

FARRO FIRST ADDITION  
TRAFFIC IMPACT STUDY

LOVELAND, COLORADO

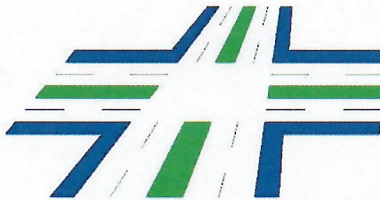
MAY 2025

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Project #2266



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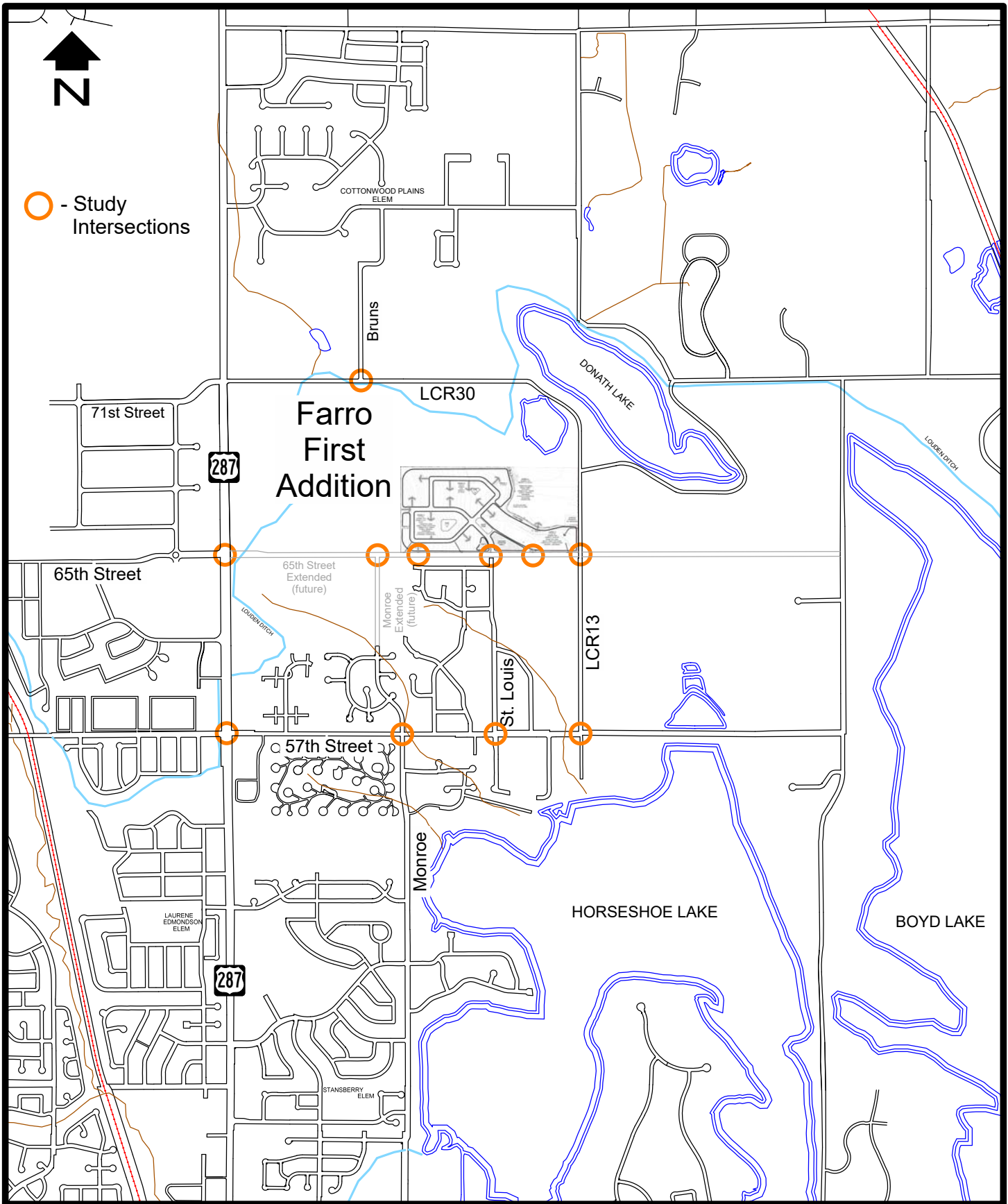
## I. INTRODUCTION

This traffic impact study (TIS) is for the proposed Farro First Addition development located in Loveland, Colorado. The Farro First Addition site is located approximately half a mile north of East 57<sup>th</sup> Street and west of (adjacent to) Larimer County Road 13 (LCR13). The location of the Farro First Addition site is shown in Figure 1. This TIS addresses the operation at the key intersections for the short range (2030) and long range (2045) futures.

This study involved the collection of data, a review of previous developments and studies in the area, trip generation, trip distribution, trip assignment, and the operation analyses of the key intersections in the area for the existing conditions, the short range (2030) future, and the long range (2045) future. During the course of this analysis, numerous contacts were made with City staff and the project representative (Schroyer Resources LLC). Since this land is within the City of Loveland, the traffic impact study guidelines for Loveland, as contained in the “Larimer County Urban Area Street Standards” (LCUASS) were used.

The following intersections, as agreed to in the scoping discussions, were addressed in this traffic study: US287/57<sup>th</sup> Street (major intersection), US287/65<sup>th</sup> Street (major intersection), 57<sup>th</sup> Street/Monroe (major intersection), 57<sup>th</sup> Street/St. Louis (minor intersection), 57<sup>th</sup> Street/LCR13-Koldewey (minor intersection), Larimer County Road 30 (LCR30)/Bruns (minor intersection), 65<sup>th</sup> Street/LCR13 (future minor intersection), 65<sup>th</sup> Street/Monroe (future minor intersection), 65<sup>th</sup> Street/St. Louis (future minor intersection), and the 65<sup>th</sup> Street/Site Accesses (future minor intersections) intersections. Appendix A contains the Transportation Impact Study Base Assumptions form and related attachments for the Farro First Addition project.

This TIS is a revision of the ***Farro First Addition Traffic Impact Study***, dated January 2025. It reflects changes in the site plan and addressed the City comments. A scoping meeting to address comments and site plan changes was held with Randy Maizland and Adam Zagaro on May 13, 2025.



SCALE: 1"=2000'

## SITE LOCATION

Figure 1

## II. EXISTING CONDITIONS

### Land Use

The project site is currently vacant. The land surrounding the site consists of primarily residential uses. There are residential uses to the south of the Farro First Addition site. The center of Loveland lies to the south of the Farro First Addition project.

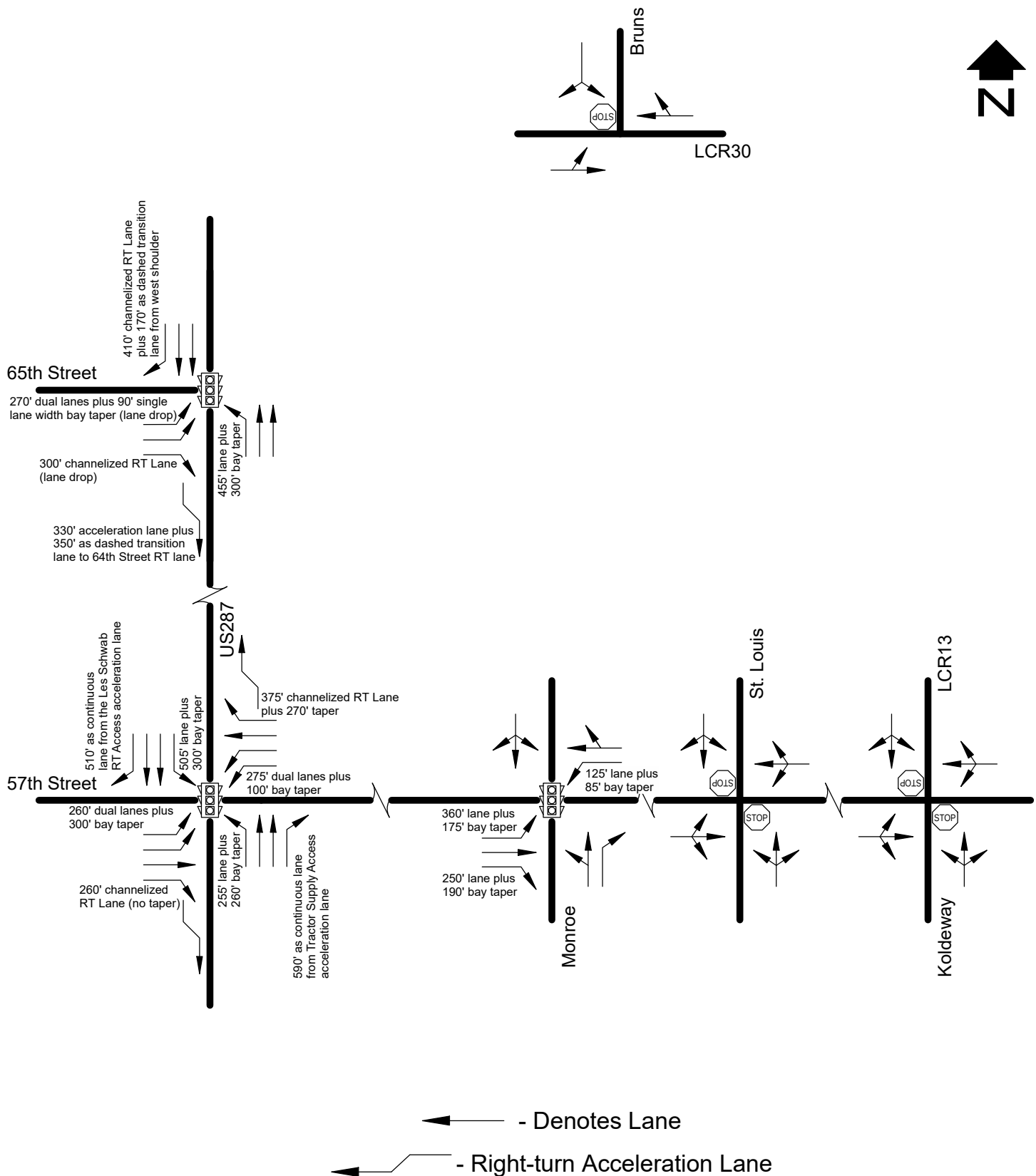
### Roads

A schematic of the current geometry at the US287/57<sup>th</sup> Street, US287/65<sup>th</sup> Street, 57<sup>th</sup> Street/Monroe, 57<sup>th</sup> Street/St. Louis, 57<sup>th</sup> Street/LCR13-Koldewey, and LCR30/Bruns intersections is shown in Figure 2. The approximate auxiliary lane lengths are also shown. The key existing streets are US287, 57<sup>th</sup> Street, 65<sup>th</sup> Street, Monroe Avenue, St. Louis Avenue, LCR13, and LCR30.

US287 is classified as a six-lane arterial street. Currently, US287 has a four-lane cross section with auxiliary turn lanes at intersections. The posted speed on US287 is 50 mph south of the US287/57<sup>th</sup> Street intersection. North of this intersection, the posted speed steps up to 55 mph in the northbound direction. Just south of the US287/65<sup>th</sup> Street intersection, the posted speed is 50 mph in the southbound direction. At the US287/57<sup>th</sup> Street intersection, US287 has northbound and southbound left-turn lanes, two through lanes in each direction, and northbound and southbound right-turn lanes. There are northbound and southbound right-turn acceleration lanes at this intersection. The US287/57<sup>th</sup> Street intersection has signal control. At the US287/65<sup>th</sup> Street intersection, US287 has a northbound left-turn lane, a southbound right-turn lane, and two through lanes in each direction. There is a southbound right-turn acceleration lane at this intersection. The US287/65<sup>th</sup> Street intersection has signal control.

Fifty-Seventh Street is classified as a four-lane arterial street between Taft Avenue and US287. Fifty-Seventh Street is classified as a two-lane arterial street east of US287. Currently, 57<sup>th</sup> Street has a two-lane cross section with some auxiliary turn lanes at some intersections. Fifty-Seventh Street has a posted speed of 35 mph east of US287 and a posted speed of 40 mph west of US287. At the US287/57<sup>th</sup> Street intersection, 57<sup>th</sup> Street has dual eastbound and westbound left-turn lanes, one through lane in each direction, and eastbound and westbound right-turn lanes. At the 57<sup>th</sup> Street/Monroe intersection, 57<sup>th</sup> Street has eastbound and westbound left-turn lanes, one through lane in each direction, and an eastbound right-turn lane. The 57<sup>th</sup> Street/Monroe intersection has signal control. At the 57<sup>th</sup> Street/St. Louis and 57<sup>th</sup> Street/LCR13-Koldewey intersections, 57<sup>th</sup> Street has one through lane in each direction with no auxiliary lanes. The 57<sup>th</sup> Street/St. Louis and 57<sup>th</sup> Street/LCR13-Koldewey intersections have stop sign control on the minor legs.

Sixty-Fifth Street is classified as a major collector street. Currently, 65<sup>th</sup> Street has a four-lane cross section between US287 and the roundabout at Harrison Avenue. The posted speed on 65<sup>th</sup> Street is 25 mph. At the US287/65<sup>th</sup> Street intersection, 65<sup>th</sup> Street has eastbound dual left-turn lanes and an eastbound channelized right-turn lane.



## EXISTING INTERSECTION GEOMETRY

Figure 2

Monroe Avenue is classified as a major collector street north and south of 57<sup>th</sup> Street. Currently, Monroe Avenue has a two-lane cross section with some auxiliary turn lanes at intersections south of 57<sup>th</sup> Street. The posted speed on Monroe Avenue is 35 mph south of 57<sup>th</sup> Street and 30 mph north of 57<sup>th</sup> Street. At the 57<sup>th</sup> Street/Monroe intersection, Monroe Avenue has a northbound right-turn lane and a combined northbound left-turn/through lane. All movements are combined into a single lane on the north leg of Monroe Avenue.

St. Louis Avenue is classified as a local street. St. Louis Avenue has all movements combined in single lanes at the 57<sup>th</sup> Street/St. Louis intersection. The posted speed on St. Louis Avenue is 25 mph.

Larimer County Road 13 is classified as a major collector street north of 57<sup>th</sup> Street. Koldeway Court is south of 57<sup>th</sup> Street and is classified as a local street. Koldeway Court and LCR13 are slightly offset. Currently, LCR13 has a two-lane cross section. The posted speed on LCR13 is 40 mph. At the 57<sup>th</sup> Street/LCR13-Koldeway intersection, LCR13-Koldeway Court has all movements combined into single lanes.

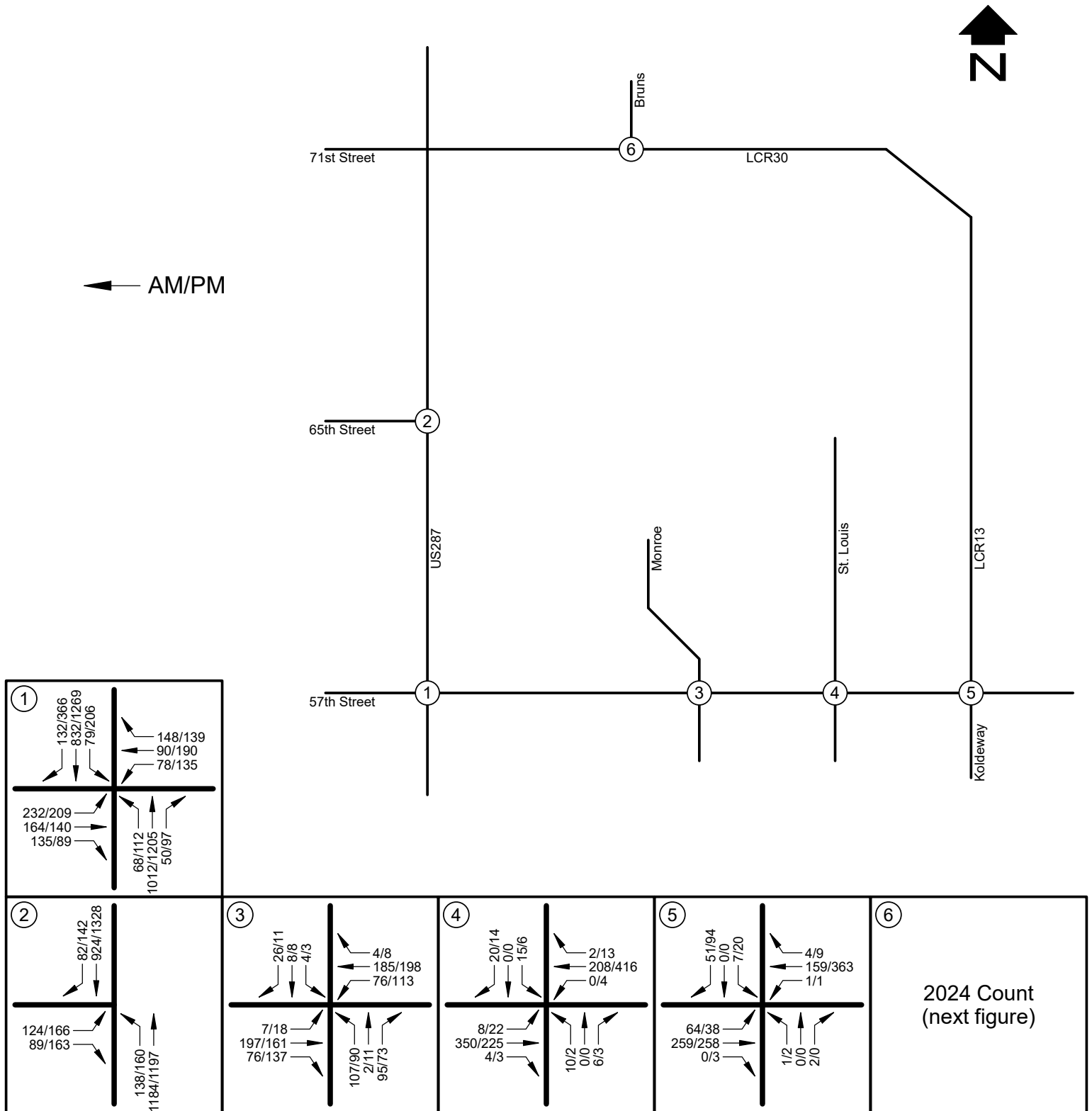
Larimer County Road 30 is classified as a major collector street. Currently, LCR30 has a two-lane cross section. The posted speed on LCR30 is 40 mph. At the LCR30/Bruns intersection, LCR30 has all movements combined into single lanes. The LCR30/Bruns intersection has stop sign control on Bruns Drive.

## Existing Traffic

Recent weekday peak hour traffic counts at the US287/57<sup>th</sup> Street, US287/65<sup>th</sup> Street, 57<sup>th</sup> Street/Monroe, 57<sup>th</sup> Street/St. Louis, 57<sup>th</sup> Street/LCR13-Koldeway, and LCR30/Bruns intersections are shown in Figure 3. Raw traffic counts are provided in Appendix B. Traffic counts at the US287/57<sup>th</sup> Street intersection were obtained in June 2022. Traffic counts at the US287/65<sup>th</sup> Street intersection were obtained in September 2022. Traffic counts at the 57<sup>th</sup> Street/Monroe intersection were obtained in February 2022. Traffic counts at the 57<sup>th</sup> Street/LCR13-Koldeway intersection were obtained in December 2022. Traffic counts at the 57<sup>th</sup> Street/St. Louis intersection were obtained in December 2022. Traffic counts at the LCR30/Bruns intersection were obtained in January 2025. Since counts were performed on different days and approximately two years ago, the traffic volumes at the key intersections were balanced and factored to the year 2024 and are shown in Figure 4.

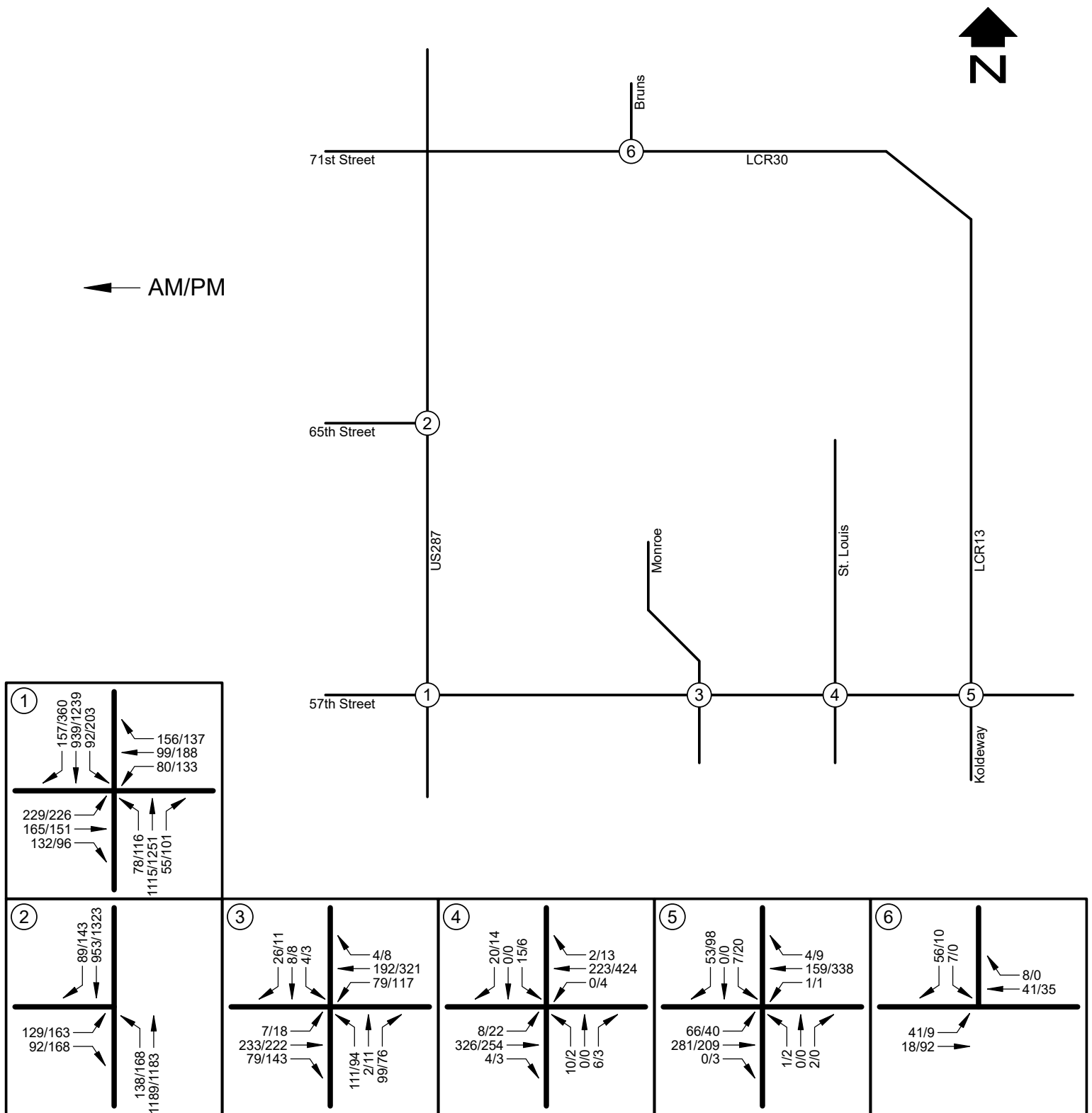
## Existing Operation

Using the volumes shown in Figure 4, the current peak hour operation at the US287/57<sup>th</sup> Street, US287/65<sup>th</sup> Street, 57<sup>th</sup> Street/Monroe, 57<sup>th</sup> Street/St. Louis, 57<sup>th</sup> Street/LCR13-Koldeway, and LCR30/Bruns intersections is shown in Table 1. Calculation forms for these analyses are provided in Appendix C. The City of Loveland provided information regarding existing signal timing for the US287/57<sup>th</sup> Street and US287/65<sup>th</sup> Street intersections. The key intersections were analyzed using the signalized and



# RECENT (2022) PEAK HOUR TRAFFIC

Figure 3



# RECENT FACTORED (2024) & BALANCED PEAK HOUR TRAFFIC

Figure 4

| TABLE 1<br>Current Peak Hour Operation    |             |                  |    |                |
|-------------------------------------------|-------------|------------------|----|----------------|
| Intersection                              | Movement    | Level of Service |    | ACF Compliance |
|                                           |             | AM               | PM |                |
| US287/57 <sup>th</sup> Street<br>(signal) | EB LT       | D                | E  | Yes            |
|                                           | EB T        | D                | D  | Yes            |
|                                           | EB RT       | A                | A  | Yes            |
|                                           | EB APPROACH | D                | D  | Yes            |
|                                           | WB LT       | D                | E  | Yes            |
|                                           | WB T        | D                | E  | Yes            |
|                                           | WB RT       | A                | A  | Yes            |
|                                           | WB APPROACH | D                | E  | No             |
|                                           | NB LT       | A                | E  | Yes            |
|                                           | NB T        | B                | C  | Yes            |
|                                           | NB RT       | A                | A  | Yes            |
|                                           | NB APPROACH | B                | C  | Yes            |
|                                           | SB LT       | B                | F  | No             |
|                                           | SB T        | B                | A  | Yes            |
|                                           | SB RT       | B                | A  | Yes            |
|                                           | SB APPROACH | B                | C  | Yes            |
|                                           | OVERALL     | C                | C  | Yes            |
| US287/65 <sup>th</sup> Street<br>(signal) | EB LT       | D                | E  | Yes            |
|                                           | EB RT       | A                | A  | Yes            |
|                                           | EB APPROACH | D                | E  | No             |
|                                           | NB LT       | A                | A  | Yes            |
|                                           | NB T        | A                | A  | Yes            |
|                                           | NB APPROACH | A                | A  | Yes            |
|                                           | SB T        | A                | A  | Yes            |
|                                           | SB RT       | A                | A  | Yes            |
|                                           | SB APPROACH | A                | A  | Yes            |
|                                           | OVERALL     | A                | A  | Yes            |

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| <b>TABLE 1</b><br><b>Current Peak Hour Operation</b> |             |                  |    |                |
|------------------------------------------------------|-------------|------------------|----|----------------|
| Intersection                                         | Movement    | Level of Service |    | ACF Compliance |
|                                                      |             | AM               | PM |                |
| 57 <sup>th</sup> Street/Monroe (signal)              | EB LT       | A                | A  | Yes            |
|                                                      | EB T        | B                | B  | Yes            |
|                                                      | EB RT       | A                | A  | Yes            |
|                                                      | EB APPROACH | B                | B  | Yes            |
|                                                      | WB LT       | A                | A  | Yes            |
|                                                      | WB T/RT     | A                | B  | Yes            |
|                                                      | WB APPROACH | A                | A  | Yes            |
|                                                      | NB LT/T     | B                | B  | Yes            |
|                                                      | NB RT       | B                | B  | Yes            |
|                                                      | NB APPROACH | B                | B  | Yes            |
|                                                      | SB LT/T/RT  | B                | B  | Yes            |
|                                                      | OVERALL     | A                | B  | Yes            |
| 57 <sup>th</sup> Street/St. Louis (stop sign)        | NB LT/T/RT  | B                | B  | Yes            |
|                                                      | SB LT/T/RT  | B                | B  | Yes            |
|                                                      | EB LT/T/RT  | A                | A  | Yes            |
|                                                      | WB LT/T/RT  | A                | A  | Yes            |
|                                                      | OVERALL     | A                | A  | Yes            |
| 57 <sup>th</sup> Street/LCR13-Koldewey (stop sign)   | NB LT/T/RT  | B                | C  | Yes            |
|                                                      | SB LT/T/RT  | B                | B  | Yes            |
|                                                      | EB LT/T/RT  | A                | A  | Yes            |
|                                                      | WB LT/T/RT  | A                | A  | Yes            |
|                                                      | OVERALL     | A                | A  | Yes            |
| LCR30/Bruns (stop sign)                              | SB LT/RT    | A                | A  | Yes            |
|                                                      | EB LT/T     | A                | A  | Yes            |
|                                                      | OVERALL     | A                | A  | Yes            |

unsignalized intersection techniques from the Highway Capacity Manual (HCM), 7<sup>th</sup> Edition. Acceptable operation is defined by the City of Loveland as level of service (LOS) C or better overall. At intersections on State Highways, overall LOS D is acceptable. At major intersections, any leg can operate at level of service D and any movement can operate at level of service E. At minor intersections, any leg can operate at level of service E and any movement can operate at level of service F. A description of level of service at signalized and unsignalized intersections is provided in Appendix C. The Loveland Motor Vehicle LOS Standards are also provided in Appendix C.

As can be seen in Table 1, the 57<sup>th</sup> Street/Monroe, 57<sup>th</sup> Street/St. Louis, 57<sup>th</sup> Street/LCR13-Koldeway, and LCR30/Bruns intersections currently meet the Loveland level of service criteria with existing control, signal timing, and geometry. During the morning peak hour, the US287/57<sup>th</sup> Street and US287/65<sup>th</sup> Street intersections meet the Loveland level of service criteria with existing control, signal timing, and geometry. The overall operation at the US287/57<sup>th</sup> Street and US287/65<sup>th</sup> Street intersections meets the Loveland level of service standards in the peak hours. At the US287/57<sup>th</sup> Street intersection during the afternoon peak hour, the northbound and southbound left-turn run as a protected only phase, which causes the southbound left-turn movement to operate at LOS F. In addition to this, the afternoon operation shows that the westbound approach of 57<sup>th</sup> Street does not meet the City LOS standards using the existing signal timing. At the US287/65<sup>th</sup> Street intersection, the afternoon operation shows that the eastbound approach of 65<sup>th</sup> Street does not meet the City LOS standards using the existing signal timing. At the US287/57<sup>th</sup> Street and US287/65<sup>th</sup> Street intersections, it has been observed with the existing afternoon intersection operation, as well as with subsequent operational analyses in this TIS, that level of service E for the eastbound and westbound approaches cannot be mitigated regardless of how much green time is given to the minor street approaches. In some instances, the more green time given to the minor street approaches, the worse the delay becomes. This is likely caused by the amount of green time required for US287 and that there is so much more traffic on US287 as compared to 57<sup>th</sup> Street or 65<sup>th</sup> Street. The arrival on the green phase for the eastbound and westbound approaches is only between 5-16 percent in the afternoon peak hour. This means most vehicles arrive with a red light. Discussions with the City staff indicated that they calculated similar results from analyses that the City conducted in other major corridors (US34) in Loveland.

### Existing Pedestrians and Bicycles

During the vehicular traffic counts, pedestrian and bicycle traffic volumes were observed. There were very few pedestrians and bicyclists.

### Crash Analysis

Crash data was obtained from the City of Loveland for the US287/57<sup>th</sup> Street, intersection for a two year, eight month period (4/7/2022 to 12/3/2024). At the US287/57<sup>th</sup> Street intersection, there were 87 reported crashes: 29 rear-end crashes, 35 crashes

involving turning vehicles, 15 sideswipe crashes, one head-on crash, five crashes involving a vehicle striking a fixed object (one crash involved a DUI), one crash involved a vehicle running a red light, and one crash involving striking an animal.

Crash data was obtained from the City of Loveland for the US287/65<sup>th</sup> Street intersection for a two year, six month period (5/2/2022 to 11/2/2024). At the US287/65<sup>th</sup> Street intersection, there were 19 reported crashes: four rear-end crashes (one crash involved a DUI), eight crashes involving turning vehicles, three sideswipe crashes, one head-on crash, one crash involving a vehicle striking a fixed object, one crash involved a vehicle running a red light, and one crash involving striking debris in the road. One crash did not have enough information to make a crash determination.

Crash data was obtained from the Larimer County website for the 57<sup>th</sup> Street/Monroe intersection for the years 2020-2024. There were 13 reported crashes. There was not enough information to determine the types of crashes.

Crash data was obtained from the Larimer County website for the 57<sup>th</sup> Street/St. Louis intersection for the years 2020-2024. There were two reported crashes. There was not enough information to determine the types of crashes.

Crash data was obtained from the Larimer County website for the 57<sup>th</sup> Street/LCR13-Koldewey intersection for the years 2020-2024. There were four reported crashes. There was not enough information to determine the types of crashes.

### III. PROPOSED DEVELOPMENT

The Farro First Addition project is proposed as a residential development. Figure 5 shows the site plan for the Farro First Addition project. The analyses in this TIS assumed that the Farro First Addition will be built out over the next 4-5 years, following approval. The analysis year for the short range future was assumed to be the year 2030 and the long range future was assumed to be the year 2045.

Access to the Farro First Addition site will be via three proposed full-movement accesses (Access A, Access B, and Access C) to/from future 65<sup>th</sup> Street. The future 65<sup>th</sup> Street will connect from US287 to Monroe Avenue in the short range (2030) future with the development of the Sugar Creek property. The Access B will be an extension of St. Louis Avenue. There will also be a future connection to/from the adjacent Sugar Creek subdivision to the west.

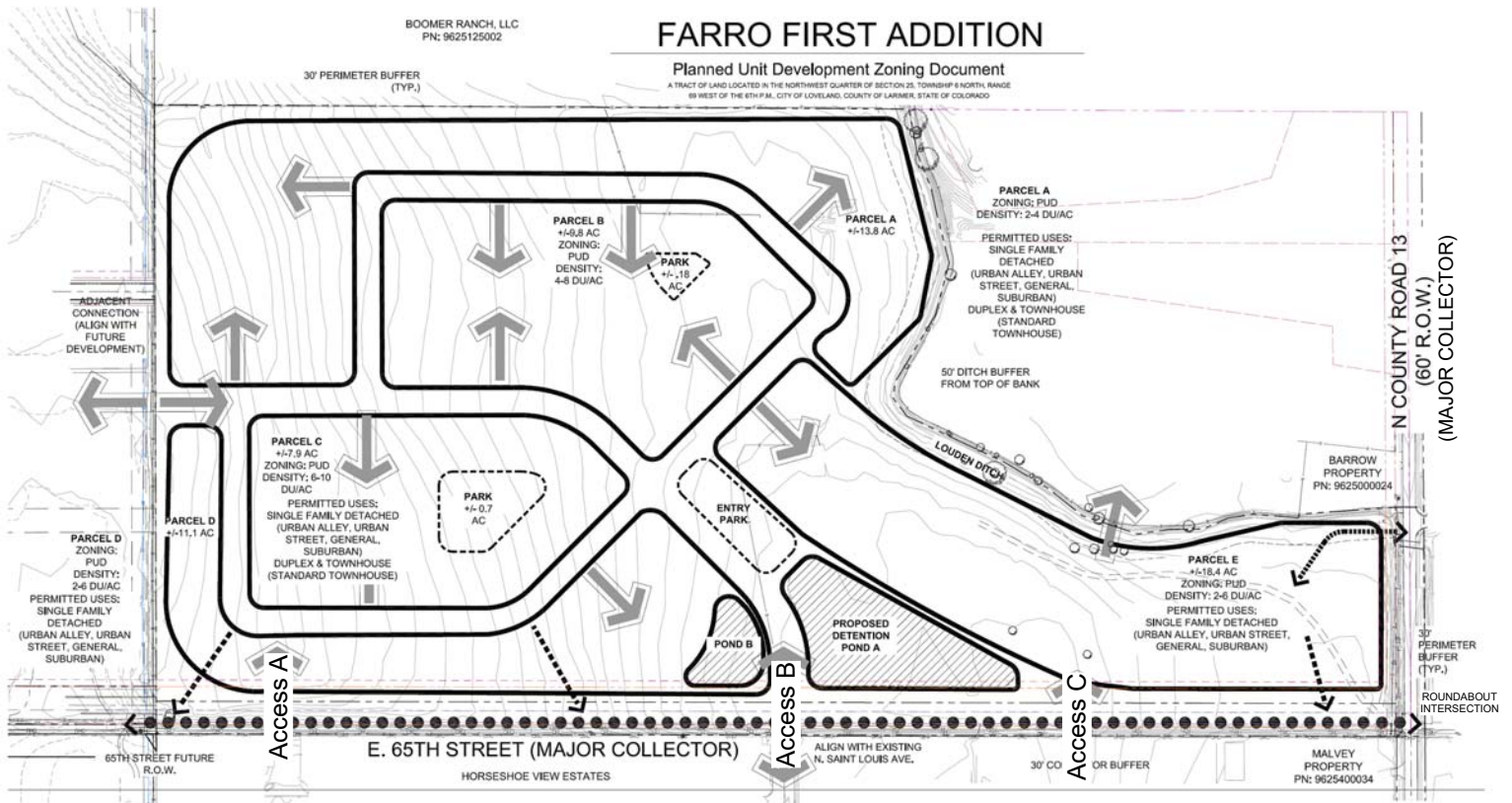
#### Trip Generation

Trip generation is important in considering the impact of a development on the existing and proposed street system. Trip Generation, 11<sup>th</sup> Edition, ITE was used to determine the trips that would be generated by the Farro First Addition project. A trip is defined as a one-way vehicle movement from origin to destination. Table 2 shows the expected trip generation from the Farro First Addition site on a daily and peak hour basis. The full development trip generation resulted in 2,832 daily trip ends, 203 morning peak hour trip ends, and 275 afternoon peak hour trip ends. Also shown in Table 2 are the number of trips for Cottonwood Plains Elementary school that would originate from the Farro First Addition site.

| TABLE 2<br>Trip Generation                                           |                        |          |       |       |              |    |      |     |              |     |      |     |
|----------------------------------------------------------------------|------------------------|----------|-------|-------|--------------|----|------|-----|--------------|-----|------|-----|
| Code                                                                 | Use                    | Size     | AWDTE |       | AM Peak Hour |    |      |     | PM Peak Hour |     |      |     |
|                                                                      |                        |          | Rate  | Trips | Rate         | In | Rate | Out | Rate         | In  | Rate | Out |
| 210                                                                  | Single Family Detached | 255 D.U. | EQ    | 2388  | EQ           | 44 | EQ   | 131 | EQ           | 151 | EQ   | 89  |
| 215                                                                  | Single Family Attached | 65 D.U.  | EQ    | 444   | EQ           | 7  | EQ   | 21  | EQ           | 21  | EQ   | 14  |
| Total                                                                |                        |          |       | 2832  |              | 51 |      | 152 |              | 172 |      | 103 |
| Students attending Cottonwood Plains Elementary School (61 students) |                        |          |       | 140   |              | 21 |      | 24  |              | 5   |      | 5   |



SCALE: 1"=400'



## SITE PLAN

Figure 5

## Trip Distribution

Trip distribution for the Farro First Addition site was estimated using knowledge of the existing and planned street system, existing traffic patterns, development trends, and engineering judgment. Figure 6 shows the trip distribution used in the following analyses. The trip distribution analysis was agreed to in the scoping discussions and is contained in Appendix A.

## Traffic Assignment

Trip assignment is the product of both the trip generation and trip distribution processes. Figure 7 shows the short range (2030) and long range (2045) site generated peak hour traffic at the key intersections.

## Background Traffic Projections

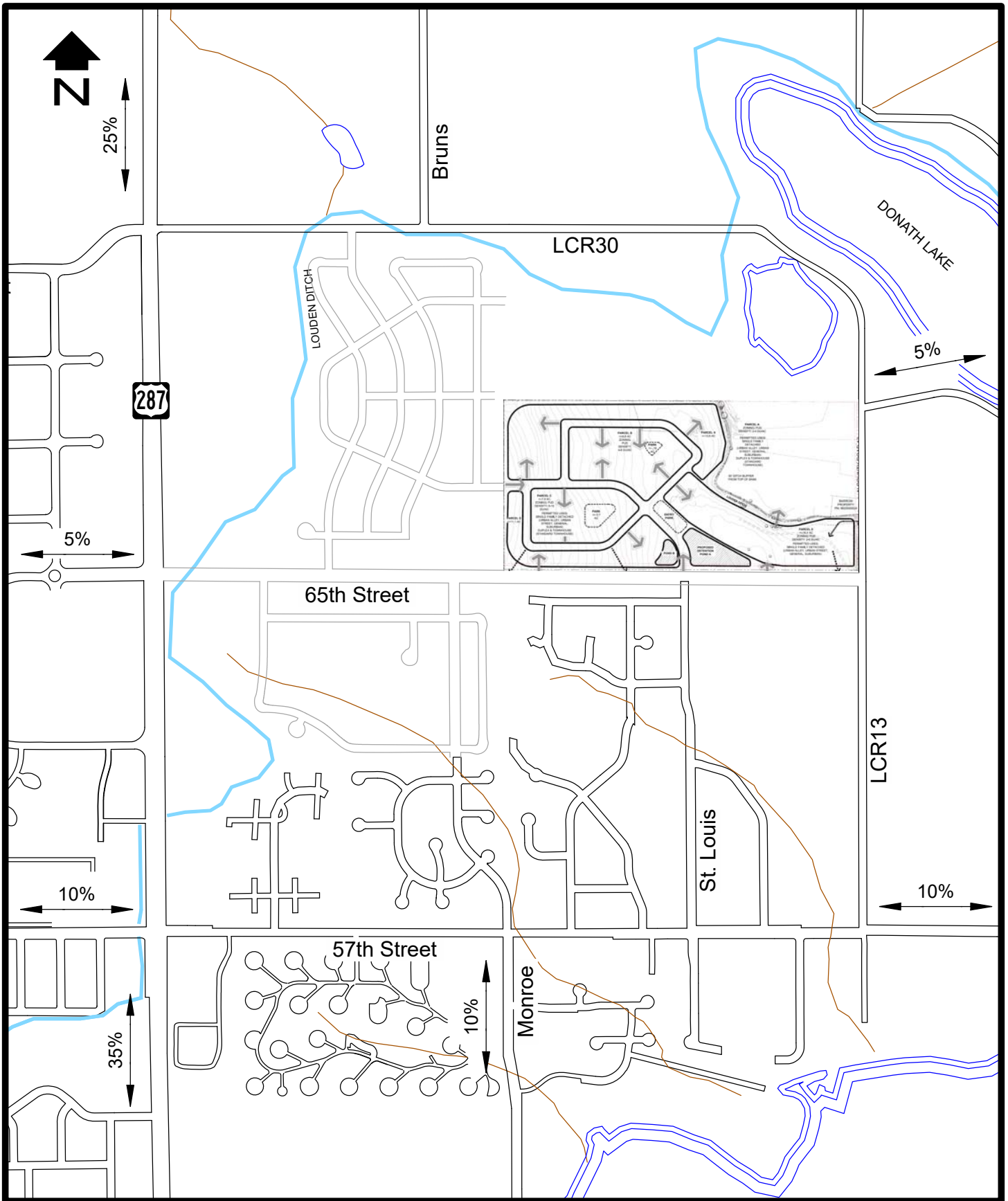
Background traffic projections for the short range (2030) and long range (2045) future horizons were obtained by factoring the existing traffic volumes on US287, 57<sup>th</sup> Street, 65<sup>th</sup> Street, Monroe Avenue (south of 57<sup>th</sup> Street), and LCR13 by approximately two percent per year. In addition to this, site traffic from the Sugar Creek residential development was added to the background traffic. School traffic (Cottonwood Plains Elementary) from Sugar Creek was calculated and added to the LCR13/Bruns intersection. Figures 8 and 9 show the short range (2030) and long range (2045) background peak hour traffic at the key intersections, respectively.

## Total Traffic

The traffic volumes generated by the proposed Farro First Addition were added to the background traffic volumes to produce the total traffic volume forecasts for the short range (2030) and long range (2045) futures. Figures 10 and 11 show the short range (2030) and long range (2045) total peak hour traffic, respectively.

## Signal Warrants

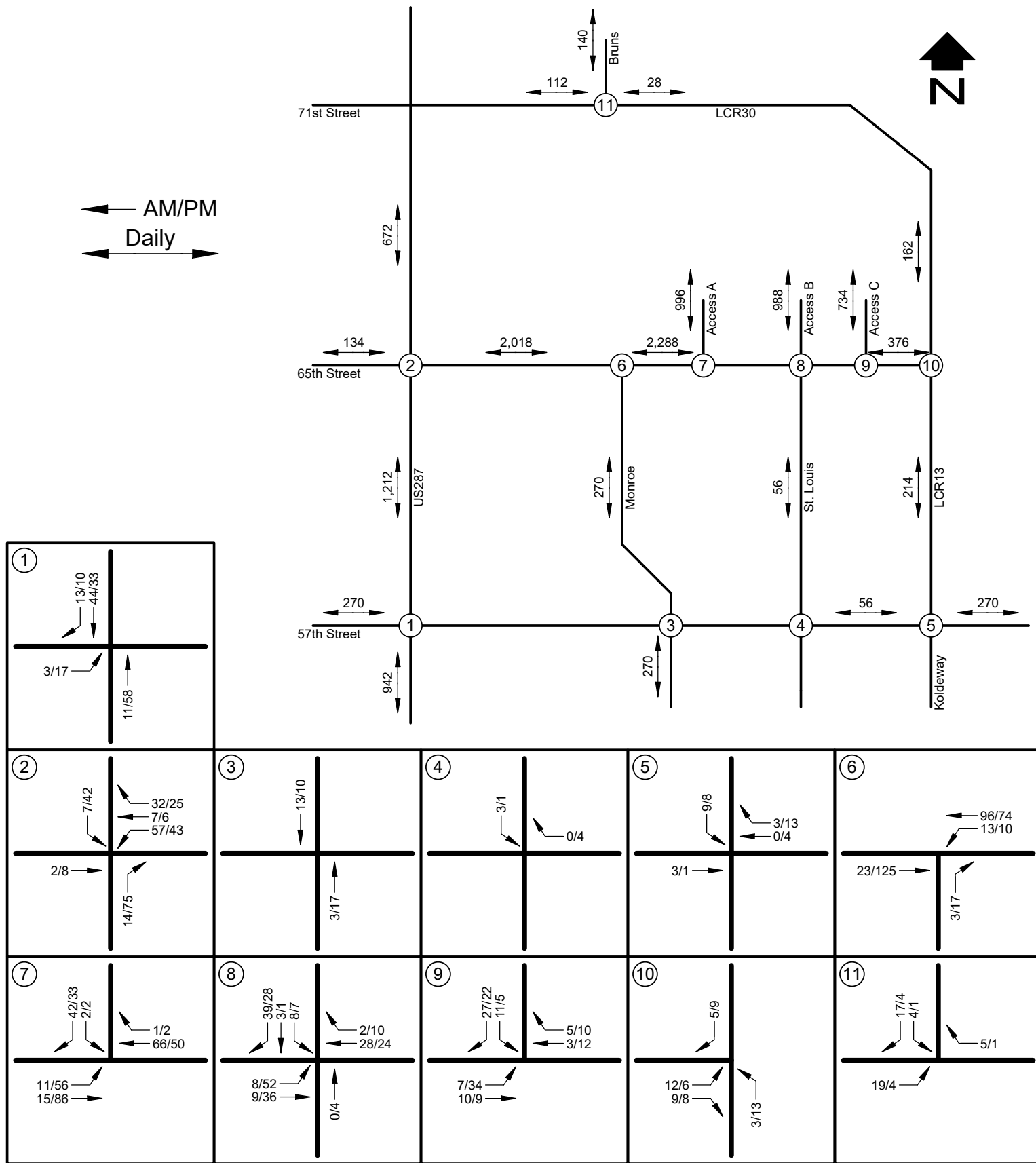
As a matter of policy, traffic signals are not installed at any location until such time that signal installation warrants are met according to the Manual on Uniform Traffic Control Devices. The US287/57<sup>th</sup> Street, US287/65<sup>th</sup> Street, and 57<sup>th</sup> Street/Monroe intersections are currently signalized. For the roads in the vicinity of the Farro First Addition, four hour and/or eight hour signal warrants are applicable. These warrants require much data and are applied when the traffic is actually on the area road system. It is acknowledged that peak hour signal warrants should not be applied, but since the peak hour forecasts are readily available in a traffic impact study, it is reasonable to use them to estimate whether



SCALE: 1"=1000'

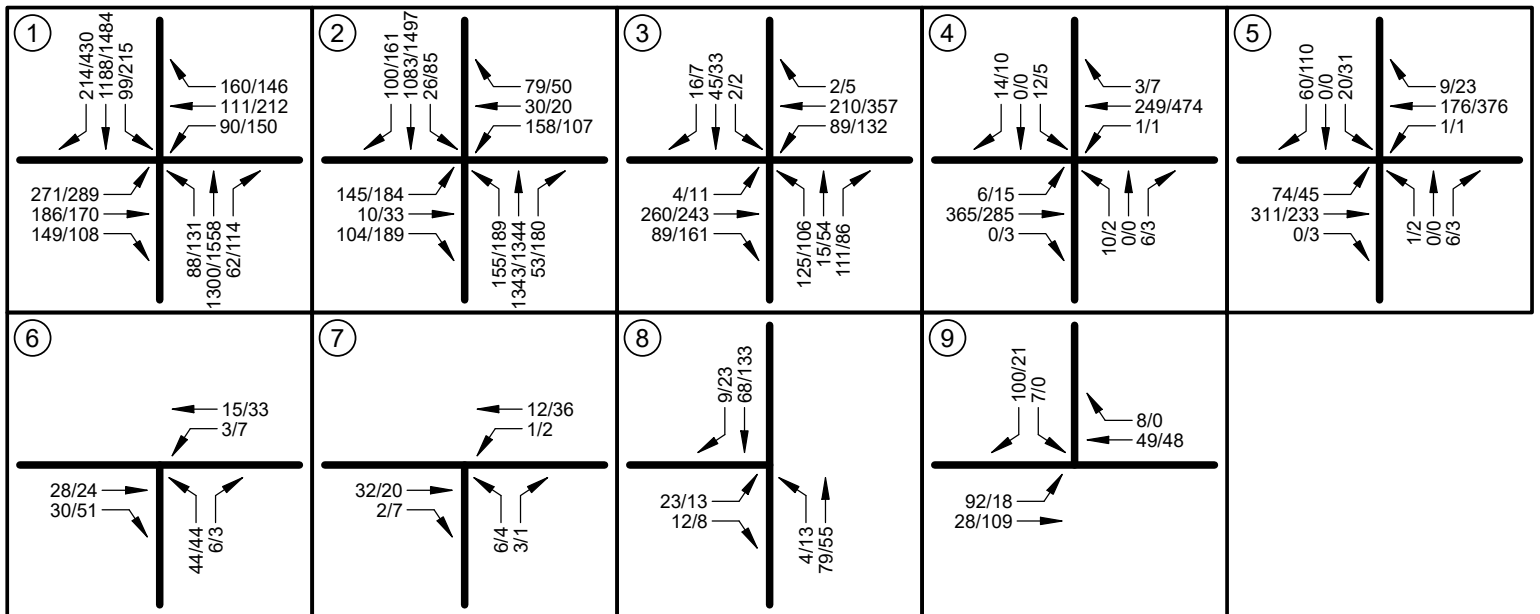
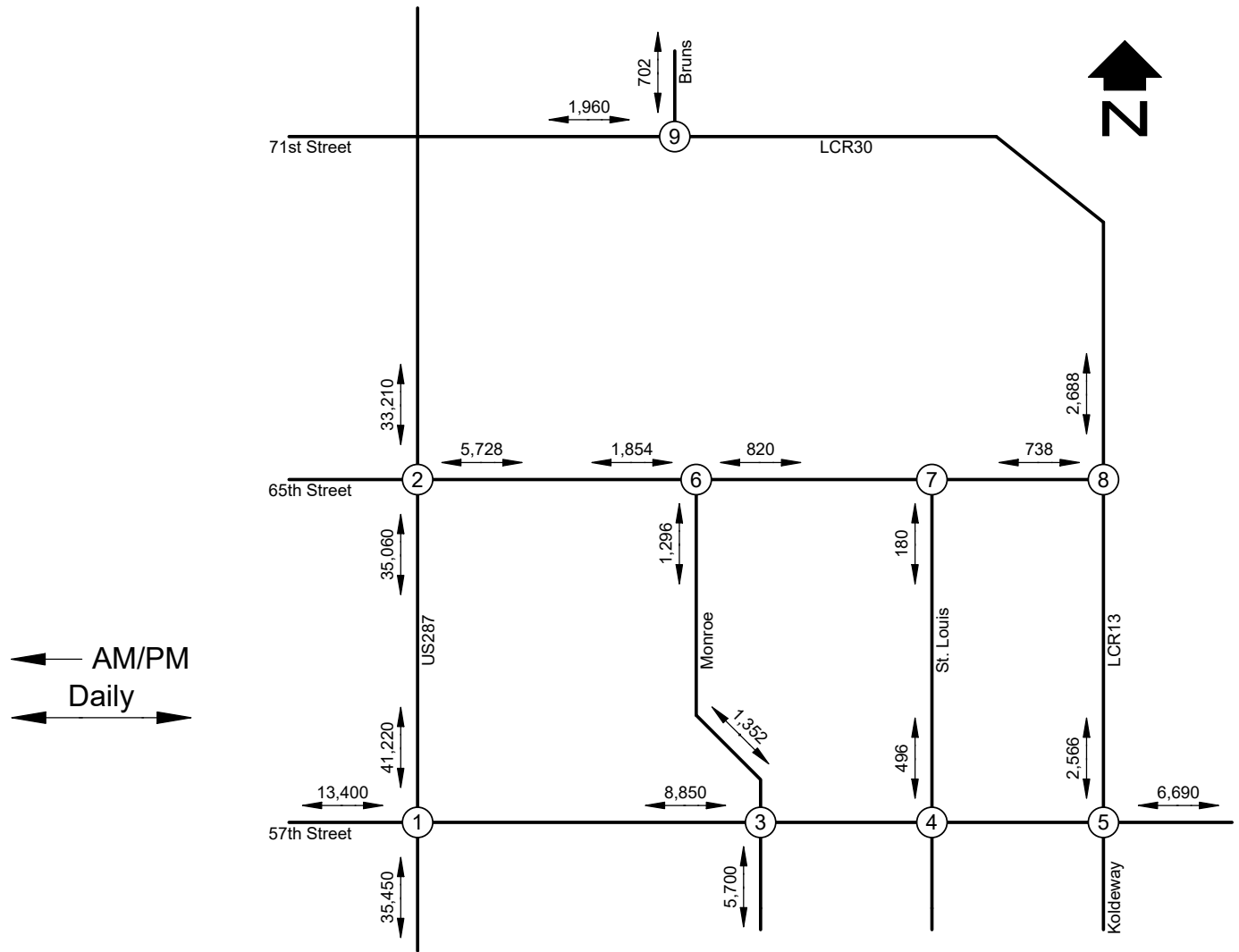
## TRIP DISTRIBUTION

Figure 6



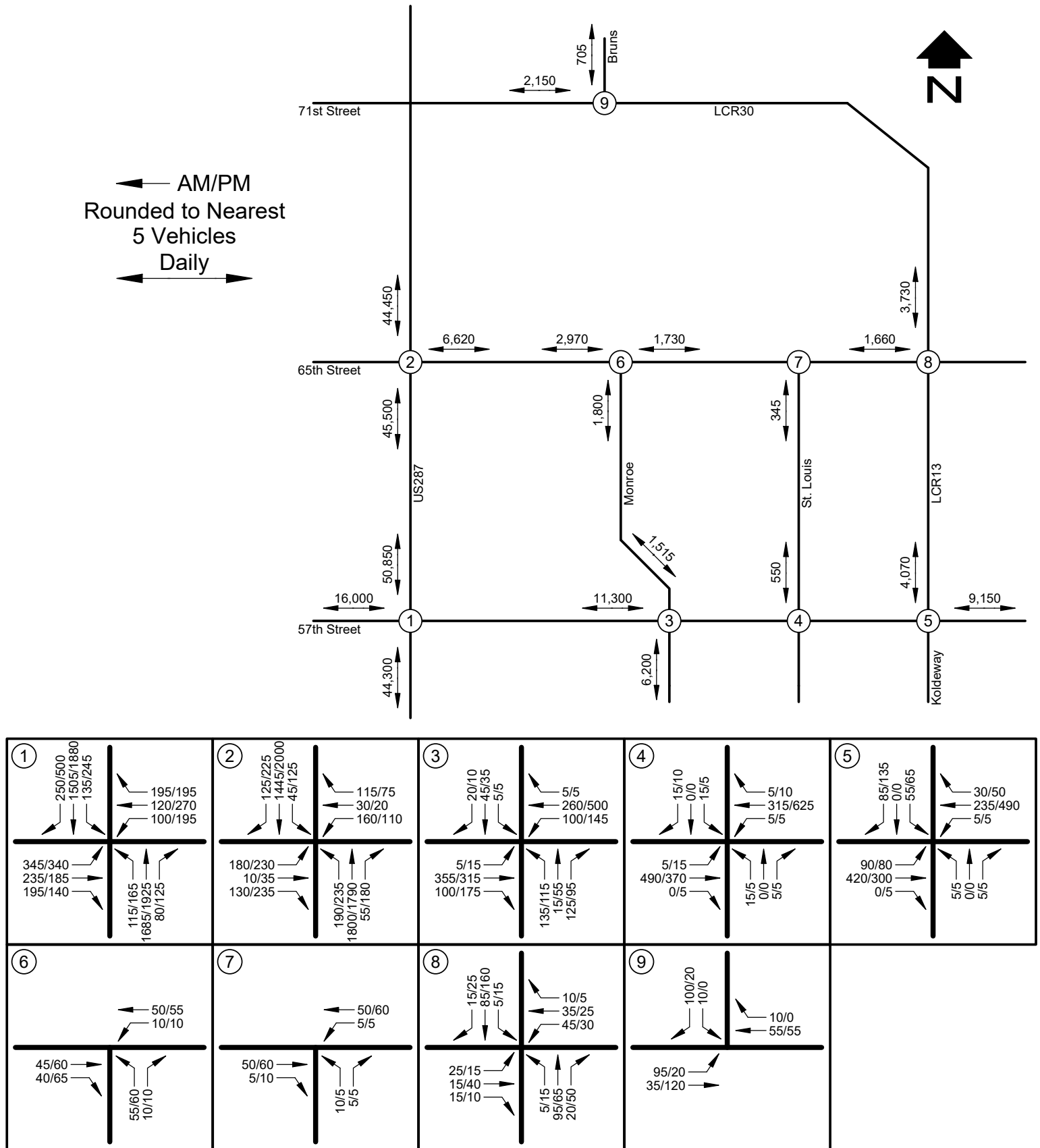
SITE GENERATED  
PEAK HOUR TRAFFIC

Figure 7



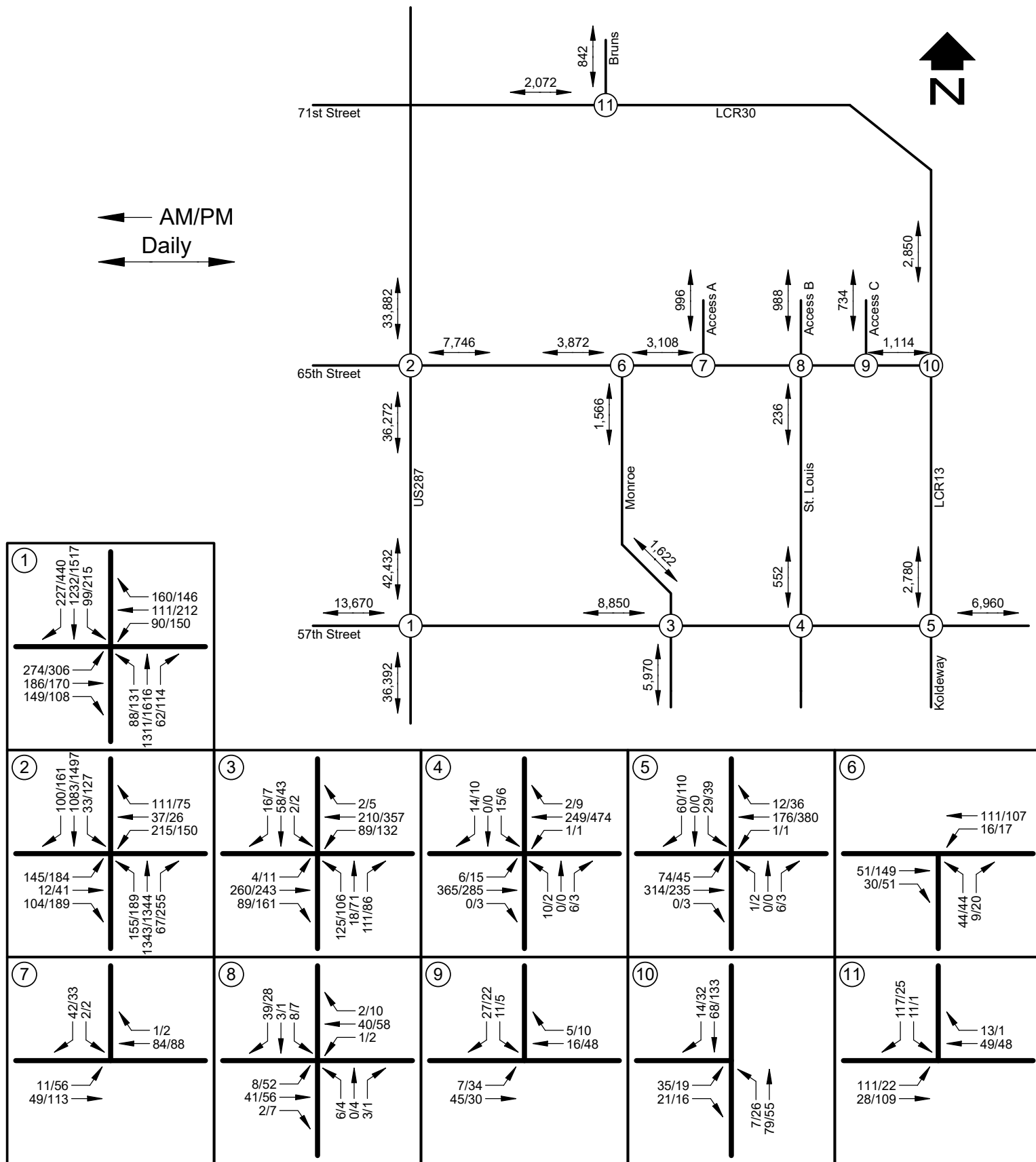
## SHORT RANGE (2030) BACKGROUND PEAK HOUR TRAFFIC

Figure 8



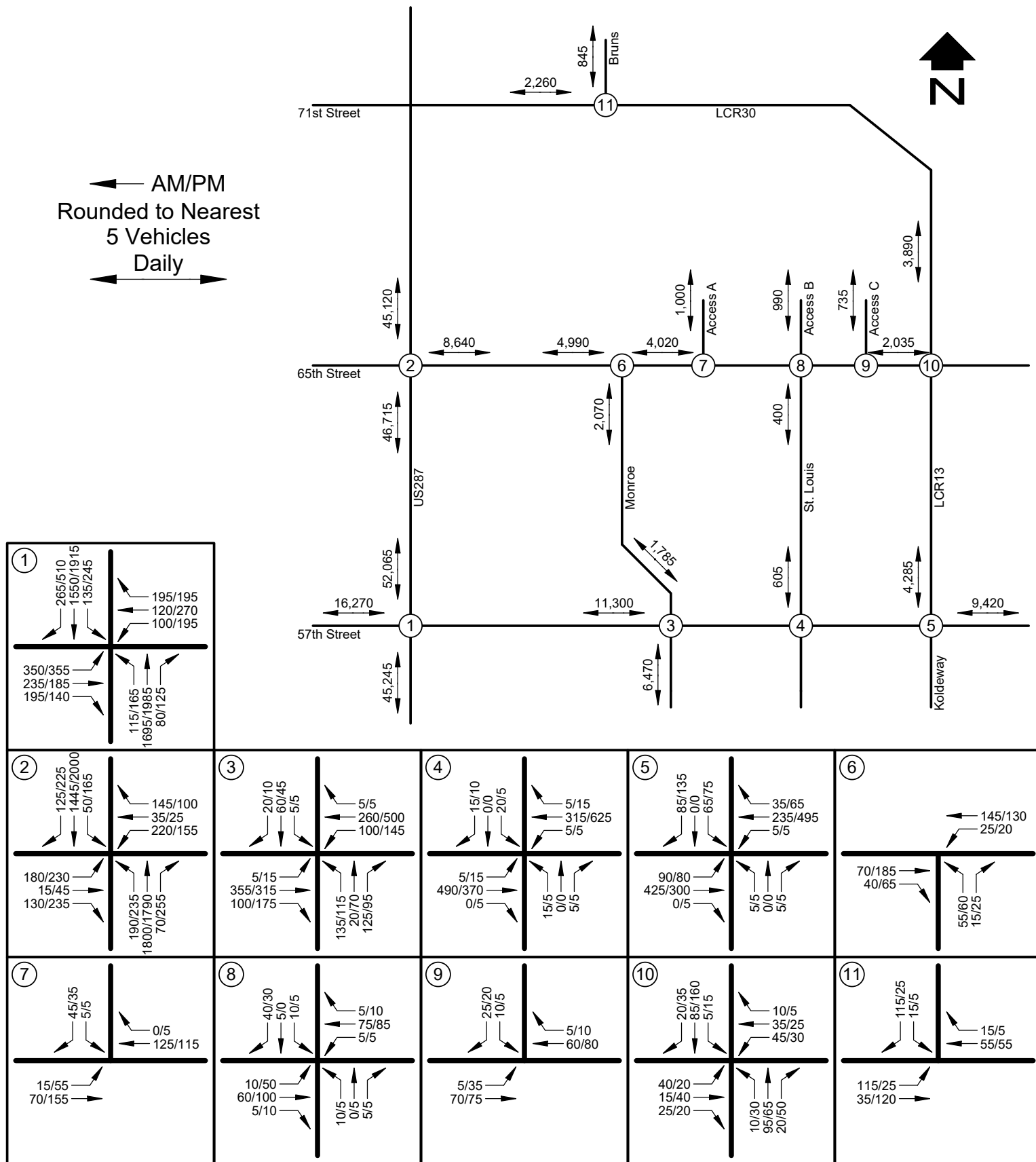
# LONG RANGE (2045) BACKGROUND PEAK HOUR TRAFFIC

Figure 9



# SHORT RANGE (2030) TOTAL PEAK HOUR TRAFFIC

Figure 10



## LONG RANGE (2045) TOTAL PEAK HOUR TRAFFIC

Figure 11

other signal warrants may be met. If peak hour signal warrants will not be met at a given intersection, it is reasonable to conclude that it is not likely that other signal warrants would be met. If peak hour signal warrants are met, it merely indicates that further evaluation should occur in the future as the development occurs. However, a judgment can be made that some intersections will likely meet other signal warrants. None of the stop sign controlled intersections analyzed in this study will meet peak hour signal warrants or signal spacing criteria and will not be signalized.

## Street Classifications (Long Range)

Table 3 shows the various street segments, existing street classification, long range (2045) daily volume, and recommended long range (2045) street classification. US287 is classified as a 4-lane arterial street. Given the forecasted long range (2045) daily volume, US287 should be classified as a 6-lane arterial street. Fifty-Seventh Street is classified as a 4-lane arterial street between Taft Avenue and US287. Fifty-Seventh Street is classified as a 2-lane arterial street east of US287. This is the proper classification for 57<sup>th</sup> Street. Future 65<sup>th</sup> Street is classified as a major collector street. East of US287, traffic volume forecasts show that it will be at 2-lane arterial street levels. The 2-lane arterial street volume levels will continue to the multifamily portion of the Sugar Creek development. East of this area, traffic volumes on 65<sup>th</sup> Street will drop to major collector street levels. Since the 2-lane arterial daily traffic volumes are just east of US287 where there is proposed to be extensive geometry, it is recommended that 65<sup>th</sup> be classified as a major collector street from US287 to LCR13. Larimer County Road 30 is classified as a major collector street. The long range (2045) daily volume forecasts show that it will be at minor collector street levels. Monroe Avenue is classified as a major collector street. South of 57<sup>th</sup> Street, this is the proper classification. North of 57<sup>th</sup> Street, traffic volume forecasts show that it will be at minor collector street levels. St. Louis Avenue is classified as a local street. North of 57<sup>th</sup> Street, traffic volume forecasts show that it will be at local street levels. Larimer County Road 13 is classified as a major collector street. North of 57<sup>th</sup> Street, traffic volume forecasts show that it will be at major collector street levels. Access A, Access B, and Access C should be classified as local streets. Bruns Drive is classified as a local street. North of LCR30, traffic volume forecasts show that it will be at local street levels.

The impact of the Farro First Addition site generated traffic to St. Louis Avenue and Bruns Drive will be relatively small. The site generated traffic will add 56 daily trip ends, 3 morning peak hour trip ends, and 5 afternoon peak hour trip ends to St. Louis Avenue. The school site generated traffic will add 140 daily trip ends, 45 morning peak hour trip ends, and 10 afternoon peak hour trip ends to Bruns Drive.

## Operation Analysis

Operation analyses were performed at the US287/57<sup>th</sup> Street, US287/65<sup>th</sup> Street, 57<sup>th</sup> Street/Monroe, 57<sup>th</sup> Street/St. Louis, 57<sup>th</sup> Street/LCR13-Koldeway, 65<sup>th</sup> Street/Monroe, 65<sup>th</sup> Street/St. Louis, 65<sup>th</sup> Street/Site Access, and 65<sup>th</sup> Street/LCR13 intersections. The operations analyses were conducted for the short range future, reflecting

**TABLE 3**  
**Long Range (2045) Street Classifications**

| <b>Street Segment</b>                             | <b>Existing Classification</b> | <b>Long Range (2045) Daily Volume</b> | <b>Long Range (2045) Classification</b> |
|---------------------------------------------------|--------------------------------|---------------------------------------|-----------------------------------------|
| US287 north of 65 <sup>th</sup> Street            | 4-Lane Arterial                | 45,120                                | 6-Lane Arterial                         |
| US287 south of 65 <sup>th</sup> Street            | 4-Lane Arterial                | 46,715                                | 6-Lane Arterial                         |
| US287 north of 57 <sup>th</sup> Street            | 4-Lane Arterial                | 52,065                                | 6-Lane Arterial                         |
| US287 south of 57 <sup>th</sup> Street            | 4-Lane Arterial                | 45,245                                | 6-Lane Arterial                         |
| 57 <sup>th</sup> Street west of US287             | 4-Lane Arterial                | 16,270                                | 4-Lane Arterial                         |
| 57 <sup>th</sup> Street west of Monroe Avenue     | 2-Lane Arterial                | 11,300                                | 2-Lane Arterial                         |
| 57 <sup>th</sup> Street east of LCR13             | 2-Lane Arterial                | 9,420                                 | 2-Lane Arterial                         |
| 65 <sup>th</sup> Street east of US287             | Major Collector                | 8,640                                 | Major Collector                         |
| 65 <sup>th</sup> Street west of Monroe Avenue     | Major Collector                | 4,990                                 | Major Collector                         |
| 65 <sup>th</sup> Street east of Monroe Avenue     | Major Collector                | 4,020                                 | Major Collector                         |
| 65 <sup>th</sup> Street west of LCR13             | Major Collector                | 2,035                                 | Major Collector                         |
| LCR30 west of Bruns Drive                         | Major Collector                | 2,260                                 | Minor Collector                         |
| Monroe Avenue south of 57 <sup>th</sup> Street    | Major Collector                | 6,470                                 | Major Collector                         |
| Monroe Avenue north of 57 <sup>th</sup> Street    | Major Collector                | 1,785                                 | Minor Collector                         |
| Monroe Avenue south of 65 <sup>th</sup> Street    | Major Collector                | 2,070                                 | Minor Collector                         |
| St. Louis Avenue north of 57 <sup>th</sup> Street | Local                          | 605                                   | Local                                   |
| St. Louis Avenue south of 65 <sup>th</sup> Street | Local                          | 400                                   | Local                                   |
| LCR13 north of 57 <sup>th</sup> Street            | Major Collector                | 4,285                                 | Major Collector                         |
| LCR13 north of 65 <sup>th</sup> Street            | Major Collector                | 3,890                                 | Major Collector                         |
| Access A north of 65 <sup>th</sup> Street         | N/A                            | 1,000                                 | Local                                   |
| Access B north of 65 <sup>th</sup> Street         | N/A                            | 990                                   | Local                                   |
| Access C north of 65 <sup>th</sup> Street         | N/A                            | 735                                   | Local                                   |
| Bruns Drive north of LCR30                        | Local                          | 845                                   | Local                                   |

a year 2030 condition, and long range future, reflecting a year 2045 condition. The long range (2045) operational analyses are used for planning and informational purposes only. Two eastbound and westbound through lanes were assumed at the US287/57<sup>th</sup> Street intersection in the long range (2045) future.

As mentioned earlier, at the US287/57<sup>th</sup> Street and US287/65<sup>th</sup> Street intersections during the afternoon peak hour, level of service E for the eastbound and westbound approaches cannot be mitigated regardless of how much green time is given to the minor street approaches. In some instances, the more green time given to the minor street approaches, the worse the delay becomes. This is likely caused by the amount of green time required for US287 and that there is so much more traffic on US287 as compared to 57<sup>th</sup> Street or 65<sup>th</sup> Street. The arrival on green rate for the eastbound and westbound left-turns/throughs is only between 5-18 percent in the afternoon peak hour. This means most vehicles arrive with a red light.

Table 4 shows the short range (2030) background peak hour operation at the US287/57<sup>th</sup> Street, US287/65<sup>th</sup> Street, 57<sup>th</sup> Street/Monroe, 57<sup>th</sup> Street/St. Louis, 57<sup>th</sup> Street/LCR13-Koldeway, 65<sup>th</sup> Street/Monroe, 65<sup>th</sup> Street/St. Louis, and 65<sup>th</sup> Street/LCR13 intersections. The 57<sup>th</sup> Street/Monroe, 57<sup>th</sup> Street/St. Louis, 57<sup>th</sup> Street/LCR13-Koldeway, 65<sup>th</sup> Street/Monroe, 65<sup>th</sup> Street/St. Louis, and 65<sup>th</sup> Street/LCR13 intersections meet the Loveland level of service criteria in the peak hours. During the morning peak hour, the US287/57<sup>th</sup> Street and US287/65<sup>th</sup> Street intersections meet the Loveland level of service criteria with signal control and required geometry. The overall operation at the US287/57<sup>th</sup> Street and US287/65<sup>th</sup> Street intersections meets the Loveland level of service standards in the peak hours. At the US287/57<sup>th</sup> Street intersection during the afternoon peak hour, the northbound and southbound left-turns run as a protected only phase, which causes the southbound left-turn movement to operate at LOS E. In addition to this, the afternoon operation shows that the eastbound and westbound approaches of 57<sup>th</sup> Street and 65<sup>th</sup> Street do not meet the City LOS standards due to the explanation given above. This operation cannot be mitigated. Calculation forms for these analyses are provided in Appendix D.

Table 5 shows the long range (2045) background peak hour operation at the US287/57<sup>th</sup> Street, US287/65<sup>th</sup> Street, 57<sup>th</sup> Street/Monroe, 57<sup>th</sup> Street/St. Louis, 57<sup>th</sup> Street/LCR13-Koldeway, 65<sup>th</sup> Street/Monroe, 65<sup>th</sup> Street/St. Louis, and 65<sup>th</sup> Street/LCR13 intersections. At the US287/57<sup>th</sup> Street and US287/65<sup>th</sup> Street intersections during the afternoon peak hour, the eastbound and westbound approaches are not ACF compliant. Calculation forms are provided in Appendix E.

Using the traffic volumes shown in Figure 10, Table 6 shows the short range (2030) total peak hour operation at the US287/57<sup>th</sup> Street, US287/65<sup>th</sup> Street, 57<sup>th</sup> Street/Monroe, 57<sup>th</sup> Street/St. Louis, 57<sup>th</sup> Street/LCR13-Koldeway, 65<sup>th</sup> Street/Monroe, 65<sup>th</sup> Street/Access A, 65<sup>th</sup> Street/St. Louis-Access B, 65<sup>th</sup> Street/Access C, and 65<sup>th</sup> Street/LCR13 intersections. The 57<sup>th</sup> Street/Monroe, 57<sup>th</sup> Street/St. Louis, 57<sup>th</sup> Street/LCR13-Koldeway, 65<sup>th</sup> Street/Monroe, 65<sup>th</sup> Street/Access A, 65<sup>th</sup> Street/St. Louis-Access B, 65<sup>th</sup> Street/Access C, and 65<sup>th</sup> Street/LCR13 intersections meet the Loveland level of service criteria

**TABLE 4**  
**Short Range (2030) Background Peak Hour Operation**

| Intersection                              | Movement    | Level of Service |    | ACF Compliance |
|-------------------------------------------|-------------|------------------|----|----------------|
|                                           |             | AM               | PM |                |
| US287/57 <sup>th</sup> Street<br>(signal) | EB LT       | D                | E  | Yes            |
|                                           | EB T        | D                | D  | Yes            |
|                                           | EB RT       | A                | A  | Yes            |
|                                           | EB APPROACH | D                | E  | No             |
|                                           | WB LT       | D                | E  | Yes            |
|                                           | WB T        | D                | E  | Yes            |
|                                           | WB RT       | A                | A  | Yes            |
|                                           | WB APPROACH | D                | E  | No             |
|                                           | NB LT       | A                | E  | Yes            |
|                                           | NB T        | B                | D  | Yes            |
|                                           | NB RT       | A                | A  | Yes            |
|                                           | NB APPROACH | B                | D  | Yes            |
|                                           | SB LT       | B                | E  | Yes            |
|                                           | SB T        | A                | A  | Yes            |
|                                           | SB RT       | A                | A  | Yes            |
|                                           | SB APPROACH | A                | B  | Yes            |
|                                           | OVERALL     | B                | C  | Yes            |
| US287/65 <sup>th</sup> Street<br>(signal) | EB LT       | D                | E  | Yes            |
|                                           | EB T        | D                | E  | Yes            |
|                                           | EB RT       | A                | A  | Yes            |
|                                           | EB APPROACH | D                | E  | No             |
|                                           | WB LT       | D                | E  | Yes            |
|                                           | WB T        | D                | E  | Yes            |
|                                           | WB RT       | A                | A  | Yes            |
|                                           | WB APPROACH | D                | E  | No             |
|                                           | NB LT       | A                | E  | Yes            |
|                                           | NB T        | A                | A  | Yes            |
|                                           | NB RT       | A                | A  | Yes            |
|                                           | NB APPROACH | A                | A  | Yes            |
|                                           | SB LT       | A                | E  | Yes            |
|                                           | SB T        | B                | B  | Yes            |
|                                           | SB RT       | A                | A  | Yes            |
|                                           | SB APPROACH | B                | C  | Yes            |
|                                           | OVERALL     | B                | C  | Yes            |

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| <b>TABLE 4</b><br><b>Short Range (2030) Background Peak Hour Operation</b> |             |                  |    |                |
|----------------------------------------------------------------------------|-------------|------------------|----|----------------|
| Intersection                                                               | Movement    | Level of Service |    | ACF Compliance |
|                                                                            |             | AM               | PM |                |
| 57 <sup>th</sup> Street/Monroe (signal)                                    | EB LT       | A                | A  | Yes            |
|                                                                            | EB T        | B                | B  | Yes            |
|                                                                            | EB RT       | A                | B  | Yes            |
|                                                                            | EB APPROACH | B                | B  | Yes            |
|                                                                            | WB LT       | A                | A  | Yes            |
|                                                                            | WB T/RT     | A                | B  | Yes            |
|                                                                            | WB APPROACH | A                | A  | Yes            |
|                                                                            | NB LT/T     | B                | B  | Yes            |
|                                                                            | NB RT       | B                | B  | Yes            |
|                                                                            | NB APPROACH | B                | B  | Yes            |
|                                                                            | SB LT/T/RT  | B                | B  | Yes            |
|                                                                            | OVERALL     | B                | B  | Yes            |
| 57 <sup>th</sup> Street/St. Louis (stop sign)                              | NB LT/T/RT  | B                | B  | Yes            |
|                                                                            | SB LT/T/RT  | B                | B  | Yes            |
|                                                                            | EB LT/T/RT  | A                | A  | Yes            |
|                                                                            | WB LT/T/RT  | A                | A  | Yes            |
|                                                                            | OVERALL     | A                | A  | Yes            |
| 57 <sup>th</sup> Street/LCR13-Koldewey (stop sign)                         | NB LT/T/RT  | B                | B  | Yes            |
|                                                                            | SB LT/T/RT  | B                | C  | Yes            |
|                                                                            | EB LT/T/RT  | A                | A  | Yes            |
|                                                                            | WB LT/T/RT  | A                | A  | Yes            |
|                                                                            | OVERALL     | A                | A  | Yes            |
| 65 <sup>th</sup> Street/Monroe (roundabout)                                | EB APPROACH | A                | A  | Yes            |
|                                                                            | WB APPROACH | A                | A  | Yes            |
|                                                                            | NB APPROACH | A                | A  | Yes            |
|                                                                            | OVERALL     | A                | A  | Yes            |
| 65 <sup>th</sup> Street/St. Louis (stop sign)                              | NB LT/RT    | A                | A  | Yes            |
|                                                                            | WB LT/T     | A                | A  | Yes            |
|                                                                            | OVERALL     | A                | A  | Yes            |
| 65 <sup>th</sup> Street/LCR13 (roundabout)                                 | EB APPROACH | A                | A  | Yes            |
|                                                                            | NB APPROACH | A                | A  | Yes            |
|                                                                            | SB APPROACH | A                | A  | Yes            |
|                                                                            | OVERALL     | A                | A  | Yes            |
| LCR30/Bruns (stop sign)                                                    | SB LT/RT    | A                | A  | Yes            |
|                                                                            | EB LT/T     | A                | A  | Yes            |
|                                                                            | OVERALL     | A                | A  | Yes            |

**TABLE 5**  
**Long Range (2045) Background Peak Hour Operation**

| Intersection                              | Movement    | Level of Service |    | ACF Compliance |
|-------------------------------------------|-------------|------------------|----|----------------|
|                                           |             | AM               | PM |                |
| US287/57 <sup>th</sup> Street<br>(signal) | EB LT       | D                | E  | Yes            |
|                                           | EB T        | D                | D  | Yes            |
|                                           | EB RT       | A                | A  | Yes            |
|                                           | EB APPROACH | D                | E  | No             |
|                                           | WB LT       | D                | E  | Yes            |
|                                           | WB T        | D                | E  | Yes            |
|                                           | WB RT       | A                | A  | Yes            |
|                                           | WB APPROACH | D                | E  | No             |
|                                           | NB LT       | D                | E  | Yes            |
|                                           | NB T        | C                | C  | Yes            |
|                                           | NB T/RT     | C                | D  | Yes            |
|                                           | NB APPROACH | C                | D  | Yes            |
|                                           | SB LT       | E                | E  | Yes            |
|                                           | SB T        | C                | A  | Yes            |
|                                           | SB RT       | C                | A  | Yes            |
|                                           | SB APPROACH | C                | A  | Yes            |
|                                           | OVERALL     | C                | C  | Yes            |
| US287/65 <sup>th</sup> Street<br>(signal) | EB LT       | D                | E  | Yes            |
|                                           | EB T        | D                | D  | Yes            |
|                                           | EB RT       | A                | A  | Yes            |
|                                           | EB APPROACH | D                | E  | No             |
|                                           | WB LT       | D                | E  | Yes            |
|                                           | WB T        | D                | E  | Yes            |
|                                           | WB RT       | A                | A  | Yes            |
|                                           | WB APPROACH | D                | E  | No             |
|                                           | NB LT       | D                | E  | Yes            |
|                                           | NB T        | A                | B  | Yes            |
|                                           | NB T/RT     | A                | B  | Yes            |
|                                           | NB APPROACH | A                | C  | Yes            |
|                                           | SB LT       | D                | E  | Yes            |
|                                           | SB T        | B                | C  | Yes            |
|                                           | SB T/RT     | B                | C  | Yes            |
|                                           | SB APPROACH | B                | C  | Yes            |
|                                           | OVERALL     | B                | C  | Yes            |

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| <b>TABLE 5</b><br><b>Long Range (2045) Background Peak Hour Operation</b> |             |                  |    |                |
|---------------------------------------------------------------------------|-------------|------------------|----|----------------|
| Intersection                                                              | Movement    | Level of Service |    | ACF Compliance |
|                                                                           |             | AM               | PM |                |
| 57 <sup>th</sup> Street/Monroe (signal)                                   | EB LT       | A                | A  | Yes            |
|                                                                           | EB T        | B                | B  | Yes            |
|                                                                           | EB RT       | A                | A  | Yes            |
|                                                                           | EB APPROACH | B                | B  | Yes            |
|                                                                           | WB LT       | A                | A  | Yes            |
|                                                                           | WB T/RT     | A                | B  | Yes            |
|                                                                           | WB APPROACH | A                | A  | Yes            |
|                                                                           | NB LT/T     | B                | B  | Yes            |
|                                                                           | NB RT       | B                | B  | Yes            |
|                                                                           | NB APPROACH | B                | B  | Yes            |
|                                                                           | SB LT/T/RT  | B                | B  | Yes            |
|                                                                           | OVERALL     | B                | B  | Yes            |
| 57 <sup>th</sup> Street/St. Louis (stop sign)                             | NB LT/T/RT  | C                | C  | Yes            |
|                                                                           | SB LT/T/RT  | C                | C  | Yes            |
|                                                                           | EB LT       | A                | A  | Yes            |
|                                                                           | WB LT       | A                | A  | Yes            |
|                                                                           | OVERALL     | A                | A  | Yes            |
| 57 <sup>th</sup> Street/LCR13-Koldeway (stop sign)                        | NB LT/T/RT  | C                | C  | Yes            |
|                                                                           | SB LT/T     | C                | D  | Yes            |
|                                                                           | SB RT       | B                | B  | Yes            |
|                                                                           | SB APPROACH | C                | C  | Yes            |
|                                                                           | EB LT       | A                | A  | Yes            |
|                                                                           | WB LT       | A                | A  | Yes            |
|                                                                           | OVERALL     | A                | A  | Yes            |
| 65 <sup>th</sup> Street/Monroe (roundabout)                               | EB APPROACH | A                | A  | Yes            |
|                                                                           | WB APPROACH | A                | A  | Yes            |
|                                                                           | NB APPROACH | A                | A  | Yes            |
|                                                                           | OVERALL     | A                | A  | Yes            |
| 65 <sup>th</sup> Street/St. Louis (stop sign)                             | NB LT/RT    | A                | A  | Yes            |
|                                                                           | WB LT/T     | A                | A  | Yes            |
|                                                                           | OVERALL     | A                | A  | Yes            |
| 65 <sup>th</sup> Street/LCR13 (roundabout)                                | EB APPROACH | A                | A  | Yes            |
|                                                                           | WB APPROACH | A                | A  | Yes            |
|                                                                           | NB APPROACH | A                | A  | Yes            |
|                                                                           | SB APPROACH | A                | A  | Yes            |
|                                                                           | OVERALL     | A                | A  | Yes            |
| LCR30/Bruns (stop sign)                                                   | SB LT/RT    | A                | A  | Yes            |
|                                                                           | EB LT/T     | A                | A  | Yes            |
|                                                                           | OVERALL     | A                | A  | Yes            |

**TABLE 6**  
**Short Range (2030) Total Peak Hour Operation**

| Intersection                               | Movement    | Level of Service |    | ACF Compliance |
|--------------------------------------------|-------------|------------------|----|----------------|
|                                            |             | AM               | PM |                |
| US287/57 <sup>th</sup> Street<br>(signal)  | EB LT       | D                | E  | Yes            |
|                                            | EB T        | D                | D  | Yes            |
|                                            | EB RT       | A                | A  | Yes            |
|                                            | EB APPROACH | D                | E  | No             |
|                                            | WB LT       | D                | E  | Yes            |
|                                            | WB T        | D                | E  | Yes            |
|                                            | WB RT       | A                | A  | Yes            |
|                                            | WB APPROACH | D                | E  | No             |
|                                            | NB LT       | A                | E  | Yes            |
|                                            | NB T        | B                | D  | Yes            |
|                                            | NB RT       | A                | A  | Yes            |
|                                            | NB APPROACH | B                | E  | No             |
|                                            | SB LT       | B                | E  | Yes            |
|                                            | SB T        | A                | A  | Yes            |
|                                            | SB RT       | A                | A  | Yes            |
|                                            | SB APPROACH | A                | B  | Yes            |
|                                            | OVERALL     | B                | D  | Yes            |
| US287/65 <sup>th</sup> Street<br>(signal)  | EB LT       | D                | E  | Yes            |
|                                            | EB T        | D                | E  | Yes            |
|                                            | EB RT       | A                | A  | Yes            |
|                                            | EB APPROACH | D                | E  | No             |
|                                            | WB LT       | D                | E  | Yes            |
|                                            | WB T        | D                | E  | Yes            |
|                                            | WB RT       | A                | A  | Yes            |
|                                            | WB APPROACH | D                | E  | No             |
|                                            | NB LT       | A                | D  | Yes            |
|                                            | NB T        | A                | A  | Yes            |
|                                            | NB RT       | A                | A  | Yes            |
|                                            | NB APPROACH | A                | B  | Yes            |
|                                            | SB LT       | A                | E  | Yes            |
|                                            | SB T        | B                | B  | Yes            |
|                                            | SB RT       | A                | A  | Yes            |
|                                            | SB APPROACH | B                | C  | Yes            |
|                                            | OVERALL     | B                | C  | Yes            |
| 57 <sup>th</sup> Street/Monroe<br>(signal) | EB LT       | A                | A  | Yes            |
|                                            | EB T        | B                | B  | Yes            |
|                                            | EB RT       | A                | B  | Yes            |
|                                            | EB APPROACH | B                | B  | Yes            |
|                                            | WB LT       | A                | A  | Yes            |
|                                            | WB T/RT     | A                | B  | Yes            |
|                                            | WB APPROACH | A                | A  | Yes            |
|                                            | NB LT/T     | B                | B  | Yes            |
|                                            | NB RT       | B                | B  | Yes            |
|                                            | NB APPROACH | B                | B  | Yes            |
|                                            | SB LT/T/RT  | B                | B  | Yes            |
|                                            | OVERALL     | B                | B  | Yes            |

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| <b>TABLE 6</b><br><b>Short Range (2030) Total Peak Hour Operation</b> |             |                  |    |                |
|-----------------------------------------------------------------------|-------------|------------------|----|----------------|
| Intersection                                                          | Movement    | Level of Service |    | ACF Compliance |
|                                                                       |             | AM               | PM |                |
| 57 <sup>th</sup> Street/St. Louis<br>(stop sign)                      | NB LT/T/RT  | B                | B  | Yes            |
|                                                                       | SB LT/T/RT  | B                | B  | Yes            |
|                                                                       | EB LT/T/RT  | A                | A  | Yes            |
|                                                                       | WB LT/T/RT  | A                | A  | Yes            |
|                                                                       | OVERALL     | A                | A  | Yes            |
| 57 <sup>th</sup> Street/LCR13-Koldewey<br>(stop sign)                 | NB LT/T/RT  | B                | B  | Yes            |
|                                                                       | SB LT/T/RT  | B                | C  | Yes            |
|                                                                       | EB LT/T/RT  | A                | A  | Yes            |
|                                                                       | WB LT/T/RT  | A                | A  | Yes            |
|                                                                       | OVERALL     | A                | A  | Yes            |
| 65 <sup>th</sup> Street/Monroe<br>(roundabout)                        | EB APPROACH | A                | A  | Yes            |
|                                                                       | WB APPROACH | A                | A  | Yes            |
|                                                                       | NB APPROACH | A                | A  | Yes            |
|                                                                       | OVERALL     | A                | A  | Yes            |
| 65 <sup>th</sup> Street/Access A<br>(stop sign)                       | SB LT/RT    | A                | A  | Yes            |
|                                                                       | EB LT/T     | A                | A  | Yes            |
|                                                                       | OVERALL     | A                | A  | Yes            |
| 65 <sup>th</sup> Street/St. Louis-Access B<br>(stop sign)             | NB LT/T/RT  | A                | B  | Yes            |
|                                                                       | SB LT/T/RT  | A                | A  | Yes            |
|                                                                       | EB LT/T/RT  | A                | A  | Yes            |
|                                                                       | WB LT/T/RT  | A                | A  | Yes            |
|                                                                       | OVERALL     | A                | A  | Yes            |
| 65 <sup>th</sup> Street/Access C<br>(stop sign)                       | SB LT/RT    | A                | A  | Yes            |
|                                                                       | EB LT/T     | A                | A  | Yes            |
|                                                                       | OVERALL     | A                | A  | Yes            |
| 65 <sup>th</sup> Street/LCR13<br>(roundabout)                         | EB APPROACH | A                | A  | Yes            |
|                                                                       | NB APPROACH | A                | A  | Yes            |
|                                                                       | SB APPROACH | A                | A  | Yes            |
|                                                                       | OVERALL     | A                | A  | Yes            |
| LCR30/Bruns<br>(stop sign)                                            | SB LT/RT    | A                | A  | Yes            |
|                                                                       | EB LT/T     | A                | A  | Yes            |
|                                                                       | OVERALL     | A                | A  | Yes            |

in the peak hours. During the morning peak hour, the US287/57<sup>th</sup> Street and US287/65<sup>th</sup> Street intersections meet the Loveland level of service criteria with signal control and required geometry. The overall operation at the US287/57<sup>th</sup> Street and US287/65<sup>th</sup> Street intersections meet the Loveland level of service standards in the peak hours. At the US287/57<sup>th</sup> Street intersection during the afternoon peak hour, the northbound and southbound left-turns run as a protected only phase, which causes the southbound left-turn movement to operate at LOS E. In addition to this, the afternoon operation shows that the eastbound and westbound approaches of 57<sup>th</sup> Street and 65<sup>th</sup> Street do not meet the City LOS standards due to the explanation given above. This operation cannot be mitigated. Calculation forms for these analyses are provided in Appendix F.

Using the traffic volumes shown in Figure 11, Table 7 shows the long range (2045) total peak hour operation at the US287/57<sup>th</sup> Street, US287/65<sup>th</sup> Street, 57<sup>th</sup> Street/Monroe, 57<sup>th</sup> Street/St. Louis, 57<sup>th</sup> Street/LCR13-Koldewey, 65<sup>th</sup> Street/Monroe, 65<sup>th</sup> Street/St. Louis, 65<sup>th</sup> Street/Site Access, and 65<sup>th</sup> Street/LCR13 intersections. At the US287/57<sup>th</sup> Street and US287/65<sup>th</sup> Street intersections during the afternoon peak hour, the eastbound and westbound approaches are not ACF compliant. Calculation forms for these analyses are provided in Appendix G.

In the meeting with City staff on May 13, 2025, alternative mitigation measures were discussed and it was determined that providing a proportional share (cash in lieu) for sidewalks along the east side of US287 between 57<sup>th</sup> Street and 65<sup>th</sup> Street would satisfy the alternative mitigation. In order to calculate the proportional share for the sidewalks, the proportion of site traffic from the Farro First Addition utilizing 65<sup>th</sup> Street was determined. Using the long range (2045) daily traffic volumes, the proportional share for the Farro First Addition was calculated at 23.4 percent.

## Geometric Requirements

Figure 12 shows the short range (2030) approach geometry at the US287/57<sup>th</sup> Street, US287/65<sup>th</sup> Street, 57<sup>th</sup> Street/Monroe, 57<sup>th</sup> Street/St. Louis, 57<sup>th</sup> Street/LCR13-Koldewey, 65<sup>th</sup> Street/Monroe, 65<sup>th</sup> Street/Access A, 65<sup>th</sup> Street/St. Louis-Access B, 65<sup>th</sup> Street/Access C, and 65<sup>th</sup> Street/LCR13 intersections. The geometry at the US287/57<sup>th</sup> Street, 57<sup>th</sup> Street/Monroe, 57<sup>th</sup> Street/St. Louis, and 57<sup>th</sup> Street/LCR13-Koldewey intersections can continue to remain as it exists today. As an arterial street, 57<sup>th</sup> Street should have left-turn lanes at all intersections. However, until traffic volumes significantly increase, it is recommended that the 57<sup>th</sup> Street/St. Louis and 57<sup>th</sup> Street/LCR13-Koldewey intersections continue to remain as it exists today. There is level of service A on 57<sup>th</sup> Street at these intersections for the eastbound and westbound approaches without the left-turn lanes. The Farro First Addition adds zero left turns at these intersections. The US287/65<sup>th</sup> Street intersection is shown with the construction of the east leg with the Sugar Creek development. A roundabout is assumed to be built at the 65<sup>th</sup> Street/Monroe intersection with the Sugar Creek development. A roundabout is shown at the 65<sup>th</sup> Street/LCR13 intersection per Loveland criteria.

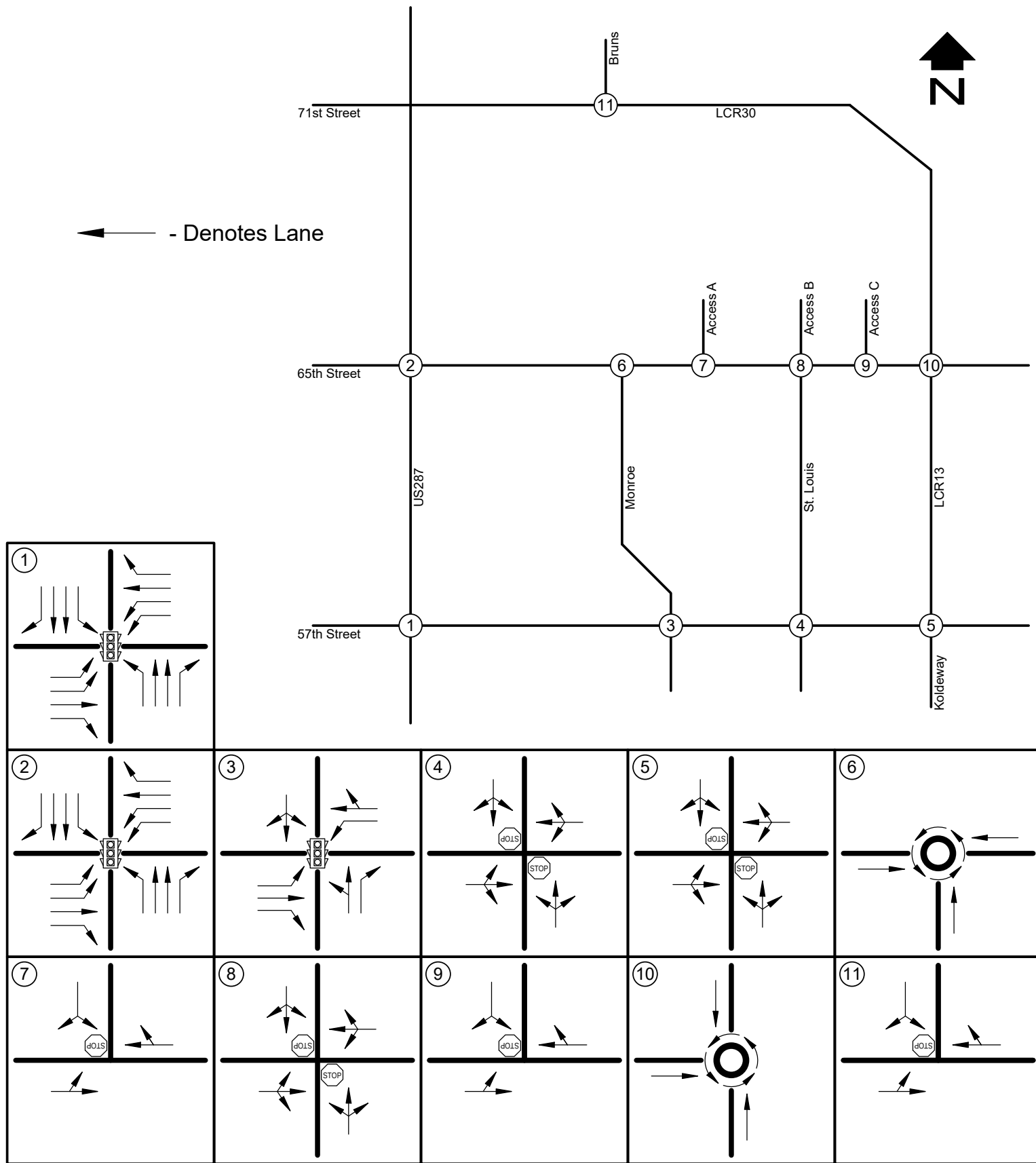
Figure 13 shows the long range (2045) approach geometry at the US287/57<sup>th</sup> Street, US287/65<sup>th</sup> Street, 57<sup>th</sup> Street/Monroe, 57<sup>th</sup> Street/St. Louis, 57<sup>th</sup> Street/LCR13-Koldewey, 65<sup>th</sup> Street/Monroe, 65<sup>th</sup> Street/Access A, 65<sup>th</sup> Street/St. Louis-Access B, 65<sup>th</sup>

| <b>TABLE 7</b><br><b>Long Range (2045) Total Peak Hour Operation</b> |             |                  |    |                |
|----------------------------------------------------------------------|-------------|------------------|----|----------------|
| Intersection                                                         | Movement    | Level of Service |    | ACF Compliance |
|                                                                      |             | AM               | PM |                |
| US287/57 <sup>th</sup> Street<br>(signal)                            | EB LT       | D                | E  | Yes            |
|                                                                      | EB T        | D                | D  | Yes            |
|                                                                      | EB RT       | A                | A  | Yes            |
|                                                                      | EB APPROACH | D                | E  | No             |
|                                                                      | WB LT       | D                | E  | Yes            |
|                                                                      | WB T        | D                | E  | Yes            |
|                                                                      | WB RT       | A                | A  | Yes            |
|                                                                      | WB APPROACH | D                | E  | No             |
|                                                                      | NB LT       | D                | E  | Yes            |
|                                                                      | NB T        | C                | D  | Yes            |
|                                                                      | NB T/RT     | C                | D  | Yes            |
|                                                                      | NB APPROACH | C                | D  | Yes            |
|                                                                      | SB LT       | E                | E  | Yes            |
|                                                                      | SB T        | C                | A  | Yes            |
|                                                                      | SB RT       | C                | A  | Yes            |
|                                                                      | SB APPROACH | D                | A  | Yes            |
|                                                                      | OVERALL     | C                | C  | Yes            |
| US287/65 <sup>th</sup> Street<br>(signal)                            | EB LT       | D                | E  | Yes            |
|                                                                      | EB T        | D                | E  | Yes            |
|                                                                      | EB RT       | A                | A  | Yes            |
|                                                                      | EB APPROACH | D                | E  | No             |
|                                                                      | WB LT       | D                | E  | Yes            |
|                                                                      | WB T        | D                | E  | Yes            |
|                                                                      | WB RT       | A                | A  | Yes            |
|                                                                      | WB APPROACH | D                | E  | No             |
|                                                                      | NB LT       | D                | E  | Yes            |
|                                                                      | NB T        | A                | C  | Yes            |
|                                                                      | NB T/RT     | A                | B  | Yes            |
|                                                                      | NB APPROACH | A                | C  | Yes            |
|                                                                      | SB LT       | D                | E  | Yes            |
|                                                                      | SB T        | B                | C  | Yes            |
|                                                                      | SB T/RT     | B                | C  | Yes            |
|                                                                      | SB APPROACH | B                | C  | Yes            |
|                                                                      | OVERALL     | B                | C  | Yes            |
| 57 <sup>th</sup> Street/Monroe<br>(signal)                           | EB LT       | A                | A  | Yes            |
|                                                                      | EB T        | B                | B  | Yes            |
|                                                                      | EB RT       | A                | A  | Yes            |
|                                                                      | EB APPROACH | B                | B  | Yes            |
|                                                                      | WB LT       | A                | A  | Yes            |
|                                                                      | WB T/RT     | A                | B  | Yes            |
|                                                                      | WB APPROACH | A                | B  | Yes            |
|                                                                      | NB LT/T     | B                | B  | Yes            |
|                                                                      | NB RT       | B                | B  | Yes            |
|                                                                      | NB APPROACH | B                | B  | Yes            |
|                                                                      | SB LT/T/RT  | B                | B  | Yes            |
|                                                                      | OVERALL     | B                | B  | Yes            |

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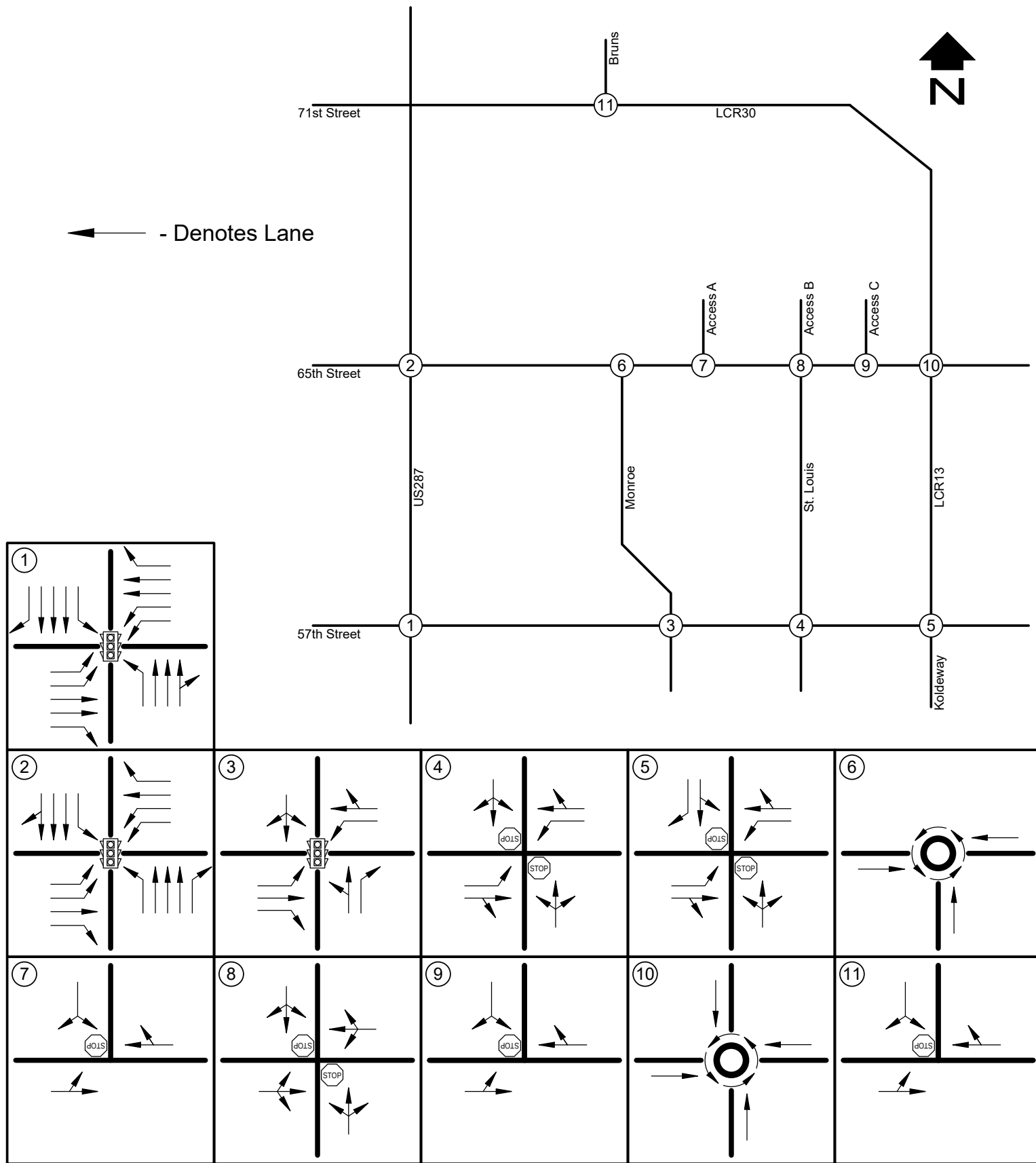
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| <b>TABLE 7</b><br><b>Long Range (2045) Total Peak Hour Operation</b> |             |                  |    |                |
|----------------------------------------------------------------------|-------------|------------------|----|----------------|
| Intersection                                                         | Movement    | Level of Service |    | ACF Compliance |
|                                                                      |             | AM               | PM |                |
| 57 <sup>th</sup> Street/St. Louis<br>(stop sign)                     | NB LT/T/RT  | C                | C  | Yes            |
|                                                                      | SB LT/T/RT  | C                | C  | Yes            |
|                                                                      | EB LT       | A                | A  | Yes            |
|                                                                      | WB LT       | A                | A  | Yes            |
|                                                                      | OVERALL     | A                | A  | Yes            |
| 57 <sup>th</sup> Street/LCR13-Koldewey<br>(stop sign)                | NB LT/T/RT  | C                | C  | Yes            |
|                                                                      | SB LT/T     | D                | E  | Yes            |
|                                                                      | SB RT       | B                | B  | Yes            |
|                                                                      | SB APPROACH | C                | C  | Yes            |
|                                                                      | EB LT       | A                | A  | Yes            |
|                                                                      | WB LT       | A                | A  | Yes            |
|                                                                      | OVERALL     | A                | A  | Yes            |
| 65 <sup>th</sup> Street/Monroe<br>(roundabout)                       | EB APPROACH | A                | A  | Yes            |
|                                                                      | WB APPROACH | A                | A  | Yes            |
|                                                                      | NB APPROACH | A                | A  | Yes            |
|                                                                      | OVERALL     | A                | A  | Yes            |
| 65 <sup>th</sup> Street/Access A<br>(stop sign)                      | SB LT/RT    | A                | A  | Yes            |
|                                                                      | EB LT/T     | A                | A  | Yes            |
|                                                                      | OVERALL     | A                | A  | Yes            |
| 65 <sup>th</sup> Street/St. Louis-Access B<br>(stop sign)            | NB LT/T/RT  | A                | B  | Yes            |
|                                                                      | SB LT/T/RT  | A                | A  | Yes            |
|                                                                      | EB LT/T/RT  | A                | A  | Yes            |
|                                                                      | WB LT/T/RT  | A                | A  | Yes            |
|                                                                      | OVERALL     | A                | A  | Yes            |
| 65 <sup>th</sup> Street/Access C<br>(stop sign)                      | SB LT/RT    | A                | A  | Yes            |
|                                                                      | EB LT/T     | A                | A  | Yes            |
|                                                                      | OVERALL     | A                | A  | Yes            |
| 65 <sup>th</sup> Street/LCR13<br>(roundabout)                        | EB APPROACH | A                | A  | Yes            |
|                                                                      | WB APPROACH | A                | A  | Yes            |
|                                                                      | NB APPROACH | A                | A  | Yes            |
|                                                                      | SB APPROACH | A                | A  | Yes            |
|                                                                      | OVERALL     | A                | A  | Yes            |
| LCR30/Bruns<br>(stop sign)                                           | SB LT/RT    | A                | A  | Yes            |
|                                                                      | EB LT/T     | A                | A  | Yes            |
|                                                                      | OVERALL     | A                | A  | Yes            |



## SHORT RANGE (2030) GEOMETRY

Figure 12



# LONG RANGE (2045) GEOMETRY

Figure 13

Street/Access C, and 65<sup>th</sup> Street/LCR13 intersections. The long range (2045) geometry was developed based upon the operation of the key intersections and the practical geometry that could occur. In the long range (2045) future, it is assumed that US287 would have a six-lane arterial cross section.

A 95<sup>th</sup> percentile vehicle queuing analysis was conducted at key intersections to determine if queuing would be an issue between intersections. Results were obtained from the 95<sup>th</sup> percentile queue lengths from the HCM analysis. Queue lengths for the signalized and unsignalized intersections are provided within the level of service operational sheets provided in Appendix F and Appendix G in vehicles, per the Highway Capacity Manual, 7<sup>th</sup> Edition. Results of the queuing analysis at the key intersections are provided in Table 8. At the stop sign controlled intersections, as shown in the queuing length table, all vehicle queues are expected to be contained within the proposed turn lane and through lane lengths without spilling back into adjacent intersections or accesses.

### Bicycle/Pedestrian Facilities

Bicycle lanes exist in the shoulder area along US287. It is expected that as streets are built and/or improved, bicycle lanes will be incorporated into the street cross sections where appropriate.

There is a limited sidewalk system in this area. Most of the developments in the area were built when the properties were located within Larimer County and sidewalks were not required. The Sugar Creek development will provide sidewalks on the future 65<sup>th</sup> Street extension and within Sugar Creek itself. Sidewalks will be built along the frontage of and within the Farro First Addition. As shown in Appendix H, four potential pedestrian destinations within 1320 feet (one mile for schools) of the Farro First Addition were identified: 1) the residential neighborhood to the south of the site, 2) Sugar Creek Multifamily to the southwest of the site, 3) Sugar Creek neighborhood to the west of the site, and 4) Cottonwood Plains Elementary School to the north of the site. Appendix H contains a graphic depicting the pedestrian influence area and these four pedestrian destinations. A pedestrian level of service worksheet is also provided in Appendix H. This worksheet shows the level of service for each quality indicator. Since the City of Loveland has no minimum level of service criteria, this level of service could not be indicated.

### Safe Routes to School

According to Thompson School District boundary maps, students from the Farro First Addition will attend Cottonwood Plains Elementary School, Lucile Erwin Middle School, and Loveland High School. The only school within walking or bicycling distance is Cottonwood Plains Elementary School, located north of LCR30 and adjacent to Bruns Drive and Truman Drive. With the development of Sugar Creek, the sidewalk system to

| <b>TABLE 8</b><br><b>95<sup>th</sup> Percentile Queuing Length Analysis</b> |                 |                                                                  |                                                                  |                                     |
|-----------------------------------------------------------------------------|-----------------|------------------------------------------------------------------|------------------------------------------------------------------|-------------------------------------|
| <b>Intersection</b>                                                         | <b>Movement</b> | <b>AM/PM<br/>2030<br/>Calculated<br/>Queue Length<br/>(feet)</b> | <b>AM/PM<br/>2045<br/>Calculated<br/>Queue Length<br/>(feet)</b> | <b>Lane Length<br/>(feet)</b>       |
| US287/57 <sup>th</sup> Street<br>(signal)                                   | EB LT           | 145'/213'*                                                       | 165'/200'                                                        | 260' Dual Lanes<br>plus 300' Taper  |
|                                                                             | EB RT           | 0'/0'                                                            | 56'/55'                                                          | 260' channelized<br>Lane (no Taper) |
|                                                                             | WB LT           | 58'/98'                                                          | 61'/122'                                                         | 275' Dual Lanes<br>plus 100' Taper  |
|                                                                             | WB RT           | 0'/0'                                                            | 55'/68'                                                          | 375' Lane plus<br>270' Taper        |
|                                                                             | NB LT           | 54'/214'*                                                        | 124'/208'                                                        | 255' Lane plus<br>260' Taper        |
|                                                                             | NB RT           | 0'/0'                                                            | N/A                                                              | 590' Continuous<br>Lane             |
|                                                                             | SB LT           | 100'/300'*                                                       | 111'/247'                                                        | 505' Lane plus<br>300' Taper        |
|                                                                             | SB RT           | 107'/47'                                                         | 43'/14'                                                          | 510' Continuous<br>Lane             |
| US287/65 <sup>th</sup> Street<br>(signal)                                   | EB LT           | 86'/134'*                                                        | 95'/140'                                                         | 270' Dual Lanes<br>plus 90' Taper   |
|                                                                             | EB RT           | 0'/0'                                                            | 3'/77'                                                           | 300' channelized<br>Lane (no Taper) |
|                                                                             | WB LT           | 119'/109'*                                                       | 112'/100'                                                        | 375' Lane plus<br>140' Taper        |
|                                                                             | WB RT           | 7'/0'                                                            | 14'/31'                                                          | 285' Lane plus<br>140' Taper        |
|                                                                             | NB LT           | 82'/127'                                                         | 113'/170'                                                        | 455' Lane plus<br>300' Taper        |
|                                                                             | NB RT           | 4'/97'                                                           | 0'/116'                                                          | 510' Lane plus<br>200' Taper        |
|                                                                             | SB LT           | 16'/161'                                                         | 67'/196'                                                         | 300' Lane plus<br>200' Taper        |
|                                                                             | SB RT           | 0'/0'                                                            | N/A                                                              | 410' Lane plus<br>170' transition   |
| 57 <sup>th</sup> Street/Monroe<br>(signal)                                  | EB LT           | 4'/8'                                                            | 4'/9'                                                            | 360' Lane plus<br>175' Taper        |
|                                                                             | EB RT           | 19'/35'                                                          | 21'/32'                                                          | 250' Lane plus<br>190' Taper        |
|                                                                             | WB LT           | 33'/46'                                                          | 35'/46'                                                          | 125' Lane plus<br>85' Taper         |
|                                                                             | WB T/RT         | 114'/202'                                                        | 136'/279'                                                        | N/A                                 |
|                                                                             | NB LT/T         | 89'/105'                                                         | 92'/131'                                                         | N/A                                 |
|                                                                             | NB RT           | 24'/13'                                                          | 27'/23'                                                          | 180' Lane plus<br>100' Taper        |
|                                                                             | SB LT/T/RT      | 43'/34'                                                          | 45'/44'                                                          | N/A                                 |

Continued on next page

\* 95<sup>th</sup> percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Continued from previous page

**TABLE 8**  
**95<sup>th</sup> Percentile Queuing Length Analysis**

| Intersection                                                  | Movement     | AM/PM<br>2030<br>Calculated<br>Queue Length<br>(feet) | AM/PM<br>2045<br>Calculated<br>Queue Length<br>(feet) | Lane Length<br>(feet)        |
|---------------------------------------------------------------|--------------|-------------------------------------------------------|-------------------------------------------------------|------------------------------|
| 57 <sup>th</sup> Street/St. Louis<br>(stop sign)              | NB LT/T/RT   | 3'/0'                                                 | 5'/3'                                                 | N/A                          |
|                                                               | SB LT/T/RT   | 5'/5'                                                 | 8'/5'                                                 | N/A                          |
|                                                               | EB LT/T/RT   | 0'/0'                                                 | N/A                                                   | N/A                          |
|                                                               | EB LT        | N/A                                                   | 0'/3'                                                 | 245' Lane plus<br>180' Taper |
|                                                               | WB LT/T/RT   | 0'/0'                                                 | N/A                                                   | N/A                          |
|                                                               | WB LT        | N/A                                                   | 0'/0'                                                 | 245' Lane plus<br>180' Taper |
| 57 <sup>th</sup> Street/LCR13-<br>Koldweay<br>(stop sign)     | NB LT/T/RT   | 0'/0'                                                 | 3'/3'                                                 | N/A                          |
|                                                               | SB LT/T/(RT) | 15'/40'                                               | 28'/45'                                               | N/A                          |
|                                                               | SB RT        | N/A                                                   | 10'/25'                                               | 285' Lane plus<br>140' Taper |
|                                                               | EB LT/T/RT   | 5'/3'                                                 | N/A                                                   | N/A                          |
|                                                               | EB LT        | N/A                                                   | 5'/8'                                                 | 295' Lane plus<br>180' Taper |
|                                                               | WB LT/T/RT   | 0'/0'                                                 | N/A                                                   | N/A                          |
|                                                               | WB LT        | N/A                                                   | 0'/0'                                                 | 245' Lane plus<br>180' Taper |
| 65 <sup>th</sup> Street/Access A<br>(stop sign)               | SB LT/RT     | 5'/3'                                                 | 5'/5'                                                 | N/A                          |
|                                                               | EB LT/T      | 0'/3'                                                 | 0'/3'                                                 | N/A                          |
| 65 <sup>th</sup> Street/St. Louis-<br>Access B<br>(stop sign) | NB LT/T/RT   | 0'/3'                                                 | 3'/3'                                                 | N/A                          |
|                                                               | SB LT/T/RT   | 5'/5'                                                 | 5'/5'                                                 | N/A                          |
|                                                               | EB LT/T/RT   | 0'/3'                                                 | 0'/3'                                                 | N/A                          |
|                                                               | WB LT/T/RT   | 0'/0'                                                 | 0'/0'                                                 | N/A                          |
| 65 <sup>th</sup> Street/Access C<br>(stop sign)               | SB LT/RT     | 3'/3'                                                 | 3'/3'                                                 | N/A                          |
|                                                               | EB LT/T      | 0'/3'                                                 | 0'/3'                                                 | N/A                          |
| LCR30/Bruns<br>(stop sign)                                    | SB LT/RT     | 13'/3'                                                | 15'/3'                                                | N/A                          |
|                                                               | EB LT/T      | 0'/0'                                                 | 8'/3'                                                 | N/A                          |

Bruns Drive will be completed. However, if the connection to LCR30 is not made with the Sugar Creek development, the street network in this area is not well defined and there are no sidewalks in this area. Through contact with the Thompson School District, bussing will be provided to students living outside of the 1.5 mile boundary for elementary school. All homes within the Farro First Addition will be outside of the 1.5 mile boundary until the last phase of Sugar Creek is built out. After the last phase of Sugar Creek, a portion of homes within the Farro First Addition will still be beyond the 1.5 mile boundary. There is an email from Ryan Baker, Thompson School District in Appendix I explaining the school district policy for bussing.

#### IV. CONCLUSIONS/RECOMMENDATIONS

This study assessed the transportation impacts associated with the development of the Farro First Addition in Loveland, Colorado. This study analyzed the transportation impacts in the short range (2030) and long range (2045) futures. As a result of these analyses, the following is concluded:

- Development of the Farro First Addition is feasible from a traffic engineering standpoint. The full development trip generation resulted in 2,832 daily trip ends, 203 morning peak hour trip ends, and 275 afternoon peak hour trip ends.
- Current operation at the 57<sup>th</sup> Street/Monroe, 57<sup>th</sup> Street/St. Louis, 57<sup>th</sup> Street/LCR13-Koldeway, and LCR30/Bruns intersections meet the Loveland level of service criteria with existing control, signal timing, and geometry. . During the morning peak hour, the US287/57<sup>th</sup> Street and US287/65<sup>th</sup> Street intersections meet the Loveland level of service criteria with existing control, signal timing, and geometry. The overall operation at the US287/57<sup>th</sup> Street and US287/65<sup>th</sup> Street intersections meets the Loveland level of service standards in the peak hours. At the US287/57<sup>th</sup> Street intersection during the afternoon peak hour, the northbound and southbound left-turn run as a protected only phase, which causes the southbound left-turn movement to operate at LOS F. In addition to this, the afternoon operation shows that the westbound approach of 57<sup>th</sup> Street does not meet the City LOS standards using the existing signal timing. At the US287/65<sup>th</sup> Street intersection, the afternoon operation shows that the eastbound approach of 65<sup>th</sup> Street does not meet the City LOS standards using the existing signal timing. At the US287/57<sup>th</sup> Street and US287/65<sup>th</sup> Street intersections, it has been observed with the existing afternoon intersection operation, as well as with subsequent operational analyses in this TIS, that level of service E for the eastbound and westbound approaches cannot be mitigated regardless of how much green time is given to the minor street approaches. In some instances, the more green time given to the minor street approaches, the worse the delay becomes. This is likely caused by the amount of green time required for US287 and that there is so much more traffic on US287 as compared to 57<sup>th</sup> Street or 65<sup>th</sup> Street. The arrival on the green phase for the eastbound and westbound approaches is only between 5-16 percent in the afternoon peak hour. This means most vehicles arrive with a red light.
- None of the stop sign controlled intersections analyzed in this study will meet peak hour signal warrants or signal spacing criteria and will not be signalized.
- With short range (2030) background traffic and the Farro First Addition site generated traffic, the 57<sup>th</sup> Street/Monroe, 57<sup>th</sup> Street/St. Louis, 57<sup>th</sup> Street/LCR13-Koldeway, 65<sup>th</sup> Street/Monroe, 65<sup>th</sup> Street/Access A, 65<sup>th</sup> Street/St. Louis-Access B, 65<sup>th</sup> Street/Access C, and 65<sup>th</sup> Street/LCR13 intersections meet the Loveland level of service criteria in the peak hours. During the morning peak hour, the US287/57<sup>th</sup> Street and US287/65<sup>th</sup> Street intersections meet the Loveland level of

service criteria with signal control and required geometry. The overall operation at the US287/57<sup>th</sup> Street and US287/65<sup>th</sup> Street intersections meet the Loveland level of service standards in the peak hours. At the US287/57<sup>th</sup> Street intersection during the afternoon peak hour, the northbound and southbound left-turns run as a protected only phase, which causes the southbound left-turn movement to operate at LOS E. In addition to this, the afternoon operation shows that the eastbound and westbound approaches of 57<sup>th</sup> Street and 65<sup>th</sup> Street do not meet the City LOS standards due to the explanation given above. This operation cannot be mitigated.

- With long range (2045) background traffic and the Farro First Addition site generated traffic, the 57<sup>th</sup> Street/Monroe, 57<sup>th</sup> Street/St. Louis, 57<sup>th</sup> Street/LCR13-Koldeway, 65<sup>th</sup> Street/Monroe, 65<sup>th</sup> Street/Access A, 65<sup>th</sup> Street/St. Louis-Access B, 65<sup>th</sup> Street/Access C, and 65<sup>th</sup> Street/LCR13 intersections meet the Loveland level of service criteria in the peak hours. At the US287/57<sup>th</sup> Street and US287/65<sup>th</sup> Street intersections during the afternoon peak hour, the eastbound and westbound approaches are not ACF compliant.
- In the meeting with City staff on May 13, 2025, alternative mitigation measures were discussed and it was determined that providing a proportional share (cash in lieu) for sidewalks along the east side of US287 between 57<sup>th</sup> Street and 65<sup>th</sup> Street would satisfy the alternative mitigation. In order to calculate the proportional share for the sidewalks, the proportion of site traffic from the Farro First Addition utilizing 65<sup>th</sup> Street was determined. Using the long range (2045) daily traffic volumes, the proportional share for the Farro First Addition was calculated at 23.4 percent.
- Table 9 shows a summary of the recommended improvements and the responsibility for that improvement. The short range (2030) range and long range (2045) geometry is shown in Figures 12 and 13, respectively.
- Bicycle lanes exist along US287 on the shoulders. There is very little of a sidewalk system in this area. Most of the developments in the area were built when the properties were located within Larimer County and sidewalks were not required. As streets are improved, sidewalks will be incorporated to the standard cross sections. The Sugar Creek development will provide sidewalks on the future 65<sup>th</sup> Street extension and within Sugar Creek itself. Sidewalks will be built along the frontage of and within the Farro First Addition.
- The only school within walking or bicycling distance is Cottonwood Plains Elementary School, located north of LCR30 and adjacent to Bruns Drive and Truman Drive. With the development of Sugar Creek, the sidewalk system to Bruns Drive will be completed. However, if the connection to LCR30 is not made with the Sugar Creek development, the street network in this area is not well defined and there are no sidewalks in this area. Bussing will be provided to students living outside of the 1.5 mile boundary for elementary school. All homes within the Farro First Addition will be outside of the 1.5 mile boundary until the last phase of Sugar Creek is built out. After the last phase of Sugar Creek, a portion of homes within the Farro First Addition will still be beyond the 1.5 mile boundary.

| <b>TABLE 9</b><br><b>Recommended Improvements Summary</b>                                             |                          |                   |                       |
|-------------------------------------------------------------------------------------------------------|--------------------------|-------------------|-----------------------|
| <b>Improvement Description and Location</b>                                                           | <b>Responsible Party</b> |                   |                       |
|                                                                                                       | <b>Applicant</b>         | <b>Background</b> | <b>Master Planned</b> |
| <b>SHORT RANGE (2030)</b>                                                                             |                          |                   |                       |
| On-site infrastructure                                                                                | X                        |                   |                       |
| Construction of 65 <sup>th</sup> Street, between US287 and east property line of Sugar Creek          |                          | X                 | X                     |
| Construction of 65 <sup>th</sup> Street, between west property line of Farro First Addition and LCR13 | X                        |                   |                       |
| Construction of a roundabout at the 65 <sup>th</sup> Street/LCR13 intersection                        | X                        |                   |                       |
| <b>LONG RANGE (2045)</b>                                                                              |                          |                   |                       |
| US287 six-lane cross section                                                                          |                          | X                 | X                     |

# APPENDIX A

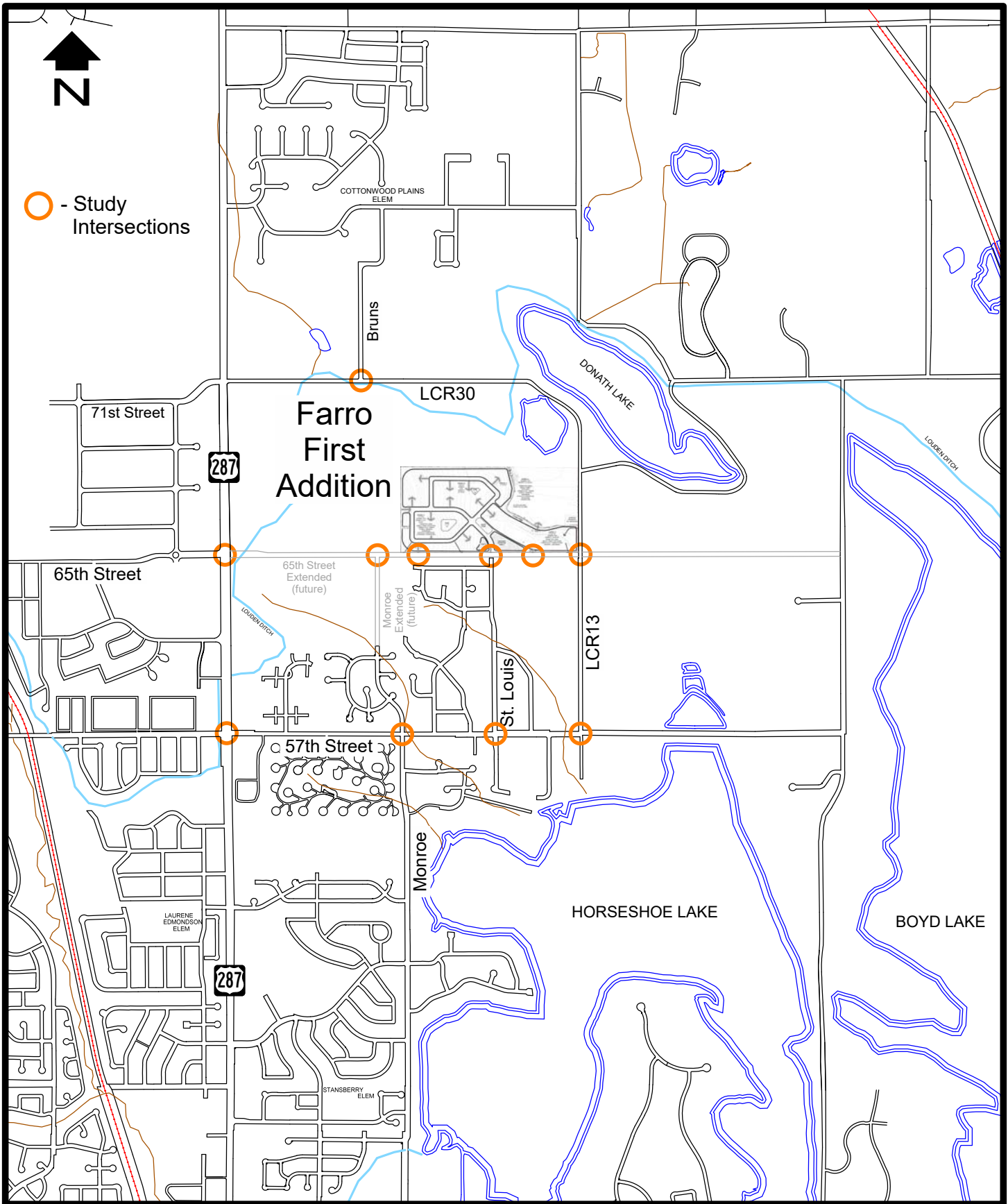
# Attachment “A” Transportation Impact Study Base Assumptions

|                                                                         |                                                                                                                                                       |               |                                      |
|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------------------------|
| <b>Project Information</b>                                              |                                                                                                                                                       |               |                                      |
| Project Name Farro Residential                                          |                                                                                                                                                       |               |                                      |
| Project Location ½ mile north of 57 <sup>th</sup> Street, west of LCR13 |                                                                                                                                                       |               |                                      |
| <b>TIS Assumptions</b>                                                  |                                                                                                                                                       |               |                                      |
| Type of Study                                                           | Full: Yes/Master                                                                                                                                      |               | Intermediate:                        |
| Study Area Boundaries                                                   | North: 65 <sup>th</sup> Street                                                                                                                        |               | South: 57 <sup>th</sup> Street       |
|                                                                         | East: LCR13                                                                                                                                           |               | West: US287                          |
| Study Years                                                             | Short Range: 2030                                                                                                                                     |               | Long Range: 2045                     |
| Future Traffic Growth Rate                                              | 2%/year                                                                                                                                               |               |                                      |
| Study Intersections                                                     | 1. All access drives                                                                                                                                  |               | 6. 65 <sup>th</sup> Street/LCR13     |
|                                                                         | 2. 57 <sup>th</sup> Street/St. Louis                                                                                                                  |               | 7. US287/65 <sup>th</sup> Street     |
|                                                                         | 3. 57 <sup>th</sup> Street/LCR13                                                                                                                      |               | 8. 65 <sup>th</sup> Street/St. Louis |
|                                                                         | 4. 57 <sup>th</sup> Street/Monroe                                                                                                                     |               | 8. LCR30/Bruns                       |
|                                                                         | 5. US287/57 <sup>th</sup> Street                                                                                                                      |               |                                      |
| Time Period for Study                                                   | AM: 7:00-9:00                                                                                                                                         | PM: 4:00-6:00 | Sat Noon: N/A                        |
| Trip Generation Rates (see attached)                                    | Per ITE                                                                                                                                               |               |                                      |
| Trip Adjustment Factors                                                 | Passby: N/A                                                                                                                                           |               | Captive Market: N/A                  |
| Trip Distribution (see attached)                                        |                                                                                                                                                       |               |                                      |
| Mode Split Assumptions                                                  | N/A                                                                                                                                                   |               |                                      |
| Design Vehicle Information                                              | P.C.                                                                                                                                                  |               |                                      |
| Committed Roadway Improvements                                          | None – 65 <sup>th</sup> Street will need to extend from US287                                                                                         |               |                                      |
| Other Traffic Studies                                                   | Sugar Creek                                                                                                                                           |               |                                      |
| Areas Requiring Special Study                                           | Pedestrian/Bike safe route to Cottonwood Plains Elementary & Laurene Edmonson Schools<br>Pedestrian/Bike safe route to Retail/Commercial destinations |               |                                      |

Date: November 26, 2024

Traffic Engineer: Delich Associates

Local Entity Engineer: \_\_\_\_\_



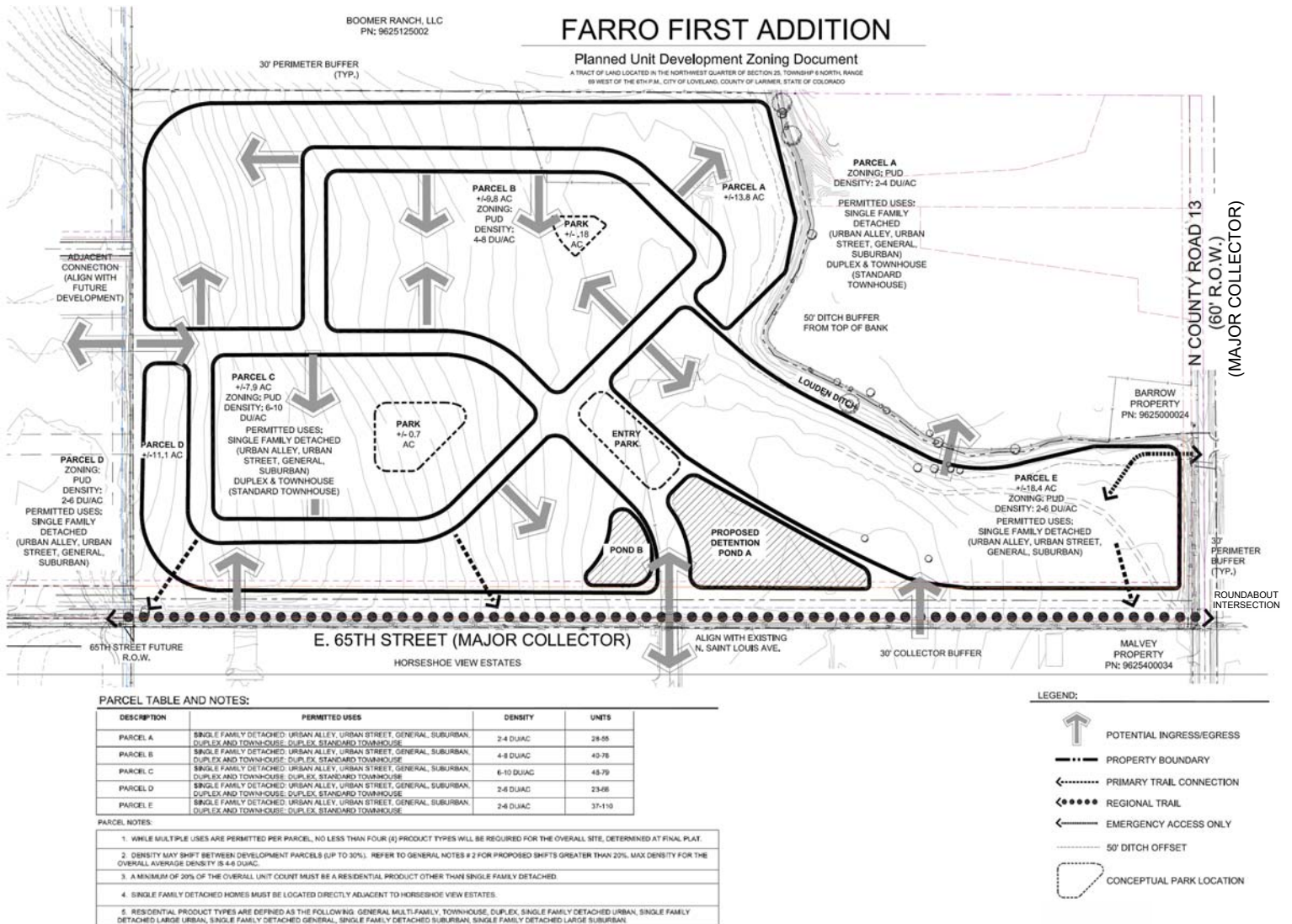
SCALE: 1"=2000'

## SITE LOCATION

Figure 1



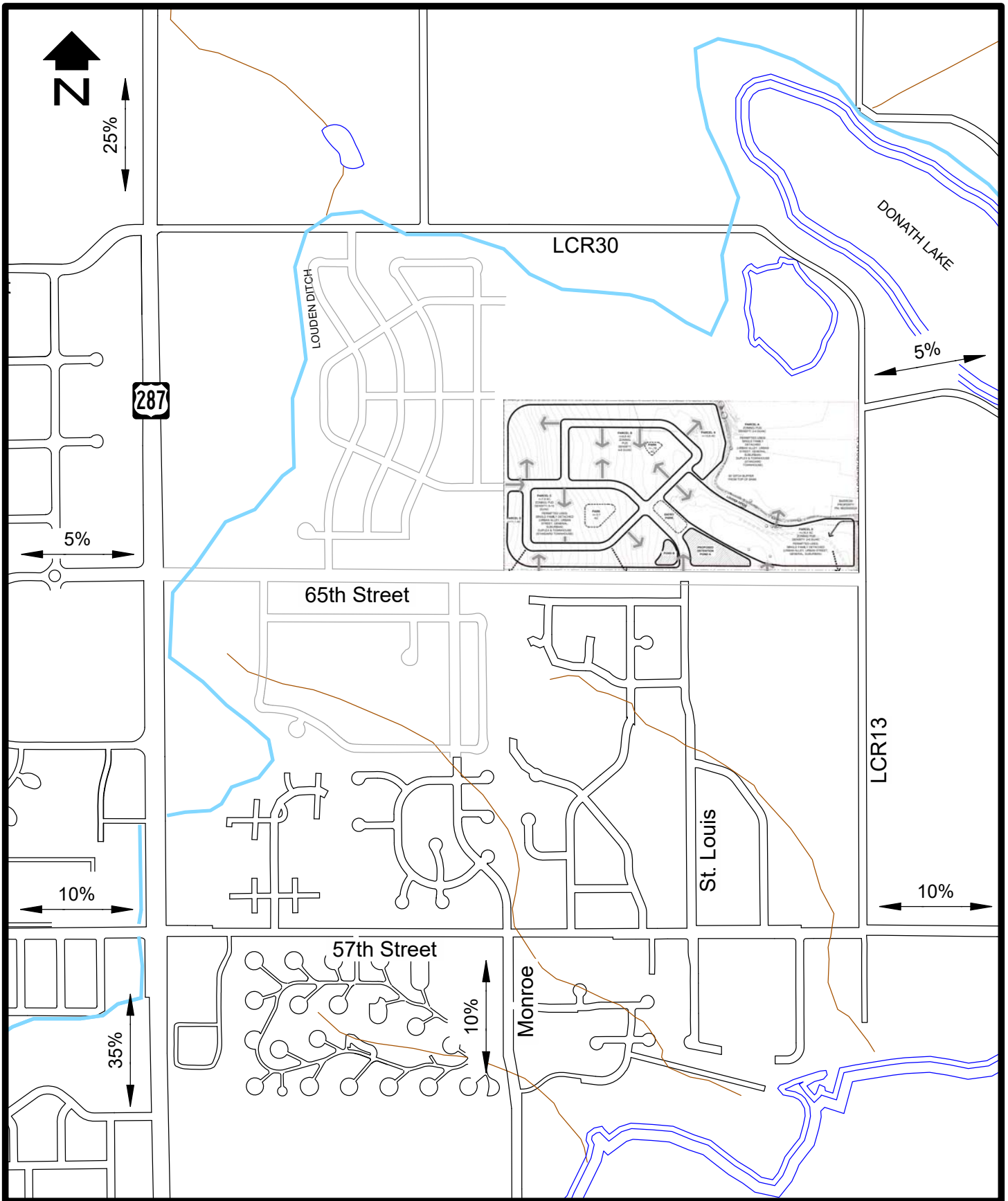
SCALE: 1"=400'



SITE PLAN

Figure 5

| TABLE 2<br>Trip Generation |                        |          |       |       |              |    |      |     |              |     |      |     |
|----------------------------|------------------------|----------|-------|-------|--------------|----|------|-----|--------------|-----|------|-----|
| Code                       | Use                    | Size     | AWDTE |       | AM Peak Hour |    |      |     | PM Peak Hour |     |      |     |
|                            |                        |          | Rate  | Trips | Rate         | In | Rate | Out | Rate         | In  | Rate | Out |
| 210                        | Single Family Detached | 309 D.U. | EQ    | 2850  | EQ           | 52 | EQ   | 156 | EQ           | 181 | EQ   | 106 |
| 215                        | Single Family Attached | 7 D.U.   | EQ    | 552   | EQ           | 9  | EQ   | 26  | EQ           | 26  | EQ   | 17  |
| Total                      |                        |          |       | 3402  |              | 61 |      | 182 |              | 207 |      | 123 |



SCALE: 1"=1000'

## TRIP DISTRIBUTION

Figure 6

## APPENDIX B

DELICH ASSOCIATES  
2272 GLEN HAVEN DRIVE  
LOVELAND, CO 80538  
Phone: (970) 669-2061

## TABULAR SUMMARY OF VEHICLE COUNTS

Date: 9/14/2022

Observer: Vickie

Day: Wednesday

Jurisdiction: Loveland

Intersection: US287/65th Street

R = right turn  
S = straight  
L = left turn

| Time Begins | Northbound: US287 |     |   |       | Southbound: US287 |     |    |       | Total north/south | Eastbound: 65th Street |   |    |       | Westbound: |   |   |       | Total east/west | Total All |
|-------------|-------------------|-----|---|-------|-------------------|-----|----|-------|-------------------|------------------------|---|----|-------|------------|---|---|-------|-----------------|-----------|
|             | L                 | S   | R | Total | L                 | S   | R  | Total |                   | L                      | S | R  | Total | L          | S | R | Total |                 |           |
| 7:00        | 32                | 205 |   | 237   |                   | 156 | 18 | 174   | 411               | 33                     |   | 10 | 43    |            |   |   | 0     | 43              | 454       |
| 7:15        | 35                | 319 |   | 354   |                   | 184 | 11 | 195   | 549               | 22                     |   | 10 | 32    |            |   |   | 0     | 32              | 581       |
| 7:30        | 20                | 327 |   | 347   |                   | 225 | 20 | 245   | 592               | 34                     |   | 21 | 55    |            |   |   | 0     | 55              | 647       |
| 7:45        | 49                | 283 |   | 332   |                   | 251 | 21 | 272   | 604               | 26                     |   | 22 | 48    |            |   |   | 0     | 48              | 652       |
| 8:00        | 39                | 289 |   | 328   |                   | 226 | 22 | 248   | 576               | 33                     |   | 20 | 53    |            |   |   | 0     | 53              | 629       |
| 8:15        | 30                | 285 |   | 315   |                   | 222 | 19 | 241   | 556               | 31                     |   | 26 | 57    |            |   |   | 0     | 57              | 613       |
| 8:30        | 30                | 276 |   | 306   |                   | 230 | 16 | 246   | 552               | 36                     |   | 32 | 68    |            |   |   | 0     | 68              | 620       |
| 8:45        | 33                | 212 |   | 245   |                   | 255 | 24 | 279   | 524               | 15                     |   | 39 | 54    |            |   |   | 0     | 54              | 578       |

|           |     |      |     |      |     |      |      |      |      |      |     |      |      |     |     |     |     |      |      |
|-----------|-----|------|-----|------|-----|------|------|------|------|------|-----|------|------|-----|-----|-----|-----|------|------|
| 7:30-8:30 | 138 | 1184 | 0   | 1322 | 0   | 924  | 82   | 1006 | 2328 | 124  | 0   | 89   | 213  | 0   | 0   | 0   | 0   | 213  | 2541 |
| PHF       | 0.7 | 0.91 | n/a | 0.95 | n/a | 0.92 | 0.93 | 0.92 | 0.96 | 0.91 | n/a | 0.86 | 0.93 | n/a | n/a | n/a | n/a | 0.93 | 0.97 |

|      |    |     |  |     |  |     |    |     |     |    |  |    |     |  |  |  |   |     |     |
|------|----|-----|--|-----|--|-----|----|-----|-----|----|--|----|-----|--|--|--|---|-----|-----|
| 4:00 | 29 | 275 |  | 304 |  | 331 | 42 | 373 | 677 | 40 |  | 43 | 83  |  |  |  | 0 | 83  | 760 |
| 4:15 | 43 | 310 |  | 353 |  | 313 | 37 | 350 | 703 | 34 |  | 43 | 77  |  |  |  | 0 | 77  | 780 |
| 4:30 | 41 | 303 |  | 344 |  | 347 | 38 | 385 | 729 | 36 |  | 35 | 71  |  |  |  | 0 | 71  | 800 |
| 4:45 | 35 | 291 |  | 326 |  | 332 | 40 | 372 | 698 | 31 |  | 38 | 69  |  |  |  | 0 | 69  | 767 |
| 5:00 | 41 | 293 |  | 334 |  | 336 | 27 | 363 | 697 | 65 |  | 47 | 112 |  |  |  | 0 | 112 | 809 |
| 5:15 | 21 | 277 |  | 298 |  | 334 | 43 | 377 | 675 | 37 |  | 42 | 79  |  |  |  | 0 | 79  | 754 |
| 5:30 | 30 | 257 |  | 287 |  | 337 | 26 | 363 | 650 | 41 |  | 49 | 90  |  |  |  | 0 | 90  | 740 |
| 5:45 | 28 | 217 |  | 245 |  | 263 | 18 | 281 | 526 | 44 |  | 31 | 75  |  |  |  | 0 | 75  | 601 |

|           |      |      |     |      |     |      |      |      |      |      |     |      |      |     |     |     |     |      |      |
|-----------|------|------|-----|------|-----|------|------|------|------|------|-----|------|------|-----|-----|-----|-----|------|------|
| 4:15-5:15 | 160  | 1197 | 0   | 1357 | 0   | 1328 | 142  | 1470 | 2827 | 166  | 0   | 163  | 329  | 0   | 0   | 0   | 0   | 329  | 3156 |
| PHF       | 0.93 | 0.97 | n/a | 0.96 | n/a | 0.96 | 0.89 | 0.95 | 0.97 | 0.64 | n/a | 0.87 | 0.73 | n/a | n/a | n/a | n/a | 0.73 | 0.98 |

DELICH ASSOCIATES  
2272 GLEN HAVEN DRIVE  
LOVELAND, CO 80538  
Phone: (970) 669-2061

## TABULAR SUMMARY OF VEHICLE COUNTS

Date: 6/9/2022

Observer: Vickie

Day: Thursday

Jurisdiction: Loveland

Intersection: US287/57th Street

R = right turn  
S = straight  
L = left turn

| Time Begins | Northbound: US287 |     |    |       | Southbound: US287 |     |    |       | Total north/south | Eastbound: 57th Street |    |    |       | Westbound: 57th Street |    |    |       | Total east/west | Total All |
|-------------|-------------------|-----|----|-------|-------------------|-----|----|-------|-------------------|------------------------|----|----|-------|------------------------|----|----|-------|-----------------|-----------|
|             | L                 | S   | R  | Total | L                 | S   | R  | Total |                   | L                      | S  | R  | Total | L                      | S  | R  | Total |                 |           |
| 7:00        | 6                 | 180 | 22 | 208   | 11                | 155 | 18 | 184   | 392               | 46                     | 25 | 21 | 92    | 13                     | 14 | 27 | 54    | 146             | 538       |
| 7:15        | 7                 | 236 | 21 | 264   | 16                | 166 | 16 | 198   | 462               | 48                     | 35 | 24 | 107   | 18                     | 20 | 37 | 75    | 182             | 644       |
| 7:30        | 14                | 278 | 21 | 313   | 27                | 199 | 31 | 257   | 570               | 55                     | 51 | 36 | 142   | 18                     | 33 | 41 | 92    | 234             | 804       |
| 7:45        | 21                | 264 | 7  | 292   | 19                | 231 | 25 | 275   | 567               | 58                     | 30 | 32 | 120   | 21                     | 21 | 37 | 79    | 199             | 766       |
| 8:00        | 16                | 251 | 9  | 276   | 13                | 196 | 41 | 250   | 526               | 56                     | 41 | 27 | 124   | 19                     | 16 | 40 | 75    | 199             | 725       |
| 8:15        | 17                | 219 | 13 | 249   | 20                | 206 | 35 | 261   | 510               | 63                     | 42 | 40 | 145   | 20                     | 20 | 30 | 70    | 215             | 725       |
| 8:30        | 7                 | 249 | 18 | 274   | 17                | 224 | 26 | 267   | 541               | 51                     | 22 | 40 | 113   | 29                     | 22 | 35 | 86    | 199             | 740       |
| 8:45        | 14                | 205 | 14 | 233   | 26                | 198 | 54 | 278   | 511               | 49                     | 32 | 26 | 107   | 19                     | 22 | 25 | 66    | 173             | 684       |

|           |      |      |     |      |      |     |     |      |      |      |     |      |      |      |      |     |      |     |      |
|-----------|------|------|-----|------|------|-----|-----|------|------|------|-----|------|------|------|------|-----|------|-----|------|
| 7:30-8:30 | 68   | 1012 | 50  | 1130 | 79   | 832 | 132 | 1043 | 2173 | 232  | 164 | 135  | 531  | 78   | 90   | 148 | 316  | 847 | 3020 |
| PHF       | 0.81 | 0.91 | 0.6 | 0.9  | 0.73 | 0.9 | 0.8 | 0.95 | 0.95 | 0.92 | 0.8 | 0.84 | 0.92 | 0.93 | 0.68 | 0.9 | 0.86 | 0.9 | 0.94 |

|      |    |     |    |     |    |     |     |     |     |    |    |    |     |    |    |    |     |     |      |
|------|----|-----|----|-----|----|-----|-----|-----|-----|----|----|----|-----|----|----|----|-----|-----|------|
| 4:00 | 23 | 276 | 18 | 317 | 47 | 335 | 75  | 457 | 774 | 48 | 29 | 19 | 96  | 29 | 32 | 35 | 96  | 192 | 966  |
| 4:15 | 34 | 285 | 19 | 338 | 43 | 330 | 76  | 449 | 787 | 55 | 28 | 24 | 107 | 20 | 35 | 31 | 86  | 193 | 980  |
| 4:30 | 29 | 324 | 25 | 378 | 48 | 339 | 76  | 463 | 841 | 47 | 35 | 26 | 108 | 33 | 28 | 31 | 92  | 200 | 1041 |
| 4:45 | 27 | 282 | 17 | 326 | 57 | 328 | 105 | 490 | 816 | 51 | 23 | 19 | 93  | 28 | 44 | 33 | 105 | 198 | 1014 |
| 5:00 | 33 | 292 | 28 | 353 | 44 | 314 | 93  | 451 | 804 | 61 | 39 | 20 | 120 | 29 | 55 | 37 | 121 | 241 | 1045 |
| 5:15 | 23 | 307 | 27 | 357 | 57 | 288 | 92  | 437 | 794 | 50 | 43 | 24 | 117 | 45 | 63 | 38 | 146 | 263 | 1057 |
| 5:30 | 33 | 279 | 28 | 340 | 39 | 318 | 110 | 467 | 807 | 68 | 51 | 22 | 141 | 25 | 32 | 33 | 90  | 231 | 1038 |
| 5:45 | 31 | 249 | 21 | 301 | 36 | 267 | 63  | 366 | 667 | 51 | 41 | 19 | 111 | 24 | 41 | 19 | 84  | 195 | 862  |

|           |      |      |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|-----------|------|------|------|------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 4:30-5:30 | 112  | 1205 | 97   | 1414 | 206 | 1269 | 366  | 1841 | 3255 | 209  | 140  | 89   | 438  | 135  | 190  | 139  | 464  | 902  | 4157 |
| PHF       | 0.85 | 0.93 | 0.87 | 0.94 | 0.9 | 0.94 | 0.87 | 0.94 | 0.97 | 0.86 | 0.81 | 0.86 | 0.91 | 0.75 | 0.75 | 0.91 | 0.79 | 0.86 | 0.98 |

DELICH ASSOCIATES  
2272 GLEN HAVEN DRIVE  
LOVELAND, CO 80538  
Phone: (970) 669-2061

## TABULAR SUMMARY OF VEHICLE COUNTS

Date: 2/1/2022

Observer: Rollins Cosult

Day: Tuesday

Jurisdiction: Loveland

Intersection: 57th Street/Monroe

R = right turn  
S = straight  
L = left turn

| Time Begins | Northbound: Monroe |   |    |       | Southbound: Monroe |   |    |       | Total north/south | Eastbound: 57th Street |    |    |       | Westbound: 57th Street |    |   |       | Total east/west | Total All |
|-------------|--------------------|---|----|-------|--------------------|---|----|-------|-------------------|------------------------|----|----|-------|------------------------|----|---|-------|-----------------|-----------|
|             | L                  | S | R  | Total | L                  | S | R  | Total |                   | L                      | S  | R  | Total | L                      | S  | R | Total |                 |           |
| 7:00        | 19                 | 0 | 21 | 40    | 0                  | 3 | 4  | 7     | 47                | 1                      | 28 | 12 | 41    | 14                     | 15 | 0 | 29    | 70              | 117       |
| 7:15        | 18                 | 0 | 24 | 42    | 2                  | 2 | 7  | 11    | 53                | 1                      | 34 | 17 | 52    | 11                     | 37 | 1 | 49    | 101             | 154       |
| 7:30        | 31                 | 0 | 22 | 53    | 2                  | 2 | 10 | 14    | 67                | 0                      | 49 | 18 | 67    | 20                     | 46 | 0 | 66    | 133             | 200       |
| 7:45        | 39                 | 1 | 26 | 66    | 0                  | 3 | 1  | 4     | 70                | 2                      | 53 | 19 | 74    | 19                     | 48 | 2 | 69    | 143             | 213       |
| 8:00        | 19                 | 1 | 23 | 43    | 0                  | 1 | 8  | 9     | 52                | 4                      | 61 | 22 | 87    | 26                     | 54 | 1 | 81    | 168             | 220       |
| 8:15        | 24                 | 0 | 16 | 40    | 1                  | 0 | 5  | 6     | 46                | 0                      | 34 | 20 | 54    | 18                     | 30 | 0 | 48    | 102             | 148       |
| 8:30        | 29                 | 0 | 23 | 52    | 0                  | 3 | 2  | 5     | 57                | 1                      | 35 | 25 | 61    | 14                     | 26 | 2 | 42    | 103             | 160       |
| 8:45        | 18                 | 1 | 15 | 34    | 1                  | 1 | 4  | 6     | 40                | 2                      | 35 | 20 | 57    | 11                     | 23 | 0 | 34    | 91              | 131       |

|           |      |     |      |      |     |      |      |      |      |      |      |      |     |      |      |     |      |      |      |
|-----------|------|-----|------|------|-----|------|------|------|------|------|------|------|-----|------|------|-----|------|------|------|
| 7:15-8:15 | 107  | 2   | 95   | 204  | 4   | 8    | 26   | 38   | 242  | 7    | 197  | 76   | 280 | 76   | 185  | 4   | 265  | 545  | 787  |
| PHF       | 0.69 | 0.5 | 0.91 | 0.77 | 0.5 | 0.67 | 0.65 | 0.68 | 0.86 | 0.44 | 0.81 | 0.86 | 0.8 | 0.73 | 0.86 | 0.5 | 0.82 | 0.81 | 0.89 |

|      |    |   |    |    |   |   |   |   |    |   |    |    |    |    |    |   |    |     |     |
|------|----|---|----|----|---|---|---|---|----|---|----|----|----|----|----|---|----|-----|-----|
| 4:00 | 26 | 2 | 17 | 45 | 0 | 3 | 5 | 8 | 53 | 5 | 41 | 38 | 84 | 32 | 42 | 3 | 77 | 161 | 214 |
| 4:15 | 26 | 3 | 19 | 48 | 0 | 1 | 1 | 2 | 50 | 5 | 36 | 31 | 72 | 31 | 51 | 2 | 84 | 156 | 206 |
| 4:30 | 20 | 3 | 22 | 45 | 1 | 3 | 4 | 8 | 53 | 5 | 52 | 36 | 93 | 23 | 58 | 1 | 82 | 175 | 228 |
| 4:45 | 18 | 3 | 15 | 36 | 2 | 1 | 1 | 4 | 40 | 3 | 32 | 32 | 67 | 27 | 47 | 2 | 76 | 143 | 183 |
| 5:00 | 16 | 1 | 15 | 32 | 0 | 1 | 0 | 1 | 33 | 3 | 31 | 34 | 68 | 16 | 36 | 0 | 52 | 120 | 153 |
| 5:15 | 19 | 4 | 20 | 43 | 1 | 0 | 1 | 2 | 45 | 6 | 21 | 27 | 54 | 44 | 53 | 2 | 99 | 153 | 198 |
| 5:30 | 28 | 2 | 14 | 44 | 0 | 1 | 1 | 2 | 46 | 1 | 43 | 32 | 76 | 27 | 38 | 0 | 65 | 141 | 187 |
| 5:45 | 16 | 3 | 12 | 31 | 1 | 1 | 1 | 3 | 34 | 4 | 24 | 29 | 57 | 18 | 35 | 3 | 56 | 113 | 147 |

|           |      |      |      |      |      |      |      |      |      |     |      |     |      |      |      |      |      |      |      |
|-----------|------|------|------|------|------|------|------|------|------|-----|------|-----|------|------|------|------|------|------|------|
| 4:00-5:00 | 90   | 11   | 73   | 174  | 3    | 8    | 11   | 22   | 196  | 18  | 161  | 137 | 316  | 113  | 198  | 8    | 319  | 635  | 831  |
| PHF       | 0.87 | 0.92 | 0.83 | 0.91 | 0.38 | 0.67 | 0.55 | 0.69 | 0.92 | 0.9 | 0.77 | 0.9 | 0.85 | 0.88 | 0.85 | 0.67 | 0.95 | 0.91 | 0.91 |

DELICH ASSOCIATES  
2272 GLEN HAVEN DRIVE  
LOVELAND, CO 80538  
Phone: (970) 669-2061

## TABULAR SUMMARY OF VEHICLE COUNTS

Date: 12/6/2022

Observer: Vickie

Day: Tuesday

Jurisdiction: Loveland

Intersection: 57th Street/St. Louis

R = right turn  
S = straight  
L = left turn

| Time Begins | Northbound: St. Louis |   |   |       | Southbound: St. Louis |   |   |       | Total north/south | Eastbound: 57th Street |     |   |       | Westbound: 57th Street |    |   |       | Total east/west | Total All |
|-------------|-----------------------|---|---|-------|-----------------------|---|---|-------|-------------------|------------------------|-----|---|-------|------------------------|----|---|-------|-----------------|-----------|
|             | L                     | S | R | Total | L                     | S | R | Total |                   | L                      | S   | R | Total | L                      | S  | R | Total |                 |           |
| 7:00        | 0                     | 0 | 0 | 0     | 1                     | 0 | 2 | 3     | 3                 | 0                      | 49  | 0 | 49    | 0                      | 23 | 1 | 24    | 73              | 76        |
| 7:15        | 2                     | 0 | 2 | 4     | 8                     | 0 | 3 | 11    | 15                | 1                      | 76  | 0 | 77    | 0                      | 42 | 0 | 42    | 119             | 134       |
| 7:30        | 4                     | 0 | 0 | 4     | 2                     | 0 | 4 | 6     | 10                | 0                      | 104 | 2 | 106   | 0                      | 52 | 0 | 52    | 158             | 168       |
| 7:45        | 2                     | 0 | 1 | 3     | 2                     | 0 | 8 | 10    | 13                | 2                      | 91  | 2 | 95    | 0                      | 60 | 2 | 62    | 157             | 170       |
| 8:00        | 2                     | 0 | 3 | 5     | 3                     | 0 | 5 | 8     | 13                | 5                      | 79  | 0 | 84    | 0                      | 54 | 0 | 54    | 138             | 151       |
| 8:15        | 3                     | 0 | 0 | 3     | 0                     | 0 | 3 | 3     | 6                 | 2                      | 60  | 1 | 63    | 0                      | 47 | 0 | 47    | 110             | 116       |
| 8:30        | 1                     | 0 | 0 | 1     | 2                     | 0 | 2 | 4     | 5                 | 0                      | 77  | 1 | 78    | 0                      | 30 | 2 | 32    | 110             | 115       |
| 8:45        | 0                     | 0 | 0 | 0     | 4                     | 0 | 5 | 9     | 9                 | 2                      | 59  | 0 | 61    | 2                      | 31 | 1 | 34    | 95              | 104       |

|           |      |     |     |     |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |
|-----------|------|-----|-----|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|------|------|------|------|
| 7:15-8:15 | 10   | 0   | 6   | 16  | 15   | 0   | 20   | 35  | 51   | 8   | 350  | 4   | 362  | 0   | 208  | 2    | 210  | 572  | 623  |
| PHF       | 0.63 | n/a | 0.5 | 0.8 | 0.47 | n/a | 0.63 | 0.8 | 0.85 | 0.4 | 0.84 | 0.5 | 0.85 | n/a | 0.87 | 0.25 | 0.85 | 0.91 | 0.92 |

|      |   |   |   |   |   |   |   |   |   |   |    |   |    |   |     |   |     |     |     |
|------|---|---|---|---|---|---|---|---|---|---|----|---|----|---|-----|---|-----|-----|-----|
| 4:00 | 0 | 0 | 1 | 1 | 3 | 0 | 3 | 6 | 7 | 0 | 45 | 0 | 45 | 1 | 95  | 2 | 98  | 143 | 150 |
| 4:15 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 7 | 7 | 6 | 51 | 0 | 57 | 1 | 116 | 3 | 120 | 177 | 184 |
| 4:30 | 1 | 0 | 2 | 3 | 0 | 0 | 3 | 3 | 6 | 6 | 64 | 1 | 71 | 0 | 104 | 6 | 110 | 181 | 187 |
| 4:45 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 5 | 5 | 6 | 53 | 0 | 59 | 2 | 92  | 2 | 96  | 155 | 160 |
| 5:00 | 1 | 0 | 1 | 2 | 3 | 0 | 2 | 5 | 7 | 4 | 57 | 2 | 63 | 1 | 104 | 2 | 107 | 170 | 177 |
| 5:15 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 3 | 3 | 3 | 37 | 0 | 40 | 0 | 97  | 3 | 100 | 140 | 143 |
| 5:30 | 1 | 0 | 0 | 1 | 0 | 0 | 4 | 4 | 5 | 1 | 46 | 1 | 48 | 0 | 72  | 3 | 75  | 123 | 128 |
| 5:45 | 1 | 0 | 1 | 2 | 0 | 0 | 2 | 2 | 4 | 8 | 41 | 1 | 50 | 3 | 57  | 2 | 62  | 112 | 116 |

|           |     |     |      |      |     |     |      |      |      |      |      |      |      |     |     |      |     |      |      |
|-----------|-----|-----|------|------|-----|-----|------|------|------|------|------|------|------|-----|-----|------|-----|------|------|
| 4:15-5:15 | 2   | 0   | 3    | 5    | 6   | 0   | 14   | 20   | 25   | 22   | 225  | 3    | 250  | 4   | 416 | 13   | 433 | 683  | 708  |
| PHF       | 0.5 | n/a | 0.38 | 0.42 | 0.5 | n/a | 0.58 | 0.71 | 0.89 | 0.92 | 0.88 | 0.38 | 0.88 | 0.5 | 0.9 | 0.54 | 0.9 | 0.94 | 0.95 |

DELICH ASSOCIATES  
2272 GLEN HAVEN DRIVE  
LOVELAND, CO 80538  
Phone: (970) 669-2061

## TABULAR SUMMARY OF VEHICLE COUNTS

Date: 11/10/2022

Observer: Vickie

Day: Thursday

Jurisdiction: Loveland

Intersection: 57th Street/LCR13-Koldewey

R = right turn  
S = straight  
L = left turn

| Time Begins | Northbound: Koldewey |   |   |       | Southbound: LCR13 |   |    |       | Total north/south | Eastbound: 57th Street |    |   |       | Westbound: 57th Street |    |   |       | Total east/west | Total All |
|-------------|----------------------|---|---|-------|-------------------|---|----|-------|-------------------|------------------------|----|---|-------|------------------------|----|---|-------|-----------------|-----------|
|             | L                    | S | R | Total | L                 | S | R  | Total |                   | L                      | S  | R | Total | L                      | S  | R | Total |                 |           |
| 7:00        | 1                    | 0 | 0 | 1     | 2                 | 0 | 3  | 5     | 6                 | 2                      | 56 | 0 | 58    | 0                      | 29 | 0 | 29    | 87              | 93        |
| 7:15        | 0                    | 0 | 0 | 0     | 1                 | 0 | 6  | 7     | 7                 | 7                      | 78 | 0 | 85    | 1                      | 32 | 1 | 34    | 119             | 126       |
| 7:30        | 0                    | 0 | 0 | 0     | 1                 | 0 | 9  | 10    | 10                | 18                     | 83 | 0 | 101   | 0                      | 31 | 1 | 32    | 133             | 143       |
| 7:45        | 0                    | 0 | 1 | 1     | 2                 | 0 | 11 | 13    | 14                | 18                     | 56 | 0 | 74    | 0                      | 55 | 2 | 57    | 131             | 145       |
| 8:00        | 1                    | 0 | 1 | 2     | 3                 | 0 | 25 | 28    | 30                | 21                     | 42 | 0 | 63    | 0                      | 41 | 0 | 41    | 104             | 134       |
| 8:15        | 1                    | 0 | 0 | 1     | 3                 | 0 | 15 | 18    | 19                | 13                     | 65 | 0 | 78    | 0                      | 26 | 0 | 26    | 104             | 123       |
| 8:30        | 0                    | 0 | 0 | 0     | 3                 | 0 | 9  | 12    | 12                | 13                     | 54 | 0 | 67    | 0                      | 22 | 3 | 25    | 92              | 104       |
| 8:45        | 0                    | 0 | 0 | 0     | 3                 | 0 | 6  | 9     | 9                 | 5                      | 46 | 0 | 51    | 0                      | 30 | 1 | 31    | 82              | 91        |

|           |      |     |     |      |      |     |      |      |      |      |      |     |     |      |      |     |      |      |      |
|-----------|------|-----|-----|------|------|-----|------|------|------|------|------|-----|-----|------|------|-----|------|------|------|
| 7:15-8:15 | 1    | 0   | 2   | 3    | 7    | 0   | 51   | 58   | 61   | 64   | 259  | 0   | 323 | 1    | 159  | 4   | 164  | 487  | 548  |
| PHF       | 0.25 | n/a | 0.5 | 0.38 | 0.58 | n/a | 0.51 | 0.52 | 0.51 | 0.76 | 0.78 | n/a | 0.8 | 0.25 | 0.72 | 0.5 | 0.72 | 0.92 | 0.94 |

|      |   |   |   |   |   |   |    |    |    |    |    |   |    |   |     |   |     |     |     |
|------|---|---|---|---|---|---|----|----|----|----|----|---|----|---|-----|---|-----|-----|-----|
| 4:00 | 0 | 0 | 1 | 1 | 5 | 0 | 23 | 28 | 29 | 13 | 63 | 0 | 76 | 1 | 77  | 3 | 81  | 157 | 186 |
| 4:15 | 1 | 0 | 0 | 1 | 6 | 0 | 29 | 35 | 36 | 6  | 68 | 0 | 74 | 1 | 96  | 1 | 98  | 172 | 208 |
| 4:30 | 0 | 0 | 0 | 0 | 4 | 0 | 26 | 30 | 30 | 11 | 73 | 1 | 85 | 0 | 100 | 3 | 103 | 188 | 218 |
| 4:45 | 1 | 0 | 0 | 1 | 3 | 0 | 16 | 19 | 20 | 7  | 56 | 2 | 65 | 0 | 74  | 2 | 76  | 141 | 161 |
| 5:00 | 0 | 0 | 0 | 0 | 7 | 0 | 23 | 30 | 30 | 14 | 61 | 0 | 75 | 0 | 93  | 3 | 96  | 171 | 201 |
| 5:15 | 0 | 0 | 0 | 0 | 4 | 0 | 19 | 23 | 23 | 4  | 38 | 1 | 43 | 0 | 89  | 2 | 91  | 134 | 157 |
| 5:30 | 0 | 0 | 0 | 0 | 5 | 0 | 17 | 22 | 22 | 5  | 48 | 0 | 53 | 0 | 61  | 0 | 61  | 114 | 136 |
| 5:45 | 0 | 0 | 0 | 0 | 1 | 0 | 7  | 8  | 8  | 1  | 46 | 1 | 48 | 0 | 51  | 0 | 51  | 99  | 107 |

|           |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |     |
|-----------|-----|-----|-----|-----|------|-----|------|------|------|------|------|------|------|------|------|------|------|------|-----|
| 4:15-5:15 | 2   | 0   | 0   | 2   | 20   | 0   | 94   | 114  | 116  | 38   | 258  | 3    | 299  | 1    | 363  | 9    | 373  | 672  | 788 |
| PHF       | 0.5 | n/a | n/a | 0.5 | 0.71 | n/a | 0.81 | 0.81 | 0.81 | 0.68 | 0.88 | 0.38 | 0.88 | 0.25 | 0.91 | 0.75 | 0.91 | 0.89 | 0.9 |

DELICH ASSOCIATES  
2272 GLEN HAVEN DRIVE  
LOVELAND, CO 80538  
Phone: (970) 669-2061

## TABULAR SUMMARY OF VEHICLE COUNTS

Date: 12/3/2024

Observer: Vickie

Day: Tuesday

Jurisdiction: Loveland

Intersection: LCR30/Bruns

R = right turn  
S = straight  
L = left turn

| Time Begins | Northbound: |   |   |       | Southbound: Bruns |   |    |       | Total north/south | Eastbound: LCR30 |   |   |       | Westbound: LCR30 |    |   |       | Total east/west | Total All |
|-------------|-------------|---|---|-------|-------------------|---|----|-------|-------------------|------------------|---|---|-------|------------------|----|---|-------|-----------------|-----------|
|             | L           | S | R | Total | L                 | S | R  | Total |                   | L                | S | R | Total | L                | S  | R | Total |                 |           |
| 7:00        |             |   |   | 0     | 0                 |   | 1  | 1     | 1                 | 1                | 3 |   | 4     |                  | 6  | 0 | 6     | 10              | 11        |
| 7:15        |             |   |   | 0     | 0                 |   | 2  | 2     | 2                 | 1                | 3 |   | 4     |                  | 6  | 2 | 8     | 12              | 14        |
| 7:30        |             |   |   | 0     | 0                 |   | 4  | 4     | 4                 | 9                | 3 |   | 12    |                  | 8  | 2 | 10    | 22              | 26        |
| 7:45        |             |   |   | 0     | 3                 |   | 23 | 26    | 26                | 24               | 8 |   | 32    |                  | 4  | 4 | 8     | 40              | 66        |
| 8:00        |             |   |   | 0     | 3                 |   | 22 | 25    | 25                | 6                | 4 |   | 10    |                  | 10 | 2 | 12    | 22              | 47        |
| 8:15        |             |   |   | 0     | 1                 |   | 7  | 8     | 8                 | 2                | 3 |   | 5     |                  | 19 | 0 | 19    | 24              | 32        |
| 8:30        |             |   |   | 0     | 1                 |   | 0  | 1     | 1                 | 1                | 7 |   | 8     |                  | 8  | 0 | 8     | 16              | 17        |
| 8:45        |             |   |   | 0     | 0                 |   | 3  | 3     | 3                 | 1                | 9 |   | 10    |                  | 6  | 0 | 6     | 16              | 19        |

|           |     |     |     |     |      |     |      |      |      |      |      |     |      |     |      |     |      |      |      |
|-----------|-----|-----|-----|-----|------|-----|------|------|------|------|------|-----|------|-----|------|-----|------|------|------|
| 7:30-8:30 | 0   | 0   | 0   | 0   | 7    | 0   | 56   | 63   | 63   | 41   | 18   | 0   | 59   | 0   | 41   | 8   | 49   | 108  | 171  |
| PHF       | n/a | n/a | n/a | n/a | 0.58 | n/a | 0.61 | 0.61 | 0.61 | 0.43 | 0.56 | n/a | 0.46 | n/a | 0.54 | 0.5 | 0.64 | 0.68 | 0.65 |

|      |  |  |  |   |   |  |   |   |   |   |    |  |    |  |    |   |    |    |    |
|------|--|--|--|---|---|--|---|---|---|---|----|--|----|--|----|---|----|----|----|
| 4:00 |  |  |  | 0 | 1 |  | 0 | 1 | 1 | 2 | 10 |  | 12 |  | 10 | 2 | 12 | 24 | 25 |
| 4:15 |  |  |  | 0 | 1 |  | 3 | 4 | 4 | 3 | 10 |  | 13 |  | 11 | 1 | 12 | 25 | 29 |
| 4:30 |  |  |  | 0 | 0 |  | 4 | 4 | 4 | 2 | 17 |  | 19 |  | 8  | 2 | 10 | 29 | 33 |
| 4:45 |  |  |  | 0 | 0 |  | 0 | 0 | 0 | 3 | 11 |  | 14 |  | 4  | 0 | 4  | 18 | 18 |
| 5:00 |  |  |  | 0 | 0 |  | 4 | 4 | 4 | 4 | 21 |  | 25 |  | 9  | 0 | 9  | 34 | 38 |
| 5:15 |  |  |  | 0 | 0 |  | 3 | 3 | 3 | 1 | 32 |  | 33 |  | 12 | 0 | 12 | 45 | 48 |
| 5:30 |  |  |  | 0 | 0 |  | 3 | 3 | 3 | 1 | 28 |  | 29 |  | 10 | 0 | 10 | 39 | 42 |
| 5:45 |  |  |  | 0 | 0 |  | 0 | 0 | 0 | 0 | 7  |  | 7  |  | 4  | 0 | 4  | 11 | 11 |

|           |     |     |     |     |     |     |      |      |      |      |      |     |      |     |      |     |      |      |      |
|-----------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|-----|------|-----|------|-----|------|------|------|
| 4:45-5:45 | 0   | 0   | 0   | 0   | 0   | 0   | 10   | 10   | 10   | 9    | 92   | 0   | 101  | 0   | 35   | 0   | 35   | 136  | 146  |
| PHF       | n/a | n/a | n/a | n/a | n/a | n/a | 0.63 | 0.63 | 0.63 | 0.56 | 0.72 | n/a | 0.77 | n/a | 0.73 | n/a | 0.73 | 0.76 | 0.76 |

## APPENDIX C

# HCM 7th Signalized Intersection Summary

## 3: US287 & 57th Street

Recent AM

|                              |                                                                                    |  |  |                                                                                    |  |  |  |                                                                                      |  |  |                                                                                      |  |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                                                                                                                 | EBT                                                                               | EBR                                                                               | WBL                                                                                                                                                                 | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                                                                                                     | NBR                                                                                 | SBL                                                                                 | SBT                                                                                                                                                                     | SBR                                                                                 |
| Lane Configurations          |   |  |  |   |  |  |  |   |  |  |   |  |
| Traffic Volume (veh/h)       | 229                                                                                                                                                                 | 165                                                                               | 132                                                                               | 80                                                                                                                                                                  | 99                                                                                | 156                                                                               | 78                                                                                  | 1115                                                                                                                                                                    | 55                                                                                  | 92                                                                                  | 939                                                                                                                                                                     | 157                                                                                 |
| Future Volume (veh/h)        | 229                                                                                                                                                                 | 165                                                                               | 132                                                                               | 80                                                                                                                                                                  | 99                                                                                | 156                                                                               | 78                                                                                  | 1115                                                                                                                                                                    | 55                                                                                  | 92                                                                                  | 939                                                                                                                                                                     | 157                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                   | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                                                                                                                |                                                                                   | 1.00                                                                              | 1.00                                                                                                                                                                |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Work Zone On Approach        |                                                                                                                                                                     | No                                                                                |                                                                                   |                                                                                                                                                                     | No                                                                                |                                                                                   |                                                                                     | No                                                                                                                                                                      |                                                                                     |                                                                                     | No                                                                                                                                                                      |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                                                                                                                | 1870                                                                              | 1870                                                                              | 1870                                                                                                                                                                | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                                                                                                    | 1870                                                                                | 1870                                                                                | 1870                                                                                                                                                                    | 1870                                                                                |
| Adj Flow Rate, veh/h         | 244                                                                                                                                                                 | 176                                                                               | 0                                                                                 | 85                                                                                                                                                                  | 105                                                                               | 0                                                                                 | 83                                                                                  | 1186                                                                                                                                                                    | 0                                                                                   | 98                                                                                  | 999                                                                                                                                                                     | 80                                                                                  |
| Peak Hour Factor             | 0.94                                                                                                                                                                | 0.94                                                                              | 0.94                                                                              | 0.94                                                                                                                                                                | 0.94                                                                              | 0.94                                                                              | 0.94                                                                                | 0.94                                                                                                                                                                    | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                                                                                                    | 0.94                                                                                |
| Percent Heavy Veh, %         | 2                                                                                                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                                                                                                       | 2                                                                                   | 2                                                                                   | 2                                                                                                                                                                       | 2                                                                                   |
| Cap, veh/h                   | 343                                                                                                                                                                 | 244                                                                               |                                                                                   | 188                                                                                                                                                                 | 160                                                                               |                                                                                   | 386                                                                                 | 2089                                                                                                                                                                    |                                                                                     | 343                                                                                 | 2089                                                                                                                                                                    | 932                                                                                 |
| Arrive On Green              | 0.10                                                                                                                                                                | 0.13                                                                              | 0.00                                                                              | 0.05                                                                                                                                                                | 0.09                                                                              | 0.00                                                                              | 0.05                                                                                | 0.59                                                                                                                                                                    | 0.00                                                                                | 0.05                                                                                | 0.59                                                                                                                                                                    | 0.59                                                                                |
| Sat Flow, veh/h              | 3456                                                                                                                                                                | 1870                                                                              | 1585                                                                              | 3456                                                                                                                                                                | 1870                                                                              | 1585                                                                              | 1781                                                                                | 3554                                                                                                                                                                    | 1585                                                                                | 1781                                                                                | 3554                                                                                                                                                                    | 1585                                                                                |
| Grp Volume(v), veh/h         | 244                                                                                                                                                                 | 176                                                                               | 0                                                                                 | 85                                                                                                                                                                  | 105                                                                               | 0                                                                                 | 83                                                                                  | 1186                                                                                                                                                                    | 0                                                                                   | 98                                                                                  | 999                                                                                                                                                                     | 80                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1728                                                                                                                                                                | 1870                                                                              | 1585                                                                              | 1728                                                                                                                                                                | 1870                                                                              | 1585                                                                              | 1781                                                                                | 1777                                                                                                                                                                    | 1585                                                                                | 1781                                                                                | 1777                                                                                                                                                                    | 1585                                                                                |
| Q Serve(g_s), s              | 7.5                                                                                                                                                                 | 9.9                                                                               | 0.0                                                                               | 2.6                                                                                                                                                                 | 6.0                                                                               | 0.0                                                                               | 1.9                                                                                 | 22.7                                                                                                                                                                    | 0.0                                                                                 | 2.3                                                                                 | 17.7                                                                                                                                                                    | 2.4                                                                                 |
| Cycle Q Clear(g_c), s        | 7.5                                                                                                                                                                 | 9.9                                                                               | 0.0                                                                               | 2.6                                                                                                                                                                 | 6.0                                                                               | 0.0                                                                               | 1.9                                                                                 | 22.7                                                                                                                                                                    | 0.0                                                                                 | 2.3                                                                                 | 17.7                                                                                                                                                                    | 2.4                                                                                 |
| Prop In Lane                 | 1.00                                                                                                                                                                |                                                                                   | 1.00                                                                              | 1.00                                                                                                                                                                |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 343                                                                                                                                                                 | 244                                                                               |                                                                                   | 188                                                                                                                                                                 | 160                                                                               |                                                                                   | 386                                                                                 | 2089                                                                                                                                                                    |                                                                                     | 343                                                                                 | 2089                                                                                                                                                                    | 932                                                                                 |
| V/C Ratio(X)                 | 0.71                                                                                                                                                                | 0.72                                                                              |                                                                                   | 0.45                                                                                                                                                                | 0.65                                                                              |                                                                                   | 0.22                                                                                | 0.57                                                                                                                                                                    |                                                                                     | 0.29                                                                                | 0.48                                                                                                                                                                    | 0.09                                                                                |
| Avail Cap(c_a), veh/h        | 503                                                                                                                                                                 | 578                                                                               |                                                                                   | 408                                                                                                                                                                 | 527                                                                               |                                                                                   | 483                                                                                 | 2089                                                                                                                                                                    |                                                                                     | 440                                                                                 | 2089                                                                                                                                                                    | 932                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                                                                                                                | 1.00                                                                              | 0.00                                                                              | 0.97                                                                                                                                                                | 0.97                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                                                                                                    | 0.00                                                                                | 0.94                                                                                | 0.94                                                                                                                                                                    | 0.94                                                                                |
| Uniform Delay (d), s/veh     | 48.0                                                                                                                                                                | 45.9                                                                              | 0.0                                                                               | 50.4                                                                                                                                                                | 48.7                                                                              | 0.0                                                                               | 9.1                                                                                 | 14.0                                                                                                                                                                    | 0.0                                                                                 | 10.4                                                                                | 13.0                                                                                                                                                                    | 9.8                                                                                 |
| Incr Delay (d2), s/veh       | 2.7                                                                                                                                                                 | 4.0                                                                               | 0.0                                                                               | 1.6                                                                                                                                                                 | 4.3                                                                               | 0.0                                                                               | 0.3                                                                                 | 1.1                                                                                                                                                                     | 0.0                                                                                 | 0.4                                                                                 | 0.7                                                                                                                                                                     | 0.2                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                                                                                                                 | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                 | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.3                                                                                                                                                                 | 4.8                                                                               | 0.0                                                                               | 1.2                                                                                                                                                                 | 3.0                                                                               | 0.0                                                                               | 0.6                                                                                 | 8.2                                                                                                                                                                     | 0.0                                                                                 | 0.8                                                                                 | 6.3                                                                                                                                                                     | 0.8                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| LnGrp Delay(d), s/veh        | 50.8                                                                                                                                                                | 49.9                                                                              | 0.0                                                                               | 52.0                                                                                                                                                                | 53.0                                                                              | 0.0                                                                               | 9.4                                                                                 | 15.2                                                                                                                                                                    | 0.0                                                                                 | 10.8                                                                                | 13.7                                                                                                                                                                    | 10.0                                                                                |
| LnGrp LOS                    | D                                                                                                                                                                   | D                                                                                 |                                                                                   | D                                                                                                                                                                   | D                                                                                 |                                                                                   | A                                                                                   | B                                                                                                                                                                       |                                                                                     | B                                                                                   | B                                                                                                                                                                       | B                                                                                   |
| Approach Vol, veh/h          |                                                                                                                                                                     | 420                                                                               |                                                                                   |                                                                                                                                                                     | 190                                                                               |                                                                                   |                                                                                     | 1269                                                                                                                                                                    |                                                                                     |                                                                                     | 1177                                                                                                                                                                    |                                                                                     |
| Approach Delay, s/veh        |                                                                                                                                                                     | 50.4                                                                              |                                                                                   |                                                                                                                                                                     | 52.6                                                                              |                                                                                   |                                                                                     | 14.8                                                                                                                                                                    |                                                                                     |                                                                                     | 13.2                                                                                                                                                                    |                                                                                     |
| Approach LOS                 |                                                                                                                                                                     | D                                                                                 |                                                                                   |                                                                                                                                                                     | D                                                                                 |                                                                                   |                                                                                     | B                                                                                                                                                                       |                                                                                     |                                                                                     | B                                                                                                                                                                       |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                                                                                                   | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                                                                                                       |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.0                                                                                                                                                                | 71.7                                                                              | 10.0                                                                              | 18.3                                                                                                                                                                | 10.0                                                                              | 71.7                                                                              | 14.9                                                                                | 13.4                                                                                                                                                                    |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                                                                                                                 | 8.0                                                                               | 5.0                                                                               | 5.0                                                                                                                                                                 | 5.0                                                                               | 8.0                                                                               | 5.0                                                                                 | 5.0                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Max Green Setting (Gmax), s  | 11.0                                                                                                                                                                | 31.0                                                                              | 12.0                                                                              | 33.0                                                                                                                                                                | 11.0                                                                              | 31.0                                                                              | 15.0                                                                                | 30.0                                                                                                                                                                    |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 4.3                                                                                                                                                                 | 24.7                                                                              | 4.6                                                                               | 11.9                                                                                                                                                                | 3.9                                                                               | 19.7                                                                              | 9.5                                                                                 | 8.0                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                                                                                                                 | 3.7                                                                               | 0.1                                                                               | 0.9                                                                                                                                                                 | 0.1                                                                               | 4.9                                                                               | 0.4                                                                                 | 0.5                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |

### Intersection Summary

HCM 7th Control Delay, s/veh 21.4  
 HCM 7th LOS C

### Notes

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

# Timing Report, Sorted By Phase

## 3: US287 & 57th Street

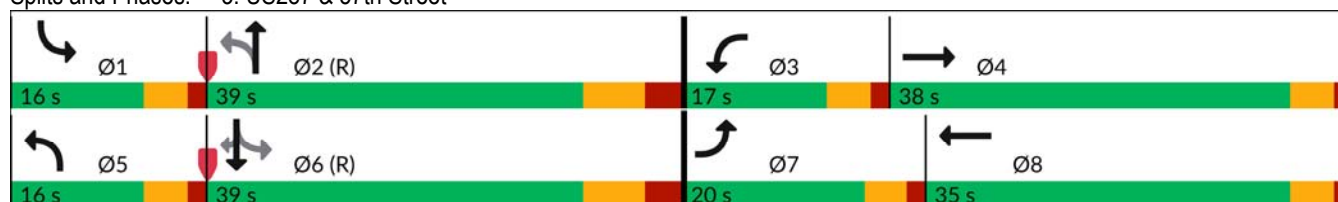
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|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |
| Movement               | SBL                                                                               | NBTL                                                                              | WBL                                                                               | EBT                                                                               | NBL                                                                               | SBTL                                                                              | EBL                                                                                | WBT                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                               | Lag                                                                                 |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 |
| Recall Mode            | Min                                                                               | C-Max                                                                             | Min                                                                               | Min                                                                               | Min                                                                               | C-Max                                                                             | Min                                                                                | Min                                                                                 |
| Maximum Split (s)      | 16                                                                                | 39                                                                                | 17                                                                                | 38                                                                                | 16                                                                                | 39                                                                                | 20                                                                                 | 35                                                                                  |
| Maximum Split (%)      | 14.5%                                                                             | 35.5%                                                                             | 15.5%                                                                             | 34.5%                                                                             | 14.5%                                                                             | 35.5%                                                                             | 18.2%                                                                              | 31.8%                                                                               |
| Minimum Split (s)      | 10                                                                                | 35                                                                                | 10                                                                                | 28                                                                                | 10                                                                                | 35                                                                                | 10                                                                                 | 28                                                                                  |
| Yellow Time (s)        | 3.5                                                                               | 5                                                                                 | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 5                                                                                 | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)       | 1.5                                                                               | 3                                                                                 | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 3                                                                                 | 1.5                                                                                | 1.5                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                  | 5                                                                                   |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Walk Time (s)          |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   | 4                                                                                 |                                                                                    |                                                                                     |
| Flash Don't Walk (s)   |                                                                                   | 23                                                                                |                                                                                   |                                                                                   |                                                                                   | 23                                                                                |                                                                                    |                                                                                     |
| Dual Entry             | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                 | Yes                                                                                 |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 |
| Start Time (s)         | 90                                                                                | 106                                                                               | 35                                                                                | 52                                                                                | 90                                                                                | 106                                                                               | 35                                                                                 | 55                                                                                  |
| End Time (s)           | 106                                                                               | 35                                                                                | 52                                                                                | 90                                                                                | 106                                                                               | 35                                                                                | 55                                                                                 | 90                                                                                  |
| Yield/Force Off (s)    | 101                                                                               | 27                                                                                | 47                                                                                | 85                                                                                | 101                                                                               | 27                                                                                | 50                                                                                 | 85                                                                                  |
| Yield/Force Off 170(s) | 101                                                                               | 4                                                                                 | 47                                                                                | 85                                                                                | 101                                                                               | 4                                                                                 | 50                                                                                 | 85                                                                                  |
| Local Start Time (s)   | 94                                                                                | 0                                                                                 | 39                                                                                | 56                                                                                | 94                                                                                | 0                                                                                 | 39                                                                                 | 59                                                                                  |
| Local Yield (s)        | 105                                                                               | 31                                                                                | 51                                                                                | 89                                                                                | 105                                                                               | 31                                                                                | 54                                                                                 | 89                                                                                  |
| Local Yield 170(s)     | 105                                                                               | 8                                                                                 | 51                                                                                | 89                                                                                | 105                                                                               | 8                                                                                 | 54                                                                                 | 89                                                                                  |

### Intersection Summary

Cycle Length 110  
Control Type Actuated-Coordinated  
Natural Cycle 85  
Offset: 106 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

### Splits and Phases: 3: US287 & 57th Street



## Queues

Recent AM

## 3: US287 &amp; 57th Street

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Group Flow (vph)   | 244                                                                               | 176                                                                               | 140                                                                               | 85                                                                                | 105                                                                               | 166                                                                               | 83                                                                                 | 1186                                                                                | 59                                                                                  | 98                                                                                  | 999                                                                                 | 167                                                                                 |
| v/c Ratio               | 0.57                                                                              | 0.60                                                                              | 0.09                                                                              | 0.30                                                                              | 0.49                                                                              | 0.10                                                                              | 0.24                                                                               | 0.66                                                                                | 0.04                                                                                | 0.34                                                                                | 0.55                                                                                | 0.19                                                                                |
| Control Delay (s/veh)   | 50.5                                                                              | 51.2                                                                              | 0.1                                                                               | 49.8                                                                              | 52.6                                                                              | 0.1                                                                               | 10.2                                                                               | 24.1                                                                                | 0.0                                                                                 | 11.6                                                                                | 16.3                                                                                | 1.3                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     | 50.5                                                                              | 51.2                                                                              | 0.1                                                                               | 49.8                                                                              | 52.6                                                                              | 0.1                                                                               | 10.2                                                                               | 24.1                                                                                | 0.0                                                                                 | 11.6                                                                                | 16.3                                                                                | 1.3                                                                                 |
| Queue Length 50th (ft)  | 84                                                                                | 117                                                                               | 0                                                                                 | 29                                                                                | 71                                                                                | 0                                                                                 | 20                                                                                 | 314                                                                                 | 0                                                                                   | 15                                                                                  | 244                                                                                 | 0                                                                                   |
| Queue Length 95th (ft)  | 123                                                                               | 179                                                                               | 0                                                                                 | 54                                                                                | 120                                                                               | 0                                                                                 | 46                                                                                 | 475                                                                                 | 0                                                                                   | 30                                                                                  | 364                                                                                 | 12                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 644                                                                               |                                                                                   |                                                                                   | 2559                                                                              |                                                                                   |                                                                                    | 634                                                                                 |                                                                                     |                                                                                     | 2545                                                                                |                                                                                     |
| Turn Bay Length (ft)    | 250                                                                               |                                                                                   | 200                                                                               | 300                                                                               |                                                                                   | 350                                                                               | 350                                                                                |                                                                                     | 450                                                                                 | 250                                                                                 |                                                                                     | 360                                                                                 |
| Base Capacity (vph)     | 499                                                                               | 575                                                                               | 1583                                                                              | 405                                                                               | 525                                                                               | 1583                                                                              | 401                                                                                | 1784                                                                                | 1583                                                                                | 335                                                                                 | 1803                                                                                | 888                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.49                                                                              | 0.31                                                                              | 0.09                                                                              | 0.21                                                                              | 0.20                                                                              | 0.10                                                                              | 0.21                                                                               | 0.66                                                                                | 0.04                                                                                | 0.29                                                                                | 0.55                                                                                | 0.19                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 7th Signalized Intersection Summary

## 3: US287 & 57th Street

Recent PM

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 226                                                                               | 151                                                                               | 96                                                                                | 133                                                                               | 188                                                                               | 137                                                                               | 116                                                                                 | 1251                                                                                | 101                                                                                 | 203                                                                                 | 1239                                                                                | 360                                                                                 |
| Future Volume (veh/h)        | 226                                                                               | 151                                                                               | 96                                                                                | 133                                                                               | 188                                                                               | 137                                                                               | 116                                                                                 | 1251                                                                                | 101                                                                                 | 203                                                                                 | 1239                                                                                | 360                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 231                                                                               | 154                                                                               | 0                                                                                 | 136                                                                               | 192                                                                               | 0                                                                                 | 118                                                                                 | 1277                                                                                | 0                                                                                   | 207                                                                                 | 1264                                                                                | 161                                                                                 |
| Peak Hour Factor             | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 323                                                                               | 300                                                                               |                                                                                   | 222                                                                               | 245                                                                               |                                                                                   | 157                                                                                 | 1838                                                                                |                                                                                     | 178                                                                                 | 1880                                                                                | 838                                                                                 |
| Arrive On Green              | 0.09                                                                              | 0.16                                                                              | 0.00                                                                              | 0.06                                                                              | 0.13                                                                              | 0.00                                                                              | 0.09                                                                                | 0.52                                                                                | 0.00                                                                                | 0.20                                                                                | 1.00                                                                                | 1.00                                                                                |
| Sat Flow, veh/h              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 231                                                                               | 154                                                                               | 0                                                                                 | 136                                                                               | 192                                                                               | 0                                                                                 | 118                                                                                 | 1277                                                                                | 0                                                                                   | 207                                                                                 | 1264                                                                                | 161                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 7.8                                                                               | 9.0                                                                               | 0.0                                                                               | 4.6                                                                               | 11.9                                                                              | 0.0                                                                               | 7.8                                                                                 | 32.5                                                                                | 0.0                                                                                 | 12.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 7.8                                                                               | 9.0                                                                               | 0.0                                                                               | 4.6                                                                               | 11.9                                                                              | 0.0                                                                               | 7.8                                                                                 | 32.5                                                                                | 0.0                                                                                 | 12.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 323                                                                               | 300                                                                               |                                                                                   | 222                                                                               | 245                                                                               |                                                                                   | 157                                                                                 | 1838                                                                                |                                                                                     | 178                                                                                 | 1880                                                                                | 838                                                                                 |
| V/C Ratio(X)                 | 0.72                                                                              | 0.51                                                                              |                                                                                   | 0.61                                                                              | 0.78                                                                              |                                                                                   | 0.75                                                                                | 0.69                                                                                |                                                                                     | 1.16                                                                                | 0.67                                                                                | 0.19                                                                                |
| Avail Cap(c_a), veh/h        | 518                                                                               | 530                                                                               |                                                                                   | 374                                                                               | 452                                                                               |                                                                                   | 178                                                                                 | 1838                                                                                |                                                                                     | 178                                                                                 | 1880                                                                                | 838                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.91                                                                              | 0.91                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                |
| Uniform Delay (d), s/veh     | 52.8                                                                              | 46.1                                                                              | 0.0                                                                               | 54.7                                                                              | 50.5                                                                              | 0.0                                                                               | 53.4                                                                                | 21.8                                                                                | 0.0                                                                                 | 48.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 3.0                                                                               | 1.4                                                                               | 0.0                                                                               | 2.5                                                                               | 5.0                                                                               | 0.0                                                                               | 14.3                                                                                | 2.2                                                                                 | 0.0                                                                                 | 113.1                                                                               | 1.7                                                                                 | 0.4                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.5                                                                               | 4.3                                                                               | 0.0                                                                               | 2.1                                                                               | 5.9                                                                               | 0.0                                                                               | 4.0                                                                                 | 12.9                                                                                | 0.0                                                                                 | 10.2                                                                                | 0.4                                                                                 | 0.1                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 55.8                                                                              | 47.5                                                                              | 0.0                                                                               | 57.2                                                                              | 55.5                                                                              | 0.0                                                                               | 67.7                                                                                | 24.0                                                                                | 0.0                                                                                 | 161.1                                                                               | 1.7                                                                                 | 0.4                                                                                 |
| LnGrp LOS                    | E                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | E                                                                                 |                                                                                   | E                                                                                   | C                                                                                   |                                                                                     | F                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 385                                                                               |                                                                                   |                                                                                   | 328                                                                               |                                                                                   |                                                                                     | 1395                                                                                |                                                                                     |                                                                                     | 1632                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 52.5                                                                              |                                                                                   |                                                                                   | 56.2                                                                              |                                                                                   |                                                                                     | 27.7                                                                                |                                                                                     |                                                                                     | 21.8                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 16.0                                                                              | 69.1                                                                              | 11.7                                                                              | 23.2                                                                              | 14.6                                                                              | 70.5                                                                              | 15.2                                                                                | 19.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 8.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 8.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 11.0                                                                              | 41.0                                                                              | 12.0                                                                              | 33.0                                                                              | 11.0                                                                              | 41.0                                                                              | 17.0                                                                                | 28.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 14.0                                                                              | 34.5                                                                              | 6.6                                                                               | 11.0                                                                              | 9.8                                                                               | 2.0                                                                               | 9.8                                                                                 | 13.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 4.0                                                                               | 0.2                                                                               | 0.7                                                                               | 0.0                                                                               | 11.5                                                                              | 0.4                                                                                 | 0.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

HCM 7th Control Delay, s/veh 30.2  
 HCM 7th LOS C

### Notes

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

# Timing Report, Sorted By Phase

## 3: US287 & 57th Street

Recent PM

|                        |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |
| Movement               | SBL                                                                               | NBT                                                                               | WBL                                                                               | EBT                                                                               | NBL                                                                               | SBT                                                                               | EBL                                                                                 | WBT                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Recall Mode            | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                                | None                                                                                |
| Maximum Split (s)      | 16                                                                                | 49                                                                                | 17                                                                                | 38                                                                                | 16                                                                                | 49                                                                                | 22                                                                                  | 33                                                                                  |
| Maximum Split (%)      | 13.3%                                                                             | 40.8%                                                                             | 14.2%                                                                             | 31.7%                                                                             | 13.3%                                                                             | 40.8%                                                                             | 18.3%                                                                               | 27.5%                                                                               |
| Minimum Split (s)      | 10                                                                                | 35                                                                                | 10                                                                                | 28                                                                                | 10                                                                                | 35                                                                                | 10                                                                                  | 28                                                                                  |
| Yellow Time (s)        | 3.5                                                                               | 5                                                                                 | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)       | 1.5                                                                               | 3                                                                                 | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 3                                                                                 | 1.5                                                                                 | 1.5                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                   | 5                                                                                   |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Walk Time (s)          |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   | 4                                                                                 |                                                                                     |                                                                                     |
| Flash Don't Walk (s)   |                                                                                   | 23                                                                                |                                                                                   |                                                                                   |                                                                                   | 23                                                                                |                                                                                     |                                                                                     |
| Dual Entry             | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                  | Yes                                                                                 |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Start Time (s)         | 48                                                                                | 64                                                                                | 113                                                                               | 10                                                                                | 48                                                                                | 64                                                                                | 113                                                                                 | 15                                                                                  |
| End Time (s)           | 64                                                                                | 113                                                                               | 10                                                                                | 48                                                                                | 64                                                                                | 113                                                                               | 15                                                                                  | 48                                                                                  |
| Yield/Force Off (s)    | 59                                                                                | 105                                                                               | 5                                                                                 | 43                                                                                | 59                                                                                | 105                                                                               | 10                                                                                  | 43                                                                                  |
| Yield/Force Off 170(s) | 59                                                                                | 82                                                                                | 5                                                                                 | 43                                                                                | 59                                                                                | 82                                                                                | 10                                                                                  | 43                                                                                  |
| Local Start Time (s)   | 104                                                                               | 0                                                                                 | 49                                                                                | 66                                                                                | 104                                                                               | 0                                                                                 | 49                                                                                  | 71                                                                                  |
| Local Yield (s)        | 115                                                                               | 41                                                                                | 61                                                                                | 99                                                                                | 115                                                                               | 41                                                                                | 66                                                                                  | 99                                                                                  |
| Local Yield 170(s)     | 115                                                                               | 18                                                                                | 61                                                                                | 99                                                                                | 115                                                                               | 18                                                                                | 66                                                                                  | 99                                                                                  |

### Intersection Summary

Cycle Length 120  
Control Type Actuated-Coordinated  
Natural Cycle 85  
Offset: 64 (53%), Referenced to phase 2:NBT and 6:SBT, Start of Green

### Splits and Phases: 3: US287 & 57th Street



## Queues

Recent PM

## 3: US287 &amp; 57th Street

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Group Flow (vph)   | 231                                                                               | 154                                                                               | 98                                                                                | 136                                                                               | 192                                                                               | 140                                                                               | 118                                                                                 | 1277                                                                                | 103                                                                                 | 207                                                                                 | 1264                                                                                | 367                                                                                 |
| v/c Ratio               | 0.56                                                                              | 0.45                                                                              | 0.06                                                                              | 0.44                                                                              | 0.66                                                                              | 0.09                                                                              | 0.58                                                                                | 0.97                                                                                | 0.07                                                                                | 0.61                                                                                | 0.79                                                                                | 0.40                                                                                |
| Control Delay (s/veh)   | 55.0                                                                              | 46.6                                                                              | 0.1                                                                               | 55.7                                                                              | 58.4                                                                              | 0.1                                                                               | 61.4                                                                                | 55.7                                                                                | 0.1                                                                                 | 64.9                                                                                | 27.3                                                                                | 1.9                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     | 55.0                                                                              | 46.6                                                                              | 0.1                                                                               | 55.7                                                                              | 58.4                                                                              | 0.1                                                                               | 61.4                                                                                | 55.7                                                                                | 0.1                                                                                 | 64.9                                                                                | 27.3                                                                                | 1.9                                                                                 |
| Queue Length 50th (ft)  | 88                                                                                | 107                                                                               | 0                                                                                 | 52                                                                                | 142                                                                               | 0                                                                                 | 87                                                                                  | 515                                                                                 | 0                                                                                   | 138                                                                                 | 435                                                                                 | 0                                                                                   |
| Queue Length 95th (ft)  | 125                                                                               | 160                                                                               | 0                                                                                 | 84                                                                                | 208                                                                               | 0                                                                                 | 148                                                                                 | #695                                                                                | 0                                                                                   | #296                                                                                | #687                                                                                | 19                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 644                                                                               |                                                                                   |                                                                                   | 2559                                                                              |                                                                                   |                                                                                     | 634                                                                                 |                                                                                     |                                                                                     | 2545                                                                                |                                                                                     |
| Turn Bay Length (ft)    | 250                                                                               |                                                                                   | 200                                                                               | 300                                                                               |                                                                                   | 350                                                                               | 350                                                                                 |                                                                                     | 450                                                                                 | 250                                                                                 |                                                                                     | 360                                                                                 |
| Base Capacity (vph)     | 514                                                                               | 527                                                                               | 1583                                                                              | 371                                                                               | 450                                                                               | 1583                                                                              | 211                                                                                 | 1320                                                                                | 1583                                                                                | 342                                                                                 | 1597                                                                                | 915                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.45                                                                              | 0.29                                                                              | 0.06                                                                              | 0.37                                                                              | 0.43                                                                              | 0.09                                                                              | 0.56                                                                                | 0.97                                                                                | 0.07                                                                                | 0.61                                                                                | 0.79                                                                                | 0.40                                                                                |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

# HCM 7th Signalized Intersection Summary 18: US287 & 65th Street

Recent AM

|                              |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations          |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 129                                                                               | 92                                                                                | 138                                                                               | 1189                                                                              | 953                                                                               | 89                                                                                |
| Future Volume (veh/h)        | 129                                                                               | 92                                                                                | 138                                                                               | 1189                                                                              | 953                                                                               | 89                                                                                |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                | No                                                                                |                                                                                   |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              |
| Adj Flow Rate, veh/h         | 133                                                                               | 0                                                                                 | 142                                                                               | 1226                                                                              | 982                                                                               | 0                                                                                 |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |
| Cap, veh/h                   | 231                                                                               |                                                                                   | 552                                                                               | 3058                                                                              | 2737                                                                              |                                                                                   |
| Arrive On Green              | 0.07                                                                              | 0.00                                                                              | 0.05                                                                              | 0.86                                                                              | 0.77                                                                              | 0.00                                                                              |
| Sat Flow, veh/h              | 3456                                                                              | 1585                                                                              | 1781                                                                              | 3647                                                                              | 3647                                                                              | 1585                                                                              |
| Grp Volume(v), veh/h         | 133                                                                               | 0                                                                                 | 142                                                                               | 1226                                                                              | 982                                                                               | 0                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1728                                                                              | 1585                                                                              | 1781                                                                              | 1777                                                                              | 1777                                                                              | 1585                                                                              |
| Q Serve(g_s), s              | 4.1                                                                               | 0.0                                                                               | 1.5                                                                               | 8.1                                                                               | 9.7                                                                               | 0.0                                                                               |
| Cycle Q Clear(g_c), s        | 4.1                                                                               | 0.0                                                                               | 1.5                                                                               | 8.1                                                                               | 9.7                                                                               | 0.0                                                                               |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |
| Lane Grp Cap(c), veh/h       | 231                                                                               |                                                                                   | 552                                                                               | 3058                                                                              | 2737                                                                              |                                                                                   |
| V/C Ratio(X)                 | 0.58                                                                              |                                                                                   | 0.26                                                                              | 0.40                                                                              | 0.36                                                                              |                                                                                   |
| Avail Cap(c_a), veh/h        | 817                                                                               |                                                                                   | 715                                                                               | 3058                                                                              | 2737                                                                              |                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 0.78                                                                              | 0.78                                                                              | 1.00                                                                              | 0.00                                                                              |
| Uniform Delay (d), s/veh     | 49.8                                                                              | 0.0                                                                               | 2.3                                                                               | 1.6                                                                               | 4.0                                                                               | 0.0                                                                               |
| Incr Delay (d2), s/veh       | 2.3                                                                               | 0.0                                                                               | 0.2                                                                               | 0.3                                                                               | 0.4                                                                               | 0.0                                                                               |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| %ile BackOfQ(50%),veh/ln     | 1.8                                                                               | 0.0                                                                               | 0.1                                                                               | 0.4                                                                               | 2.2                                                                               | 0.0                                                                               |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| LnGrp Delay(d), s/veh        | 52.1                                                                              | 0.0                                                                               | 2.5                                                                               | 1.9                                                                               | 4.4                                                                               | 0.0                                                                               |
| LnGrp LOS                    | D                                                                                 |                                                                                   | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |
| Approach Vol, veh/h          | 133                                                                               |                                                                                   |                                                                                   | 1368                                                                              | 982                                                                               |                                                                                   |
| Approach Delay, s/veh        | 52.1                                                                              |                                                                                   |                                                                                   | 2.0                                                                               | 4.4                                                                               |                                                                                   |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Timer - Assigned Phs         |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 98.6                                                                              |                                                                                   | 11.4                                                                              | 9.9                                                                               | 88.7                                                                              |
| Change Period (Y+Rc), s      |                                                                                   | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |
| Max Green Setting (Gmax), s  |                                                                                   | 75.0                                                                              |                                                                                   | 25.0                                                                              | 15.0                                                                              | 55.0                                                                              |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 10.1                                                                              |                                                                                   | 6.1                                                                               | 3.5                                                                               | 11.7                                                                              |
| Green Ext Time (p_c), s      |                                                                                   | 10.3                                                                              |                                                                                   | 0.4                                                                               | 0.2                                                                               | 7.1                                                                               |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| HCM 7th Control Delay, s/veh |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   |                                                                                   |
| HCM 7th LOS                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |

## Notes

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

# Timing Report, Sorted By Phase

## 18: US287 & 65th Street

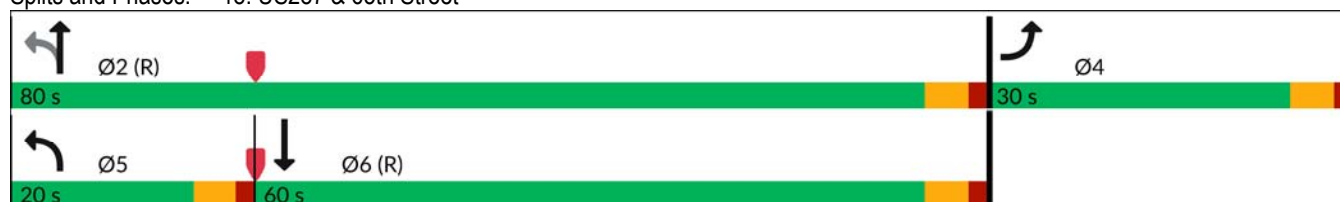
Recent AM

|                        |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Phase Number           | 2                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 |
| Movement               | NBTL                                                                              | EBL                                                                               | NBL                                                                               | SBT                                                                               |
| Lead/Lag               |                                                                                   |                                                                                   | Lead                                                                              | Lag                                                                               |
| Lead-Lag Optimize      |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |
| Recall Mode            | C-Max                                                                             | None                                                                              | None                                                                              | C-Max                                                                             |
| Maximum Split (s)      | 80                                                                                | 30                                                                                | 20                                                                                | 60                                                                                |
| Maximum Split (%)      | 72.7%                                                                             | 27.3%                                                                             | 18.2%                                                                             | 54.5%                                                                             |
| Minimum Split (s)      | 26                                                                                | 24                                                                                | 10                                                                                | 26                                                                                |
| Yellow Time (s)        | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |
| All-Red Time (s)       | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Walk Time (s)          | 7                                                                                 | 7                                                                                 |                                                                                   | 7                                                                                 |
| Flash Don't Walk (s)   | 11                                                                                | 11                                                                                |                                                                                   | 11                                                                                |
| Dual Entry             | Yes                                                                               | Yes                                                                               | No                                                                                | Yes                                                                               |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |
| Start Time (s)         | 49                                                                                | 19                                                                                | 49                                                                                | 69                                                                                |
| End Time (s)           | 19                                                                                | 49                                                                                | 69                                                                                | 19                                                                                |
| Yield/Force Off (s)    | 14                                                                                | 44                                                                                | 64                                                                                | 14                                                                                |
| Yield/Force Off 170(s) | 3                                                                                 | 33                                                                                | 64                                                                                | 3                                                                                 |
| Local Start Time (s)   | 90                                                                                | 60                                                                                | 90                                                                                | 0                                                                                 |
| Local Yield (s)        | 55                                                                                | 85                                                                                | 105                                                                               | 55                                                                                |
| Local Yield 170(s)     | 44                                                                                | 74                                                                                | 105                                                                               | 44                                                                                |

### Intersection Summary

Cycle Length 110  
Control Type Actuated-Coordinated  
Natural Cycle 60  
Offset: 69 (63%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

### Splits and Phases: 18: US287 & 65th Street



## Queues

Recent AM

## 18: US287 &amp; 65th Street

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Group Flow (vph)   | 133                                                                               | 95                                                                                | 142                                                                               | 1226                                                                              | 982                                                                               | 92                                                                                |
| v/c Ratio               | 0.40                                                                              | 0.06                                                                              | 0.30                                                                              | 0.42                                                                              | 0.39                                                                              | 0.06                                                                              |
| Control Delay (s/veh)   | 49.9                                                                              | 0.1                                                                               | 5.5                                                                               | 8.4                                                                               | 6.8                                                                               | 0.1                                                                               |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Delay (s/veh)     | 49.9                                                                              | 0.1                                                                               | 5.5                                                                               | 8.4                                                                               | 6.8                                                                               | 0.1                                                                               |
| Queue Length 50th (ft)  | 46                                                                                | 0                                                                                 | 36                                                                                | 228                                                                               | 122                                                                               | 0                                                                                 |
| Queue Length 95th (ft)  | 75                                                                                | 0                                                                                 | m57                                                                               | 445                                                                               | 180                                                                               | 0                                                                                 |
| Internal Link Dist (ft) | 505                                                                               |                                                                                   |                                                                                   | 2545                                                                              | 694                                                                               |                                                                                   |
| Turn Bay Length (ft)    | 275                                                                               |                                                                                   | 460                                                                               |                                                                                   |                                                                                   | 470                                                                               |
| Base Capacity (vph)     | 811                                                                               | 1583                                                                              | 574                                                                               | 2939                                                                              | 2547                                                                              | 1583                                                                              |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Reduced v/c Ratio       | 0.16                                                                              | 0.06                                                                              | 0.25                                                                              | 0.42                                                                              | 0.39                                                                              | 0.06                                                                              |

## Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 7th Signalized Intersection Summary 18: US287 & 65th Street

Recent PM

|                              |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations          |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 163                                                                               | 168                                                                               | 168                                                                               | 1183                                                                              | 1323                                                                              | 143                                                                               |
| Future Volume (veh/h)        | 163                                                                               | 168                                                                               | 168                                                                               | 1183                                                                              | 1323                                                                              | 143                                                                               |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                | No                                                                                |                                                                                   |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              |
| Adj Flow Rate, veh/h         | 166                                                                               | 0                                                                                 | 171                                                                               | 1207                                                                              | 1350                                                                              | 0                                                                                 |
| Peak Hour Factor             | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |
| Cap, veh/h                   | 260                                                                               |                                                                                   | 390                                                                               | 2961                                                                              | 2665                                                                              |                                                                                   |
| Arrive On Green              | 0.08                                                                              | 0.00                                                                              | 0.07                                                                              | 1.00                                                                              | 0.75                                                                              | 0.00                                                                              |
| Sat Flow, veh/h              | 3456                                                                              | 1585                                                                              | 1781                                                                              | 3647                                                                              | 3647                                                                              | 1585                                                                              |
| Grp Volume(v), veh/h         | 166                                                                               | 0                                                                                 | 171                                                                               | 1207                                                                              | 1350                                                                              | 0                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1728                                                                              | 1585                                                                              | 1781                                                                              | 1777                                                                              | 1777                                                                              | 1585                                                                              |
| Q Serve(g_s), s              | 5.6                                                                               | 0.0                                                                               | 2.4                                                                               | 0.0                                                                               | 18.4                                                                              | 0.0                                                                               |
| Cycle Q Clear(g_c), s        | 5.6                                                                               | 0.0                                                                               | 2.4                                                                               | 0.0                                                                               | 18.4                                                                              | 0.0                                                                               |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |
| Lane Grp Cap(c), veh/h       | 260                                                                               |                                                                                   | 390                                                                               | 2961                                                                              | 2665                                                                              |                                                                                   |
| V/C Ratio(X)                 | 0.64                                                                              |                                                                                   | 0.44                                                                              | 0.41                                                                              | 0.51                                                                              |                                                                                   |
| Avail Cap(c_a), veh/h        | 749                                                                               |                                                                                   | 539                                                                               | 2961                                                                              | 2665                                                                              |                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.33                                                                              | 1.33                                                                              | 1.00                                                                              | 1.00                                                                              |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 0.44                                                                              | 0.44                                                                              | 1.00                                                                              | 0.00                                                                              |
| Uniform Delay (d), s/veh     | 53.9                                                                              | 0.0                                                                               | 5.1                                                                               | 0.0                                                                               | 6.1                                                                               | 0.0                                                                               |
| Incr Delay (d2), s/veh       | 2.6                                                                               | 0.0                                                                               | 0.3                                                                               | 0.2                                                                               | 0.7                                                                               | 0.0                                                                               |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| %ile BackOfQ(50%),veh/ln     | 2.5                                                                               | 0.0                                                                               | 0.5                                                                               | 0.1                                                                               | 5.0                                                                               | 0.0                                                                               |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| LnGrp Delay(d), s/veh        | 56.5                                                                              | 0.0                                                                               | 5.5                                                                               | 0.2                                                                               | 6.7                                                                               | 0.0                                                                               |
| LnGrp LOS                    | E                                                                                 |                                                                                   | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |
| Approach Vol, veh/h          | 166                                                                               |                                                                                   |                                                                                   | 1378                                                                              | 1350                                                                              |                                                                                   |
| Approach Delay, s/veh        | 56.5                                                                              |                                                                                   |                                                                                   | 0.8                                                                               | 6.7                                                                               |                                                                                   |
| Approach LOS                 | E                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Timer - Assigned Phs         |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 107.0                                                                             |                                                                                   | 13.0                                                                              | 10.0                                                                              | 97.0                                                                              |
| Change Period (Y+Rc), s      |                                                                                   | 8.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 8.0                                                                               |
| Max Green Setting (Gmax), s  |                                                                                   | 82.0                                                                              |                                                                                   | 25.0                                                                              | 15.0                                                                              | 62.0                                                                              |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 2.0                                                                               |                                                                                   | 7.6                                                                               | 4.4                                                                               | 20.4                                                                              |
| Green Ext Time (p_c), s      |                                                                                   | 10.1                                                                              |                                                                                   | 0.5                                                                               | 0.3                                                                               | 11.5                                                                              |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| HCM 7th Control Delay, s/veh |                                                                                   |                                                                                   | 6.8                                                                               |                                                                                   |                                                                                   |                                                                                   |
| HCM 7th LOS                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |

## Notes

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

# Timing Report, Sorted By Phase

## 18: US287 & 65th Street

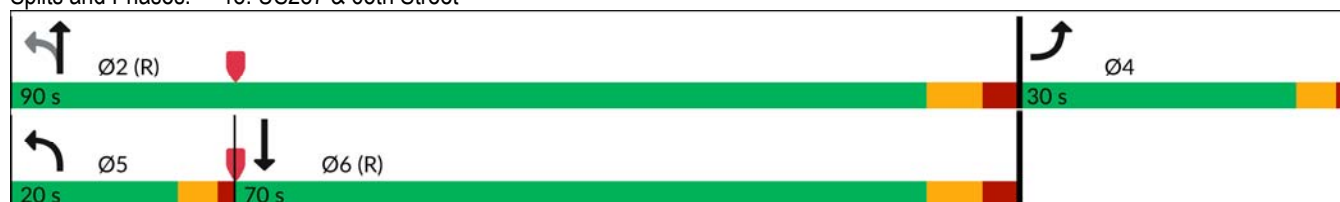
Recent PM

|                        |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Phase Number           | 2                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 |
| Movement               | NBTL                                                                              | EBL                                                                               | NBL                                                                               | SBT                                                                               |
| Lead/Lag               |                                                                                   |                                                                                   | Lead                                                                              | Lag                                                                               |
| Lead-Lag Optimize      |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |
| Recall Mode            | C-Max                                                                             | None                                                                              | None                                                                              | C-Max                                                                             |
| Maximum Split (s)      | 90                                                                                | 30                                                                                | 20                                                                                | 70                                                                                |
| Maximum Split (%)      | 75.0%                                                                             | 25.0%                                                                             | 16.7%                                                                             | 58.3%                                                                             |
| Minimum Split (s)      | 26                                                                                | 24                                                                                | 10                                                                                | 26                                                                                |
| Yellow Time (s)        | 5                                                                                 | 3.5                                                                               | 3.5                                                                               | 5                                                                                 |
| All-Red Time (s)       | 3                                                                                 | 1.5                                                                               | 1.5                                                                               | 3                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Walk Time (s)          | 7                                                                                 | 7                                                                                 |                                                                                   | 7                                                                                 |
| Flash Don't Walk (s)   | 11                                                                                | 11                                                                                |                                                                                   | 11                                                                                |
| Dual Entry             | Yes                                                                               | Yes                                                                               | No                                                                                | Yes                                                                               |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |
| Start Time (s)         | 14                                                                                | 104                                                                               | 14                                                                                | 34                                                                                |
| End Time (s)           | 104                                                                               | 14                                                                                | 34                                                                                | 104                                                                               |
| Yield/Force Off (s)    | 96                                                                                | 9                                                                                 | 29                                                                                | 96                                                                                |
| Yield/Force Off 170(s) | 85                                                                                | 118                                                                               | 29                                                                                | 85                                                                                |
| Local Start Time (s)   | 100                                                                               | 70                                                                                | 100                                                                               | 0                                                                                 |
| Local Yield (s)        | 62                                                                                | 95                                                                                | 115                                                                               | 62                                                                                |
| Local Yield 170(s)     | 51                                                                                | 84                                                                                | 115                                                                               | 51                                                                                |

### Intersection Summary

Cycle Length 120  
Control Type Actuated-Coordinated  
Natural Cycle 65  
Offset: 34 (28%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

### Splits and Phases: 18: US287 & 65th Street



## Queues

Recent PM

## 18: US287 &amp; 65th Street

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Group Flow (vph)   | 166                                                                               | 171                                                                               | 171                                                                               | 1207                                                                              | 1350                                                                              | 146                                                                               |
| v/c Ratio               | 0.48                                                                              | 0.11                                                                              | 0.48                                                                              | 0.42                                                                              | 0.55                                                                              | 0.09                                                                              |
| Control Delay (s/veh)   | 55.2                                                                              | 0.1                                                                               | 9.5                                                                               | 16.3                                                                              | 11.0                                                                              | 0.1                                                                               |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Delay (s/veh)     | 55.2                                                                              | 0.1                                                                               | 9.5                                                                               | 16.3                                                                              | 11.0                                                                              | 0.1                                                                               |
| Queue Length 50th (ft)  | 63                                                                                | 0                                                                                 | 52                                                                                | 419                                                                               | 237                                                                               | 0                                                                                 |
| Queue Length 95th (ft)  | 96                                                                                | 0                                                                                 | m77                                                                               | m527                                                                              | 378                                                                               | 0                                                                                 |
| Internal Link Dist (ft) | 505                                                                               |                                                                                   |                                                                                   | 2545                                                                              | 694                                                                               |                                                                                   |
| Turn Bay Length (ft)    | 275                                                                               |                                                                                   | 460                                                                               |                                                                                   |                                                                                   | 470                                                                               |
| Base Capacity (vph)     | 743                                                                               | 1583                                                                              | 435                                                                               | 2857                                                                              | 2446                                                                              | 1583                                                                              |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Reduced v/c Ratio       | 0.22                                                                              | 0.11                                                                              | 0.39                                                                              | 0.42                                                                              | 0.55                                                                              | 0.09                                                                              |

## Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 7th Signalized Intersection Summary 5: Monroe & 57th Street

Recent AM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |                                                                                     |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 7                                                                                 | 233                                                                               | 79                                                                                | 79                                                                                | 192                                                                               | 4                                                                                 | 111                                                                                 | 2                                                                                   | 99                                                                                  | 4                                                                                   | 8                                                                                   | 26                                                                                  |
| Future Volume (veh/h)        | 7                                                                                 | 233                                                                               | 79                                                                                | 79                                                                                | 192                                                                               | 4                                                                                 | 111                                                                                 | 2                                                                                   | 99                                                                                  | 4                                                                                   | 8                                                                                   | 26                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 8                                                                                 | 262                                                                               | 19                                                                                | 89                                                                                | 216                                                                               | 3                                                                                 | 125                                                                                 | 2                                                                                   | 14                                                                                  | 4                                                                                   | 9                                                                                   | 10                                                                                  |
| Peak Hour Factor             | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 577                                                                               | 470                                                                               | 398                                                                               | 578                                                                               | 600                                                                               | 8                                                                                 | 492                                                                                 | 4                                                                                   | 301                                                                                 | 160                                                                                 | 154                                                                                 | 140                                                                                 |
| Arrive On Green              | 0.04                                                                              | 0.25                                                                              | 0.25                                                                              | 0.12                                                                              | 0.33                                                                              | 0.29                                                                              | 0.16                                                                                | 0.19                                                                                | 0.19                                                                                | 0.16                                                                                | 0.19                                                                                | 0.16                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 1840                                                                              | 26                                                                                | 1406                                                                                | 22                                                                                  | 1585                                                                                | 142                                                                                 | 813                                                                                 | 735                                                                                 |
| Grp Volume(v), veh/h         | 8                                                                                 | 262                                                                               | 19                                                                                | 89                                                                                | 0                                                                                 | 219                                                                               | 127                                                                                 | 0                                                                                   | 14                                                                                  | 23                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 0                                                                                 | 1866                                                                              | 1429                                                                                | 0                                                                                   | 1585                                                                                | 1690                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.1                                                                               | 3.9                                                                               | 0.3                                                                               | 1.0                                                                               | 0.0                                                                               | 2.8                                                                               | 2.2                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.1                                                                               | 3.9                                                                               | 0.3                                                                               | 1.0                                                                               | 0.0                                                                               | 2.8                                                                               | 2.5                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 0.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.01                                                                              | 0.98                                                                                |                                                                                     | 1.00                                                                                | 0.17                                                                                |                                                                                     | 0.43                                                                                |
| Lane Grp Cap(c), veh/h       | 577                                                                               | 470                                                                               | 398                                                                               | 578                                                                               | 0                                                                                 | 609                                                                               | 452                                                                                 | 0                                                                                   | 301                                                                                 | 401                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.01                                                                              | 0.56                                                                              | 0.05                                                                              | 0.15                                                                              | 0.00                                                                              | 0.36                                                                              | 0.28                                                                                | 0.00                                                                                | 0.05                                                                                | 0.06                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 895                                                                               | 1180                                                                              | 1000                                                                              | 762                                                                               | 0                                                                                 | 1177                                                                              | 1024                                                                                | 0                                                                                   | 950                                                                                 | 1074                                                                                | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 8.0                                                                               | 10.3                                                                              | 9.0                                                                               | 6.2                                                                               | 0.0                                                                               | 8.2                                                                               | 11.8                                                                                | 0.0                                                                                 | 10.5                                                                                | 10.8                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 1.0                                                                               | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               | 0.4                                                                               | 0.3                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 1.2                                                                               | 0.1                                                                               | 0.2                                                                               | 0.0                                                                               | 0.8                                                                               | 0.7                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 8.0                                                                               | 11.4                                                                              | 9.0                                                                               | 6.4                                                                               | 0.0                                                                               | 8.5                                                                               | 12.2                                                                                | 0.0                                                                                 | 10.6                                                                                | 10.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | A                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 | B                                                                                   |                                                                                     | B                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 289                                                                               |                                                                                   |                                                                                   | 308                                                                               |                                                                                   |                                                                                     | 141                                                                                 |                                                                                     |                                                                                     | 23                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 11.1                                                                              |                                                                                   |                                                                                   | 7.9                                                                               |                                                                                   |                                                                                     | 12.0                                                                                |                                                                                     |                                                                                     | 10.9                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 6.7                                                                               | 14.0                                                                              |                                                                                   | 11.0                                                                              | 4.3                                                                               | 16.3                                                                              |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 6.0                                                                               | 4.0                                                                               | 7.0                                                                               |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 6.0                                                                               | 19.0                                                                              |                                                                                   | 18.0                                                                              | 6.0                                                                               | 19.0                                                                              |                                                                                     | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.0                                                                               | 5.9                                                                               |                                                                                   | 2.4                                                                               | 2.1                                                                               | 4.8                                                                               |                                                                                     | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.2                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.9                                                                               |                                                                                     | 0.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timing Report, Sorted By Phase

## 5: Monroe & 57th Street

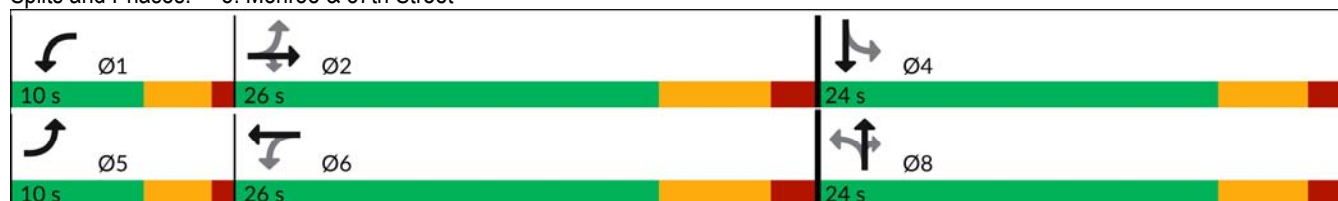
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|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 8                                                                                 |
| Movement               | WBL                                                                               | EBTL                                                                              | SBTL                                                                              | EBL                                                                               | WBTL                                                                              | NBTL                                                                              |
| Lead/Lag               | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |
| Recall Mode            | None                                                                              | None                                                                              | Min                                                                               | None                                                                              | None                                                                              | Min                                                                               |
| Maximum Split (s)      | 10                                                                                | 26                                                                                | 24                                                                                | 10                                                                                | 26                                                                                | 24                                                                                |
| Maximum Split (%)      | 16.7%                                                                             | 43.3%                                                                             | 40.0%                                                                             | 16.7%                                                                             | 43.3%                                                                             | 40.0%                                                                             |
| Minimum Split (s)      | 10                                                                                | 25                                                                                | 24                                                                                | 10                                                                                | 25                                                                                | 24                                                                                |
| Yellow Time (s)        | 3                                                                                 | 5                                                                                 | 4                                                                                 | 3                                                                                 | 5                                                                                 | 4                                                                                 |
| All-Red Time (s)       | 1                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Walk Time (s)          |                                                                                   | 7                                                                                 | 7                                                                                 |                                                                                   | 7                                                                                 | 7                                                                                 |
| Flash Don't Walk (s)   |                                                                                   | 11                                                                                | 11                                                                                |                                                                                   | 11                                                                                | 11                                                                                |
| Dual Entry             | No                                                                                | Yes                                                                               | Yes                                                                               | No                                                                                | Yes                                                                               | Yes                                                                               |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |
| Start Time (s)         | 0                                                                                 | 10                                                                                | 36                                                                                | 0                                                                                 | 10                                                                                | 36                                                                                |
| End Time (s)           | 10                                                                                | 36                                                                                | 0                                                                                 | 10                                                                                | 36                                                                                | 0                                                                                 |
| Yield/Force Off (s)    | 6                                                                                 | 29                                                                                | 54                                                                                | 6                                                                                 | 29                                                                                | 54                                                                                |
| Yield/Force Off 170(s) | 6                                                                                 | 18                                                                                | 54                                                                                | 6                                                                                 | 18                                                                                | 54                                                                                |
| Local Start Time (s)   | 50                                                                                | 0                                                                                 | 26                                                                                | 50                                                                                | 0                                                                                 | 26                                                                                |
| Local Yield (s)        | 56                                                                                | 19                                                                                | 44                                                                                | 56                                                                                | 19                                                                                | 44                                                                                |
| Local Yield 170(s)     | 56                                                                                | 8                                                                                 | 44                                                                                | 56                                                                                | 8                                                                                 | 44                                                                                |

### Intersection Summary

|               |                        |
|---------------|------------------------|
| Cycle Length  | 60                     |
| Control Type  | Actuated-Uncoordinated |
| Natural Cycle | 60                     |

### Splits and Phases: 5: Monroe & 57th Street



## Queues

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## 5: Monroe &amp; 57th Street

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBT                                                                               | NBR                                                                                | SBT                                                                                 |
| Lane Group Flow (vph)   | 8                                                                                 | 262                                                                               | 89                                                                                | 89                                                                                | 220                                                                               | 127                                                                               | 111                                                                                | 42                                                                                  |
| v/c Ratio               | 0.01                                                                              | 0.42                                                                              | 0.14                                                                              | 0.14                                                                              | 0.28                                                                              | 0.23                                                                              | 0.15                                                                               | 0.06                                                                                |
| Control Delay (s/veh)   | 5.0                                                                               | 15.2                                                                              | 2.3                                                                               | 5.6                                                                               | 10.4                                                                              | 16.1                                                                              | 2.8                                                                                | 8.5                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Total Delay (s/veh)     | 5.0                                                                               | 15.2                                                                              | 2.3                                                                               | 5.6                                                                               | 10.4                                                                              | 16.1                                                                              | 2.8                                                                                | 8.5                                                                                 |
| Queue Length 50th (ft)  | 1                                                                                 | 54                                                                                | 0                                                                                 | 8                                                                                 | 27                                                                                | 27                                                                                | 0                                                                                  | 2                                                                                   |
| Queue Length 95th (ft)  | 5                                                                                 | 119                                                                               | 14                                                                                | 27                                                                                | 100                                                                               | 72                                                                                | 19                                                                                 | 21                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 2559                                                                              |                                                                                   |                                                                                   | 1310                                                                              | 458                                                                               |                                                                                    | 384                                                                                 |
| Turn Bay Length (ft)    | 330                                                                               |                                                                                   | 250                                                                               | 115                                                                               |                                                                                   |                                                                                   | 180                                                                                |                                                                                     |
| Base Capacity (vph)     | 669                                                                               | 1074                                                                              | 967                                                                               | 637                                                                               | 1126                                                                              | 726                                                                               | 947                                                                                | 929                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Reduced v/c Ratio       | 0.01                                                                              | 0.24                                                                              | 0.09                                                                              | 0.14                                                                              | 0.20                                                                              | 0.17                                                                              | 0.12                                                                               | 0.05                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |

# HCM 7th Signalized Intersection Summary

## 5: Monroe & 57th Street

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|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |                                                                                     |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 18                                                                                | 215                                                                               | 137                                                                               | 113                                                                               | 309                                                                               | 8                                                                                 | 90                                                                                  | 11                                                                                  | 73                                                                                  | 3                                                                                   | 8                                                                                   | 11                                                                                  |
| Future Volume (veh/h)        | 18                                                                                | 215                                                                               | 137                                                                               | 113                                                                               | 309                                                                               | 8                                                                                 | 90                                                                                  | 11                                                                                  | 73                                                                                  | 3                                                                                   | 8                                                                                   | 11                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 20                                                                                | 236                                                                               | 35                                                                                | 124                                                                               | 340                                                                               | 8                                                                                 | 99                                                                                  | 12                                                                                  | 16                                                                                  | 3                                                                                   | 9                                                                                   | 12                                                                                  |
| Peak Hour Factor             | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 492                                                                               | 446                                                                               | 378                                                                               | 610                                                                               | 578                                                                               | 14                                                                                | 443                                                                                 | 45                                                                                  | 298                                                                                 | 145                                                                                 | 139                                                                                 | 158                                                                                 |
| Arrive On Green              | 0.06                                                                              | 0.24                                                                              | 0.24                                                                              | 0.14                                                                              | 0.32                                                                              | 0.29                                                                              | 0.16                                                                                | 0.19                                                                                | 0.19                                                                                | 0.16                                                                                | 0.19                                                                                | 0.16                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 1820                                                                              | 43                                                                                | 1224                                                                                | 237                                                                                 | 1585                                                                                | 100                                                                                 | 742                                                                                 | 842                                                                                 |
| Grp Volume(v), veh/h         | 20                                                                                | 236                                                                               | 35                                                                                | 124                                                                               | 0                                                                                 | 348                                                                               | 111                                                                                 | 0                                                                                   | 16                                                                                  | 24                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 0                                                                                 | 1863                                                                              | 1462                                                                                | 0                                                                                   | 1585                                                                                | 1684                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.3                                                                               | 3.5                                                                               | 0.5                                                                               | 1.4                                                                               | 0.0                                                                               | 5.0                                                                               | 1.8                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.3                                                                               | 3.5                                                                               | 0.5                                                                               | 1.4                                                                               | 0.0                                                                               | 5.0                                                                               | 2.1                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.02                                                                              | 0.89                                                                                |                                                                                     | 1.00                                                                                | 0.12                                                                                |                                                                                     | 0.50                                                                                |
| Lane Grp Cap(c), veh/h       | 492                                                                               | 446                                                                               | 378                                                                               | 610                                                                               | 0                                                                                 | 591                                                                               | 442                                                                                 | 0                                                                                   | 298                                                                                 | 390                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.04                                                                              | 0.53                                                                              | 0.09                                                                              | 0.20                                                                              | 0.00                                                                              | 0.59                                                                              | 0.25                                                                                | 0.00                                                                                | 0.05                                                                                | 0.06                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 753                                                                               | 1200                                                                              | 1017                                                                              | 730                                                                               | 0                                                                                 | 1195                                                                              | 1024                                                                                | 0                                                                                   | 942                                                                                 | 1061                                                                                | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 8.1                                                                               | 10.6                                                                              | 9.5                                                                               | 6.2                                                                               | 0.0                                                                               | 9.2                                                                               | 11.8                                                                                | 0.0                                                                                 | 10.7                                                                                | 11.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 1.0                                                                               | 0.1                                                                               | 0.2                                                                               | 0.0                                                                               | 0.9                                                                               | 0.3                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.1                                                                               | 1.1                                                                               | 0.1                                                                               | 0.3                                                                               | 0.0                                                                               | 1.4                                                                               | 0.6                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 8.2                                                                               | 11.6                                                                              | 9.6                                                                               | 6.3                                                                               | 0.0                                                                               | 10.1                                                                              | 12.1                                                                                | 0.0                                                                                 | 10.7                                                                                | 11.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | A                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | B                                                                                 | B                                                                                   |                                                                                     | B                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 291                                                                               |                                                                                   |                                                                                   | 472                                                                               |                                                                                   |                                                                                     | 127                                                                                 |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 11.1                                                                              |                                                                                   |                                                                                   | 9.1                                                                               |                                                                                   |                                                                                     | 11.9                                                                                |                                                                                     |                                                                                     | 11.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 7.3                                                                               | 13.6                                                                              |                                                                                   | 11.0                                                                              | 4.8                                                                               | 16.1                                                                              |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 6.0                                                                               | 4.0                                                                               | 7.0                                                                               |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.5                                                                               | 19.5                                                                              |                                                                                   | 18.0                                                                              | 5.5                                                                               | 19.5                                                                              |                                                                                     | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.4                                                                               | 5.5                                                                               |                                                                                   | 2.4                                                                               | 2.3                                                                               | 7.0                                                                               |                                                                                     | 4.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 1.1                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 1.6                                                                               |                                                                                     | 0.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh |                                                                                   |                                                                                   | 10.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timing Report, Sorted By Phase

## 5: Monroe & 57th Street

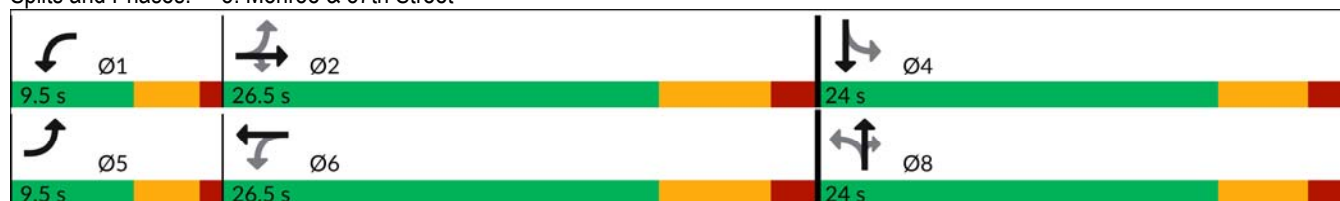
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|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 8                                                                                 |
| Movement               | WBL                                                                               | EBTL                                                                              | SBTL                                                                              | EBL                                                                               | WBTL                                                                              | NBTL                                                                              |
| Lead/Lag               | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |
| Recall Mode            | None                                                                              | None                                                                              | Min                                                                               | None                                                                              | None                                                                              | Min                                                                               |
| Maximum Split (s)      | 9.5                                                                               | 26.5                                                                              | 24                                                                                | 9.5                                                                               | 26.5                                                                              | 24                                                                                |
| Maximum Split (%)      | 15.8%                                                                             | 44.2%                                                                             | 40.0%                                                                             | 15.8%                                                                             | 44.2%                                                                             | 40.0%                                                                             |
| Minimum Split (s)      | 9.5                                                                               | 25                                                                                | 24                                                                                | 9.5                                                                               | 25                                                                                | 24                                                                                |
| Yellow Time (s)        | 3                                                                                 | 5                                                                                 | 4                                                                                 | 3                                                                                 | 5                                                                                 | 4                                                                                 |
| All-Red Time (s)       | 1                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Walk Time (s)          |                                                                                   | 7                                                                                 | 7                                                                                 |                                                                                   | 7                                                                                 | 7                                                                                 |
| Flash Don't Walk (s)   |                                                                                   | 11                                                                                | 11                                                                                |                                                                                   | 11                                                                                | 11                                                                                |
| Dual Entry             | No                                                                                | Yes                                                                               | Yes                                                                               | No                                                                                | Yes                                                                               | Yes                                                                               |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |
| Start Time (s)         | 0                                                                                 | 9.5                                                                               | 36                                                                                | 0                                                                                 | 9.5                                                                               | 36                                                                                |
| End Time (s)           | 9.5                                                                               | 36                                                                                | 0                                                                                 | 9.5                                                                               | 36                                                                                | 0                                                                                 |
| Yield/Force Off (s)    | 5.5                                                                               | 29                                                                                | 54                                                                                | 5.5                                                                               | 29                                                                                | 54                                                                                |
| Yield/Force Off 170(s) | 5.5                                                                               | 18                                                                                | 54                                                                                | 5.5                                                                               | 18                                                                                | 54                                                                                |
| Local Start Time (s)   | 50.5                                                                              | 0                                                                                 | 26.5                                                                              | 50.5                                                                              | 0                                                                                 | 26.5                                                                              |
| Local Yield (s)        | 56                                                                                | 19.5                                                                              | 44.5                                                                              | 56                                                                                | 19.5                                                                              | 44.5                                                                              |
| Local Yield 170(s)     | 56                                                                                | 8.5                                                                               | 44.5                                                                              | 56                                                                                | 8.5                                                                               | 44.5                                                                              |

### Intersection Summary

|               |                        |
|---------------|------------------------|
| Cycle Length  | 60                     |
| Control Type  | Actuated-Uncoordinated |
| Natural Cycle | 60                     |

### Splits and Phases: 5: Monroe & 57th Street



## Queues

Recent PM

## 5: Monroe &amp; 57th Street

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBT                                                                               | NBR                                                                                | SBT                                                                                 |
| Lane Group Flow (vph)   | 20                                                                                | 236                                                                               | 151                                                                               | 124                                                                               | 349                                                                               | 111                                                                               | 80                                                                                 | 24                                                                                  |
| v/c Ratio               | 0.03                                                                              | 0.42                                                                              | 0.26                                                                              | 0.19                                                                              | 0.43                                                                              | 0.34                                                                              | 0.16                                                                               | 0.06                                                                                |
| Control Delay (s/veh)   | 4.6                                                                               | 15.2                                                                              | 4.1                                                                               | 5.3                                                                               | 11.0                                                                              | 18.1                                                                              | 1.7                                                                                | 11.1                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Total Delay (s/veh)     | 4.6                                                                               | 15.2                                                                              | 4.1                                                                               | 5.3                                                                               | 11.0                                                                              | 18.1                                                                              | 1.7                                                                                | 11.1                                                                                |
| Queue Length 50th (ft)  | 2                                                                                 | 45                                                                                | 0                                                                                 | 11                                                                                | 44                                                                                | 22                                                                                | 0                                                                                  | 2                                                                                   |
| Queue Length 95th (ft)  | 9                                                                                 | 102                                                                               | 29                                                                                | 33                                                                                | 152                                                                               | 65                                                                                | 8                                                                                  | 17                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 2559                                                                              |                                                                                   |                                                                                   | 1310                                                                              | 458                                                                               |                                                                                    | 384                                                                                 |
| Turn Bay Length (ft)    | 330                                                                               |                                                                                   | 250                                                                               | 115                                                                               |                                                                                   |                                                                                   | 180                                                                                |                                                                                     |
| Base Capacity (vph)     | 635                                                                               | 980                                                                               | 904                                                                               | 649                                                                               | 999                                                                               | 665                                                                               | 846                                                                                | 816                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Reduced v/c Ratio       | 0.03                                                                              | 0.24                                                                              | 0.17                                                                              | 0.19                                                                              | 0.35                                                                              | 0.17                                                                              | 0.09                                                                               | 0.03                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |

Intersection

Int Delay, s/veh 1.1

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

|                          |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 8    | 326  | 4    | 0    | 223  | 2    | 10   | 0    | 6    | 15   | 0    | 20   |
| Future Vol, veh/h        | 8    | 326  | 4    | 0    | 223  | 2    | 10   | 0    | 6    | 15   | 0    | 20   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 9    | 354  | 4    | 0    | 242  | 2    | 11   | 0    | 7    | 16   | 0    | 22   |

| Major/Minor          | Major1 |   | Major2 |       | Minor1 |   | Minor2 |       |       |       |       |       |
|----------------------|--------|---|--------|-------|--------|---|--------|-------|-------|-------|-------|-------|
| Conflicting Flow All | 244    | 0 | 0      | 358   | 0      | 0 | 628    | 618   | 356   | 621   | 619   | 243   |
| Stage 1              | -      | - | -      | -     | -      | - | 374    | 374   | -     | 243   | 243   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 254    | 244   | -     | 378   | 376   | -     |
| Critical Hdwy        | 4.12   | - | -      | 4.12  | -      | - | 7.12   | 6.52  | 6.22  | 7.12  | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | -      | 2.218 | -      | - | 3.518  | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1322   | - | -      | 1201  | -      | - | 395    | 405   | 688   | 400   | 404   | 796   |
| Stage 1              | -      | - | -      | -     | -      | - | 647    | 618   | -     | 761   | 705   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 750    | 704   | -     | 644   | 616   | -     |
| Platoon blocked, %   |        | - | -      |       | -      | - |        |       |       |       |       |       |
| Mov Cap-1 Maneuver   | 1322   | - | -      | 1201  | -      | - | 382    | 401   | 688   | 394   | 400   | 796   |
| Mov Cap-2 Maneuver   | -      | - | -      | -     | -      | - | 382    | 401   | -     | 394   | 400   | -     |
| Stage 1              | -      | - | -      | -     | -      | - | 641    | 612   | -     | 754   | 705   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 730    | 704   | -     | 632   | 610   | -     |

| Approach             | EB  | WB | NB   | SB |
|----------------------|-----|----|------|----|
| HCM Control Delay, s | 0.2 | 0  | 13.2 | 12 |
| HCM LOS              |     |    | B    | B  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL  | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|------|-----|-----|-------|
| Capacity (veh/h)      | 458   | 1322  | -   | -   | 1201 | -   | -   | 554   |
| HCM Lane V/C Ratio    | 0.038 | 0.007 | -   | -   | -    | -   | -   | 0.069 |
| HCM Control Delay (s) | 13.2  | 7.7   | 0   | -   | 0    | -   | -   | 12    |
| HCM Lane LOS          | B     | A     | A   | -   | A    | -   | -   | B     |
| HCM 95th %tile Q(veh) | 0.1   | 0     | -   | -   | 0    | -   | -   | 0.2   |

HCM 6th TWSC  
11: 57th Street & St. Louis

Recent PM

Intersection

Int Delay, s/veh 0.8

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

|                          |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 22   | 254  | 3    | 4    | 424  | 13   | 2    | 0    | 3    | 6    | 0    | 14   |
| Future Vol, veh/h        | 22   | 254  | 3    | 4    | 424  | 13   | 2    | 0    | 3    | 6    | 0    | 14   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 23   | 267  | 3    | 4    | 446  | 14   | 2    | 0    | 3    | 6    | 0    | 15   |

| Major/Minor          | Major1 |   | Major2 |       | Minor1 |   | Minor2 |       |       |       |       |       |
|----------------------|--------|---|--------|-------|--------|---|--------|-------|-------|-------|-------|-------|
| Conflicting Flow All | 460    | 0 | 0      | 270   | 0      | 0 | 784    | 783   | 269   | 777   | 777   | 453   |
| Stage 1              | -      | - | -      | -     | -      | - | 315    | 315   | -     | 461   | 461   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 469    | 468   | -     | 316   | 316   | -     |
| Critical Hdwy        | 4.12   | - | -      | 4.12  | -      | - | 7.12   | 6.52  | 6.22  | 7.12  | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | -      | 2.218 | -      | - | 3.518  | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1101   | - | -      | 1293  | -      | - | 311    | 325   | 770   | 314   | 328   | 607   |
| Stage 1              | -      | - | -      | -     | -      | - | 696    | 656   | -     | 581   | 565   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 575    | 561   | -     | 695   | 655   | -     |
| Platoon blocked, %   |        | - | -      |       | -      | - |        |       |       |       |       |       |
| Mov Cap-1 Maneuver   | 1101   | - | -      | 1293  | -      | - | 297    | 316   | 770   | 306   | 318   | 607   |
| Mov Cap-2 Maneuver   | -      | - | -      | -     | -      | - | 297    | 316   | -     | 306   | 318   | -     |
| Stage 1              | -      | - | -      | -     | -      | - | 679    | 640   | -     | 566   | 563   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 559    | 559   | -     | 675   | 639   | -     |

| Approach             | EB  | WB  | NB   | SB |
|----------------------|-----|-----|------|----|
| HCM Control Delay, s | 0.7 | 0.1 | 12.7 | 13 |
| HCM LOS              |     |     | B    | B  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 470   | 1101  | -   | -   | 1293  | -   | -   | 469   |
| HCM Lane V/C Ratio    | 0.011 | 0.021 | -   | -   | 0.003 | -   | -   | 0.045 |
| HCM Control Delay (s) | 12.7  | 8.3   | 0   | -   | 7.8   | 0   | -   | 13    |
| HCM Lane LOS          | B     | A     | A   | -   | A     | A   | -   | B     |
| HCM 95th %tile Q(veh) | 0     | 0.1   | -   | -   | 0     | -   | -   | 0.1   |

HCM 6th TWSC  
15: 57th Street & LCR13

Recent AM

Intersection

Int Delay, s/veh 2

| Movement                 | EBL  | EBT                                                                               | EBR  | WBL  | WBT                                                                               | WBR  | NBL  | NBT                                                                               | NBR  | SBL  | SBT                                                                                 | SBR  |
|--------------------------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |      |      |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h       | 66   | 281                                                                               | 0    | 1    | 159                                                                               | 4    | 1    | 0                                                                                 | 2    | 7    | 0                                                                                   | 53   |
| Future Vol, veh/h        | 66   | 281                                                                               | 0    | 1    | 159                                                                               | 4    | 1    | 0                                                                                 | 2    | 7    | 0                                                                                   | 53   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                   | 0    |
| Sign Control             | Free | Free                                                                              | Free | Free | Free                                                                              | Free | Stop | Stop                                                                              | Stop | Stop | Stop                                                                                | Stop |
| RT Channelized           | -    | -                                                                                 | None | -    | -                                                                                 | None | -    | -                                                                                 | None | -    | -                                                                                   | None |
| Storage Length           | -    | -                                                                                 | -    | -    | -                                                                                 | -    | -    | -                                                                                 | -    | -    | -                                                                                   | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Grade, %                 | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Peak Hour Factor         | 94   | 94                                                                                | 94   | 94   | 94                                                                                | 94   | 94   | 94                                                                                | 94   | 94   | 94                                                                                  | 94   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2    | 2    | 2                                                                                 | 2    | 2    | 2                                                                                 | 2    | 2    | 2                                                                                   | 2    |
| Mvmt Flow                | 70   | 299                                                                               | 0    | 1    | 169                                                                               | 4    | 1    | 0                                                                                 | 2    | 7    | 0                                                                                   | 56   |

| Major/Minor          | Major1 |   | Major2 |       | Minor1 |   | Minor2 |       |       |       |       |       |
|----------------------|--------|---|--------|-------|--------|---|--------|-------|-------|-------|-------|-------|
| Conflicting Flow All | 173    | 0 | 0      | 299   | 0      | 0 | 640    | 614   | 299   | 613   | 612   | 171   |
| Stage 1              | -      | - | -      | -     | -      | - | 439    | 439   | -     | 173   | 173   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 201    | 175   | -     | 440   | 439   | -     |
| Critical Hdwy        | 4.12   | - | -      | 4.12  | -      | - | 7.12   | 6.52  | 6.22  | 7.12  | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | -      | 2.218 | -      | - | 3.518  | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1404   | - | -      | 1262  | -      | - | 388    | 407   | 741   | 405   | 408   | 873   |
| Stage 1              | -      | - | -      | -     | -      | - | 597    | 578   | -     | 829   | 756   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 801    | 754   | -     | 596   | 578   | -     |
| Platoon blocked, %   |        | - | -      |       | -      | - |        |       |       |       |       |       |
| Mov Cap-1 Maneuver   | 1404   | - | -      | 1262  | -      | - | 346    | 382   | 741   | 385   | 383   | 873   |
| Mov Cap-2 Maneuver   | -      | - | -      | -     | -      | - | 346    | 382   | -     | 385   | 383   | -     |
| Stage 1              | -      | - | -      | -     | -      | - | 561    | 543   | -     | 779   | 755   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 749    | 753   | -     | 559   | 543   | -     |

| Approach             | EB  |  | WB |  | NB   |  | SB   |
|----------------------|-----|--|----|--|------|--|------|
| HCM Control Delay, s | 1.5 |  | 0  |  | 11.7 |  | 10.2 |
| HCM LOS              |     |  |    |  | B    |  | B    |

| Minor Lane/Major Mvmt | NBLn1 | EBL  | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 537   | 1404 | -   | -   | 1262  | -   | -   | 761   |
| HCM Lane V/C Ratio    | 0.006 | 0.05 | -   | -   | 0.001 | -   | -   | 0.084 |
| HCM Control Delay (s) | 11.7  | 7.7  | 0   | -   | 7.9   | 0   | -   | 10.2  |
| HCM Lane LOS          | B     | A    | A   | -   | A     | A   | -   | B     |
| HCM 95th %tile Q(veh) | 0     | 0.2  | -   | -   | 0     | -   | -   | 0.3   |

HCM 6th TWSC  
15: 57th Street & LCR13

Recent PM

Intersection

Int Delay, s/veh 2.7

| Movement                 | EBL  | EBT                                                                               | EBR  | WBL  | WBT                                                                               | WBR  | NBL  | NBT                                                                               | NBR  | SBL  | SBT                                                                                 | SBR  |
|--------------------------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |      |      |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h       | 40   | 209                                                                               | 3    | 1    | 338                                                                               | 9    | 2    | 0                                                                                 | 0    | 20   | 0                                                                                   | 98   |
| Future Vol, veh/h        | 40   | 209                                                                               | 3    | 1    | 338                                                                               | 9    | 2    | 0                                                                                 | 0    | 20   | 0                                                                                   | 98   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                   | 0    |
| Sign Control             | Free | Free                                                                              | Free | Free | Free                                                                              | Free | Stop | Stop                                                                              | Stop | Stop | Stop                                                                                | Stop |
| RT Channelized           | -    | -                                                                                 | None | -    | -                                                                                 | None | -    | -                                                                                 | None | -    | -                                                                                   | None |
| Storage Length           | -    | -                                                                                 | -    | -    | -                                                                                 | -    | -    | -                                                                                 | -    | -    | -                                                                                   | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Grade, %                 | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Peak Hour Factor         | 90   | 90                                                                                | 90   | 90   | 90                                                                                | 90   | 90   | 90                                                                                | 90   | 90   | 90                                                                                  | 90   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2    | 2    | 2                                                                                 | 2    | 2    | 2                                                                                 | 2    | 2    | 2                                                                                   | 2    |
| Mvmt Flow                | 44   | 232                                                                               | 3    | 1    | 376                                                                               | 10   | 2    | 0                                                                                 | 0    | 22   | 0                                                                                   | 109  |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 386    | 0 | 0 | 235    | 0 | 0 | 760    | 710   | 234   | 705    | 706   | 381   |
| Stage 1              | -      | - | - | -      | - | - | 322    | 322   | -     | 383    | 383   | -     |
| Stage 2              | -      | - | - | -      | - | - | 438    | 388   | -     | 322    | 323   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1172   | - | - | 1332   | - | - | 323    | 359   | 805   | 351    | 361   | 666   |
| Stage 1              | -      | - | - | -      | - | - | 690    | 651   | -     | 640    | 612   | -     |
| Stage 2              | -      | - | - | -      | - | - | 597    | 609   | -     | 690    | 650   | -     |
| Platoon blocked, %   |        | - | - |        | - | - |        |       |       |        |       |       |
| Mov Cap-1 Maneuver   | 1172   | - | - | 1332   | - | - | 261    | 343   | 805   | 339    | 345   | 666   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 261    | 343   | -     | 339    | 345   | -     |
| Stage 1              | -      | - | - | -      | - | - | 660    | 623   | -     | 612    | 611   | -     |
| Stage 2              | -      | - | - | -      | - | - | 499    | 608   | -     | 660    | 622   | -     |

| Approach             | EB  | WB | NB   | SB   |
|----------------------|-----|----|------|------|
| HCM Control Delay, s | 1.3 | 0  | 18.9 | 13.2 |
| HCM LOS              |     |    | C    | B    |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 261   | 1172  | -   | -   | 1332  | -   | -   | 572   |
| HCM Lane V/C Ratio    | 0.009 | 0.038 | -   | -   | 0.001 | -   | -   | 0.229 |
| HCM Control Delay (s) | 18.9  | 8.2   | 0   | -   | 7.7   | 0   | -   | 13.2  |
| HCM Lane LOS          | C     | A     | A   | -   | A     | A   | -   | B     |
| HCM 95th %tile Q(veh) | 0     | 0.1   | -   | -   | 0     | -   | -   | 0.9   |

# HCM 7th TWSC

## 3: LCR13 & Bruns

Recent AM

### Intersection

Int Delay, s/veh 5

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|----------|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|

|                          |      |                                                                                   |                                                                                   |      |                                                                                   |      |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 41   | 18                                                                                | 41                                                                                | 8    | 7                                                                                 | 56   |
| Future Vol, veh/h        | 41   | 18                                                                                | 41                                                                                | 8    | 7                                                                                 | 56   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 92   | 85                                                                                | 85                                                                                | 85   | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    |
| Mvmt Flow                | 45   | 21                                                                                | 48                                                                                | 9    | 8                                                                                 | 66   |

| Major/Minor | Major1 | Major2 | Minor2 |
|-------------|--------|--------|--------|
|-------------|--------|--------|--------|

|                      |       |   |   |   |       |       |
|----------------------|-------|---|---|---|-------|-------|
| Conflicting Flow All | 58    | 0 | - | 0 | 163   | 53    |
| Stage 1              | -     | - | - | - | 53    | -     |
| Stage 2              | -     | - | - | - | 110   | -     |
| Critical Hdwy        | 4.12  | - | - | - | 6.42  | 6.22  |
| Critical Hdwy Stg 1  | -     | - | - | - | 5.42  | -     |
| Critical Hdwy Stg 2  | -     | - | - | - | 5.42  | -     |
| Follow-up Hdwy       | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver   | 1547  | - | - | - | 827   | 1015  |
| Stage 1              | -     | - | - | - | 970   | -     |
| Stage 2              | -     | - | - | - | 914   | -     |
| Platoon blocked, %   | -     | - | - | - | -     | -     |
| Mov Cap-1 Maneuver   | 1547  | - | - | - | 803   | 1015  |
| Mov Cap-2 Maneuver   | -     | - | - | - | 803   | -     |
| Stage 1              | -     | - | - | - | 941   | -     |
| Stage 2              | -     | - | - | - | 914   | -     |

| Approach | EB | WB | SB |
|----------|----|----|----|
|----------|----|----|----|

|                   |      |   |      |
|-------------------|------|---|------|
| HCM Ctrl Dly, s/v | 5.01 | 0 | 8.95 |
| HCM LOS           |      |   | A    |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|-----------------------|-----|-----|-----|-----|-------|
|-----------------------|-----|-----|-----|-----|-------|

|                       |       |   |   |   |       |
|-----------------------|-------|---|---|---|-------|
| Capacity (veh/h)      | 1220  | - | - | - | 986   |
| HCM Lane V/C Ratio    | 0.029 | - | - | - | 0.075 |
| HCM Ctrl Dly (s/v)    | 7.4   | 0 | - | - | 8.9   |
| HCM Lane LOS          | A     | A | - | - | A     |
| HCM 95th %tile Q(veh) | 0.1   | - | - | - | 0.2   |

# HCM 7th TWSC 3: LCR13 & Bruns

Recent PM

## Intersection

Int Delay, s/veh 1

| Movement                 | EBL  | EBT                                                                               | WBT                                                                               | WBR  | SBL                                                                               | SBR  |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 9    | 92                                                                                | 35                                                                                | 0    | 0                                                                                 | 10   |
| Future Vol, veh/h        | 9    | 92                                                                                | 35                                                                                | 0    | 0                                                                                 | 10   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 92   | 85                                                                                | 85                                                                                | 85   | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    |
| Mvmt Flow                | 10   | 108                                                                               | 41                                                                                | 0    | 0                                                                                 | 12   |

| Major/Minor          | Major1 | Major2 | Minor2        |
|----------------------|--------|--------|---------------|
| Conflicting Flow All | 41     | 0      | 0 169 41      |
| Stage 1              | -      | -      | - 41 -        |
| Stage 2              | -      | -      | - 128 -       |
| Critical Hdwy        | 4.12   | -      | - 6.42 6.22   |
| Critical Hdwy Stg 1  | -      | -      | - 5.42 -      |
| Critical Hdwy Stg 2  | -      | -      | - 5.42 -      |
| Follow-up Hdwy       | 2.218  | -      | - 3.518 3.318 |
| Pot Cap-1 Maneuver   | 1568   | -      | - 821 1030    |
| Stage 1              | -      | -      | - 981 -       |
| Stage 2              | -      | -      | - 898 -       |
| Platoon blocked, %   | -      | -      | -             |
| Mov Cap-1 Maneuver   | 1568   | -      | - 816 1030    |
| Mov Cap-2 Maneuver   | -      | -      | - 816 -       |
| Stage 1              | -      | -      | - 975 -       |
| Stage 2              | -      | -      | - 898 -       |

| Approach          | EB   | WB | SB   |
|-------------------|------|----|------|
| HCM Ctrl Dly, s/v | 0.61 | 0  | 8.54 |
| HCM LOS           |      |    | A    |

| Minor Lane/Major Mvmt | EBL   | EBT | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|
| Capacity (veh/h)      | 149   | -   | -   | -   | 1030  |
| HCM Lane V/C Ratio    | 0.006 | -   | -   | -   | 0.011 |
| HCM Ctrl Dly (s/v)    | 7.3   | 0   | -   | -   | 8.5   |
| HCM Lane LOS          | A     | A   | -   | -   | A     |
| HCM 95th %tile Q(veh) | 0     | -   | -   | -   | 0     |

## UNSIGNALIZED INTERSECTIONS

| Level-of-Service | Average Total Delay<br>sec/veh |
|------------------|--------------------------------|
| A                | $\leq 10$                      |
| B                | $> 10$ and $\leq 15$           |
| C                | $> 15$ and $\leq 25$           |
| D                | $> 25$ and $\leq 35$           |
| E                | $> 35$ and $\leq 50$           |
| F                | $> 50$                         |

## SIGNALIZED INTERSECTIONS

| Level-of-Service | Average Total Delay<br>sec/veh |
|------------------|--------------------------------|
| A                | $\leq 10$                      |
| B                | $> 10$ and $\leq 20$           |
| C                | $> 20$ and $\leq 35$           |
| D                | $> 35$ and $\leq 55$           |
| E                | $> 55$ and $\leq 80$           |
| F                | $> 80$                         |

**Table 4-2**  
**Loveland (GMA and City Limits)**  
**Motor Vehicle LOS Standards (Intersections)**

| Intersection Component                                                                                                                                                                                                                                                                                                                                            | Major Intersection <sup>134</sup> | Minor Intersection <sup>234</sup> | Driveway |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|----------|
| Overall (City Limits)                                                                                                                                                                                                                                                                                                                                             | LOS C                             | LOS C                             | No Limit |
| Overall (GMAs)                                                                                                                                                                                                                                                                                                                                                    | LOS D                             | LOS D                             | No Limit |
| Any Leg                                                                                                                                                                                                                                                                                                                                                           | LOS D                             | LOS E                             | No Limit |
| Any Movement                                                                                                                                                                                                                                                                                                                                                      | LOS E                             | LOS F                             | No Limit |
| <sup>1</sup> Includes all signalized and unsignalized arterial/arterial and arterial/major collector intersections<br><sup>2</sup> Includes all unsignalized intersections (except major intersections) and high volume driveways<br><sup>3</sup> There are no LOS standards for I-25 Interchanges<br><sup>4</sup> On State Highways, overall LOS D is acceptable |                                   |                                   |          |

## APPENDIX D

# HCM 7th Signalized Intersection Summary

## 3: US287 & 57th Street

Short Bkgrd AM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 271                                                                               | 186                                                                               | 149                                                                               | 90                                                                                | 111                                                                               | 160                                                                               | 88                                                                                  | 1300                                                                                | 62                                                                                  | 99                                                                                  | 1188                                                                                | 214                                                                                 |
| Future Volume (veh/h)        | 271                                                                               | 186                                                                               | 149                                                                               | 90                                                                                | 111                                                                               | 160                                                                               | 88                                                                                  | 1300                                                                                | 62                                                                                  | 99                                                                                  | 1188                                                                                | 214                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 288                                                                               | 198                                                                               | 0                                                                                 | 96                                                                                | 118                                                                               | 0                                                                                 | 94                                                                                  | 1383                                                                                | 0                                                                                   | 105                                                                                 | 1264                                                                                | 109                                                                                 |
| Peak Hour Factor             | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 385                                                                               | 283                                                                               |                                                                                   | 183                                                                               | 174                                                                               |                                                                                   | 383                                                                                 | 2026                                                                                |                                                                                     | 275                                                                                 | 2028                                                                                | 905                                                                                 |
| Arrive On Green              | 0.11                                                                              | 0.15                                                                              | 0.00                                                                              | 0.05                                                                              | 0.09                                                                              | 0.00                                                                              | 0.05                                                                                | 0.57                                                                                | 0.00                                                                                | 0.11                                                                                | 1.00                                                                                | 1.00                                                                                |
| Sat Flow, veh/h              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 288                                                                               | 198                                                                               | 0                                                                                 | 96                                                                                | 118                                                                               | 0                                                                                 | 94                                                                                  | 1383                                                                                | 0                                                                                   | 105                                                                                 | 1264                                                                                | 109                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 8.9                                                                               | 11.0                                                                              | 0.0                                                                               | 3.0                                                                               | 6.7                                                                               | 0.0                                                                               | 2.3                                                                                 | 30.1                                                                                | 0.0                                                                                 | 2.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 8.9                                                                               | 11.0                                                                              | 0.0                                                                               | 3.0                                                                               | 6.7                                                                               | 0.0                                                                               | 2.3                                                                                 | 30.1                                                                                | 0.0                                                                                 | 2.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 385                                                                               | 283                                                                               |                                                                                   | 183                                                                               | 174                                                                               |                                                                                   | 383                                                                                 | 2026                                                                                |                                                                                     | 275                                                                                 | 2028                                                                                | 905                                                                                 |
| V/C Ratio(X)                 | 0.75                                                                              | 0.70                                                                              |                                                                                   | 0.52                                                                              | 0.68                                                                              |                                                                                   | 0.25                                                                                | 0.68                                                                                |                                                                                     | 0.38                                                                                | 0.62                                                                                | 0.12                                                                                |
| Avail Cap(c_a), veh/h        | 503                                                                               | 578                                                                               |                                                                                   | 408                                                                               | 527                                                                               |                                                                                   | 485                                                                                 | 2026                                                                                |                                                                                     | 376                                                                                 | 2028                                                                                | 905                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.96                                                                              | 0.96                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                |
| Uniform Delay (d), s/veh     | 47.4                                                                              | 44.3                                                                              | 0.0                                                                               | 50.7                                                                              | 48.3                                                                              | 0.0                                                                               | 8.3                                                                                 | 16.6                                                                                | 0.0                                                                                 | 13.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 4.4                                                                               | 3.1                                                                               | 0.0                                                                               | 2.2                                                                               | 4.4                                                                               | 0.0                                                                               | 0.3                                                                                 | 1.9                                                                                 | 0.0                                                                                 | 0.8                                                                                 | 1.3                                                                                 | 0.2                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 4.0                                                                               | 5.3                                                                               | 0.0                                                                               | 1.3                                                                               | 3.3                                                                               | 0.0                                                                               | 0.8                                                                                 | 11.1                                                                                | 0.0                                                                                 | 0.9                                                                                 | 0.4                                                                                 | 0.1                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 51.8                                                                              | 47.4                                                                              | 0.0                                                                               | 53.0                                                                              | 52.7                                                                              | 0.0                                                                               | 8.6                                                                                 | 18.5                                                                                | 0.0                                                                                 | 13.9                                                                                | 1.3                                                                                 | 0.2                                                                                 |
| LnGrp LOS                    | D                                                                                 | D                                                                                 |                                                                                   | D                                                                                 | D                                                                                 |                                                                                   | A                                                                                   | B                                                                                   |                                                                                     | B                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 486                                                                               |                                                                                   |                                                                                   | 214                                                                               |                                                                                   |                                                                                     | 1477                                                                                |                                                                                     |                                                                                     | 1478                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 50.0                                                                              |                                                                                   |                                                                                   | 52.8                                                                              |                                                                                   |                                                                                     | 17.9                                                                                |                                                                                     |                                                                                     | 2.1                                                                                 |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.8                                                                               | 69.7                                                                              | 9.8                                                                               | 20.7                                                                              | 9.7                                                                               | 69.8                                                                              | 16.3                                                                                | 14.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 8.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 8.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 11.0                                                                              | 31.0                                                                              | 12.0                                                                              | 33.0                                                                              | 11.0                                                                              | 31.0                                                                              | 15.0                                                                                | 30.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 4.6                                                                               | 32.1                                                                              | 5.0                                                                               | 13.0                                                                              | 4.3                                                                               | 2.0                                                                               | 10.9                                                                                | 8.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 0.0                                                                               | 0.1                                                                               | 1.0                                                                               | 0.1                                                                               | 10.3                                                                              | 0.4                                                                                 | 0.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

HCM 7th Control Delay, s/veh 17.8  
 HCM 7th LOS B

### Notes

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

# Timing Report, Sorted By Phase

## 3: US287 & 57th Street

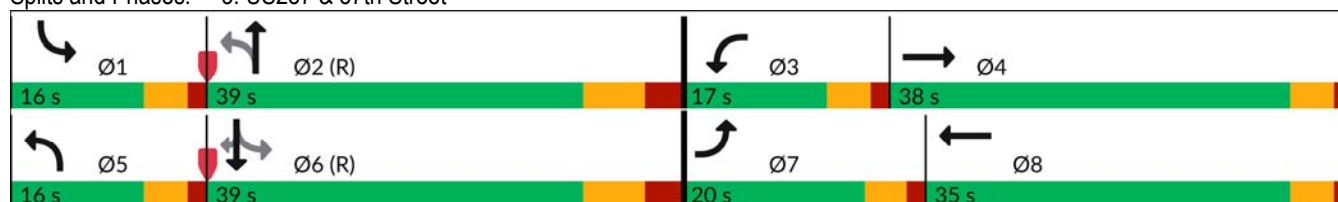
Short Bkgrd AM

|                        |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |
| Movement               | SBL                                                                               | NBTL                                                                              | WBL                                                                               | EBT                                                                               | NBL                                                                               | SBTL                                                                              | EBL                                                                                | WBT                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                               | Lag                                                                                 |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 |
| Recall Mode            | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                               | None                                                                                |
| Maximum Split (s)      | 16                                                                                | 39                                                                                | 17                                                                                | 38                                                                                | 16                                                                                | 39                                                                                | 20                                                                                 | 35                                                                                  |
| Maximum Split (%)      | 14.5%                                                                             | 35.5%                                                                             | 15.5%                                                                             | 34.5%                                                                             | 14.5%                                                                             | 35.5%                                                                             | 18.2%                                                                              | 31.8%                                                                               |
| Minimum Split (s)      | 10                                                                                | 35                                                                                | 10                                                                                | 28                                                                                | 10                                                                                | 35                                                                                | 10                                                                                 | 28                                                                                  |
| Yellow Time (s)        | 3.5                                                                               | 5                                                                                 | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 5                                                                                 | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)       | 1.5                                                                               | 3                                                                                 | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 3                                                                                 | 1.5                                                                                | 1.5                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                  | 5                                                                                   |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Walk Time (s)          |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   | 4                                                                                 |                                                                                    |                                                                                     |
| Flash Don't Walk (s)   |                                                                                   | 23                                                                                |                                                                                   |                                                                                   |                                                                                   | 23                                                                                |                                                                                    |                                                                                     |
| Dual Entry             | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                 | Yes                                                                                 |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 |
| Start Time (s)         | 90                                                                                | 106                                                                               | 35                                                                                | 52                                                                                | 90                                                                                | 106                                                                               | 35                                                                                 | 55                                                                                  |
| End Time (s)           | 106                                                                               | 35                                                                                | 52                                                                                | 90                                                                                | 106                                                                               | 35                                                                                | 55                                                                                 | 90                                                                                  |
| Yield/Force Off (s)    | 101                                                                               | 27                                                                                | 47                                                                                | 85                                                                                | 101                                                                               | 27                                                                                | 50                                                                                 | 85                                                                                  |
| Yield/Force Off 170(s) | 101                                                                               | 4                                                                                 | 47                                                                                | 85                                                                                | 101                                                                               | 4                                                                                 | 50                                                                                 | 85                                                                                  |
| Local Start Time (s)   | 94                                                                                | 0                                                                                 | 39                                                                                | 56                                                                                | 94                                                                                | 0                                                                                 | 39                                                                                 | 59                                                                                  |
| Local Yield (s)        | 105                                                                               | 31                                                                                | 51                                                                                | 89                                                                                | 105                                                                               | 31                                                                                | 54                                                                                 | 89                                                                                  |
| Local Yield 170(s)     | 105                                                                               | 8                                                                                 | 51                                                                                | 89                                                                                | 105                                                                               | 8                                                                                 | 54                                                                                 | 89                                                                                  |

### Intersection Summary

Cycle Length 110  
Control Type Actuated-Coordinated  
Natural Cycle 85  
Offset: 106 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

### Splits and Phases: 3: US287 & 57th Street



Queues  
3: US287 & 57th Street

Short Bkgrd AM

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Group Flow (vph)   | 288                                                                               | 198                                                                               | 159                                                                               | 96                                                                                | 118                                                                               | 170                                                                               | 94                                                                                 | 1383                                                                                | 66                                                                                  | 105                                                                                 | 1264                                                                                | 228                                                                                 |
| v/c Ratio               | 0.63                                                                              | 0.62                                                                              | 0.10                                                                              | 0.33                                                                              | 0.51                                                                              | 0.11                                                                              | 0.36                                                                               | 0.81                                                                                | 0.04                                                                                | 0.47                                                                                | 0.70                                                                                | 0.25                                                                                |
| Control Delay (s/veh)   | 51.7                                                                              | 50.5                                                                              | 0.1                                                                               | 49.8                                                                              | 51.9                                                                              | 0.1                                                                               | 13.3                                                                               | 30.2                                                                                | 0.0                                                                                 | 25.6                                                                                | 33.9                                                                                | 12.0                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     | 51.7                                                                              | 50.5                                                                              | 0.1                                                                               | 49.8                                                                              | 51.9                                                                              | 0.1                                                                               | 13.3                                                                               | 30.2                                                                                | 0.0                                                                                 | 25.6                                                                                | 33.9                                                                                | 12.0                                                                                |
| Queue Length 50th (ft)  | 100                                                                               | 130                                                                               | 0                                                                                 | 33                                                                                | 79                                                                                | 0                                                                                 | 24                                                                                 | 421                                                                                 | 0                                                                                   | 45                                                                                  | 396                                                                                 | 20                                                                                  |
| Queue Length 95th (ft)  | 143                                                                               | 196                                                                               | 0                                                                                 | 58                                                                                | 130                                                                               | 0                                                                                 | 54                                                                                 | #679                                                                                | 0                                                                                   | 102                                                                                 | #562                                                                                | 107                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 644                                                                               |                                                                                   |                                                                                   | 2559                                                                              |                                                                                   |                                                                                    | 634                                                                                 |                                                                                     |                                                                                     | 2545                                                                                |                                                                                     |
| Turn Bay Length (ft)    | 250                                                                               |                                                                                   | 200                                                                               | 300                                                                               |                                                                                   | 350                                                                               | 350                                                                                |                                                                                     | 450                                                                                 | 250                                                                                 |                                                                                     | 360                                                                                 |
| Base Capacity (vph)     | 499                                                                               | 575                                                                               | 1583                                                                              | 405                                                                               | 525                                                                               | 1583                                                                              | 310                                                                                | 1716                                                                                | 1583                                                                                | 268                                                                                 | 1801                                                                                | 917                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.58                                                                              | 0.34                                                                              | 0.10                                                                              | 0.24                                                                              | 0.22                                                                              | 0.11                                                                              | 0.30                                                                               | 0.81                                                                                | 0.04                                                                                | 0.39                                                                                | 0.70                                                                                | 0.25                                                                                |

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

# HCM 7th Signalized Intersection Summary

## 3: US287 & 57th Street

Short Bkgrd PM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 289                                                                               | 170                                                                               | 108                                                                               | 150                                                                               | 212                                                                               | 146                                                                               | 131                                                                                 | 1558                                                                                | 114                                                                                 | 215                                                                                 | 1484                                                                                | 430                                                                                 |
| Future Volume (veh/h)        | 289                                                                               | 170                                                                               | 108                                                                               | 150                                                                               | 212                                                                               | 146                                                                               | 131                                                                                 | 1558                                                                                | 114                                                                                 | 215                                                                                 | 1484                                                                                | 430                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 295                                                                               | 173                                                                               | 0                                                                                 | 153                                                                               | 216                                                                               | 0                                                                                 | 134                                                                                 | 1590                                                                                | 0                                                                                   | 219                                                                                 | 1514                                                                                | 223                                                                                 |
| Peak Hour Factor             | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 359                                                                               | 332                                                                               |                                                                                   | 233                                                                               | 263                                                                               |                                                                                   | 171                                                                                 | 1660                                                                                |                                                                                     | 242                                                                                 | 1802                                                                                | 804                                                                                 |
| Arrive On Green              | 0.10                                                                              | 0.18                                                                              | 0.00                                                                              | 0.07                                                                              | 0.14                                                                              | 0.00                                                                              | 0.10                                                                                | 0.47                                                                                | 0.00                                                                                | 0.27                                                                                | 1.00                                                                                | 1.00                                                                                |
| Sat Flow, veh/h              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 295                                                                               | 173                                                                               | 0                                                                                 | 153                                                                               | 216                                                                               | 0                                                                                 | 134                                                                                 | 1590                                                                                | 0                                                                                   | 219                                                                                 | 1514                                                                                | 223                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 10.5                                                                              | 10.5                                                                              | 0.0                                                                               | 5.4                                                                               | 14.0                                                                              | 0.0                                                                               | 9.2                                                                                 | 53.9                                                                                | 0.0                                                                                 | 14.8                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 10.5                                                                              | 10.5                                                                              | 0.0                                                                               | 5.4                                                                               | 14.0                                                                              | 0.0                                                                               | 9.2                                                                                 | 53.9                                                                                | 0.0                                                                                 | 14.8                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 359                                                                               | 332                                                                               |                                                                                   | 233                                                                               | 263                                                                               |                                                                                   | 171                                                                                 | 1660                                                                                |                                                                                     | 242                                                                                 | 1802                                                                                | 804                                                                                 |
| V/C Ratio(X)                 | 0.82                                                                              | 0.52                                                                              |                                                                                   | 0.66                                                                              | 0.82                                                                              |                                                                                   | 0.78                                                                                | 0.96                                                                                |                                                                                     | 0.90                                                                                | 0.84                                                                                | 0.28                                                                                |
| Avail Cap(c_a), veh/h        | 359                                                                               | 404                                                                               |                                                                                   | 276                                                                               | 359                                                                               |                                                                                   | 171                                                                                 | 1660                                                                                |                                                                                     | 242                                                                                 | 1802                                                                                | 804                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.86                                                                              | 0.86                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.70                                                                                | 0.70                                                                                | 0.70                                                                                |
| Uniform Delay (d), s/veh     | 54.9                                                                              | 46.6                                                                              | 0.0                                                                               | 56.9                                                                              | 52.2                                                                              | 0.0                                                                               | 55.2                                                                                | 32.1                                                                                | 0.0                                                                                 | 44.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 14.1                                                                              | 1.3                                                                               | 0.0                                                                               | 3.7                                                                               | 9.0                                                                               | 0.0                                                                               | 20.8                                                                                | 14.1                                                                                | 0.0                                                                                 | 26.0                                                                                | 3.5                                                                                 | 0.6                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 5.2                                                                               | 5.0                                                                               | 0.0                                                                               | 2.5                                                                               | 7.2                                                                               | 0.0                                                                               | 5.0                                                                                 | 24.4                                                                                | 0.0                                                                                 | 7.1                                                                                 | 0.9                                                                                 | 0.1                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 68.9                                                                              | 47.9                                                                              | 0.0                                                                               | 60.6                                                                              | 61.2                                                                              | 0.0                                                                               | 76.0                                                                                | 46.2                                                                                | 0.0                                                                                 | 70.7                                                                                | 3.5                                                                                 | 0.6                                                                                 |
| LnGrp LOS                    | E                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | E                                                                                 |                                                                                   | E                                                                                   | D                                                                                   |                                                                                     | E                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 468                                                                               |                                                                                   |                                                                                   | 369                                                                               |                                                                                   |                                                                                     | 1724                                                                                |                                                                                     |                                                                                     | 1956                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 61.1                                                                              |                                                                                   |                                                                                   | 60.9                                                                              |                                                                                   |                                                                                     | 48.5                                                                                |                                                                                     |                                                                                     | 10.7                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 21.0                                                                              | 65.4                                                                              | 12.4                                                                              | 26.2                                                                              | 16.0                                                                              | 70.4                                                                              | 17.0                                                                                | 21.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 8.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 8.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 16.0                                                                              | 51.0                                                                              | 9.0                                                                               | 26.0                                                                              | 11.0                                                                              | 56.0                                                                              | 12.0                                                                                | 23.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 16.8                                                                              | 55.9                                                                              | 7.4                                                                               | 12.5                                                                              | 11.2                                                                              | 2.0                                                                               | 12.5                                                                                | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               | 0.1                                                                               | 0.7                                                                               | 0.0                                                                               | 17.0                                                                              | 0.0                                                                                 | 0.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

HCM 7th Control Delay, s/veh 34.5  
 HCM 7th LOS C

### Notes

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

# Timing Report, Sorted By Phase

## 3: US287 & 57th Street

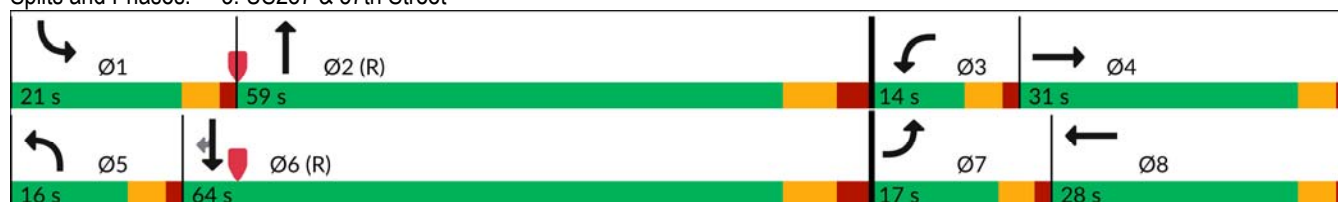
Short Bkgrd PM

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|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |
| Movement               | SBL                                                                               | NBT                                                                               | WBL                                                                               | EBT                                                                               | NBL                                                                               | SBT                                                                               | EBL                                                                                 | WBT                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Recall Mode            | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                                | None                                                                                |
| Maximum Split (s)      | 21                                                                                | 59                                                                                | 14                                                                                | 31                                                                                | 16                                                                                | 64                                                                                | 17                                                                                  | 28                                                                                  |
| Maximum Split (%)      | 16.8%                                                                             | 47.2%                                                                             | 11.2%                                                                             | 24.8%                                                                             | 12.8%                                                                             | 51.2%                                                                             | 13.6%                                                                               | 22.4%                                                                               |
| Minimum Split (s)      | 10                                                                                | 35                                                                                | 10                                                                                | 28                                                                                | 10                                                                                | 35                                                                                | 10                                                                                  | 28                                                                                  |
| Yellow Time (s)        | 3.5                                                                               | 5                                                                                 | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)       | 1.5                                                                               | 3                                                                                 | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 3                                                                                 | 1.5                                                                                 | 1.5                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                   | 5                                                                                   |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Walk Time (s)          |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   | 4                                                                                 |                                                                                     |                                                                                     |
| Flash Don't Walk (s)   |                                                                                   | 23                                                                                |                                                                                   |                                                                                   |                                                                                   | 23                                                                                |                                                                                     |                                                                                     |
| Dual Entry             | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                  | Yes                                                                                 |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Start Time (s)         | 43                                                                                | 64                                                                                | 123                                                                               | 12                                                                                | 43                                                                                | 59                                                                                | 123                                                                                 | 15                                                                                  |
| End Time (s)           | 64                                                                                | 123                                                                               | 12                                                                                | 43                                                                                | 59                                                                                | 123                                                                               | 15                                                                                  | 43                                                                                  |
| Yield/Force Off (s)    | 59                                                                                | 115                                                                               | 7                                                                                 | 38                                                                                | 54                                                                                | 115                                                                               | 10                                                                                  | 38                                                                                  |
| Yield/Force Off 170(s) | 59                                                                                | 92                                                                                | 7                                                                                 | 38                                                                                | 54                                                                                | 92                                                                                | 10                                                                                  | 38                                                                                  |
| Local Start Time (s)   | 104                                                                               | 0                                                                                 | 59                                                                                | 73                                                                                | 104                                                                               | 120                                                                               | 59                                                                                  | 76                                                                                  |
| Local Yield (s)        | 120                                                                               | 51                                                                                | 68                                                                                | 99                                                                                | 115                                                                               | 51                                                                                | 71                                                                                  | 99                                                                                  |
| Local Yield 170(s)     | 120                                                                               | 28                                                                                | 68                                                                                | 99                                                                                | 115                                                                               | 28                                                                                | 71                                                                                  | 99                                                                                  |

### Intersection Summary

Cycle Length 125  
Control Type Actuated-Coordinated  
Natural Cycle 115  
Offset: 64 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Green

### Splits and Phases: 3: US287 & 57th Street



Queues  
3: US287 & 57th Street

Short Bkgrd PM

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Group Flow (vph)   | 295                                                                               | 173                                                                               | 110                                                                               | 153                                                                               | 216                                                                               | 149                                                                               | 134                                                                                | 1590                                                                                | 116                                                                                 | 219                                                                                 | 1514                                                                                | 439                                                                                 |
| v/c Ratio               | 0.83                                                                              | 0.50                                                                              | 0.07                                                                              | 0.57                                                                              | 0.72                                                                              | 0.09                                                                              | 0.72                                                                               | 1.04                                                                                | 0.07                                                                                | 0.83                                                                                | 0.89                                                                                | 0.45                                                                                |
| Control Delay (s/veh)   | 74.4                                                                              | 50.3                                                                              | 0.1                                                                               | 64.4                                                                              | 63.8                                                                              | 0.1                                                                               | 76.4                                                                               | 68.2                                                                                | 0.1                                                                                 | 88.0                                                                                | 27.0                                                                                | 2.5                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     | 74.4                                                                              | 50.3                                                                              | 0.1                                                                               | 64.4                                                                              | 63.8                                                                              | 0.1                                                                               | 76.4                                                                               | 68.2                                                                                | 0.1                                                                                 | 88.0                                                                                | 27.0                                                                                | 2.5                                                                                 |
| Queue Length 50th (ft)  | 122                                                                               | 126                                                                               | 0                                                                                 | 62                                                                                | 167                                                                               | 0                                                                                 | 104                                                                                | ~755                                                                                | 0                                                                                   | 185                                                                                 | 504                                                                                 | 1                                                                                   |
| Queue Length 95th (ft)  | #193                                                                              | 193                                                                               | 0                                                                                 | 98                                                                                | 246                                                                               | 0                                                                                 | #214                                                                               | #895                                                                                | 0                                                                                   | m#315                                                                               | #750                                                                                | 46                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 644                                                                               |                                                                                   |                                                                                   | 2559                                                                              |                                                                                   |                                                                                    | 634                                                                                 |                                                                                     |                                                                                     | 2545                                                                                |                                                                                     |
| Turn Bay Length (ft)    | 250                                                                               |                                                                                   | 200                                                                               | 300                                                                               |                                                                                   | 350                                                                               | 350                                                                                |                                                                                     | 450                                                                                 | 250                                                                                 |                                                                                     | 360                                                                                 |
| Base Capacity (vph)     | 357                                                                               | 402                                                                               | 1583                                                                              | 274                                                                               | 357                                                                               | 1583                                                                              | 187                                                                                | 1535                                                                                | 1583                                                                                | 265                                                                                 | 1695                                                                                | 970                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.83                                                                              | 0.43                                                                              | 0.07                                                                              | 0.56                                                                              | 0.61                                                                              | 0.09                                                                              | 0.72                                                                               | 1.04                                                                                | 0.07                                                                                | 0.83                                                                                | 0.89                                                                                | 0.45                                                                                |

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

# HCM 7th Signalized Intersection Summary 18: US287 & 65th Street

Short Bkgrd AM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 145                                                                               | 10                                                                                | 104                                                                               | 158                                                                               | 30                                                                                | 79                                                                                | 155                                                                                 | 1343                                                                                | 53                                                                                  | 26                                                                                  | 1083                                                                                | 100                                                                                 |
| Future Volume (veh/h)        | 145                                                                               | 10                                                                                | 104                                                                               | 158                                                                               | 30                                                                                | 79                                                                                | 155                                                                                 | 1343                                                                                | 53                                                                                  | 26                                                                                  | 1083                                                                                | 100                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 149                                                                               | 10                                                                                | 0                                                                                 | 163                                                                               | 31                                                                                | 0                                                                                 | 160                                                                                 | 1385                                                                                | 16                                                                                  | 27                                                                                  | 1116                                                                                | 0                                                                                   |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 241                                                                               | 102                                                                               |                                                                                   | 256                                                                               | 110                                                                               |                                                                                   | 410                                                                                 | 2360                                                                                | 1053                                                                                | 374                                                                                 | 2276                                                                                |                                                                                     |
| Arrive On Green              | 0.07                                                                              | 0.05                                                                              | 0.00                                                                              | 0.07                                                                              | 0.06                                                                              | 0.00                                                                              | 0.12                                                                                | 1.00                                                                                | 1.00                                                                                | 0.03                                                                                | 0.64                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 149                                                                               | 10                                                                                | 0                                                                                 | 163                                                                               | 31                                                                                | 0                                                                                 | 160                                                                                 | 1385                                                                                | 16                                                                                  | 27                                                                                  | 1116                                                                                | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 4.6                                                                               | 0.6                                                                               | 0.0                                                                               | 5.0                                                                               | 1.7                                                                               | 0.0                                                                               | 3.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.6                                                                                 | 18.1                                                                                | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 4.6                                                                               | 0.6                                                                               | 0.0                                                                               | 5.0                                                                               | 1.7                                                                               | 0.0                                                                               | 3.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.6                                                                                 | 18.1                                                                                | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 241                                                                               | 102                                                                               |                                                                                   | 256                                                                               | 110                                                                               |                                                                                   | 410                                                                                 | 2360                                                                                | 1053                                                                                | 374                                                                                 | 2276                                                                                |                                                                                     |
| V/C Ratio(X)                 | 0.62                                                                              | 0.10                                                                              |                                                                                   | 0.64                                                                              | 0.28                                                                              |                                                                                   | 0.39                                                                                | 0.59                                                                                | 0.02                                                                                | 0.07                                                                                | 0.49                                                                                |                                                                                     |
| Avail Cap(c_a), veh/h        | 298                                                                               | 323                                                                               |                                                                                   | 361                                                                               | 357                                                                               |                                                                                   | 508                                                                                 | 2360                                                                                | 1053                                                                                | 417                                                                                 | 2276                                                                                |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.63                                                                                | 0.63                                                                                | 0.63                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 49.7                                                                              | 49.4                                                                              | 0.0                                                                               | 49.5                                                                              | 49.6                                                                              | 0.0                                                                               | 7.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 5.9                                                                                 | 10.4                                                                                | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 2.6                                                                               | 0.4                                                                               | 0.0                                                                               | 2.6                                                                               | 1.4                                                                               | 0.0                                                                               | 0.4                                                                                 | 0.7                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.8                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.1                                                                               | 0.3                                                                               | 0.0                                                                               | 2.2                                                                               | 0.9                                                                               | 0.0                                                                               | 0.8                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 5.9                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 52.3                                                                              | 49.9                                                                              | 0.0                                                                               | 52.1                                                                              | 51.0                                                                              | 0.0                                                                               | 7.4                                                                                 | 0.7                                                                                 | 0.0                                                                                 | 6.0                                                                                 | 11.1                                                                                | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | D                                                                                 |                                                                                   | D                                                                                 | D                                                                                 |                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | B                                                                                   |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 159                                                                               |                                                                                   |                                                                                   | 194                                                                               |                                                                                   |                                                                                     | 1561                                                                                |                                                                                     |                                                                                     | 1143                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 52.1                                                                              |                                                                                   |                                                                                   | 51.9                                                                              |                                                                                   |                                                                                     | 1.4                                                                                 |                                                                                     |                                                                                     | 11.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 7.3                                                                               | 80.1                                                                              | 11.6                                                                              | 11.0                                                                              | 9.9                                                                               | 77.4                                                                              | 11.2                                                                                | 11.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 8.0                                                                               | 4.5                                                                               | 6.0                                                                               | 4.5                                                                               | 8.0                                                                               | 4.5                                                                                 | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.5                                                                               | 53.0                                                                              | 10.5                                                                              | 18.0                                                                              | 11.5                                                                              | 47.0                                                                              | 8.5                                                                                 | 20.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.6                                                                               | 2.0                                                                               | 7.0                                                                               | 2.6                                                                               | 5.3                                                                               | 20.1                                                                              | 6.6                                                                                 | 3.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 12.5                                                                              | 0.1                                                                               | 0.0                                                                               | 0.2                                                                               | 7.8                                                                               | 0.1                                                                                 | 0.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Intersection Summary

HCM 7th Control Delay, s/veh 10.8  
HCM 7th LOS B

## Notes

Unsignalized Delay for [EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Timing Report, Sorted By Phase  
18: US287 & 65th Street

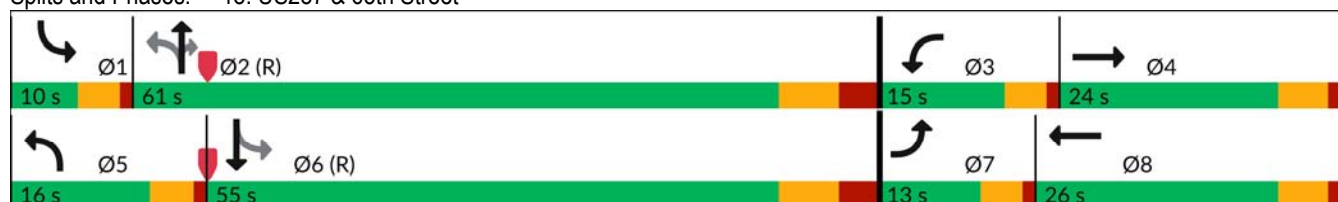
Short Bkgrd AM

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|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |
| Movement               | SBL                                                                               | NBTL                                                                              | WBL                                                                               | EBT                                                                               | NBL                                                                               | SBTL                                                                              | EBL                                                                                | WBT                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                               | Lag                                                                                 |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 |
| Recall Mode            | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                               | None                                                                                |
| Maximum Split (s)      | 10                                                                                | 61                                                                                | 15                                                                                | 24                                                                                | 16                                                                                | 55                                                                                | 13                                                                                 | 26                                                                                  |
| Maximum Split (%)      | 9.1%                                                                              | 55.5%                                                                             | 13.6%                                                                             | 21.8%                                                                             | 14.5%                                                                             | 50.0%                                                                             | 11.8%                                                                              | 23.6%                                                                               |
| Minimum Split (s)      | 9.5                                                                               | 26                                                                                | 10                                                                                | 24                                                                                | 9.5                                                                               | 26                                                                                | 10                                                                                 | 24                                                                                  |
| Yellow Time (s)        | 3.5                                                                               | 5                                                                                 | 3.5                                                                               | 4                                                                                 | 3.5                                                                               | 5                                                                                 | 3.5                                                                                | 4                                                                                   |
| All-Red Time (s)       | 1                                                                                 | 3                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 3                                                                                 | 1                                                                                  | 2                                                                                   |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                  | 5                                                                                   |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Walk Time (s)          |                                                                                   | 7                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 7                                                                                 |                                                                                    | 7                                                                                   |
| Flash Don't Walk (s)   |                                                                                   | 11                                                                                |                                                                                   | 11                                                                                |                                                                                   | 11                                                                                |                                                                                    | 11                                                                                  |
| Dual Entry             | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | Yes                                                                                | Yes                                                                                 |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 |
| Start Time (s)         | 94                                                                                | 104                                                                               | 55                                                                                | 70                                                                                | 94                                                                                | 0                                                                                 | 55                                                                                 | 68                                                                                  |
| End Time (s)           | 104                                                                               | 55                                                                                | 70                                                                                | 94                                                                                | 0                                                                                 | 55                                                                                | 68                                                                                 | 94                                                                                  |
| Yield/Force Off (s)    | 99.5                                                                              | 47                                                                                | 65.5                                                                              | 88                                                                                | 105.5                                                                             | 47                                                                                | 63.5                                                                               | 88                                                                                  |
| Yield/Force Off 170(s) | 99.5                                                                              | 36                                                                                | 65.5                                                                              | 77                                                                                | 105.5                                                                             | 36                                                                                | 63.5                                                                               | 77                                                                                  |
| Local Start Time (s)   | 94                                                                                | 104                                                                               | 55                                                                                | 70                                                                                | 94                                                                                | 0                                                                                 | 55                                                                                 | 68                                                                                  |
| Local Yield (s)        | 99.5                                                                              | 47                                                                                | 65.5                                                                              | 88                                                                                | 105.5                                                                             | 47                                                                                | 63.5                                                                               | 88                                                                                  |
| Local Yield 170(s)     | 99.5                                                                              | 36                                                                                | 65.5                                                                              | 77                                                                                | 105.5                                                                             | 36                                                                                | 63.5                                                                               | 77                                                                                  |

Intersection Summary

Cycle Length 110  
Control Type Actuated-Coordinated  
Natural Cycle 80  
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Splits and Phases: 18: US287 & 65th Street



## Queues

Short Bkgrd AM

## 18: US287 &amp; 65th Street

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Group Flow (vph)   | 149                                                                               | 10                                                                                | 107                                                                               | 163                                                                               | 31                                                                                | 81                                                                                | 160                                                                                 | 1385                                                                                | 55                                                                                  | 27                                                                                  | 1116                                                                                | 103                                                                                 |
| v/c Ratio               | 0.51                                                                              | 0.08                                                                              | 0.07                                                                              | 0.34                                                                              | 0.22                                                                              | 0.05                                                                              | 0.42                                                                                | 0.57                                                                                | 0.05                                                                                | 0.09                                                                                | 0.51                                                                                | 0.07                                                                                |
| Control Delay (s/veh)   | 54.4                                                                              | 49.2                                                                              | 0.1                                                                               | 44.3                                                                              | 50.8                                                                              | 0.1                                                                               | 11.2                                                                                | 10.2                                                                                | 1.1                                                                                 | 5.3                                                                                 | 14.0                                                                                | 0.1                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     | 54.4                                                                              | 49.2                                                                              | 0.1                                                                               | 44.3                                                                              | 50.8                                                                              | 0.1                                                                               | 11.2                                                                                | 10.2                                                                                | 1.1                                                                                 | 5.3                                                                                 | 14.0                                                                                | 0.1                                                                                 |
| Queue Length 50th (ft)  | 52                                                                                | 7                                                                                 | 0                                                                                 | 50                                                                                | 21                                                                                | 0                                                                                 | 28                                                                                  | 157                                                                                 | 0                                                                                   | 5                                                                                   | 239                                                                                 | 0                                                                                   |
| Queue Length 95th (ft)  | 86                                                                                | 24                                                                                | 0                                                                                 | 91                                                                                | 51                                                                                | 0                                                                                 | m76                                                                                 | 268                                                                                 | m2                                                                                  | 13                                                                                  | 339                                                                                 | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   |                                                                                   | 2160                                                                              |                                                                                   |                                                                                     | 2545                                                                                |                                                                                     |                                                                                     | 694                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 275                                                                               |                                                                                   | 250                                                                               | 250                                                                               |                                                                                   | 250                                                                               | 460                                                                                 |                                                                                     | 250                                                                                 | 250                                                                                 |                                                                                     | 470                                                                                 |
| Base Capacity (vph)     | 301                                                                               | 321                                                                               | 1583                                                                              | 504                                                                               | 355                                                                               | 1583                                                                              | 426                                                                                 | 2411                                                                                | 1116                                                                                | 287                                                                                 | 2202                                                                                | 1583                                                                                |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.50                                                                              | 0.03                                                                              | 0.07                                                                              | 0.32                                                                              | 0.09                                                                              | 0.05                                                                              | 0.38                                                                                | 0.57                                                                                | 0.05                                                                                | 0.09                                                                                | 0.51                                                                                | 0.07                                                                                |

## Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 7th Signalized Intersection Summary

## 18: US287 & 65th Street

Short Bkgrd PM

|                                                                                                                    |  |  |  |  |  |  |  |  |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                                           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                                                                                                |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)                                                                                             | 184                                                                               | 33                                                                                | 189                                                                               | 107                                                                               | 20                                                                                | 50                                                                                | 189                                                                                 | 1344                                                                                | 180                                                                                 | 85                                                                                  | 1497                                                                                | 161                                                                                 |
| Future Volume (veh/h)                                                                                              | 184                                                                               | 33                                                                                | 189                                                                               | 107                                                                               | 20                                                                                | 50                                                                                | 189                                                                                 | 1344                                                                                | 180                                                                                 | 85                                                                                  | 1497                                                                                | 161                                                                                 |
| Initial Q (Qb), veh                                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.                                                                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)                                                                                                | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach                                                                                              |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln                                                                                             | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h                                                                                               | 188                                                                               | 34                                                                                | 0                                                                                 | 109                                                                               | 20                                                                                | 0                                                                                 | 193                                                                                 | 1371                                                                                | 125                                                                                 | 87                                                                                  | 1528                                                                                | 0                                                                                   |
| Peak Hour Factor                                                                                                   | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Percent Heavy Veh, %                                                                                               | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                                                                         | 249                                                                               | 123                                                                               |                                                                                   | 187                                                                               | 90                                                                                |                                                                                   | 230                                                                                 | 2342                                                                                | 1045                                                                                | 123                                                                                 | 2129                                                                                |                                                                                     |
| Arrive On Green                                                                                                    | 0.07                                                                              | 0.07                                                                              | 0.00                                                                              | 0.05                                                                              | 0.05                                                                              | 0.00                                                                              | 0.17                                                                                | 0.88                                                                                | 0.88                                                                                | 0.07                                                                                | 0.60                                                                                | 0.00                                                                                |
| Sat Flow, veh/h                                                                                                    | 3456                                                                              | 1870                                                                              | 1585                                                                              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h                                                                                               | 188                                                                               | 34                                                                                | 0                                                                                 | 109                                                                               | 20                                                                                | 0                                                                                 | 193                                                                                 | 1371                                                                                | 125                                                                                 | 87                                                                                  | 1528                                                                                | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                                                                           | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s                                                                                                    | 6.7                                                                               | 2.2                                                                               | 0.0                                                                               | 3.9                                                                               | 1.3                                                                               | 0.0                                                                               | 13.1                                                                                | 12.2                                                                                | 1.4                                                                                 | 6.0                                                                                 | 37.8                                                                                | 0.0                                                                                 |
| Cycle Q Clear(g_c), s                                                                                              | 6.7                                                                               | 2.2                                                                               | 0.0                                                                               | 3.9                                                                               | 1.3                                                                               | 0.0                                                                               | 13.1                                                                                | 12.2                                                                                | 1.4                                                                                 | 6.0                                                                                 | 37.8                                                                                | 0.0                                                                                 |
| Prop In Lane                                                                                                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                                                                             | 249                                                                               | 123                                                                               |                                                                                   | 187                                                                               | 90                                                                                |                                                                                   | 230                                                                                 | 2342                                                                                | 1045                                                                                | 123                                                                                 | 2129                                                                                |                                                                                     |
| V/C Ratio(X)                                                                                                       | 0.76                                                                              | 0.28                                                                              |                                                                                   | 0.58                                                                              | 0.22                                                                              |                                                                                   | 0.84                                                                                | 0.59                                                                                | 0.12                                                                                | 0.71                                                                                | 0.72                                                                                |                                                                                     |
| Avail Cap(c_a), veh/h                                                                                              | 249                                                                               | 314                                                                               |                                                                                   | 221                                                                               | 299                                                                               |                                                                                   | 242                                                                                 | 2342                                                                                | 1045                                                                                | 185                                                                                 | 2129                                                                                |                                                                                     |
| HCM Platoon Ratio                                                                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.33                                                                                | 1.33                                                                                | 1.33                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                                                                 | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.24                                                                                | 0.24                                                                                | 0.24                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh                                                                                           | 56.9                                                                              | 55.5                                                                              | 0.0                                                                               | 57.8                                                                              | 57.3                                                                              | 0.0                                                                               | 50.5                                                                                | 3.4                                                                                 | 2.7                                                                                 | 56.9                                                                                | 17.6                                                                                | 0.0                                                                                 |
| Incr Delay (d2), s/veh                                                                                             | 12.4                                                                              | 1.2                                                                               | 0.0                                                                               | 2.9                                                                               | 1.2                                                                               | 0.0                                                                               | 6.2                                                                                 | 0.3                                                                                 | 0.1                                                                                 | 7.2                                                                                 | 2.1                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3), s/veh                                                                                         | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                                           | 3.3                                                                               | 1.1                                                                               | 0.0                                                                               | 1.7                                                                               | 0.6                                                                               | 0.0                                                                               | 5.8                                                                                 | 2.3                                                                                 | 0.4                                                                                 | 2.8                                                                                 | 14.0                                                                                | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh                                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh                                                                                              | 69.3                                                                              | 56.7                                                                              | 0.0                                                                               | 60.6                                                                              | 58.5                                                                              | 0.0                                                                               | 56.7                                                                                | 3.6                                                                                 | 2.8                                                                                 | 64.2                                                                                | 19.7                                                                                | 0.0                                                                                 |
| LnGrp LOS                                                                                                          | E                                                                                 | E                                                                                 |                                                                                   | E                                                                                 | E                                                                                 |                                                                                   | E                                                                                   | A                                                                                   | A                                                                                   | E                                                                                   | B                                                                                   |                                                                                     |
| Approach Vol, veh/h                                                                                                |                                                                                   | 222                                                                               |                                                                                   |                                                                                   | 129                                                                               |                                                                                   |                                                                                     | 1689                                                                                |                                                                                     |                                                                                     | 1615                                                                                |                                                                                     |
| Approach Delay, s/veh                                                                                              |                                                                                   | 67.4                                                                              |                                                                                   |                                                                                   | 60.3                                                                              |                                                                                   |                                                                                     | 9.6                                                                                 |                                                                                     |                                                                                     | 22.1                                                                                |                                                                                     |
| Approach LOS                                                                                                       |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs                                                                                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                                           | 12.6                                                                              | 89.4                                                                              | 10.7                                                                              | 12.2                                                                              | 20.1                                                                              | 81.9                                                                              | 13.0                                                                                | 10.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                                                                            | 5.0                                                                               | 8.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 8.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                                                                        | 12.0                                                                              | 63.0                                                                              | 7.0                                                                               | 20.0                                                                              | 16.0                                                                              | 59.0                                                                              | 8.0                                                                                 | 19.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                                                                       | 8.0                                                                               | 14.2                                                                              | 5.9                                                                               | 4.2                                                                               | 15.1                                                                              | 39.8                                                                              | 8.7                                                                                 | 3.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                                                                            | 0.1                                                                               | 12.9                                                                              | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               | 10.1                                                                              | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh                                                                                       |                                                                                   |                                                                                   | 20.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                                                                                                        |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                                                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved pedestrian interval to be less than phase max green.                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Unsignalized Delay for [EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Timing Report, Sorted By Phase  
18: US287 & 65th Street

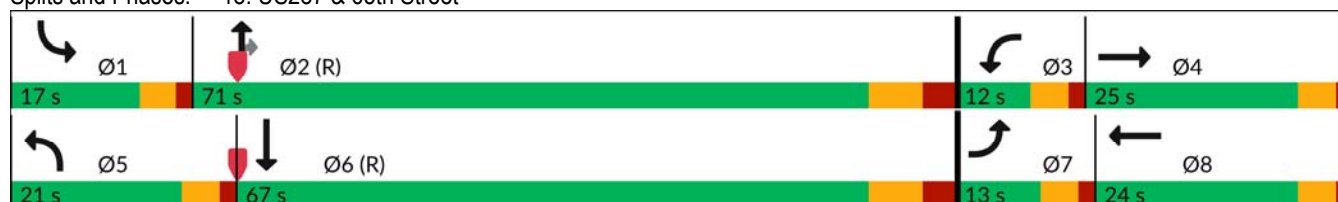
Short Bkgrd PM

|                        |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |
| Movement               | SBL                                                                               | NBT                                                                               | WBL                                                                               | EBT                                                                               | NBL                                                                               | SBT                                                                               | EBL                                                                                 | WBT                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Recall Mode            | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                                | None                                                                                |
| Maximum Split (s)      | 17                                                                                | 71                                                                                | 12                                                                                | 25                                                                                | 21                                                                                | 67                                                                                | 13                                                                                  | 24                                                                                  |
| Maximum Split (%)      | 13.6%                                                                             | 56.8%                                                                             | 9.6%                                                                              | 20.0%                                                                             | 16.8%                                                                             | 53.6%                                                                             | 10.4%                                                                               | 19.2%                                                                               |
| Minimum Split (s)      | 10                                                                                | 26                                                                                | 10                                                                                | 24                                                                                | 10                                                                                | 26                                                                                | 10                                                                                  | 24                                                                                  |
| Yellow Time (s)        | 3.5                                                                               | 5                                                                                 | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)       | 1.5                                                                               | 3                                                                                 | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 3                                                                                 | 1.5                                                                                 | 1.5                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                   | 5                                                                                   |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Walk Time (s)          |                                                                                   | 7                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 7                                                                                 |                                                                                     | 7                                                                                   |
| Flash Don't Walk (s)   |                                                                                   | 11                                                                                |                                                                                   | 11                                                                                |                                                                                   | 11                                                                                |                                                                                     | 11                                                                                  |
| Dual Entry             | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Start Time (s)         | 13                                                                                | 30                                                                                | 101                                                                               | 113                                                                               | 13                                                                                | 34                                                                                | 101                                                                                 | 114                                                                                 |
| End Time (s)           | 30                                                                                | 101                                                                               | 113                                                                               | 13                                                                                | 34                                                                                | 101                                                                               | 114                                                                                 | 13                                                                                  |
| Yield/Force Off (s)    | 25                                                                                | 93                                                                                | 108                                                                               | 8                                                                                 | 29                                                                                | 93                                                                                | 109                                                                                 | 8                                                                                   |
| Yield/Force Off 170(s) | 25                                                                                | 82                                                                                | 108                                                                               | 122                                                                               | 29                                                                                | 82                                                                                | 109                                                                                 | 122                                                                                 |
| Local Start Time (s)   | 104                                                                               | 121                                                                               | 67                                                                                | 79                                                                                | 104                                                                               | 0                                                                                 | 67                                                                                  | 80                                                                                  |
| Local Yield (s)        | 116                                                                               | 59                                                                                | 74                                                                                | 99                                                                                | 120                                                                               | 59                                                                                | 75                                                                                  | 99                                                                                  |
| Local Yield 170(s)     | 116                                                                               | 48                                                                                | 74                                                                                | 88                                                                                | 120                                                                               | 48                                                                                | 75                                                                                  | 88                                                                                  |

Intersection Summary

Cycle Length 125  
Control Type Actuated-Coordinated  
Natural Cycle 90  
Offset: 34 (27%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Splits and Phases: 18: US287 & 65th Street



## Queues

Short Bkgrd PM

## 18: US287 &amp; 65th Street

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Group Flow (vph)   | 188                                                                               | 34                                                                                | 193                                                                               | 109                                                                               | 20                                                                                | 51                                                                                | 193                                                                                | 1371                                                                                | 184                                                                                 | 87                                                                                  | 1528                                                                                | 164                                                                                 |
| v/c Ratio               | 0.60                                                                              | 0.26                                                                              | 0.12                                                                              | 0.47                                                                              | 0.17                                                                              | 0.03                                                                              | 0.67                                                                               | 0.60                                                                                | 0.17                                                                                | 0.49                                                                                | 0.74                                                                                | 0.10                                                                                |
| Control Delay (s/veh)   | 63.5                                                                              | 59.3                                                                              | 0.2                                                                               | 63.6                                                                              | 57.8                                                                              | 0.0                                                                               | 37.0                                                                               | 34.0                                                                                | 11.6                                                                                | 62.2                                                                                | 24.2                                                                                | 0.1                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     | 63.5                                                                              | 59.3                                                                              | 0.2                                                                               | 63.6                                                                              | 57.8                                                                              | 0.0                                                                               | 37.0                                                                               | 34.0                                                                                | 11.6                                                                                | 62.2                                                                                | 24.2                                                                                | 0.1                                                                                 |
| Queue Length 50th (ft)  | 70                                                                                | 27                                                                                | 0                                                                                 | 44                                                                                | 16                                                                                | 0                                                                                 | 125                                                                                | 613                                                                                 | 59                                                                                  | 68                                                                                  | 495                                                                                 | 0                                                                                   |
| Queue Length 95th (ft)  | #134                                                                              | 60                                                                                | 0                                                                                 | 75                                                                                | 41                                                                                | 0                                                                                 | m130                                                                               | m615                                                                                | m74                                                                                 | 118                                                                                 | 688                                                                                 | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   |                                                                                   | 2160                                                                              |                                                                                   |                                                                                    | 2545                                                                                |                                                                                     |                                                                                     | 694                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 275                                                                               |                                                                                   | 250                                                                               | 250                                                                               |                                                                                   | 250                                                                               | 460                                                                                |                                                                                     | 250                                                                                 | 250                                                                                 |                                                                                     | 470                                                                                 |
| Base Capacity (vph)     | 311                                                                               | 312                                                                               | 1583                                                                              | 230                                                                               | 298                                                                               | 1583                                                                              | 297                                                                                | 2288                                                                                | 1081                                                                                | 198                                                                                 | 2061                                                                                | 1583                                                                                |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.60                                                                              | 0.11                                                                              | 0.12                                                                              | 0.47                                                                              | 0.07                                                                              | 0.03                                                                              | 0.65                                                                               | 0.60                                                                                | 0.17                                                                                | 0.44                                                                                | 0.74                                                                                | 0.10                                                                                |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 7th Signalized Intersection Summary

## 5: Monroe & 57th Street

Short Bkgrd AM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |                                                                                     |  |  |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 4                                                                                 | 260                                                                               | 89                                                                                | 89                                                                                | 210                                                                               | 2                                                                                 | 125                                                                                 | 15                                                                                  | 111                                                                                 | 2                                                                                   | 45                                                                                  | 16                                                                                  |
| Future Volume (veh/h)        | 4                                                                                 | 260                                                                               | 89                                                                                | 89                                                                                | 210                                                                               | 2                                                                                 | 125                                                                                 | 15                                                                                  | 111                                                                                 | 2                                                                                   | 45                                                                                  | 16                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 4                                                                                 | 292                                                                               | 17                                                                                | 100                                                                               | 236                                                                               | 2                                                                                 | 140                                                                                 | 17                                                                                  | 16                                                                                  | 2                                                                                   | 51                                                                                  | 6                                                                                   |
| Peak Hour Factor             | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 563                                                                               | 491                                                                               | 416                                                                               | 561                                                                               | 643                                                                               | 5                                                                                 | 464                                                                                 | 33                                                                                  | 324                                                                                 | 115                                                                                 | 330                                                                                 | 38                                                                                  |
| Arrive On Green              | 0.04                                                                              | 0.26                                                                              | 0.26                                                                              | 0.12                                                                              | 0.35                                                                              | 0.32                                                                              | 0.17                                                                                | 0.20                                                                                | 0.20                                                                                | 0.17                                                                                | 0.20                                                                                | 0.17                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 1852                                                                              | 16                                                                                | 1288                                                                                | 162                                                                                 | 1585                                                                                | 25                                                                                  | 1617                                                                                | 186                                                                                 |
| Grp Volume(v), veh/h         | 4                                                                                 | 292                                                                               | 17                                                                                | 100                                                                               | 0                                                                                 | 238                                                                               | 157                                                                                 | 0                                                                                   | 16                                                                                  | 59                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 0                                                                                 | 1868                                                                              | 1450                                                                                | 0                                                                                   | 1585                                                                                | 1828                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.1                                                                               | 4.6                                                                               | 0.3                                                                               | 1.1                                                                               | 0.0                                                                               | 3.2                                                                               | 2.4                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.1                                                                               | 4.6                                                                               | 0.3                                                                               | 1.1                                                                               | 0.0                                                                               | 3.2                                                                               | 3.3                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.01                                                                              | 0.89                                                                                |                                                                                     | 1.00                                                                                | 0.03                                                                                |                                                                                     | 0.10                                                                                |
| Lane Grp Cap(c), veh/h       | 563                                                                               | 491                                                                               | 416                                                                               | 561                                                                               | 0                                                                                 | 648                                                                               | 454                                                                                 | 0                                                                                   | 324                                                                                 | 429                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.01                                                                              | 0.59                                                                              | 0.04                                                                              | 0.18                                                                              | 0.00                                                                              | 0.37                                                                              | 0.35                                                                                | 0.00                                                                                | 0.05                                                                                | 0.14                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 869                                                                               | 1106                                                                              | 937                                                                               | 716                                                                               | 0                                                                                 | 1104                                                                              | 951                                                                                 | 0                                                                                   | 890                                                                                 | 1078                                                                                | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 8.4                                                                               | 10.9                                                                              | 9.3                                                                               | 6.4                                                                               | 0.0                                                                               | 8.3                                                                               | 12.3                                                                                | 0.0                                                                                 | 10.8                                                                                | 11.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 1.2                                                                               | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 0.3                                                                               | 0.5                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 1.5                                                                               | 0.1                                                                               | 0.2                                                                               | 0.0                                                                               | 0.9                                                                               | 0.9                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 8.4                                                                               | 12.1                                                                              | 9.3                                                                               | 6.5                                                                               | 0.0                                                                               | 8.6                                                                               | 12.8                                                                                | 0.0                                                                                 | 10.9                                                                                | 11.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | A                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 | B                                                                                   |                                                                                     | B                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 313                                                                               |                                                                                   |                                                                                   | 338                                                                               |                                                                                   |                                                                                     | 173                                                                                 |                                                                                     |                                                                                     | 59                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 11.9                                                                              |                                                                                   |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                     | 12.6                                                                                |                                                                                     |                                                                                     | 11.3                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 7.0                                                                               | 14.9                                                                              |                                                                                   | 11.9                                                                              | 4.2                                                                               | 17.7                                                                              |                                                                                     | 11.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 6.0                                                                               | 4.0                                                                               | 7.0                                                                               |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 6.0                                                                               | 19.0                                                                              |                                                                                   | 18.0                                                                              | 6.0                                                                               | 19.0                                                                              |                                                                                     | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.1                                                                               | 6.6                                                                               |                                                                                   | 2.9                                                                               | 2.1                                                                               | 5.2                                                                               |                                                                                     | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 1.3                                                                               |                                                                                   | 0.2                                                                               | 0.0                                                                               | 1.0                                                                               |                                                                                     | 0.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh |                                                                                   |                                                                                   | 10.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Timing Report, Sorted By Phase  
5: Monroe & 57th Street

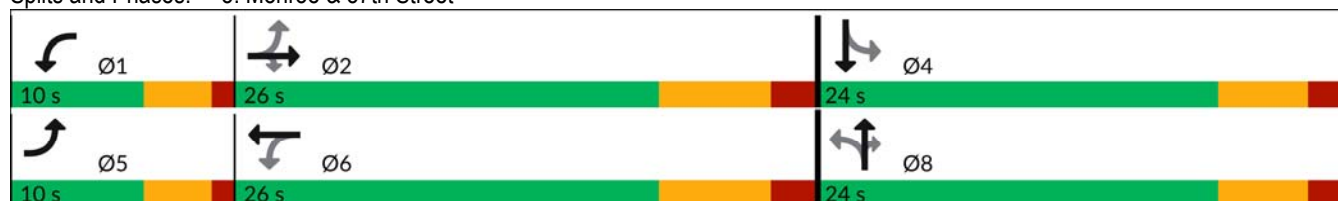
Short Bkgrd AM

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 8                                                                                 |
| Movement               | WBL                                                                               | EBTL                                                                              | SBTL                                                                              | EBL                                                                               | WBTL                                                                              | NBTL                                                                              |
| Lead/Lag               | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |
| Recall Mode            | None                                                                              | None                                                                              | Min                                                                               | None                                                                              | None                                                                              | Min                                                                               |
| Maximum Split (s)      | 10                                                                                | 26                                                                                | 24                                                                                | 10                                                                                | 26                                                                                | 24                                                                                |
| Maximum Split (%)      | 16.7%                                                                             | 43.3%                                                                             | 40.0%                                                                             | 16.7%                                                                             | 43.3%                                                                             | 40.0%                                                                             |
| Minimum Split (s)      | 10                                                                                | 25                                                                                | 24                                                                                | 10                                                                                | 25                                                                                | 24                                                                                |
| Yellow Time (s)        | 3                                                                                 | 5                                                                                 | 4                                                                                 | 3                                                                                 | 5                                                                                 | 4                                                                                 |
| All-Red Time (s)       | 1                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Walk Time (s)          |                                                                                   | 7                                                                                 | 7                                                                                 |                                                                                   | 7                                                                                 | 7                                                                                 |
| Flash Don't Walk (s)   |                                                                                   | 11                                                                                | 11                                                                                |                                                                                   | 11                                                                                | 11                                                                                |
| Dual Entry             | No                                                                                | Yes                                                                               | Yes                                                                               | No                                                                                | Yes                                                                               | Yes                                                                               |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |
| Start Time (s)         | 0                                                                                 | 10                                                                                | 36                                                                                | 0                                                                                 | 10                                                                                | 36                                                                                |
| End Time (s)           | 10                                                                                | 36                                                                                | 0                                                                                 | 10                                                                                | 36                                                                                | 0                                                                                 |
| Yield/Force Off (s)    | 6                                                                                 | 29                                                                                | 54                                                                                | 6                                                                                 | 29                                                                                | 54                                                                                |
| Yield/Force Off 170(s) | 6                                                                                 | 18                                                                                | 54                                                                                | 6                                                                                 | 18                                                                                | 54                                                                                |
| Local Start Time (s)   | 50                                                                                | 0                                                                                 | 26                                                                                | 50                                                                                | 0                                                                                 | 26                                                                                |
| Local Yield (s)        | 56                                                                                | 19                                                                                | 44                                                                                | 56                                                                                | 19                                                                                | 44                                                                                |
| Local Yield 170(s)     | 56                                                                                | 8                                                                                 | 44                                                                                | 56                                                                                | 8                                                                                 | 44                                                                                |

Intersection Summary

|               |                        |
|---------------|------------------------|
| Cycle Length  | 60                     |
| Control Type  | Actuated-Uncoordinated |
| Natural Cycle | 60                     |

Splits and Phases: 5: Monroe & 57th Street



## Queues

Short Bkgrd AM

## 5: Monroe &amp; 57th Street

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBT                                                                               | NBR                                                                                 | SBT                                                                                 |
| Lane Group Flow (vph)   | 4                                                                                 | 292                                                                               | 100                                                                               | 100                                                                               | 238                                                                               | 157                                                                               | 125                                                                                 | 71                                                                                  |
| v/c Ratio               | 0.01                                                                              | 0.49                                                                              | 0.17                                                                              | 0.16                                                                              | 0.32                                                                              | 0.42                                                                              | 0.22                                                                                | 0.14                                                                                |
| Control Delay (s/veh)   | 5.8                                                                               | 17.0                                                                              | 3.1                                                                               | 6.3                                                                               | 11.5                                                                              | 18.8                                                                              | 3.8                                                                                 | 11.9                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     | 5.8                                                                               | 17.0                                                                              | 3.1                                                                               | 6.3                                                                               | 11.5                                                                              | 18.8                                                                              | 3.8                                                                                 | 11.9                                                                                |
| Queue Length 50th (ft)  | 1                                                                                 | 65                                                                                | 0                                                                                 | 10                                                                                | 32                                                                                | 35                                                                                | 0                                                                                   | 11                                                                                  |
| Queue Length 95th (ft)  | 4                                                                                 | 142                                                                               | 19                                                                                | 33                                                                                | 114                                                                               | 88                                                                                | 24                                                                                  | 37                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 2559                                                                              |                                                                                   |                                                                                   | 1310                                                                              | 458                                                                               |                                                                                     | 384                                                                                 |
| Turn Bay Length (ft)    | 330                                                                               |                                                                                   | 250                                                                               | 115                                                                               |                                                                                   |                                                                                   | 180                                                                                 |                                                                                     |
| Base Capacity (vph)     | 653                                                                               | 948                                                                               | 868                                                                               | 619                                                                               | 1019                                                                              | 629                                                                               | 840                                                                                 | 870                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.01                                                                              | 0.31                                                                              | 0.12                                                                              | 0.16                                                                              | 0.23                                                                              | 0.25                                                                              | 0.15                                                                                | 0.08                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |

# HCM 7th Signalized Intersection Summary 5: Monroe & 57th Street

Short Bkgrd PM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |                                                                                     |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 11                                                                                | 243                                                                               | 161                                                                               | 132                                                                               | 357                                                                               | 5                                                                                 | 106                                                                                 | 54                                                                                  | 86                                                                                  | 2                                                                                   | 33                                                                                  | 7                                                                                   |
| Future Volume (veh/h)        | 11                                                                                | 243                                                                               | 161                                                                               | 132                                                                               | 357                                                                               | 5                                                                                 | 106                                                                                 | 54                                                                                  | 86                                                                                  | 2                                                                                   | 33                                                                                  | 7                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 12                                                                                | 267                                                                               | 41                                                                                | 145                                                                               | 392                                                                               | 5                                                                                 | 116                                                                                 | 59                                                                                  | 19                                                                                  | 2                                                                                   | 36                                                                                  | 4                                                                                   |
| Peak Hour Factor             | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 448                                                                               | 464                                                                               | 393                                                                               | 585                                                                               | 628                                                                               | 8                                                                                 | 370                                                                                 | 126                                                                                 | 333                                                                                 | 116                                                                                 | 340                                                                                 | 37                                                                                  |
| Arrive On Green              | 0.04                                                                              | 0.25                                                                              | 0.25                                                                              | 0.14                                                                              | 0.34                                                                              | 0.31                                                                              | 0.18                                                                                | 0.21                                                                                | 0.21                                                                                | 0.18                                                                                | 0.21                                                                                | 0.18                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 1843                                                                              | 24                                                                                | 938                                                                                 | 601                                                                                 | 1585                                                                                | 33                                                                                  | 1618                                                                                | 174                                                                                 |
| Grp Volume(v), veh/h         | 12                                                                                | 267                                                                               | 41                                                                                | 145                                                                               | 0                                                                                 | 397                                                                               | 175                                                                                 | 0                                                                                   | 19                                                                                  | 42                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 0                                                                                 | 1866                                                                              | 1539                                                                                | 0                                                                                   | 1585                                                                                | 1825                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.2                                                                               | 4.3                                                                               | 0.7                                                                               | 1.7                                                                               | 0.0                                                                               | 6.2                                                                               | 2.9                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.2                                                                               | 4.3                                                                               | 0.7                                                                               | 1.7                                                                               | 0.0                                                                               | 6.2                                                                               | 3.5                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.01                                                                              | 0.66                                                                                |                                                                                     | 1.00                                                                                | 0.05                                                                                |                                                                                     | 0.10                                                                                |
| Lane Grp Cap(c), veh/h       | 448                                                                               | 464                                                                               | 393                                                                               | 585                                                                               | 0                                                                                 | 636                                                                               | 452                                                                                 | 0                                                                                   | 333                                                                                 | 440                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.03                                                                              | 0.58                                                                              | 0.10                                                                              | 0.25                                                                              | 0.00                                                                              | 0.62                                                                              | 0.39                                                                                | 0.00                                                                                | 0.06                                                                                | 0.10                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 729                                                                               | 1081                                                                              | 916                                                                               | 700                                                                               | 0                                                                                 | 1078                                                                              | 961                                                                                 | 0                                                                                   | 870                                                                                 | 1051                                                                                | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(l)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 8.8                                                                               | 11.4                                                                              | 10.0                                                                              | 6.5                                                                               | 0.0                                                                               | 9.6                                                                               | 12.4                                                                                | 0.0                                                                                 | 10.9                                                                                | 11.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 1.1                                                                               | 0.1                                                                               | 0.2                                                                               | 0.0                                                                               | 1.0                                                                               | 0.5                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 1.4                                                                               | 0.2                                                                               | 0.4                                                                               | 0.0                                                                               | 1.8                                                                               | 1.0                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 8.9                                                                               | 12.5                                                                              | 10.2                                                                              | 6.7                                                                               | 0.0                                                                               | 10.6                                                                              | 13.0                                                                                | 0.0                                                                                 | 11.0                                                                                | 11.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | A                                                                                 | B                                                                                 | B                                                                                 | A                                                                                 |                                                                                   | B                                                                                 | B                                                                                   |                                                                                     | B                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 320                                                                               |                                                                                   |                                                                                   | 542                                                                               |                                                                                   |                                                                                     | 194                                                                                 |                                                                                     |                                                                                     | 42                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 12.1                                                                              |                                                                                   |                                                                                   | 9.5                                                                               |                                                                                   |                                                                                     | 12.8                                                                                |                                                                                     |                                                                                     | 11.2                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 7.8                                                                               | 14.6                                                                              |                                                                                   | 12.3                                                                              | 4.5                                                                               | 17.8                                                                              |                                                                                     | 12.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 6.0                                                                               | 4.0                                                                               | 7.0                                                                               |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 6.0                                                                               | 19.0                                                                              |                                                                                   | 18.0                                                                              | 6.0                                                                               | 19.0                                                                              |                                                                                     | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 3.7                                                                               | 6.3                                                                               |                                                                                   | 2.6                                                                               | 2.2                                                                               | 8.2                                                                               |                                                                                     | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 1.3                                                                               |                                                                                   | 0.1                                                                               | 0.0                                                                               | 1.7                                                                               |                                                                                     | 0.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh |                                                                                   |                                                                                   | 10.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timing Report, Sorted By Phase

## 5: Monroe & 57th Street

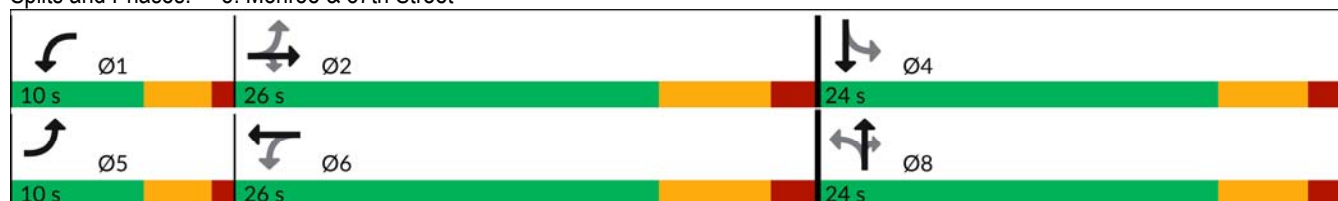
Short Bkgrd PM

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 8                                                                                 |
| Movement               | WBL                                                                               | EBTL                                                                              | SBTL                                                                              | EBL                                                                               | WBTL                                                                              | NBTL                                                                              |
| Lead/Lag               | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |
| Recall Mode            | None                                                                              | None                                                                              | Min                                                                               | None                                                                              | None                                                                              | Min                                                                               |
| Maximum Split (s)      | 10                                                                                | 26                                                                                | 24                                                                                | 10                                                                                | 26                                                                                | 24                                                                                |
| Maximum Split (%)      | 16.7%                                                                             | 43.3%                                                                             | 40.0%                                                                             | 16.7%                                                                             | 43.3%                                                                             | 40.0%                                                                             |
| Minimum Split (s)      | 10                                                                                | 25                                                                                | 24                                                                                | 10                                                                                | 25                                                                                | 24                                                                                |
| Yellow Time (s)        | 3                                                                                 | 5                                                                                 | 4                                                                                 | 3                                                                                 | 5                                                                                 | 4                                                                                 |
| All-Red Time (s)       | 1                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Walk Time (s)          |                                                                                   | 7                                                                                 | 7                                                                                 |                                                                                   | 7                                                                                 | 7                                                                                 |
| Flash Don't Walk (s)   |                                                                                   | 11                                                                                | 11                                                                                |                                                                                   | 11                                                                                | 11                                                                                |
| Dual Entry             | No                                                                                | Yes                                                                               | Yes                                                                               | No                                                                                | Yes                                                                               | Yes                                                                               |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |
| Start Time (s)         | 0                                                                                 | 10                                                                                | 36                                                                                | 0                                                                                 | 10                                                                                | 36                                                                                |
| End Time (s)           | 10                                                                                | 36                                                                                | 0                                                                                 | 10                                                                                | 36                                                                                | 0                                                                                 |
| Yield/Force Off (s)    | 6                                                                                 | 29                                                                                | 54                                                                                | 6                                                                                 | 29                                                                                | 54                                                                                |
| Yield/Force Off 170(s) | 6                                                                                 | 18                                                                                | 54                                                                                | 6                                                                                 | 18                                                                                | 54                                                                                |
| Local Start Time (s)   | 50                                                                                | 0                                                                                 | 26                                                                                | 50                                                                                | 0                                                                                 | 26                                                                                |
| Local Yield (s)        | 56                                                                                | 19                                                                                | 44                                                                                | 56                                                                                | 19                                                                                | 44                                                                                |
| Local Yield 170(s)     | 56                                                                                | 8                                                                                 | 44                                                                                | 56                                                                                | 8                                                                                 | 44                                                                                |

### Intersection Summary

|               |                        |
|---------------|------------------------|
| Cycle Length  | 60                     |
| Control Type  | Actuated-Uncoordinated |
| Natural Cycle | 60                     |

### Splits and Phases: 5: Monroe & 57th Street



## Queues

Short Bkgrd PM

## 5: Monroe &amp; 57th Street

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBT                                                                               | NBR                                                                                | SBT                                                                                 |
| Lane Group Flow (vph)   | 12                                                                                | 267                                                                               | 177                                                                               | 145                                                                               | 397                                                                               | 175                                                                               | 95                                                                                 | 46                                                                                  |
| v/c Ratio               | 0.02                                                                              | 0.47                                                                              | 0.29                                                                              | 0.23                                                                              | 0.49                                                                              | 0.45                                                                              | 0.18                                                                               | 0.09                                                                                |
| Control Delay (s/veh)   | 5.6                                                                               | 17.4                                                                              | 4.4                                                                               | 6.6                                                                               | 13.2                                                                              | 19.5                                                                              | 2.2                                                                                | 12.7                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Total Delay (s/veh)     | 5.6                                                                               | 17.4                                                                              | 4.4                                                                               | 6.6                                                                               | 13.2                                                                              | 19.5                                                                              | 2.2                                                                                | 12.7                                                                                |
| Queue Length 50th (ft)  | 1                                                                                 | 58                                                                                | 0                                                                                 | 15                                                                                | 59                                                                                | 38                                                                                | 0                                                                                  | 8                                                                                   |
| Queue Length 95th (ft)  | 7                                                                                 | 130                                                                               | 34                                                                                | 46                                                                                | 200                                                                               | 96                                                                                | 13                                                                                 | 29                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 2559                                                                              |                                                                                   |                                                                                   | 1310                                                                              | 458                                                                               |                                                                                    | 384                                                                                 |
| Turn Bay Length (ft)    | 330                                                                               |                                                                                   | 250                                                                               | 115                                                                               |                                                                                   |                                                                                   | 180                                                                                |                                                                                     |
| Base Capacity (vph)     | 612                                                                               | 885                                                                               | 845                                                                               | 632                                                                               | 955                                                                               | 649                                                                               | 794                                                                                | 813                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Reduced v/c Ratio       | 0.02                                                                              | 0.30                                                                              | 0.21                                                                              | 0.23                                                                              | 0.42                                                                              | 0.27                                                                              | 0.12                                                                               | 0.06                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |

Intersection

Int Delay, s/veh 0.9

| Movement                 | EBL  | EBT                                                                               | EBR  | WBL  | WBT                                                                               | WBR  | NBL  | NBT                                                                               | NBR  | SBL  | SBT                                                                                 | SBR  |
|--------------------------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |      |      |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h       | 6    | 365                                                                               | 0    | 1    | 249                                                                               | 3    | 10   | 0                                                                                 | 6    | 12   | 0                                                                                   | 14   |
| Future Vol, veh/h        | 6    | 365                                                                               | 0    | 1    | 249                                                                               | 3    | 10   | 0                                                                                 | 6    | 12   | 0                                                                                   | 14   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                   | 0    |
| Sign Control             | Free | Free                                                                              | Free | Free | Free                                                                              | Free | Stop | Stop                                                                              | Stop | Stop | Stop                                                                                | Stop |
| RT Channelized           | -    | -                                                                                 | None | -    | -                                                                                 | None | -    | -                                                                                 | None | -    | -                                                                                   | None |
| Storage Length           | -    | -                                                                                 | -    | -    | -                                                                                 | -    | -    | -                                                                                 | -    | -    | -                                                                                   | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Grade, %                 | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Peak Hour Factor         | 92   | 92                                                                                | 92   | 92   | 92                                                                                | 92   | 92   | 92                                                                                | 92   | 92   | 92                                                                                  | 92   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2    | 2    | 2                                                                                 | 2    | 2    | 2                                                                                 | 2    | 2    | 2                                                                                   | 2    |
| Mvmt Flow                | 7    | 397                                                                               | 0    | 1    | 271                                                                               | 3    | 11   | 0                                                                                 | 7    | 13   | 0                                                                                   | 15   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 274    | 0 | 0 | 397    | 0 | 0 | 683    | 686   | 397   | 684    | 684   | 272   |
| Stage 1              | -      | - | - | -      | - | - | 410    | 410   | -     | 274    | 274   | -     |
| Stage 2              | -      | - | - | -      | - | - | 273    | 276   | -     | 410    | 410   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1289   | - | - | 1162   | - | - | 364    | 370   | 653   | 363    | 371   | 766   |
| Stage 1              | -      | - | - | -      | - | - | 619    | 596   | -     | 732    | 683   | -     |
| Stage 2              | -      | - | - | -      | - | - | 733    | 682   | -     | 619    | 596   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 1289   | - | - | 1162   | - | - | 354    | 367   | 653   | 356    | 368   | 766   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 354    | 367   | -     | 356    | 368   | -     |
| Stage 1              | -      | - | - | -      | - | - | 615    | 592   | -     | 731    | 682   | -     |
| Stage 2              | -      | - | - | -      | - | - | 718    | 681   | -     | 609    | 592   | -     |

| Approach          | EB   | WB   | NB    | SB    |
|-------------------|------|------|-------|-------|
| HCM Ctrl Dly, s/v | 0.13 | 0.03 | 13.79 | 12.62 |
| HCM LOS           |      |      | B     | B     |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 427   | 29    | -   | -   | 7     | -   | -   | 500   |
| HCM Lane V/C Ratio    | 0.041 | 0.005 | -   | -   | 0.001 | -   | -   | 0.056 |
| HCM Ctrl Dly (s/v)    | 13.8  | 7.8   | 0   | -   | 8.1   | 0   | -   | 12.6  |
| HCM Lane LOS          | B     | A     | A   | -   | A     | A   | -   | B     |
| HCM 95th %tile Q(veh) | 0.1   | 0     | -   | -   | 0     | -   | -   | 0.2   |

HCM 7th TWSC  
11: 57th Street & St. Louis

Short Bkgrd PM

Intersection

Int Delay, s/veh 0.5

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

|                          |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 15   | 285  | 3    | 1    | 474  | 7    | 2    | 0    | 3    | 5    | 0    | 10   |
| Future Vol, veh/h        | 15   | 285  | 3    | 1    | 474  | 7    | 2    | 0    | 3    | 5    | 0    | 10   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 16   | 300  | 3    | 1    | 499  | 7    | 2    | 0    | 3    | 5    | 0    | 11   |

| Major/Minor          | Major1 |   | Major2 |       | Minor1 |   | Minor2 |       |       |       |       |       |
|----------------------|--------|---|--------|-------|--------|---|--------|-------|-------|-------|-------|-------|
| Conflicting Flow All | 506    | 0 | 0      | 303   | 0      | 0 | 834    | 842   | 302   | 836   | 839   | 503   |
| Stage 1              | -      | - | -      | -     | -      | - | 333    | 333   | -     | 505   | 505   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 501    | 508   | -     | 332   | 335   | -     |
| Critical Hdwy        | 4.12   | - | -      | 4.12  | -      | - | 7.12   | 6.52  | 6.22  | 7.12  | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | -      | 2.218 | -      | - | 3.518  | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1058   | - | -      | 1258  | -      | - | 287    | 301   | 738   | 286   | 302   | 569   |
| Stage 1              | -      | - | -      | -     | -      | - | 680    | 644   | -     | 550   | 540   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 552    | 538   | -     | 682   | 643   | -     |
| Platoon blocked, %   |        | - | -      |       | -      | - |        |       |       |       |       |       |
| Mov Cap-1 Maneuver   | 1058   | - | -      | 1258  | -      | - | 277    | 295   | 738   | 280   | 296   | 569   |
| Mov Cap-2 Maneuver   | -      | - | -      | -     | -      | - | 277    | 295   | -     | 280   | 296   | -     |
| Stage 1              | -      | - | -      | -     | -      | - | 668    | 632   | -     | 549   | 540   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 541    | 538   | -     | 667   | 631   | -     |

| Approach          | EB   | WB   | NB    | SB    |
|-------------------|------|------|-------|-------|
| HCM Ctrl Dly, s/v | 0.42 | 0.02 | 13.23 | 13.84 |
| HCM LOS           |      |      | B     | B     |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 443   | 89    | -   | -   | 4     | -   | -   | 423   |
| HCM Lane V/C Ratio    | 0.012 | 0.015 | -   | -   | 0.001 | -   | -   | 0.037 |
| HCM Ctrl Dly (s/v)    | 13.2  | 8.5   | 0   | -   | 7.9   | 0   | -   | 13.8  |
| HCM Lane LOS          | B     | A     | A   | -   | A     | A   | -   | B     |
| HCM 95th %tile Q(veh) | 0     | 0     | -   | -   | 0     | -   | -   | 0.1   |

Intersection

Int Delay, s/veh 2.4

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

|                          |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 74   | 311  | 0    | 1    | 176  | 9    | 1    | 0    | 2    | 20   | 0    | 60   |
| Future Vol, veh/h        | 74   | 311  | 0    | 1    | 176  | 9    | 1    | 0    | 2    | 20   | 0    | 60   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 94   | 94   | 94   | 94   | 94   | 94   | 94   | 94   | 94   | 94   | 94   | 94   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 79   | 331  | 0    | 1    | 187  | 10   | 1    | 0    | 2    | 21   | 0    | 64   |

| Major/Minor          | Major1 |   | Major2 |       | Minor1 |   | Minor2 |       |       |       |       |       |
|----------------------|--------|---|--------|-------|--------|---|--------|-------|-------|-------|-------|-------|
| Conflicting Flow All | 197    | 0 | 0      | 331   | 0      | 0 | 678    | 687   | 331   | 682   | 682   | 192   |
| Stage 1              | -      | - | -      | -     | -      | - | 488    | 488   | -     | 194   | 194   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 189    | 199   | -     | 488   | 488   | -     |
| Critical Hdwy        | 4.12   | - | -      | 4.12  | -      | - | 7.12   | 6.52  | 6.22  | 7.12  | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | -      | 2.218 | -      | - | 3.518  | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1376   | - | -      | 1229  | -      | - | 366    | 370   | 711   | 364   | 372   | 850   |
| Stage 1              | -      | - | -      | -     | -      | - | 561    | 550   | -     | 808   | 740   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 812    | 736   | -     | 561   | 550   | -     |
| Platoon blocked, %   |        | - | -      |       | -      | - |        |       |       |       |       |       |
| Mov Cap-1 Maneuver   | 1376   | - | -      | 1229  | -      | - | 315    | 343   | 711   | 337   | 346   | 850   |
| Mov Cap-2 Maneuver   | -      | - | -      | -     | -      | - | 315    | 343   | -     | 337   | 346   | -     |
| Stage 1              | -      | - | -      | -     | -      | - | 522    | 511   | -     | 807   | 739   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 751    | 736   | -     | 520   | 511   | -     |

| Approach          | EB   | WB   | NB    | SB    |
|-------------------|------|------|-------|-------|
| HCM Ctrl Dly, s/v | 1.49 | 0.04 | 12.24 | 11.79 |
| HCM LOS           |      |      | B     | B     |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 501   | 346   | -   | -   | 10    | -   | -   | 615   |
| HCM Lane V/C Ratio    | 0.006 | 0.057 | -   | -   | 0.001 | -   | -   | 0.138 |
| HCM Ctrl Dly (s/v)    | 12.2  | 7.8   | 0   | -   | 7.9   | 0   | -   | 11.8  |
| HCM Lane LOS          | B     | A     | A   | -   | A     | A   | -   | B     |
| HCM 95th %tile Q(veh) | 0     | 0.2   | -   | -   | 0     | -   | -   | 0.5   |

HCM 7th TWSC  
15: 57th Street & LCR13

Short Bkgrd PM

Intersection

Int Delay, s/veh 3.2

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 45   | 233  | 3    | 1    | 376  | 23   | 2    | 0    | 3    | 31   | 0    | 110  |
| Future Vol, veh/h        | 45   | 233  | 3    | 1    | 376  | 23   | 2    | 0    | 3    | 31   | 0    | 110  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 50   | 259  | 3    | 1    | 418  | 26   | 2    | 0    | 3    | 34   | 0    | 122  |

| Major/Minor          | Major1 |   | Major2 |       | Minor1 |   | Minor2 |       |       |       |       |       |
|----------------------|--------|---|--------|-------|--------|---|--------|-------|-------|-------|-------|-------|
| Conflicting Flow All | 443    | 0 | 0      | 262   | 0      | 0 | 781    | 806   | 261   | 792   | 795   | 431   |
| Stage 1              | -      | - | -      | -     | -      | - | 361    | 361   | -     | 433   | 433   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 420    | 446   | -     | 359   | 362   | -     |
| Critical Hdwy        | 4.12   | - | -      | 4.12  | -      | - | 7.12   | 6.52  | 6.22  | 7.12  | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | -      | 2.218 | -      | - | 3.518  | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1117   | - | -      | 1302  | -      | - | 312    | 316   | 778   | 307   | 320   | 625   |
| Stage 1              | -      | - | -      | -     | -      | - | 658    | 626   | -     | 601   | 582   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 611    | 574   | -     | 659   | 625   | -     |
| Platoon blocked, %   |        | - | -      |       | -      | - |        |       |       |       |       |       |
| Mov Cap-1 Maneuver   | 1117   | - | -      | 1302  | -      | - | 238    | 299   | 778   | 289   | 303   | 625   |
| Mov Cap-2 Maneuver   | -      | - | -      | -     | -      | - | 238    | 299   | -     | 289   | 303   | -     |
| Stage 1              | -      | - | -      | -     | -      | - | 623    | 593   | -     | 601   | 581   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 491    | 574   | -     | 622   | 592   | -     |

| Approach          | EB   | WB   | NB    | SB    |
|-------------------|------|------|-------|-------|
| HCM Ctrl Dly, s/v | 1.34 | 0.02 | 13.95 | 15.52 |
| HCM LOS           |      |      | B     | C     |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 408   | 288   | -   | -   | 4     | -   | -   | 498   |
| HCM Lane V/C Ratio    | 0.014 | 0.045 | -   | -   | 0.001 | -   | -   | 0.315 |
| HCM Ctrl Dly (s/v)    | 14    | 8.4   | 0   | -   | 7.8   | 0   | -   | 15.5  |
| HCM Lane LOS          | B     | A     | A   | -   | A     | A   | -   | C     |
| HCM 95th %tile Q(veh) | 0     | 0.1   | -   | -   | 0     | -   | -   | 1.3   |

HCM 7th Roundabout  
23: Monroe & 65th Street

Short Bkgrd AM

Intersection

Intersection Delay, s/veh 3.1  
Intersection LOS A

| Approach                    | EB    | WB    | NB    |
|-----------------------------|-------|-------|-------|
| Entry Lanes                 | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 68    | 22    | 59    |
| Demand Flow Rate, veh/h     | 70    | 22    | 60    |
| Vehicles Circulating, veh/h | 4     | 53    | 34    |
| Vehicles Exiting, veh/h     | 71    | 41    | 40    |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 3.1   | 2.9   | 3.1   |
| Approach LOS                | A     | A     | A     |

| Lane                  | Left    | Left    | Left    |
|-----------------------|---------|---------|---------|
| Designated Moves      | TR      | LT      | LR      |
| Assumed Moves         | TR      | LT      | LR      |
| RT Channelized        |         |         |         |
| Lane Util             | 1.000   | 1.000   | 1.000   |
| Follow-Up Headway, s  | 2.609   | 2.609   | 2.609   |
| Critical Headway, s   | 4.976   | 4.976   | 4.976   |
| A (Intercept)         | 1380    | 1380    | 1380    |
| B (Slope)             | 1.02e-3 | 1.02e-3 | 1.02e-3 |
| Entry Flow, veh/h     | 70      | 22      | 60      |
| Cap Entry Lane, veh/h | 1374    | 1307    | 1333    |
| Entry HV Adj Factor   | 0.976   | 0.984   | 0.983   |
| Flow Entry, veh/h     | 68      | 22      | 59      |
| Cap Entry, veh/h      | 1342    | 1286    | 1311    |
| V/C Ratio             | 0.051   | 0.017   | 0.045   |
| Control Delay, s/veh  | 3.1     | 2.9     | 3.1     |
| LOS                   | A       | A       | A       |
| 95th %tile Queue, veh | 0       | 0       | 0       |

HCM 7th Roundabout  
23: Monroe & 65th Street

Short Bkgrd PM

Intersection

Intersection Delay, s/veh 3.1  
Intersection LOS A

| Approach                    | EB    | WB    | NB    |
|-----------------------------|-------|-------|-------|
| Entry Lanes                 | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 88    | 47    | 56    |
| Demand Flow Rate, veh/h     | 90    | 48    | 57    |
| Vehicles Circulating, veh/h | 8     | 53    | 29    |
| Vehicles Exiting, veh/h     | 93    | 33    | 69    |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 3.2   | 3.1   | 3.1   |
| Approach LOS                | A     | A     | A     |

| Lane                  | Left    | Left    | Left    |
|-----------------------|---------|---------|---------|
| Designated Moves      | TR      | LT      | LR      |
| Assumed Moves         | TR      | LT      | LR      |
| RT Channelized        |         |         |         |
| Lane Util             | 1.000   | 1.000   | 1.000   |
| Follow-Up Headway, s  | 2.609   | 2.609   | 2.609   |
| Critical Headway, s   | 4.976   | 4.976   | 4.976   |
| A (Intercept)         | 1380    | 1380    | 1380    |
| B (Slope)             | 1.02e-3 | 1.02e-3 | 1.02e-3 |
| Entry Flow, veh/h     | 90      | 48      | 57      |
| Cap Entry Lane, veh/h | 1369    | 1307    | 1340    |
| Entry HV Adj Factor   | 0.983   | 0.984   | 0.982   |
| Flow Entry, veh/h     | 88      | 47      | 56      |
| Cap Entry, veh/h      | 1345    | 1286    | 1316    |
| V/C Ratio             | 0.066   | 0.037   | 0.043   |
| Control Delay, s/veh  | 3.2     | 3.1     | 3.1     |
| LOS                   | A       | A       | A       |
| 95th %tile Queue, veh | 0       | 0       | 0       |

HCM 7th TWSC  
12: St. Louis & 65th Street

Short Bkgrd AM

Intersection

Int Delay, s/veh 1.5

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|----------|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|

|                          |                                                                                   |      |      |                                                                                   |                                                                                   |      |
|--------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |  |      |      |  |  |      |
| Traffic Vol, veh/h       | 32                                                                                | 2    | 1    | 12                                                                                | 6                                                                                 | 3    |
| Future Vol, veh/h        | 32                                                                                | 2    | 1    | 12                                                                                | 6                                                                                 | 3    |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Free                                                                              | Free | Free | Free                                                                              | Stop                                                                              | Stop |
| RT Channelized           | -                                                                                 | None | -    | None                                                                              | -                                                                                 | None |
| Storage Length           | -                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 85                                                                                | 85   | 85   | 85                                                                                | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2                                                                                 | 2    | 2    | 2                                                                                 | 2                                                                                 | 2    |
| Mvmt Flow                | 38                                                                                | 2    | 1    | 14                                                                                | 7                                                                                 | 4    |

| Major/Minor | Major1 | Major2 | Minor1 |
|-------------|--------|--------|--------|
|-------------|--------|--------|--------|

|                      |   |   |       |   |       |       |
|----------------------|---|---|-------|---|-------|-------|
| Conflicting Flow All | 0 | 0 | 40    | 0 | 55    | 39    |
| Stage 1              | - | - | -     | - | 39    | -     |
| Stage 2              | - | - | -     | - | 16    | -     |
| Critical Hdwy        | - | - | 4.12  | - | 6.42  | 6.22  |
| Critical Hdwy Stg 1  | - | - | -     | - | 5.42  | -     |
| Critical Hdwy Stg 2  | - | - | -     | - | 5.42  | -     |
| Follow-up Hdwy       | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver   | - | - | 1570  | - | 952   | 1033  |
| Stage 1              | - | - | -     | - | 984   | -     |
| Stage 2              | - | - | -     | - | 1006  | -     |
| Platoon blocked, %   | - | - | -     | - | -     | -     |
| Mov Cap-1 Maneuver   | - | - | 1570  | - | 952   | 1033  |
| Mov Cap-2 Maneuver   | - | - | -     | - | 952   | -     |
| Stage 1              | - | - | -     | - | 984   | -     |
| Stage 2              | - | - | -     | - | 1006  | -     |

| Approach | EB | WB | NB |
|----------|----|----|----|
|----------|----|----|----|

|                   |   |      |      |
|-------------------|---|------|------|
| HCM Ctrl Dly, s/v | 0 | 0.56 | 8.72 |
| HCM LOS           |   |      | A    |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|-----------------------|-------|-----|-----|-----|-----|
|-----------------------|-------|-----|-----|-----|-----|

|                       |       |   |   |       |   |
|-----------------------|-------|---|---|-------|---|
| Capacity (veh/h)      | 977   | - | - | 138   | - |
| HCM Lane V/C Ratio    | 0.011 | - | - | 0.001 | - |
| HCM Ctrl Dly (s/v)    | 8.7   | - | - | 7.3   | 0 |
| HCM Lane LOS          | A     | - | - | A     | A |
| HCM 95th %tile Q(veh) | 0     | - | - | 0     | - |

HCM 7th TWSC  
12: St. Louis & 65th Street

Short Bkgrd PM

Intersection

Int Delay, s/veh 0.8

Movement EBT EBR WBL WBT NBL NBR

|                          |                                                                                   |      |      |                                                                                   |                                                                                   |      |
|--------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |  |      |      |  |  |      |
| Traffic Vol, veh/h       | 20                                                                                | 7    | 2    | 36                                                                                | 4                                                                                 | 1    |
| Future Vol, veh/h        | 20                                                                                | 7    | 2    | 36                                                                                | 4                                                                                 | 1    |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Free                                                                              | Free | Free | Free                                                                              | Stop                                                                              | Stop |
| RT Channelized           | -                                                                                 | None | -    | None                                                                              | -                                                                                 | None |
| Storage Length           | -                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 85                                                                                | 85   | 85   | 85                                                                                | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2                                                                                 | 2    | 2    | 2                                                                                 | 2                                                                                 | 2    |
| Mvmt Flow                | 24                                                                                | 8    | 2    | 42                                                                                | 5                                                                                 | 1    |

Major/Minor Major1 Major2 Minor1

|                      |   |   |       |   |       |       |
|----------------------|---|---|-------|---|-------|-------|
| Conflicting Flow All | 0 | 0 | 32    | 0 | 75    | 28    |
| Stage 1              | - | - | -     | - | 28    | -     |
| Stage 2              | - | - | -     | - | 47    | -     |
| Critical Hdwy        | - | - | 4.12  | - | 6.42  | 6.22  |
| Critical Hdwy Stg 1  | - | - | -     | - | 5.42  | -     |
| Critical Hdwy Stg 2  | - | - | -     | - | 5.42  | -     |
| Follow-up Hdwy       | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver   | - | - | 1581  | - | 929   | 1048  |
| Stage 1              | - | - | -     | - | 995   | -     |
| Stage 2              | - | - | -     | - | 975   | -     |
| Platoon blocked, %   | - | - | -     | - | -     | -     |
| Mov Cap-1 Maneuver   | - | - | 1581  | - | 927   | 1048  |
| Mov Cap-2 Maneuver   | - | - | -     | - | 927   | -     |
| Stage 1              | - | - | -     | - | 995   | -     |
| Stage 2              | - | - | -     | - | 974   | -     |

Approach EB WB NB

|                   |   |      |      |
|-------------------|---|------|------|
| HCM Ctrl Dly, s/v | 0 | 0.38 | 8.82 |
| HCM LOS           |   |      | A    |

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

|                       |       |   |   |       |   |
|-----------------------|-------|---|---|-------|---|
| Capacity (veh/h)      | 949   | - | - | 95    | - |
| HCM Lane V/C Ratio    | 0.006 | - | - | 0.001 | - |
| HCM Ctrl Dly (s/v)    | 8.8   | - | - | 7.3   | 0 |
| HCM Lane LOS          | A     | - | - | A     | A |
| HCM 95th %tile Q(veh) | 0     | - | - | 0     | - |

HCM 7th Roundabout  
6: LCR13 & 65th Street

Short Bkgrd AM

Intersection

Intersection Delay, s/veh 3.2  
Intersection LOS A

| Approach                    | EB    | NB    | SB    |
|-----------------------------|-------|-------|-------|
| Entry Lanes                 | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 41    | 98    | 91    |
| Demand Flow Rate, veh/h     | 42    | 100   | 93    |
| Vehicles Circulating, veh/h | 82    | 28    | 5     |
| Vehicles Exiting, veh/h     | 16    | 96    | 123   |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 3.2   | 3.3   | 3.2   |
| Approach LOS                | A     | A     | A     |

| Lane                  | Left    | Left    | Left    |
|-----------------------|---------|---------|---------|
| Designated Moves      | LR      | LT      | TR      |
| Assumed Moves         | LR      | LT      | TR      |
| RT Channelized        |         |         |         |
| Lane Util             | 1.000   | 1.000   | 1.000   |
| Follow-Up Headway, s  | 2.609   | 2.609   | 2.609   |
| Critical Headway, s   | 4.976   | 4.976   | 4.976   |
| A (Intercept)         | 1380    | 1380    | 1380    |
| B (Slope)             | 1.02e-3 | 1.02e-3 | 1.02e-3 |
| Entry Flow, veh/h     | 42      | 100     | 93      |
| Cap Entry Lane, veh/h | 1269    | 1341    | 1373    |
| Entry HV Adj Factor   | 0.976   | 0.981   | 0.983   |
| Flow Entry, veh/h     | 41      | 98      | 91      |
| Cap Entry, veh/h      | 1239    | 1316    | 1349    |
| V/C Ratio             | 0.033   | 0.075   | 0.068   |
| Control Delay, s/veh  | 3.2     | 3.3     | 3.2     |
| LOS                   | A       | A       | A       |
| 95th %tile Queue, veh | 0       | 0       | 0       |

HCM 7th Roundabout  
6: LCR13 & 65th Street

Short Bkgrd PM

Intersection

Intersection Delay, s/veh 3.6  
Intersection LOS A

| Approach                    | EB    | NB    | SB    |
|-----------------------------|-------|-------|-------|
| Entry Lanes                 | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 24    | 80    | 183   |
| Demand Flow Rate, veh/h     | 24    | 81    | 187   |
| Vehicles Circulating, veh/h | 159   | 15    | 15    |
| Vehicles Exiting, veh/h     | 43    | 168   | 81    |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 3.2   | 3.2   | 3.8   |
| Approach LOS                | A     | A     | A     |

| Lane                  | Left    | Left    | Left    |
|-----------------------|---------|---------|---------|
| Designated Moves      | LR      | LT      | TR      |
| Assumed Moves         | LR      | LT      | TR      |
| RT Channelized        |         |         |         |
| Lane Util             | 1.000   | 1.000   | 1.000   |
| Follow-Up Headway, s  | 2.609   | 2.609   | 2.609   |
| Critical Headway, s   | 4.976   | 4.976   | 4.976   |
| A (Intercept)         | 1380    | 1380    | 1380    |
| B (Slope)             | 1.02e-3 | 1.02e-3 | 1.02e-3 |
| Entry Flow, veh/h     | 24      | 81      | 187     |
| Cap Entry Lane, veh/h | 1173    | 1359    | 1359    |
| Entry HV Adj Factor   | 1.000   | 0.984   | 0.978   |
| Flow Entry, veh/h     | 24      | 80      | 183     |
| Cap Entry, veh/h      | 1173    | 1337    | 1329    |
| V/C Ratio             | 0.020   | 0.060   | 0.138   |
| Control Delay, s/veh  | 3.2     | 3.2     | 3.8     |
| LOS                   | A       | A       | A       |
| 95th %tile Queue, veh | 0       | 0       | 0       |

# HCM 7th TWSC 3: LCR13 & Bruns

Short Bkgrd AM

## Intersection

Int Delay, s/veh 5.9

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|----------|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|

|                          |      |                                                                                   |                                                                                   |      |                                                                                   |      |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 92   | 28                                                                                | 49                                                                                | 8    | 7                                                                                 | 100  |
| Future Vol, veh/h        | 92   | 28                                                                                | 49                                                                                | 8    | 7                                                                                 | 100  |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 92   | 85                                                                                | 85                                                                                | 85   | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    |
| Mvmt Flow                | 100  | 33                                                                                | 58                                                                                | 9    | 8                                                                                 | 118  |

| Major/Minor | Major1 | Major2 | Minor2 |
|-------------|--------|--------|--------|
|-------------|--------|--------|--------|

|                      |       |   |   |       |       |
|----------------------|-------|---|---|-------|-------|
| Conflicting Flow All | 67    | 0 | 0 | 295   | 62    |
| Stage 1              | -     | - | - | 62    | -     |
| Stage 2              | -     | - | - | 233   | -     |
| Critical Hdwy        | 4.12  | - | - | 6.42  | 6.22  |
| Critical Hdwy Stg 1  | -     | - | - | 5.42  | -     |
| Critical Hdwy Stg 2  | -     | - | - | 5.42  | -     |
| Follow-up Hdwy       | 2.218 | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver   | 1534  | - | - | 696   | 1002  |
| Stage 1              | -     | - | - | 960   | -     |
| Stage 2              | -     | - | - | 806   | -     |
| Platoon blocked, %   | -     | - | - | -     | -     |
| Mov Cap-1 Maneuver   | 1534  | - | - | 650   | 1002  |
| Mov Cap-2 Maneuver   | -     | - | - | 650   | -     |
| Stage 1              | -     | - | - | 897   | -     |
| Stage 2              | -     | - | - | 806   | -     |

| Approach | EB | WB | SB |
|----------|----|----|----|
|----------|----|----|----|

|                   |      |   |      |
|-------------------|------|---|------|
| HCM Ctrl Dly, s/v | 5.65 | 0 | 9.27 |
| HCM LOS           |      |   | A    |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|-----------------------|-----|-----|-----|-----|-------|
|-----------------------|-----|-----|-----|-----|-------|

|                       |       |   |   |   |      |
|-----------------------|-------|---|---|---|------|
| Capacity (veh/h)      | 1354  | - | - | - | 968  |
| HCM Lane V/C Ratio    | 0.065 | - | - | - | 0.13 |
| HCM Ctrl Dly (s/v)    | 7.5   | 0 | - | - | 9.3  |
| HCM Lane LOS          | A     | A | - | - | A    |
| HCM 95th %tile Q(veh) | 0.2   | - | - | - | 0.4  |

Intersection

Int Delay, s/veh 1.6

Movement EBL EBT WBT WBR SBL SBR

|                          |      |                                                                                   |                                                                                   |      |                                                                                   |      |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 18   | 109                                                                               | 48                                                                                | 0    | 0                                                                                 | 21   |
| Future Vol, veh/h        | 18   | 109                                                                               | 48                                                                                | 0    | 0                                                                                 | 21   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 92   | 85                                                                                | 85                                                                                | 85   | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    |
| Mvmt Flow                | 20   | 128                                                                               | 56                                                                                | 0    | 0                                                                                 | 25   |

Major/Minor Major1 Major2 Minor2

|                      |       |   |   |   |       |       |
|----------------------|-------|---|---|---|-------|-------|
| Conflicting Flow All | 56    | 0 | - | 0 | 224   | 56    |
| Stage 1              | -     | - | - | - | 56    | -     |
| Stage 2              | -     | - | - | - | 167   | -     |
| Critical Hdwy        | 4.12  | - | - | - | 6.42  | 6.22  |
| Critical Hdwy Stg 1  | -     | - | - | - | 5.42  | -     |
| Critical Hdwy Stg 2  | -     | - | - | - | 5.42  | -     |
| Follow-up Hdwy       | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver   | 1548  | - | - | - | 764   | 1010  |
| Stage 1              | -     | - | - | - | 966   | -     |
| Stage 2              | -     | - | - | - | 862   | -     |
| Platoon blocked, %   |       | - | - | - |       |       |
| Mov Cap-1 Maneuver   | 1548  | - | - | - | 754   | 1010  |
| Mov Cap-2 Maneuver   | -     | - | - | - | 754   | -     |
| Stage 1              | -     | - | - | - | 953   | -     |
| Stage 2              | -     | - | - | - | 862   | -     |

Approach EB WB SB

|                   |      |   |      |
|-------------------|------|---|------|
| HCM Ctrl Dly, s/v | 0.97 | 0 | 8.65 |
| HCM LOS           |      |   | A    |

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

|                       |       |   |   |   |       |
|-----------------------|-------|---|---|---|-------|
| Capacity (veh/h)      | 238   | - | - | - | 1010  |
| HCM Lane V/C Ratio    | 0.013 | - | - | - | 0.024 |
| HCM Ctrl Dly (s/v)    | 7.4   | 0 | - | - | 8.7   |
| HCM Lane LOS          | A     | A | - | - | A     |
| HCM 95th %tile Q(veh) | 0     | - | - | - | 0.1   |

## APPENDIX E

# HCM 7th Signalized Intersection Summary

## 3: US287 & 57th Street

Long Bkgrd AM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 345                                                                               | 235                                                                               | 195                                                                               | 100                                                                               | 120                                                                               | 195                                                                               | 115                                                                                 | 1685                                                                                | 80                                                                                  | 135                                                                                 | 1505                                                                                | 250                                                                                 |
| Future Volume (veh/h)        | 345                                                                               | 235                                                                               | 195                                                                               | 100                                                                               | 120                                                                               | 195                                                                               | 115                                                                                 | 1685                                                                                | 80                                                                                  | 135                                                                                 | 1505                                                                                | 250                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 363                                                                               | 247                                                                               | 0                                                                                 | 105                                                                               | 126                                                                               | 0                                                                                 | 121                                                                                 | 1774                                                                                | 79                                                                                  | 142                                                                                 | 1584                                                                                | 92                                                                                  |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 464                                                                               | 522                                                                               |                                                                                   | 198                                                                               | 248                                                                               |                                                                                   | 166                                                                                 | 2535                                                                                | 113                                                                                 | 178                                                                                 | 2617                                                                                | 812                                                                                 |
| Arrive On Green              | 0.13                                                                              | 0.15                                                                              | 0.00                                                                              | 0.06                                                                              | 0.07                                                                              | 0.00                                                                              | 0.09                                                                                | 0.51                                                                                | 0.51                                                                                | 0.03                                                                                | 0.17                                                                                | 0.17                                                                                |
| Sat Flow, veh/h              | 3456                                                                              | 3554                                                                              | 1585                                                                              | 3456                                                                              | 3554                                                                              | 1585                                                                              | 1781                                                                                | 5011                                                                                | 223                                                                                 | 1781                                                                                | 5106                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 363                                                                               | 247                                                                               | 0                                                                                 | 105                                                                               | 126                                                                               | 0                                                                                 | 121                                                                                 | 1204                                                                                | 649                                                                                 | 142                                                                                 | 1584                                                                                | 92                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1728                                                                              | 1777                                                                              | 1585                                                                              | 1728                                                                              | 1777                                                                              | 1585                                                                              | 1781                                                                                | 1702                                                                                | 1830                                                                                | 1781                                                                                | 1702                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 10.2                                                                              | 6.4                                                                               | 0.0                                                                               | 3.0                                                                               | 3.4                                                                               | 0.0                                                                               | 6.6                                                                                 | 27.1                                                                                | 27.1                                                                                | 7.9                                                                                 | 28.7                                                                                | 4.9                                                                                 |
| Cycle Q Clear(g_c), s        | 10.2                                                                              | 6.4                                                                               | 0.0                                                                               | 3.0                                                                               | 3.4                                                                               | 0.0                                                                               | 6.6                                                                                 | 27.1                                                                                | 27.1                                                                                | 7.9                                                                                 | 28.7                                                                                | 4.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.12                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 464                                                                               | 522                                                                               |                                                                                   | 198                                                                               | 248                                                                               |                                                                                   | 166                                                                                 | 1722                                                                                | 926                                                                                 | 178                                                                                 | 2617                                                                                | 812                                                                                 |
| V/C Ratio(X)                 | 0.78                                                                              | 0.47                                                                              |                                                                                   | 0.53                                                                              | 0.51                                                                              |                                                                                   | 0.73                                                                                | 0.70                                                                                | 0.70                                                                                | 0.80                                                                                | 0.61                                                                                | 0.11                                                                                |
| Avail Cap(c_a), veh/h        | 518                                                                               | 1173                                                                              |                                                                                   | 207                                                                               | 853                                                                               |                                                                                   | 196                                                                                 | 1722                                                                                | 926                                                                                 | 178                                                                                 | 2617                                                                                | 812                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.70                                                                                | 0.70                                                                                | 0.70                                                                                |
| Uniform Delay (d), s/veh     | 41.9                                                                              | 39.1                                                                              | 0.0                                                                               | 45.8                                                                              | 44.8                                                                              | 0.0                                                                               | 44.1                                                                                | 18.9                                                                                | 18.9                                                                                | 47.3                                                                                | 32.2                                                                                | 22.3                                                                                |
| Incr Delay (d2), s/veh       | 6.9                                                                               | 0.7                                                                               | 0.0                                                                               | 2.2                                                                               | 1.5                                                                               | 0.0                                                                               | 10.6                                                                                | 2.4                                                                                 | 4.4                                                                                 | 16.1                                                                                | 0.7                                                                                 | 0.2                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 4.7                                                                               | 2.8                                                                               | 0.0                                                                               | 1.3                                                                               | 1.5                                                                               | 0.0                                                                               | 3.3                                                                                 | 9.9                                                                                 | 11.1                                                                                | 4.3                                                                                 | 13.0                                                                                | 1.9                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 48.8                                                                              | 39.8                                                                              | 0.0                                                                               | 48.0                                                                              | 46.4                                                                              | 0.0                                                                               | 54.7                                                                                | 21.3                                                                                | 23.3                                                                                | 63.5                                                                                | 32.9                                                                                | 22.5                                                                                |
| LnGrp LOS                    | D                                                                                 | D                                                                                 |                                                                                   | D                                                                                 | D                                                                                 |                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   | E                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 610                                                                               |                                                                                   |                                                                                   | 231                                                                               |                                                                                   |                                                                                     | 1974                                                                                |                                                                                     |                                                                                     | 1818                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 45.1                                                                              |                                                                                   |                                                                                   | 47.1                                                                              |                                                                                   |                                                                                     | 24.0                                                                                |                                                                                     |                                                                                     | 34.8                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 14.0                                                                              | 57.6                                                                              | 9.7                                                                               | 18.7                                                                              | 13.3                                                                              | 58.2                                                                              | 17.4                                                                                | 11.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 8.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 8.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.0                                                                               | 31.0                                                                              | 5.0                                                                               | 32.0                                                                              | 10.0                                                                              | 30.0                                                                              | 14.0                                                                                | 23.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 9.9                                                                               | 29.1                                                                              | 5.0                                                                               | 8.4                                                                               | 8.6                                                                               | 30.7                                                                              | 12.2                                                                                | 5.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.6                                                                               | 0.0                                                                               | 1.5                                                                               | 0.0                                                                               | 0.0                                                                               | 0.3                                                                                 | 0.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

HCM 7th Control Delay, s/veh 32.2  
 HCM 7th LOS C

### Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Timing Report, Sorted By Phase  
3: US287 & 57th Street

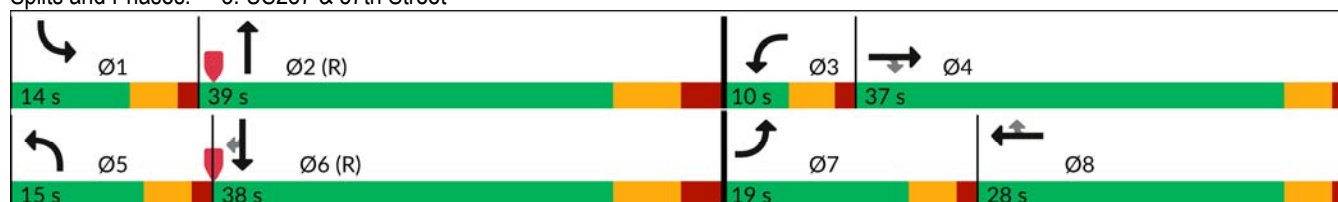
Long Bkgrd AM

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|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |
| Movement               | SBL                                                                               | NBT                                                                               | WBL                                                                               | EBT                                                                               | NBL                                                                               | SBT                                                                               | EBL                                                                                 | WBT                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Recall Mode            | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                                | None                                                                                |
| Maximum Split (s)      | 14                                                                                | 39                                                                                | 10                                                                                | 37                                                                                | 15                                                                                | 38                                                                                | 19                                                                                  | 28                                                                                  |
| Maximum Split (%)      | 14.0%                                                                             | 39.0%                                                                             | 10.0%                                                                             | 37.0%                                                                             | 15.0%                                                                             | 38.0%                                                                             | 19.0%                                                                               | 28.0%                                                                               |
| Minimum Split (s)      | 10                                                                                | 35                                                                                | 10                                                                                | 28                                                                                | 10                                                                                | 35                                                                                | 10                                                                                  | 28                                                                                  |
| Yellow Time (s)        | 3.5                                                                               | 5                                                                                 | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)       | 1.5                                                                               | 3                                                                                 | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 3                                                                                 | 1.5                                                                                 | 1.5                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                   | 5                                                                                   |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Walk Time (s)          |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   | 4                                                                                 |                                                                                     |                                                                                     |
| Flash Don't Walk (s)   |                                                                                   | 23                                                                                |                                                                                   |                                                                                   |                                                                                   | 23                                                                                |                                                                                     |                                                                                     |
| Dual Entry             | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                  | Yes                                                                                 |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Start Time (s)         | 85                                                                                | 99                                                                                | 38                                                                                | 48                                                                                | 85                                                                                | 0                                                                                 | 38                                                                                  | 57                                                                                  |
| End Time (s)           | 99                                                                                | 38                                                                                | 48                                                                                | 85                                                                                | 0                                                                                 | 38                                                                                | 57                                                                                  | 85                                                                                  |
| Yield/Force Off (s)    | 94                                                                                | 30                                                                                | 43                                                                                | 80                                                                                | 95                                                                                | 30                                                                                | 52                                                                                  | 80                                                                                  |
| Yield/Force Off 170(s) | 94                                                                                | 7                                                                                 | 43                                                                                | 80                                                                                | 95                                                                                | 7                                                                                 | 52                                                                                  | 80                                                                                  |
| Local Start Time (s)   | 85                                                                                | 99                                                                                | 38                                                                                | 48                                                                                | 85                                                                                | 0                                                                                 | 38                                                                                  | 57                                                                                  |
| Local Yield (s)        | 94                                                                                | 30                                                                                | 43                                                                                | 80                                                                                | 95                                                                                | 30                                                                                | 52                                                                                  | 80                                                                                  |
| Local Yield 170(s)     | 94                                                                                | 7                                                                                 | 43                                                                                | 80                                                                                | 95                                                                                | 7                                                                                 | 52                                                                                  | 80                                                                                  |

Intersection Summary

Cycle Length 100  
Control Type Actuated-Coordinated  
Natural Cycle 85  
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Splits and Phases: 3: US287 & 57th Street



Queues  
3: US287 & 57th Street

Long Bkgrd AM

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Group Flow (vph)   | 363                                                                               | 247                                                                               | 205                                                                               | 105                                                                               | 126                                                                               | 205                                                                               | 121                                                                                | 1858                                                                                | 142                                                                                 | 1584                                                                                | 263                                                                                 |
| v/c Ratio               | 0.73                                                                              | 0.34                                                                              | 0.42                                                                              | 0.51                                                                              | 0.35                                                                              | 0.57                                                                              | 0.52                                                                               | 0.89                                                                                | 0.54                                                                                | 0.72                                                                                | 0.32                                                                                |
| Control Delay (s/veh)   | 50.1                                                                              | 35.2                                                                              | 7.5                                                                               | 54.8                                                                              | 43.6                                                                              | 11.5                                                                              | 47.8                                                                               | 35.4                                                                                | 54.2                                                                                | 17.2                                                                                | 2.7                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     | 50.1                                                                              | 35.2                                                                              | 7.5                                                                               | 54.8                                                                              | 43.6                                                                              | 11.5                                                                              | 47.8                                                                               | 35.4                                                                                | 54.2                                                                                | 17.2                                                                                | 2.7                                                                                 |
| Queue Length 50th (ft)  | 114                                                                               | 73                                                                                | 0                                                                                 | 34                                                                                | 40                                                                                | 0                                                                                 | 73                                                                                 | 396                                                                                 | 72                                                                                  | 328                                                                                 | 24                                                                                  |
| Queue Length 95th (ft)  | 163                                                                               | 104                                                                               | 56                                                                                | 61                                                                                | 65                                                                                | 55                                                                                | 124                                                                                | #603                                                                                | m110                                                                                | #451                                                                                | m46                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 644                                                                               |                                                                                   |                                                                                   | 2559                                                                              |                                                                                   |                                                                                    | 634                                                                                 |                                                                                     | 2545                                                                                |                                                                                     |
| Turn Bay Length (ft)    | 250                                                                               |                                                                                   | 200                                                                               | 300                                                                               |                                                                                   | 350                                                                               | 350                                                                                |                                                                                     | 250                                                                                 |                                                                                     | 360                                                                                 |
| Base Capacity (vph)     | 514                                                                               | 1167                                                                              | 659                                                                               | 205                                                                               | 849                                                                               | 545                                                                               | 241                                                                                | 2082                                                                                | 265                                                                                 | 2186                                                                                | 830                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.71                                                                              | 0.21                                                                              | 0.31                                                                              | 0.51                                                                              | 0.15                                                                              | 0.38                                                                              | 0.50                                                                               | 0.89                                                                                | 0.54                                                                                | 0.72                                                                                | 0.32                                                                                |

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 7th Signalized Intersection Summary

## 3: US287 & 57th Street

Long Bkgrd PM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 340                                                                               | 185                                                                               | 140                                                                               | 195                                                                               | 270                                                                               | 195                                                                               | 165                                                                                 | 1925                                                                                | 125                                                                                 | 245                                                                                 | 1880                                                                                | 500                                                                                 |
| Future Volume (veh/h)        | 340                                                                               | 185                                                                               | 140                                                                               | 195                                                                               | 270                                                                               | 195                                                                               | 165                                                                                 | 1925                                                                                | 125                                                                                 | 245                                                                                 | 1880                                                                                | 500                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 347                                                                               | 189                                                                               | 0                                                                                 | 199                                                                               | 276                                                                               | 0                                                                                 | 168                                                                                 | 1964                                                                                | 123                                                                                 | 250                                                                                 | 1918                                                                                | 294                                                                                 |
| Peak Hour Factor             | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 430                                                                               | 541                                                                               |                                                                                   | 280                                                                               | 387                                                                               |                                                                                   | 206                                                                                 | 2312                                                                                | 144                                                                                 | 257                                                                                 | 2546                                                                                | 790                                                                                 |
| Arrive On Green              | 0.12                                                                              | 0.15                                                                              | 0.00                                                                              | 0.08                                                                              | 0.11                                                                              | 0.00                                                                              | 0.12                                                                                | 0.47                                                                                | 0.47                                                                                | 0.29                                                                                | 1.00                                                                                | 1.00                                                                                |
| Sat Flow, veh/h              | 3456                                                                              | 3554                                                                              | 1585                                                                              | 3456                                                                              | 3554                                                                              | 1585                                                                              | 1781                                                                                | 4913                                                                                | 307                                                                                 | 1781                                                                                | 5106                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 347                                                                               | 189                                                                               | 0                                                                                 | 199                                                                               | 276                                                                               | 0                                                                                 | 168                                                                                 | 1359                                                                                | 728                                                                                 | 250                                                                                 | 1918                                                                                | 294                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1728                                                                              | 1777                                                                              | 1585                                                                              | 1728                                                                              | 1777                                                                              | 1585                                                                              | 1781                                                                                | 1702                                                                                | 1815                                                                                | 1781                                                                                | 1702                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 12.2                                                                              | 6.0                                                                               | 0.0                                                                               | 7.0                                                                               | 9.4                                                                               | 0.0                                                                               | 11.5                                                                                | 44.0                                                                                | 44.4                                                                                | 17.4                                                                                | 0.5                                                                                 | 0.1                                                                                 |
| Cycle Q Clear(g_c), s        | 12.2                                                                              | 6.0                                                                               | 0.0                                                                               | 7.0                                                                               | 9.4                                                                               | 0.0                                                                               | 11.5                                                                                | 44.0                                                                                | 44.4                                                                                | 17.4                                                                                | 0.5                                                                                 | 0.1                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.17                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 430                                                                               | 541                                                                               |                                                                                   | 280                                                                               | 387                                                                               |                                                                                   | 206                                                                                 | 1602                                                                                | 854                                                                                 | 257                                                                                 | 2546                                                                                | 790                                                                                 |
| V/C Ratio(X)                 | 0.81                                                                              | 0.35                                                                              |                                                                                   | 0.71                                                                              | 0.71                                                                              |                                                                                   | 0.81                                                                                | 0.85                                                                                | 0.85                                                                                | 0.97                                                                                | 0.75                                                                                | 0.37                                                                                |
| Avail Cap(c_a), veh/h        | 498                                                                               | 853                                                                               |                                                                                   | 332                                                                               | 682                                                                               |                                                                                   | 214                                                                                 | 1602                                                                                | 854                                                                                 | 257                                                                                 | 2546                                                                                | 790                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.76                                                                              | 0.76                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.35                                                                                | 0.35                                                                                | 0.35                                                                                |
| Uniform Delay (d), s/veh     | 53.2                                                                              | 47.4                                                                              | 0.0                                                                               | 56.0                                                                              | 53.8                                                                              | 0.0                                                                               | 53.9                                                                                | 29.1                                                                                | 29.3                                                                                | 44.3                                                                                | 0.1                                                                                 | 0.1                                                                                 |
| Incr Delay (d2), s/veh       | 8.3                                                                               | 0.4                                                                               | 0.0                                                                               | 4.3                                                                               | 1.9                                                                               | 0.0                                                                               | 20.4                                                                                | 5.8                                                                                 | 10.5                                                                                | 27.0                                                                                | 0.8                                                                                 | 0.5                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 5.8                                                                               | 2.7                                                                               | 0.0                                                                               | 3.2                                                                               | 4.3                                                                               | 0.0                                                                               | 6.2                                                                                 | 17.8                                                                                | 20.2                                                                                | 8.0                                                                                 | 0.2                                                                                 | 0.1                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 61.6                                                                              | 47.8                                                                              | 0.0                                                                               | 60.3                                                                              | 55.7                                                                              | 0.0                                                                               | 74.3                                                                                | 34.9                                                                                | 39.8                                                                                | 71.2                                                                                | 0.8                                                                                 | 0.6                                                                                 |
| LnGrp LOS                    | E                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | E                                                                                 |                                                                                   | E                                                                                   | C                                                                                   | D                                                                                   | E                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 536                                                                               |                                                                                   |                                                                                   | 475                                                                               |                                                                                   |                                                                                     | 2255                                                                                |                                                                                     |                                                                                     | 2462                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 56.7                                                                              |                                                                                   |                                                                                   | 57.6                                                                              |                                                                                   |                                                                                     | 39.4                                                                                |                                                                                     |                                                                                     | 7.9                                                                                 |                                                                                     |
| Approach LOS                 |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 22.0                                                                              | 65.8                                                                              | 14.1                                                                              | 23.0                                                                              | 18.5                                                                              | 69.3                                                                              | 19.6                                                                                | 17.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 8.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 8.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 17.0                                                                              | 45.0                                                                              | 11.0                                                                              | 29.0                                                                              | 14.0                                                                              | 48.0                                                                              | 17.0                                                                                | 23.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 19.4                                                                              | 46.4                                                                              | 9.0                                                                               | 8.0                                                                               | 13.5                                                                              | 2.5                                                                               | 14.2                                                                                | 11.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               | 0.1                                                                               | 1.0                                                                               | 0.0                                                                               | 22.8                                                                              | 0.4                                                                                 | 1.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

HCM 7th Control Delay, s/veh 29.0  
 HCM 7th LOS C

### Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

# Timing Report, Sorted By Phase

## 3: US287 & 57th Street

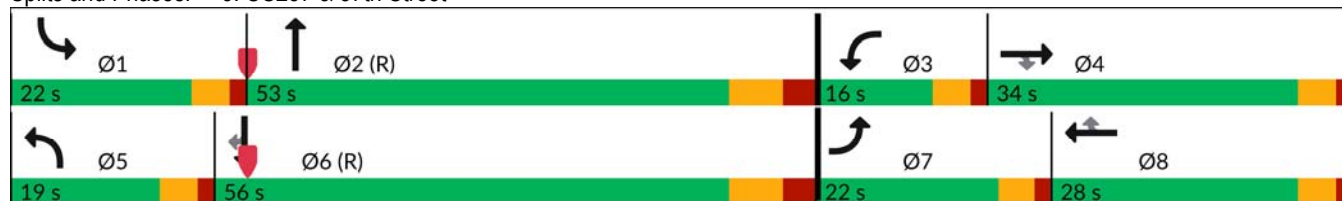
Long Bkgrd PM

|                        |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |
| Movement               | SBL                                                                               | NBT                                                                               | WBL                                                                               | EBT                                                                               | NBL                                                                               | SBT                                                                               | EBL                                                                                 | WBT                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Recall Mode            | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                                | None                                                                                |
| Maximum Split (s)      | 22                                                                                | 53                                                                                | 16                                                                                | 34                                                                                | 19                                                                                | 56                                                                                | 22                                                                                  | 28                                                                                  |
| Maximum Split (%)      | 17.6%                                                                             | 42.4%                                                                             | 12.8%                                                                             | 27.2%                                                                             | 15.2%                                                                             | 44.8%                                                                             | 17.6%                                                                               | 22.4%                                                                               |
| Minimum Split (s)      | 10                                                                                | 35                                                                                | 10                                                                                | 28                                                                                | 10                                                                                | 35                                                                                | 10                                                                                  | 28                                                                                  |
| Yellow Time (s)        | 3.5                                                                               | 5                                                                                 | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)       | 1.5                                                                               | 3                                                                                 | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 3                                                                                 | 1.5                                                                                 | 1.5                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                   | 5                                                                                   |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Walk Time (s)          |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   | 4                                                                                 |                                                                                     |                                                                                     |
| Flash Don't Walk (s)   |                                                                                   | 23                                                                                |                                                                                   |                                                                                   |                                                                                   | 23                                                                                |                                                                                     |                                                                                     |
| Dual Entry             | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                  | Yes                                                                                 |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Start Time (s)         | 42                                                                                | 64                                                                                | 117                                                                               | 8                                                                                 | 42                                                                                | 61                                                                                | 117                                                                                 | 14                                                                                  |
| End Time (s)           | 64                                                                                | 117                                                                               | 8                                                                                 | 42                                                                                | 61                                                                                | 117                                                                               | 14                                                                                  | 42                                                                                  |
| Yield/Force Off (s)    | 59                                                                                | 109                                                                               | 3                                                                                 | 37                                                                                | 56                                                                                | 109                                                                               | 9                                                                                   | 37                                                                                  |
| Yield/Force Off 170(s) | 59                                                                                | 86                                                                                | 3                                                                                 | 37                                                                                | 56                                                                                | 86                                                                                | 9                                                                                   | 37                                                                                  |
| Local Start Time (s)   | 103                                                                               | 0                                                                                 | 53                                                                                | 69                                                                                | 103                                                                               | 122                                                                               | 53                                                                                  | 75                                                                                  |
| Local Yield (s)        | 120                                                                               | 45                                                                                | 64                                                                                | 98                                                                                | 117                                                                               | 45                                                                                | 70                                                                                  | 98                                                                                  |
| Local Yield 170(s)     | 120                                                                               | 22                                                                                | 64                                                                                | 98                                                                                | 117                                                                               | 22                                                                                | 70                                                                                  | 98                                                                                  |

### Intersection Summary

Cycle Length 125  
Control Type Actuated-Coordinated  
Natural Cycle 115  
Offset: 64 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Green

### Splits and Phases: 3: US287 & 57th Street



Queues  
3: US287 & 57th Street

Long Bkgrd PM

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Group Flow (vph)   | 347                                                                               | 189                                                                               | 143                                                                               | 199                                                                               | 276                                                                               | 199                                                                               | 168                                                                                 | 2092                                                                                | 250                                                                                 | 1918                                                                                | 510                                                                                 |
| v/c Ratio               | 0.74                                                                              | 0.31                                                                              | 0.36                                                                              | 0.62                                                                              | 0.60                                                                              | 0.52                                                                              | 0.69                                                                                | 1.06                                                                                | 0.74                                                                                | 0.85                                                                                | 0.55                                                                                |
| Control Delay (s/veh)   | 62.1                                                                              | 45.5                                                                              | 9.2                                                                               | 63.7                                                                              | 56.3                                                                              | 11.5                                                                              | 65.8                                                                                | 75.6                                                                                | 80.1                                                                                | 19.0                                                                                | 2.4                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     | 62.1                                                                              | 45.5                                                                              | 9.2                                                                               | 63.7                                                                              | 56.3                                                                              | 11.5                                                                              | 65.8                                                                                | 75.6                                                                                | 80.1                                                                                | 19.0                                                                                | 2.4                                                                                 |
| Queue Length 50th (ft)  | 139                                                                               | 71                                                                                | 0                                                                                 | 80                                                                                | 112                                                                               | 0                                                                                 | 129                                                                                 | ~716                                                                                | 204                                                                                 | 236                                                                                 | 4                                                                                   |
| Queue Length 95th (ft)  | 192                                                                               | 102                                                                               | 55                                                                                | 122                                                                               | 153                                                                               | 68                                                                                | 208                                                                                 | #812                                                                                | m248                                                                                | m#642                                                                               | m8                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 644                                                                               |                                                                                   |                                                                                   | 2559                                                                              |                                                                                   |                                                                                     | 634                                                                                 |                                                                                     | 2545                                                                                |                                                                                     |
| Turn Bay Length (ft)    | 250                                                                               |                                                                                   | 200                                                                               | 300                                                                               |                                                                                   | 350                                                                               | 350                                                                                 |                                                                                     | 250                                                                                 |                                                                                     | 360                                                                                 |
| Base Capacity (vph)     | 494                                                                               | 849                                                                               | 488                                                                               | 329                                                                               | 679                                                                               | 464                                                                               | 251                                                                                 | 1973                                                                                | 336                                                                                 | 2246                                                                                | 919                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.70                                                                              | 0.22                                                                              | 0.29                                                                              | 0.60                                                                              | 0.41                                                                              | 0.43                                                                              | 0.67                                                                                | 1.06                                                                                | 0.74                                                                                | 0.85                                                                                | 0.55                                                                                |

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

# HCM 7th Signalized Intersection Summary

## 18: US287 & 65th Street

Long Bkgrd AM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 180                                                                               | 10                                                                                | 130                                                                               | 160                                                                               | 30                                                                                | 115                                                                               | 190                                                                                 | 1800                                                                                | 55                                                                                  | 45                                                                                  | 1445                                                                                | 125                                                                                 |
| Future Volume (veh/h)        | 180                                                                               | 10                                                                                | 130                                                                               | 160                                                                               | 30                                                                                | 115                                                                               | 190                                                                                 | 1800                                                                                | 55                                                                                  | 45                                                                                  | 1445                                                                                | 125                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 186                                                                               | 10                                                                                | 0                                                                                 | 165                                                                               | 31                                                                                | 0                                                                                 | 196                                                                                 | 1856                                                                                | -3                                                                                  | 46                                                                                  | 1490                                                                                | 120                                                                                 |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 286                                                                               | 123                                                                               |                                                                                   | 265                                                                               | 112                                                                               |                                                                                   | 238                                                                                 | 3173                                                                                | 985                                                                                 | 82                                                                                  | 2572                                                                                | 207                                                                                 |
| Arrive On Green              | 0.08                                                                              | 0.07                                                                              | 0.00                                                                              | 0.08                                                                              | 0.06                                                                              | 0.00                                                                              | 0.27                                                                                | 1.00                                                                                | 0.00                                                                                | 0.05                                                                                | 0.53                                                                                | 0.53                                                                                |
| Sat Flow, veh/h              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 5106                                                                                | 1585                                                                                | 1781                                                                                | 4817                                                                                | 388                                                                                 |
| Grp Volume(v), veh/h         | 186                                                                               | 10                                                                                | 0                                                                                 | 165                                                                               | 31                                                                                | 0                                                                                 | 196                                                                                 | 1856                                                                                | -3                                                                                  | 46                                                                                  | 1053                                                                                | 557                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 1702                                                                                | 1585                                                                                | 1781                                                                                | 1702                                                                                | 1801                                                                                |
| Q Serve(g_s), s              | 5.2                                                                               | 0.5                                                                               | 0.0                                                                               | 4.6                                                                               | 1.6                                                                               | 0.0                                                                               | 10.3                                                                                | 0.0                                                                                 | 0.0                                                                                 | 2.5                                                                                 | 20.9                                                                                | 20.9                                                                                |
| Cycle Q Clear(g_c), s        | 5.2                                                                               | 0.5                                                                               | 0.0                                                                               | 4.6                                                                               | 1.6                                                                               | 0.0                                                                               | 10.3                                                                                | 0.0                                                                                 | 0.0                                                                                 | 2.5                                                                                 | 20.9                                                                                | 20.9                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.22                                                                                |
| Lane Grp Cap(c), veh/h       | 286                                                                               | 123                                                                               |                                                                                   | 265                                                                               | 112                                                                               |                                                                                   | 238                                                                                 | 3173                                                                                | 985                                                                                 | 82                                                                                  | 1817                                                                                | 961                                                                                 |
| V/C Ratio(X)                 | 0.65                                                                              | 0.08                                                                              |                                                                                   | 0.62                                                                              | 0.28                                                                              |                                                                                   | 0.82                                                                                | 0.58                                                                                | 0.00                                                                                | 0.56                                                                                | 0.58                                                                                | 0.58                                                                                |
| Avail Cap(c_a), veh/h        | 311                                                                               | 374                                                                               |                                                                                   | 346                                                                               | 393                                                                               |                                                                                   | 267                                                                                 | 3173                                                                                | 985                                                                                 | 107                                                                                 | 1817                                                                                | 961                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.43                                                                                | 0.43                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 44.5                                                                              | 43.9                                                                              | 0.0                                                                               | 44.8                                                                              | 44.9                                                                              | 0.0                                                                               | 35.5                                                                                | 0.0                                                                                 | 0.0                                                                                 | 46.7                                                                                | 15.7                                                                                | 15.7                                                                                |
| Incr Delay (d2), s/veh       | 4.2                                                                               | 0.3                                                                               | 0.0                                                                               | 2.4                                                                               | 1.3                                                                               | 0.0                                                                               | 8.0                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 5.9                                                                                 | 1.4                                                                                 | 2.5                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.4                                                                               | 0.2                                                                               | 0.0                                                                               | 2.0                                                                               | 0.8                                                                               | 0.0                                                                               | 4.2                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 1.2                                                                                 | 7.2                                                                                 | 7.9                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 48.7                                                                              | 44.2                                                                              | 0.0                                                                               | 47.2                                                                              | 46.3                                                                              | 0.0                                                                               | 43.5                                                                                | 0.3                                                                                 | 0.0                                                                                 | 52.6                                                                                | 17.1                                                                                | 18.3                                                                                |
| LnGrp LOS                    | D                                                                                 | D                                                                                 |                                                                                   | D                                                                                 | D                                                                                 |                                                                                   | D                                                                                   | A                                                                                   |                                                                                     | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 196                                                                               |                                                                                   |                                                                                   | 196                                                                               |                                                                                   |                                                                                     | 2049                                                                                |                                                                                     |                                                                                     | 1656                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 48.5                                                                              |                                                                                   |                                                                                   | 47.0                                                                              |                                                                                   |                                                                                     | 4.5                                                                                 |                                                                                     |                                                                                     | 18.5                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.6                                                                               | 69.1                                                                              | 11.7                                                                              | 10.6                                                                              | 17.4                                                                              | 60.4                                                                              | 12.3                                                                                | 10.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 8.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 8.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.0                                                                               | 44.0                                                                              | 9.0                                                                               | 19.0                                                                              | 14.0                                                                              | 35.0                                                                              | 8.0                                                                                 | 20.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 4.5                                                                               | 2.0                                                                               | 6.6                                                                               | 2.5                                                                               | 12.3                                                                              | 22.9                                                                              | 7.2                                                                                 | 3.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 18.1                                                                              | 0.1                                                                               | 0.0                                                                               | 0.1                                                                               | 7.3                                                                               | 0.0                                                                                 | 0.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

HCM 7th Control Delay, s/veh 14.3  
 HCM 7th LOS B

### Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Timing Report, Sorted By Phase  
18: US287 & 65th Street

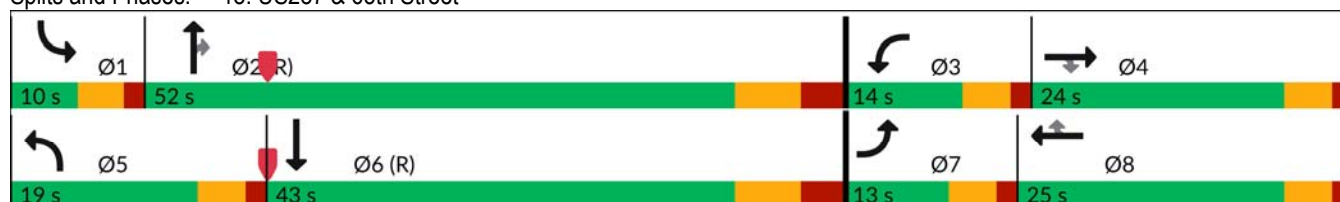
Long Bkgrd AM

|                        |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |
| Movement               | SBL                                                                               | NBT                                                                               | WBL                                                                               | EBT                                                                               | NBL                                                                               | SBT                                                                               | EBL                                                                                 | WBT                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Recall Mode            | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                                | None                                                                                |
| Maximum Split (s)      | 10                                                                                | 52                                                                                | 14                                                                                | 24                                                                                | 19                                                                                | 43                                                                                | 13                                                                                  | 25                                                                                  |
| Maximum Split (%)      | 10.0%                                                                             | 52.0%                                                                             | 14.0%                                                                             | 24.0%                                                                             | 19.0%                                                                             | 43.0%                                                                             | 13.0%                                                                               | 25.0%                                                                               |
| Minimum Split (s)      | 10                                                                                | 26                                                                                | 10                                                                                | 24                                                                                | 10                                                                                | 26                                                                                | 10                                                                                  | 24                                                                                  |
| Yellow Time (s)        | 3.5                                                                               | 5                                                                                 | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)       | 1.5                                                                               | 3                                                                                 | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 3                                                                                 | 1.5                                                                                 | 1.5                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                   | 5                                                                                   |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Walk Time (s)          |                                                                                   | 7                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 7                                                                                 |                                                                                     | 7                                                                                   |
| Flash Don't Walk (s)   |                                                                                   | 11                                                                                |                                                                                   | 11                                                                                |                                                                                   | 11                                                                                |                                                                                     | 11                                                                                  |
| Dual Entry             | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Start Time (s)         | 31                                                                                | 41                                                                                | 93                                                                                | 7                                                                                 | 31                                                                                | 50                                                                                | 93                                                                                  | 6                                                                                   |
| End Time (s)           | 41                                                                                | 93                                                                                | 7                                                                                 | 31                                                                                | 50                                                                                | 93                                                                                | 6                                                                                   | 31                                                                                  |
| Yield/Force Off (s)    | 36                                                                                | 85                                                                                | 2                                                                                 | 26                                                                                | 45                                                                                | 85                                                                                | 1                                                                                   | 26                                                                                  |
| Yield/Force Off 170(s) | 36                                                                                | 74                                                                                | 2                                                                                 | 15                                                                                | 45                                                                                | 74                                                                                | 1                                                                                   | 15                                                                                  |
| Local Start Time (s)   | 81                                                                                | 91                                                                                | 43                                                                                | 57                                                                                | 81                                                                                | 0                                                                                 | 43                                                                                  | 56                                                                                  |
| Local Yield (s)        | 86                                                                                | 35                                                                                | 52                                                                                | 76                                                                                | 95                                                                                | 35                                                                                | 51                                                                                  | 76                                                                                  |
| Local Yield 170(s)     | 86                                                                                | 24                                                                                | 52                                                                                | 65                                                                                | 95                                                                                | 24                                                                                | 51                                                                                  | 65                                                                                  |

Intersection Summary

Cycle Length 100  
Control Type Actuated-Coordinated  
Natural Cycle 80  
Offset: 50 (50%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Splits and Phases: 18: US287 & 65th Street



## Queues

Long Bkgrd AM

## 18: US287 &amp; 65th Street

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Group Flow (vph)   | 186                                                                               | 10                                                                                | 134                                                                               | 165                                                                               | 31                                                                                | 119                                                                               | 196                                                                                | 1856                                                                                | 57                                                                                  | 46                                                                                  | 1619                                                                                |
| v/c Ratio               | 0.61                                                                              | 0.07                                                                              | 0.42                                                                              | 0.50                                                                              | 0.20                                                                              | 0.36                                                                              | 0.63                                                                               | 0.62                                                                                | 0.06                                                                                | 0.29                                                                                | 0.69                                                                                |
| Control Delay (s/veh)   | 52.9                                                                              | 43.4                                                                              | 4.3                                                                               | 48.3                                                                              | 45.3                                                                              | 3.0                                                                               | 50.8                                                                               | 5.1                                                                                 | 0.2                                                                                 | 46.4                                                                                | 24.0                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     | 52.9                                                                              | 43.4                                                                              | 4.3                                                                               | 48.3                                                                              | 45.3                                                                              | 3.0                                                                               | 50.8                                                                               | 5.1                                                                                 | 0.2                                                                                 | 46.4                                                                                | 24.0                                                                                |
| Queue Length 50th (ft)  | 59                                                                                | 6                                                                                 | 0                                                                                 | 52                                                                                | 19                                                                                | 0                                                                                 | 98                                                                                 | 186                                                                                 | 0                                                                                   | 28                                                                                  | 287                                                                                 |
| Queue Length 95th (ft)  | 95                                                                                | 22                                                                                | 3                                                                                 | 85                                                                                | 47                                                                                | 0                                                                                 | m115                                                                               | 434                                                                                 | m0                                                                                  | 62                                                                                  | 394                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   |                                                                                   | 2160                                                                              |                                                                                   |                                                                                    | 2545                                                                                |                                                                                     |                                                                                     | 694                                                                                 |
| Turn Bay Length (ft)    | 275                                                                               |                                                                                   | 250                                                                               | 250                                                                               |                                                                                   | 250                                                                               | 460                                                                                |                                                                                     | 250                                                                                 | 250                                                                                 |                                                                                     |
| Base Capacity (vph)     | 308                                                                               | 372                                                                               | 491                                                                               | 343                                                                               | 391                                                                               | 504                                                                               | 321                                                                                | 3010                                                                                | 990                                                                                 | 160                                                                                 | 2332                                                                                |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.60                                                                              | 0.03                                                                              | 0.27                                                                              | 0.48                                                                              | 0.08                                                                              | 0.24                                                                              | 0.61                                                                               | 0.62                                                                                | 0.06                                                                                | 0.29                                                                                | 0.69                                                                                |

## Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 7th Signalized Intersection Summary 18: US287 & 65th Street

Long Bkgrd PM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 230                                                                               | 35                                                                                | 235                                                                               | 110                                                                               | 20                                                                                | 75                                                                                | 235                                                                                 | 1790                                                                                | 180                                                                                 | 125                                                                                 | 2000                                                                                | 225                                                                                 |
| Future Volume (veh/h)        | 230                                                                               | 35                                                                                | 235                                                                               | 110                                                                               | 20                                                                                | 75                                                                                | 235                                                                                 | 1790                                                                                | 180                                                                                 | 125                                                                                 | 2000                                                                                | 225                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 235                                                                               | 36                                                                                | 0                                                                                 | 112                                                                               | 20                                                                                | 0                                                                                 | 240                                                                                 | 1827                                                                                | 71                                                                                  | 128                                                                                 | 2041                                                                                | 220                                                                                 |
| Peak Hour Factor             | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 316                                                                               | 157                                                                               |                                                                                   | 192                                                                               | 90                                                                                |                                                                                   | 257                                                                                 | 3138                                                                                | 974                                                                                 | 168                                                                                 | 2646                                                                                | 282                                                                                 |
| Arrive On Green              | 0.09                                                                              | 0.08                                                                              | 0.00                                                                              | 0.06                                                                              | 0.05                                                                              | 0.00                                                                              | 0.14                                                                                | 0.61                                                                                | 0.61                                                                                | 0.09                                                                                | 0.56                                                                                | 0.56                                                                                |
| Sat Flow, veh/h              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 5106                                                                                | 1585                                                                                | 1781                                                                                | 4685                                                                                | 500                                                                                 |
| Grp Volume(v), veh/h         | 235                                                                               | 36                                                                                | 0                                                                                 | 112                                                                               | 20                                                                                | 0                                                                                 | 240                                                                                 | 1827                                                                                | 71                                                                                  | 128                                                                                 | 1477                                                                                | 784                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 1702                                                                                | 1585                                                                                | 1781                                                                                | 1702                                                                                | 1780                                                                                |
| Q Serve(g_s), s              | 8.3                                                                               | 2.2                                                                               | 0.0                                                                               | 4.0                                                                               | 1.3                                                                               | 0.0                                                                               | 16.7                                                                                | 26.8                                                                                | 2.3                                                                                 | 8.8                                                                                 | 41.7                                                                                | 42.8                                                                                |
| Cycle Q Clear(g_c), s        | 8.3                                                                               | 2.2                                                                               | 0.0                                                                               | 4.0                                                                               | 1.3                                                                               | 0.0                                                                               | 16.7                                                                                | 26.8                                                                                | 2.3                                                                                 | 8.8                                                                                 | 41.7                                                                                | 42.8                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.28                                                                                |
| Lane Grp Cap(c), veh/h       | 316                                                                               | 157                                                                               |                                                                                   | 192                                                                               | 90                                                                                |                                                                                   | 257                                                                                 | 3138                                                                                | 974                                                                                 | 168                                                                                 | 1922                                                                                | 1005                                                                                |
| V/C Ratio(X)                 | 0.74                                                                              | 0.23                                                                              |                                                                                   | 0.58                                                                              | 0.22                                                                              |                                                                                   | 0.94                                                                                | 0.58                                                                                | 0.07                                                                                | 0.76                                                                                | 0.77                                                                                | 0.78                                                                                |
| Avail Cap(c_a), veh/h        | 359                                                                               | 359                                                                               |                                                                                   | 304                                                                               | 329                                                                               |                                                                                   | 257                                                                                 | 3138                                                                                | 974                                                                                 | 257                                                                                 | 1922                                                                                | 1005                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.14                                                                                | 0.14                                                                                | 0.14                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 55.4                                                                              | 53.5                                                                              | 0.0                                                                               | 57.6                                                                              | 57.3                                                                              | 0.0                                                                               | 52.9                                                                                | 14.5                                                                                | 9.7                                                                                 | 55.3                                                                                | 20.9                                                                                | 21.2                                                                                |
| Incr Delay (d2), s/veh       | 7.1                                                                               | 0.7                                                                               | 0.0                                                                               | 2.8                                                                               | 1.2                                                                               | 0.0                                                                               | 9.6                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 7.0                                                                                 | 3.0                                                                                 | 6.0                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.9                                                                               | 1.1                                                                               | 0.0                                                                               | 1.8                                                                               | 0.6                                                                               | 0.0                                                                               | 7.8                                                                                 | 8.9                                                                                 | 0.8                                                                                 | 4.1                                                                                 | 15.3                                                                                | 17.3                                                                                |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 62.5                                                                              | 54.2                                                                              | 0.0                                                                               | 60.4                                                                              | 58.5                                                                              | 0.0                                                                               | 62.6                                                                                | 14.6                                                                                | 9.7                                                                                 | 62.3                                                                                | 23.9                                                                                | 27.1                                                                                |
| LnGrp LOS                    | E                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | E                                                                                 |                                                                                   | E                                                                                   | B                                                                                   | A                                                                                   | E                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 271                                                                               |                                                                                   |                                                                                   | 132                                                                               |                                                                                   |                                                                                     | 2138                                                                                |                                                                                     |                                                                                     | 2389                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 61.4                                                                              |                                                                                   |                                                                                   | 60.2                                                                              |                                                                                   |                                                                                     | 19.8                                                                                |                                                                                     |                                                                                     | 27.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 15.8                                                                              | 83.8                                                                              | 10.9                                                                              | 14.5                                                                              | 22.0                                                                              | 77.6                                                                              | 15.4                                                                                | 10.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 8.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 8.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 17.0                                                                              | 52.0                                                                              | 10.0                                                                              | 23.0                                                                              | 17.0                                                                              | 52.0                                                                              | 12.0                                                                                | 21.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 10.8                                                                              | 28.8                                                                              | 6.0                                                                               | 4.2                                                                               | 18.7                                                                              | 44.8                                                                              | 10.3                                                                                | 3.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 13.5                                                                              | 0.1                                                                               | 0.1                                                                               | 0.0                                                                               | 6.1                                                                               | 0.1                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Intersection Summary

HCM 7th Control Delay, s/veh 26.7  
HCM 7th LOS C

## Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Timing Report, Sorted By Phase  
18: US287 & 65th Street

Long Bkgrd PM

|                        |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |
| Movement               | SBL                                                                               | NBT                                                                               | WBL                                                                               | EBT                                                                               | NBL                                                                               | SBT                                                                               | EBL                                                                                 | WBT                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Recall Mode            | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                                | None                                                                                |
| Maximum Split (s)      | 22                                                                                | 60                                                                                | 15                                                                                | 28                                                                                | 22                                                                                | 60                                                                                | 17                                                                                  | 26                                                                                  |
| Maximum Split (%)      | 17.6%                                                                             | 48.0%                                                                             | 12.0%                                                                             | 22.4%                                                                             | 17.6%                                                                             | 48.0%                                                                             | 13.6%                                                                               | 20.8%                                                                               |
| Minimum Split (s)      | 10                                                                                | 26                                                                                | 10                                                                                | 24                                                                                | 10                                                                                | 26                                                                                | 10                                                                                  | 24                                                                                  |
| Yellow Time (s)        | 3.5                                                                               | 5                                                                                 | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)       | 1.5                                                                               | 3                                                                                 | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 3                                                                                 | 1.5                                                                                 | 1.5                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                   | 5                                                                                   |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Walk Time (s)          |                                                                                   | 7                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 7                                                                                 |                                                                                     | 7                                                                                   |
| Flash Don't Walk (s)   |                                                                                   | 11                                                                                |                                                                                   | 11                                                                                |                                                                                   | 11                                                                                |                                                                                     | 11                                                                                  |
| Dual Entry             | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Start Time (s)         | 6                                                                                 | 28                                                                                | 88                                                                                | 103                                                                               | 6                                                                                 | 28                                                                                | 88                                                                                  | 105                                                                                 |
| End Time (s)           | 28                                                                                | 88                                                                                | 103                                                                               | 6                                                                                 | 28                                                                                | 88                                                                                | 105                                                                                 | 6                                                                                   |
| Yield/Force Off (s)    | 23                                                                                | 80                                                                                | 98                                                                                | 1                                                                                 | 23                                                                                | 80                                                                                | 100                                                                                 | 1                                                                                   |
| Yield/Force Off 170(s) | 23                                                                                | 69                                                                                | 98                                                                                | 115                                                                               | 23                                                                                | 69                                                                                | 100                                                                                 | 115                                                                                 |
| Local Start Time (s)   | 103                                                                               | 0                                                                                 | 60                                                                                | 75                                                                                | 103                                                                               | 0                                                                                 | 60                                                                                  | 77                                                                                  |
| Local Yield (s)        | 120                                                                               | 52                                                                                | 70                                                                                | 98                                                                                | 120                                                                               | 52                                                                                | 72                                                                                  | 98                                                                                  |
| Local Yield 170(s)     | 120                                                                               | 41                                                                                | 70                                                                                | 87                                                                                | 120                                                                               | 41                                                                                | 72                                                                                  | 87                                                                                  |

Intersection Summary

Cycle Length 125  
Control Type Actuated-Coordinated  
Natural Cycle 110  
Offset: 28 (22%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Splits and Phases: 18: US287 & 65th Street



## Queues

Long Bkgrd PM

## 18: US287 &amp; 65th Street

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Group Flow (vph)   | 235                                                                               | 36                                                                                | 240                                                                               | 112                                                                               | 20                                                                                | 77                                                                                | 240                                                                                | 1827                                                                                | 184                                                                                 | 128                                                                                 | 2271                                                                                |
| v/c Ratio               | 0.61                                                                              | 0.22                                                                              | 0.67                                                                              | 0.41                                                                              | 0.15                                                                              | 0.33                                                                              | 0.70                                                                               | 0.64                                                                                | 0.19                                                                                | 0.59                                                                                | 0.93                                                                                |
| Control Delay (s/veh)   | 60.7                                                                              | 55.0                                                                              | 16.4                                                                              | 59.2                                                                              | 55.6                                                                              | 4.5                                                                               | 30.7                                                                               | 35.1                                                                                | 13.5                                                                                | 62.6                                                                                | 38.5                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     | 60.7                                                                              | 55.0                                                                              | 16.4                                                                              | 59.2                                                                              | 55.6                                                                              | 4.5                                                                               | 30.7                                                                               | 35.1                                                                                | 13.5                                                                                | 62.6                                                                                | 38.5                                                                                |
| Queue Length 50th (ft)  | 95                                                                                | 28                                                                                | 0                                                                                 | 44                                                                                | 16                                                                                | 0                                                                                 | 132                                                                                | 568                                                                                 | 72                                                                                  | 99                                                                                  | 623                                                                                 |
| Queue Length 95th (ft)  | 140                                                                               | 60                                                                                | 77                                                                                | 75                                                                                | 40                                                                                | 6                                                                                 | m176                                                                               | m559                                                                                | m87                                                                                 | 158                                                                                 | #834                                                                                |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   |                                                                                   | 2160                                                                              |                                                                                   |                                                                                    | 2545                                                                                |                                                                                     |                                                                                     | 694                                                                                 |
| Turn Bay Length (ft)    | 275                                                                               |                                                                                   | 250                                                                               | 250                                                                               |                                                                                   | 250                                                                               | 460                                                                                |                                                                                     | 250                                                                                 | 250                                                                                 |                                                                                     |
| Base Capacity (vph)     | 386                                                                               | 357                                                                               | 497                                                                               | 302                                                                               | 327                                                                               | 386                                                                               | 345                                                                                | 2845                                                                                | 952                                                                                 | 261                                                                                 | 2447                                                                                |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.61                                                                              | 0.10                                                                              | 0.48                                                                              | 0.37                                                                              | 0.06                                                                              | 0.20                                                                              | 0.70                                                                               | 0.64                                                                                | 0.19                                                                                | 0.49                                                                                | 0.93                                                                                |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 7th Signalized Intersection Summary

## 5: Monroe & 57th Street

Long Bkgrd AM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |                                                                                     |  |  |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 5                                                                                 | 355                                                                               | 100                                                                               | 100                                                                               | 260                                                                               | 5                                                                                 | 135                                                                                 | 15                                                                                  | 125                                                                                 | 5                                                                                   | 45                                                                                  | 20                                                                                  |
| Future Volume (veh/h)        | 5                                                                                 | 355                                                                               | 100                                                                               | 100                                                                               | 260                                                                               | 5                                                                                 | 135                                                                                 | 15                                                                                  | 125                                                                                 | 5                                                                                   | 45                                                                                  | 20                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 5                                                                                 | 374                                                                               | 26                                                                                | 105                                                                               | 274                                                                               | 4                                                                                 | 142                                                                                 | 16                                                                                  | 27                                                                                  | 5                                                                                   | 47                                                                                  | 8                                                                                   |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 572                                                                               | 569                                                                               | 482                                                                               | 540                                                                               | 714                                                                               | 10                                                                                | 446                                                                                 | 29                                                                                  | 295                                                                                 | 122                                                                                 | 278                                                                                 | 45                                                                                  |
| Arrive On Green              | 0.03                                                                              | 0.30                                                                              | 0.30                                                                              | 0.12                                                                              | 0.39                                                                              | 0.36                                                                              | 0.16                                                                                | 0.19                                                                                | 0.19                                                                                | 0.16                                                                                | 0.19                                                                                | 0.16                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 1839                                                                              | 27                                                                                | 1371                                                                                | 154                                                                                 | 1585                                                                                | 70                                                                                  | 1491                                                                                | 240                                                                                 |
| Grp Volume(v), veh/h         | 5                                                                                 | 374                                                                               | 26                                                                                | 105                                                                               | 0                                                                                 | 278                                                                               | 158                                                                                 | 0                                                                                   | 27                                                                                  | 60                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 0                                                                                 | 1866                                                                              | 1525                                                                                | 0                                                                                   | 1585                                                                                | 1801                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.1                                                                               | 6.2                                                                               | 0.4                                                                               | 1.2                                                                               | 0.0                                                                               | 3.8                                                                               | 1.3                                                                                 | 0.0                                                                                 | 0.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.1                                                                               | 6.2                                                                               | 0.4                                                                               | 1.2                                                                               | 0.0                                                                               | 3.8                                                                               | 3.2                                                                                 | 0.0                                                                                 | 0.5                                                                                 | 1.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.01                                                                              | 0.90                                                                                |                                                                                     | 1.00                                                                                | 0.08                                                                                |                                                                                     | 0.13                                                                                |
| Lane Grp Cap(c), veh/h       | 572                                                                               | 569                                                                               | 482                                                                               | 540                                                                               | 0                                                                                 | 724                                                                               | 432                                                                                 | 0                                                                                   | 295                                                                                 | 394                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.01                                                                              | 0.66                                                                              | 0.05                                                                              | 0.19                                                                              | 0.00                                                                              | 0.38                                                                              | 0.37                                                                                | 0.00                                                                                | 0.09                                                                                | 0.15                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 858                                                                               | 1044                                                                              | 885                                                                               | 677                                                                               | 0                                                                                 | 1041                                                                              | 910                                                                                 | 0                                                                                   | 840                                                                                 | 1004                                                                                | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 7.9                                                                               | 10.8                                                                              | 8.8                                                                               | 6.2                                                                               | 0.0                                                                               | 7.9                                                                               | 13.5                                                                                | 0.0                                                                                 | 12.1                                                                                | 12.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 1.3                                                                               | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 0.3                                                                               | 0.5                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 2.0                                                                               | 0.1                                                                               | 0.3                                                                               | 0.0                                                                               | 1.0                                                                               | 1.0                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 7.9                                                                               | 12.1                                                                              | 8.9                                                                               | 6.4                                                                               | 0.0                                                                               | 8.2                                                                               | 14.0                                                                                | 0.0                                                                                 | 12.2                                                                                | 12.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | A                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 | B                                                                                   |                                                                                     | B                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 405                                                                               |                                                                                   |                                                                                   | 383                                                                               |                                                                                   |                                                                                     | 185                                                                                 |                                                                                     |                                                                                     | 60                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 11.9                                                                              |                                                                                   |                                                                                   | 7.7                                                                               |                                                                                   |                                                                                     | 13.7                                                                                |                                                                                     |                                                                                     | 12.5                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 7.2                                                                               | 16.9                                                                              |                                                                                   | 11.8                                                                              | 4.2                                                                               | 19.9                                                                              |                                                                                     | 11.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 6.0                                                                               | 4.0                                                                               | 7.0                                                                               |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 6.0                                                                               | 19.0                                                                              |                                                                                   | 18.0                                                                              | 6.0                                                                               | 19.0                                                                              |                                                                                     | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.2                                                                               | 8.2                                                                               |                                                                                   | 3.0                                                                               | 2.1                                                                               | 5.8                                                                               |                                                                                     | 5.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 1.7                                                                               |                                                                                   | 0.2                                                                               | 0.0                                                                               | 1.2                                                                               |                                                                                     | 0.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh |                                                                                   |                                                                                   | 10.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Timing Report, Sorted By Phase  
5: Monroe & 57th Street

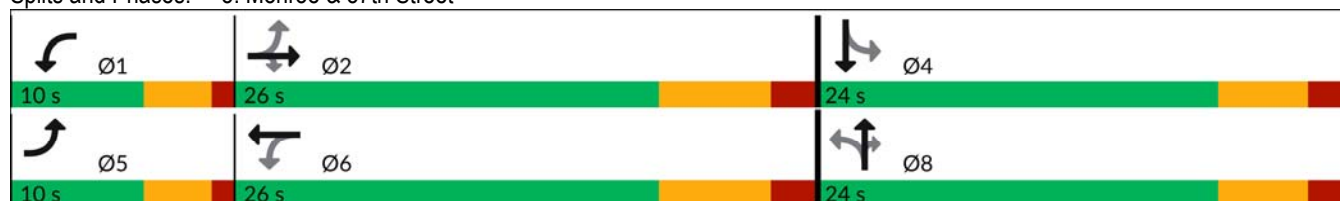
Long Bkgrd AM

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 8                                                                                 |
| Movement               | WBL                                                                               | EBTL                                                                              | SBTL                                                                              | EBL                                                                               | WBTL                                                                              | NBTL                                                                              |
| Lead/Lag               | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |
| Recall Mode            | None                                                                              | None                                                                              | Min                                                                               | None                                                                              | None                                                                              | Min                                                                               |
| Maximum Split (s)      | 10                                                                                | 26                                                                                | 24                                                                                | 10                                                                                | 26                                                                                | 24                                                                                |
| Maximum Split (%)      | 16.7%                                                                             | 43.3%                                                                             | 40.0%                                                                             | 16.7%                                                                             | 43.3%                                                                             | 40.0%                                                                             |
| Minimum Split (s)      | 10                                                                                | 25                                                                                | 24                                                                                | 10                                                                                | 25                                                                                | 24                                                                                |
| Yellow Time (s)        | 3                                                                                 | 5                                                                                 | 4                                                                                 | 3                                                                                 | 5                                                                                 | 4                                                                                 |
| All-Red Time (s)       | 1                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Walk Time (s)          |                                                                                   | 7                                                                                 | 7                                                                                 |                                                                                   | 7                                                                                 | 7                                                                                 |
| Flash Don't Walk (s)   |                                                                                   | 11                                                                                | 11                                                                                |                                                                                   | 11                                                                                | 11                                                                                |
| Dual Entry             | No                                                                                | Yes                                                                               | Yes                                                                               | No                                                                                | Yes                                                                               | Yes                                                                               |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |
| Start Time (s)         | 0                                                                                 | 10                                                                                | 36                                                                                | 0                                                                                 | 10                                                                                | 36                                                                                |
| End Time (s)           | 10                                                                                | 36                                                                                | 0                                                                                 | 10                                                                                | 36                                                                                | 0                                                                                 |
| Yield/Force Off (s)    | 6                                                                                 | 29                                                                                | 54                                                                                | 6                                                                                 | 29                                                                                | 54                                                                                |
| Yield/Force Off 170(s) | 6                                                                                 | 18                                                                                | 54                                                                                | 6                                                                                 | 18                                                                                | 54                                                                                |
| Local Start Time (s)   | 50                                                                                | 0                                                                                 | 26                                                                                | 50                                                                                | 0                                                                                 | 26                                                                                |
| Local Yield (s)        | 56                                                                                | 19                                                                                | 44                                                                                | 56                                                                                | 19                                                                                | 44                                                                                |
| Local Yield 170(s)     | 56                                                                                | 8                                                                                 | 44                                                                                | 56                                                                                | 8                                                                                 | 44                                                                                |

Intersection Summary

|               |                        |
|---------------|------------------------|
| Cycle Length  | 60                     |
| Control Type  | Actuated-Uncoordinated |
| Natural Cycle | 60                     |

Splits and Phases: 5: Monroe & 57th Street



## Queues

Long Bkgrd AM

## 5: Monroe &amp; 57th Street

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBT                                                                               | NBR                                                                                | SBT                                                                                 |
| Lane Group Flow (vph)   | 5                                                                                 | 374                                                                               | 105                                                                               | 105                                                                               | 279                                                                               | 158                                                                               | 132                                                                                | 73                                                                                  |
| v/c Ratio               | 0.01                                                                              | 0.62                                                                              | 0.17                                                                              | 0.19                                                                              | 0.33                                                                              | 0.46                                                                              | 0.25                                                                               | 0.15                                                                                |
| Control Delay (s/veh)   | 5.6                                                                               | 19.8                                                                              | 3.3                                                                               | 6.4                                                                               | 11.2                                                                              | 21.2                                                                              | 4.4                                                                                | 12.4                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Total Delay (s/veh)     | 5.6                                                                               | 19.8                                                                              | 3.3                                                                               | 6.4                                                                               | 11.2                                                                              | 21.2                                                                              | 4.4                                                                                | 12.4                                                                                |
| Queue Length 50th (ft)  | 1                                                                                 | 89                                                                                | 0                                                                                 | 11                                                                                | 40                                                                                | 39                                                                                | 0                                                                                  | 11                                                                                  |
| Queue Length 95th (ft)  | 4                                                                                 | 189                                                                               | 21                                                                                | 35                                                                                | 136                                                                               | 89                                                                                | 27                                                                                 | 38                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 2559                                                                              |                                                                                   |                                                                                   | 1310                                                                              | 458                                                                               |                                                                                    | 384                                                                                 |
| Turn Bay Length (ft)    | 330                                                                               |                                                                                   | 250                                                                               | 115                                                                               |                                                                                   |                                                                                   | 180                                                                                |                                                                                     |
| Base Capacity (vph)     | 660                                                                               | 854                                                                               | 794                                                                               | 566                                                                               | 988                                                                               | 564                                                                               | 771                                                                                | 772                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Reduced v/c Ratio       | 0.01                                                                              | 0.44                                                                              | 0.13                                                                              | 0.19                                                                              | 0.28                                                                              | 0.28                                                                              | 0.17                                                                               | 0.09                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |

# HCM 7th Signalized Intersection Summary 5: Monroe & 57th Street

Long Bkgrd PM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |                                                                                     |  |  |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 15                                                                                | 315                                                                               | 175                                                                               | 145                                                                               | 500                                                                               | 5                                                                                 | 115                                                                                 | 55                                                                                  | 95                                                                                  | 5                                                                                   | 35                                                                                  | 10                                                                                  |
| Future Volume (veh/h)        | 15                                                                                | 315                                                                               | 175                                                                               | 145                                                                               | 500                                                                               | 5                                                                                 | 115                                                                                 | 55                                                                                  | 95                                                                                  | 5                                                                                   | 35                                                                                  | 10                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 16                                                                                | 332                                                                               | 55                                                                                | 153                                                                               | 526                                                                               | 4                                                                                 | 121                                                                                 | 58                                                                                  | 16                                                                                  | 5                                                                                   | 37                                                                                  | 4                                                                                   |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 411                                                                               | 587                                                                               | 497                                                                               | 587                                                                               | 739                                                                               | 6                                                                                 | 365                                                                                 | 109                                                                                 | 300                                                                                 | 120                                                                                 | 293                                                                                 | 29                                                                                  |
| Arrive On Green              | 0.05                                                                              | 0.31                                                                              | 0.31                                                                              | 0.13                                                                              | 0.40                                                                              | 0.37                                                                              | 0.16                                                                                | 0.19                                                                                | 0.19                                                                                | 0.16                                                                                | 0.19                                                                                | 0.16                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 1854                                                                              | 14                                                                                | 1097                                                                                | 576                                                                                 | 1585                                                                                | 84                                                                                  | 1552                                                                                | 156                                                                                 |
| Grp Volume(v), veh/h         | 16                                                                                | 332                                                                               | 55                                                                                | 153                                                                               | 0                                                                                 | 530                                                                               | 179                                                                                 | 0                                                                                   | 16                                                                                  | 46                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 0                                                                                 | 1868                                                                              | 1674                                                                                | 0                                                                                   | 1585                                                                                | 1792                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.2                                                                               | 5.7                                                                               | 0.9                                                                               | 1.8                                                                               | 0.0                                                                               | 9.1                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.2                                                                               | 5.7                                                                               | 0.9                                                                               | 1.8                                                                               | 0.0                                                                               | 9.1                                                                               | 3.5                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 3.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.01                                                                              | 0.68                                                                                |                                                                                     | 1.00                                                                                | 0.11                                                                                |                                                                                     | 0.09                                                                                |
| Lane Grp Cap(c), veh/h       | 411                                                                               | 587                                                                               | 497                                                                               | 587                                                                               | 0                                                                                 | 744                                                                               | 430                                                                                 | 0                                                                                   | 300                                                                                 | 396                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.04                                                                              | 0.57                                                                              | 0.11                                                                              | 0.26                                                                              | 0.00                                                                              | 0.71                                                                              | 0.42                                                                                | 0.00                                                                                | 0.05                                                                                | 0.12                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 654                                                                               | 1467                                                                              | 1243                                                                              | 679                                                                               | 0                                                                                 | 1465                                                                              | 891                                                                                 | 0                                                                                   | 787                                                                                 | 939                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 8.4                                                                               | 10.9                                                                              | 9.3                                                                               | 6.2                                                                               | 0.0                                                                               | 9.7                                                                               | 14.3                                                                                | 0.0                                                                                 | 12.7                                                                                | 13.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.9                                                                               | 0.1                                                                               | 0.2                                                                               | 0.0                                                                               | 1.3                                                                               | 0.6                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.1                                                                               | 1.8                                                                               | 0.3                                                                               | 0.4                                                                               | 0.0                                                                               | 2.7                                                                               | 1.3                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 8.4                                                                               | 11.8                                                                              | 9.4                                                                               | 6.4                                                                               | 0.0                                                                               | 10.9                                                                              | 14.9                                                                                | 0.0                                                                                 | 12.8                                                                                | 13.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | A                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | B                                                                                 | B                                                                                   |                                                                                     | B                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 403                                                                               |                                                                                   |                                                                                   | 683                                                                               |                                                                                   |                                                                                     | 195                                                                                 |                                                                                     |                                                                                     | 46                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 11.3                                                                              |                                                                                   |                                                                                   | 9.9                                                                               |                                                                                   |                                                                                     | 14.8                                                                                |                                                                                     |                                                                                     | 13.1                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.0                                                                               | 18.0                                                                              |                                                                                   | 12.2                                                                              | 4.8                                                                               | 21.2                                                                              |                                                                                     | 12.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 6.0                                                                               | 4.0                                                                               | 7.0                                                                               |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 6.0                                                                               | 29.0                                                                              |                                                                                   | 18.0                                                                              | 6.0                                                                               | 29.0                                                                              |                                                                                     | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.8                                                                               | 7.7                                                                               |                                                                                   | 5.5                                                                               | 2.2                                                                               | 11.1                                                                              |                                                                                     | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 2.0                                                                               |                                                                                   | 0.1                                                                               | 0.0                                                                               | 3.1                                                                               |                                                                                     | 0.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh |                                                                                   |                                                                                   | 11.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Timing Report, Sorted By Phase  
5: Monroe & 57th Street

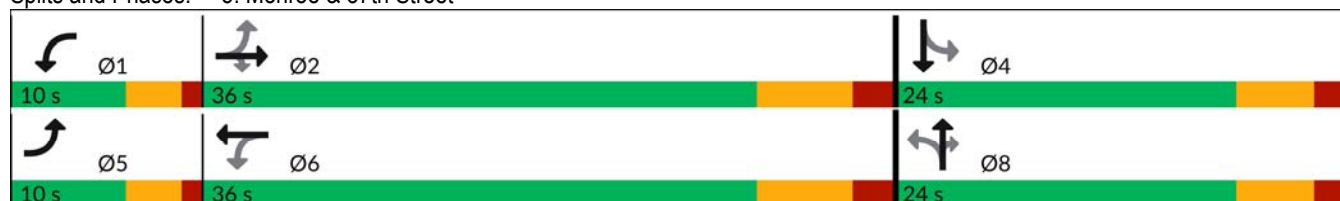
Long Bkgrd PM

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 8                                                                                 |
| Movement               | WBL                                                                               | EBTL                                                                              | SBTL                                                                              | EBL                                                                               | WBTL                                                                              | NBTL                                                                              |
| Lead/Lag               | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |
| Recall Mode            | None                                                                              | None                                                                              | Min                                                                               | None                                                                              | None                                                                              | Min                                                                               |
| Maximum Split (s)      | 10                                                                                | 36                                                                                | 24                                                                                | 10                                                                                | 36                                                                                | 24                                                                                |
| Maximum Split (%)      | 14.3%                                                                             | 51.4%                                                                             | 34.3%                                                                             | 14.3%                                                                             | 51.4%                                                                             | 34.3%                                                                             |
| Minimum Split (s)      | 10                                                                                | 25                                                                                | 24                                                                                | 10                                                                                | 25                                                                                | 24                                                                                |
| Yellow Time (s)        | 3                                                                                 | 5                                                                                 | 4                                                                                 | 3                                                                                 | 5                                                                                 | 4                                                                                 |
| All-Red Time (s)       | 1                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Walk Time (s)          |                                                                                   | 7                                                                                 | 7                                                                                 |                                                                                   | 7                                                                                 | 7                                                                                 |
| Flash Don't Walk (s)   |                                                                                   | 11                                                                                | 11                                                                                |                                                                                   | 11                                                                                | 11                                                                                |
| Dual Entry             | No                                                                                | Yes                                                                               | Yes                                                                               | No                                                                                | Yes                                                                               | Yes                                                                               |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |
| Start Time (s)         | 0                                                                                 | 10                                                                                | 46                                                                                | 0                                                                                 | 10                                                                                | 46                                                                                |
| End Time (s)           | 10                                                                                | 46                                                                                | 0                                                                                 | 10                                                                                | 46                                                                                | 0                                                                                 |
| Yield/Force Off (s)    | 6                                                                                 | 39                                                                                | 64                                                                                | 6                                                                                 | 39                                                                                | 64                                                                                |
| Yield/Force Off 170(s) | 6                                                                                 | 28                                                                                | 64                                                                                | 6                                                                                 | 28                                                                                | 64                                                                                |
| Local Start Time (s)   | 60                                                                                | 0                                                                                 | 36                                                                                | 60                                                                                | 0                                                                                 | 36                                                                                |
| Local Yield (s)        | 66                                                                                | 29                                                                                | 54                                                                                | 66                                                                                | 29                                                                                | 54                                                                                |
| Local Yield 170(s)     | 66                                                                                | 18                                                                                | 54                                                                                | 66                                                                                | 18                                                                                | 54                                                                                |

Intersection Summary

|               |                        |
|---------------|------------------------|
| Cycle Length  | 70                     |
| Control Type  | Actuated-Uncoordinated |
| Natural Cycle | 60                     |

Splits and Phases: 5: Monroe & 57th Street



## Queues

Long Bkgrd PM

## 5: Monroe &amp; 57th Street

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBT                                                                               | NBR                                                                                | SBT                                                                                 |
| Lane Group Flow (vph)   | 16                                                                                | 332                                                                               | 184                                                                               | 153                                                                               | 531                                                                               | 179                                                                               | 100                                                                                | 53                                                                                  |
| v/c Ratio               | 0.03                                                                              | 0.51                                                                              | 0.27                                                                              | 0.25                                                                              | 0.60                                                                              | 0.49                                                                              | 0.20                                                                               | 0.12                                                                                |
| Control Delay (s/veh)   | 5.2                                                                               | 16.9                                                                              | 3.6                                                                               | 6.3                                                                               | 14.2                                                                              | 23.1                                                                              | 4.1                                                                                | 14.9                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Total Delay (s/veh)     | 5.2                                                                               | 16.9                                                                              | 3.6                                                                               | 6.3                                                                               | 14.2                                                                              | 23.1                                                                              | 4.1                                                                                | 14.9                                                                                |
| Queue Length 50th (ft)  | 2                                                                                 | 77                                                                                | 0                                                                                 | 17                                                                                | 90                                                                                | 44                                                                                | 0                                                                                  | 9                                                                                   |
| Queue Length 95th (ft)  | 9                                                                                 | 158                                                                               | 32                                                                                | 46                                                                                | 279                                                                               | 120                                                                               | 23                                                                                 | 38                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 2559                                                                              |                                                                                   |                                                                                   | 1310                                                                              | 458                                                                               |                                                                                    | 384                                                                                 |
| Turn Bay Length (ft)    | 330                                                                               |                                                                                   | 250                                                                               | 115                                                                               |                                                                                   |                                                                                   | 180                                                                                |                                                                                     |
| Base Capacity (vph)     | 553                                                                               | 1217                                                                              | 1098                                                                              | 612                                                                               | 1216                                                                              | 589                                                                               | 728                                                                                | 728                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Reduced v/c Ratio       | 0.03                                                                              | 0.27                                                                              | 0.17                                                                              | 0.25                                                                              | 0.44                                                                              | 0.30                                                                              | 0.14                                                                               | 0.07                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |

HCM 7th TWSC  
11: 57th Street & St. Louis

Long Bkgrd AM

Intersection

|                          |                                                                                   |                                                                                   |      |                                                                                   |                                                                                   |      |      |                                                                                   |      |      |                                                                                     |      |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 1                                                                                 |                                                                                   |      |                                                                                   |                                                                                   |      |      |                                                                                   |      |      |                                                                                     |      |
| Movement                 | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR  | NBL  | NBT                                                                               | NBR  | SBL  | SBT                                                                                 | SBR  |
| Lane Configurations      |  |  |      |  |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h       | 5                                                                                 | 490                                                                               | 0    | 5                                                                                 | 315                                                                               | 5    | 15   | 0                                                                                 | 5    | 15   | 0                                                                                   | 15   |
| Future Vol, veh/h        | 5                                                                                 | 490                                                                               | 0    | 5                                                                                 | 315                                                                               | 5    | 15   | 0                                                                                 | 5    | 15   | 0                                                                                   | 15   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                   | 0    |
| Sign Control             | Free                                                                              | Free                                                                              | Free | Free                                                                              | Free                                                                              | Free | Stop | Stop                                                                              | Stop | Stop | Stop                                                                                | Stop |
| RT Channelized           | -                                                                                 | -                                                                                 | None | -                                                                                 | -                                                                                 | None | -    | -                                                                                 | None | -    | -                                                                                   | None |
| Storage Length           | 250                                                                               | -                                                                                 | -    | 250                                                                               | -                                                                                 | -    | -    | -                                                                                 | -    | -    | -                                                                                   | -    |
| Veh in Median Storage, # | -                                                                                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Grade, %                 | -                                                                                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Peak Hour Factor         | 95                                                                                | 95                                                                                | 95   | 95                                                                                | 95                                                                                | 95   | 95   | 95                                                                                | 95   | 95   | 95                                                                                  | 95   |
| Heavy Vehicles, %        | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2                                                                                 | 2    | 2    | 2                                                                                 | 2    | 2    | 2                                                                                   | 2    |
| Mvmt Flow                | 5                                                                                 | 516                                                                               | 0    | 5                                                                                 | 332                                                                               | 5    | 16   | 0                                                                                 | 5    | 16   | 0                                                                                   | 16   |

|                      |        |   |   |        |   |   |        |       |       |        |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
| Conflicting Flow All | 337    | 0 | 0 | 516    | 0 | 0 | 868    | 874   | 516   | 871    | 871   | 334   |
| Stage 1              | -      | - | - | -      | - | - | 526    | 526   | -     | 345    | 345   | -     |
| Stage 2              | -      | - | - | -      | - | - | 342    | 347   | -     | 526    | 526   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1222   | - | - | 1050   | - | - | 273    | 288   | 559   | 271    | 289   | 708   |
| Stage 1              | -      | - | - | -      | - | - | 535    | 529   | -     | 671    | 636   | -     |
| Stage 2              | -      | - | - | -      | - | - | 673    | 635   | -     | 535    | 529   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 1222   | - | - | 1050   | - | - | 264    | 286   | 559   | 266    | 287   | 708   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 264    | 286   | -     | 266    | 287   | -     |
| Stage 1              | -      | - | - | -      | - | - | 533    | 526   | -     | 667    | 633   | -     |
| Stage 2              | -      | - | - | -      | - | - | 655    | 631   | -     | 528    | 526   | -     |

|                   |      |      |       |       |
|-------------------|------|------|-------|-------|
| Approach          | EB   | WB   | NB    | SB    |
| HCM Ctrl Dly, s/v | 0.08 | 0.13 | 17.72 | 15.13 |
| HCM LOS           |      |      | C     | C     |

|                       |       |       |     |     |       |     |     |       |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
| Capacity (veh/h)      | 304   | 1222  | -   | -   | 1050  | -   | -   | 387   |
| HCM Lane V/C Ratio    | 0.069 | 0.004 | -   | -   | 0.005 | -   | -   | 0.082 |
| HCM Ctrl Dly (s/v)    | 17.7  | 8     | -   | -   | 8.4   | -   | -   | 15.1  |
| HCM Lane LOS          | C     | A     | -   | -   | A     | -   | -   | C     |
| HCM 95th %tile Q(veh) | 0.2   | 0     | -   | -   | 0     | -   | -   | 0.3   |

HCM 7th TWSC  
11: 57th Street & St. Louis

Long Bkgrd PM

Intersection

Int Delay, s/veh 0.6

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

|                          |                                                                                   |                                                                                   |      |                                                                                   |                                                                                   |      |      |                                                                                   |      |      |                                                                                     |      |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations      |  |  |      |  |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h       | 15                                                                                | 370                                                                               | 5    | 5                                                                                 | 625                                                                               | 10   | 5    | 0                                                                                 | 5    | 5    | 0                                                                                   | 10   |
| Future Vol, veh/h        | 15                                                                                | 370                                                                               | 5    | 5                                                                                 | 625                                                                               | 10   | 5    | 0                                                                                 | 5    | 5    | 0                                                                                   | 10   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                   | 0    |
| Sign Control             | Free                                                                              | Free                                                                              | Free | Free                                                                              | Free                                                                              | Free | Stop | Stop                                                                              | Stop | Stop | Stop                                                                                | Stop |
| RT Channelized           | -                                                                                 | -                                                                                 | None | -                                                                                 | -                                                                                 | None | -    | -                                                                                 | None | -    | -                                                                                   | None |
| Storage Length           | 250                                                                               | -                                                                                 | -    | 250                                                                               | -                                                                                 | -    | -    | -                                                                                 | -    | -    | -                                                                                   | -    |
| Veh in Median Storage, # | -                                                                                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Grade, %                 | -                                                                                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Peak Hour Factor         | 95                                                                                | 95                                                                                | 95   | 95                                                                                | 95                                                                                | 95   | 95   | 95                                                                                | 95   | 95   | 95                                                                                  | 95   |
| Heavy Vehicles, %        | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2                                                                                 | 2    | 2    | 2                                                                                 | 2    | 2    | 2                                                                                   | 2    |
| Mvmt Flow                | 16                                                                                | 389                                                                               | 5    | 5                                                                                 | 658                                                                               | 11   | 5    | 0                                                                                 | 5    | 5    | 0                                                                                   | 11   |

| Major/Minor          | Major1 |   | Major2 |       | Minor1 |   | Minor2 |       |       |       |       |       |
|----------------------|--------|---|--------|-------|--------|---|--------|-------|-------|-------|-------|-------|
| Conflicting Flow All | 668    | 0 | 0      | 395   | 0      | 0 | 1092   | 1103  | 392   | 1095  | 1100  | 663   |
| Stage 1              | -      | - | -      | -     | -      | - | 424    | 424   | -     | 674   | 674   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 668    | 679   | -     | 421   | 426   | -     |
| Critical Hdwy        | 4.12   | - | -      | 4.12  | -      | - | 7.12   | 6.52  | 6.22  | 7.12  | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | -      | 2.218 | -      | - | 3.518  | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 921    | - | -      | 1164  | -      | - | 192    | 211   | 657   | 191   | 212   | 461   |
| Stage 1              | -      | - | -      | -     | -      | - | 608    | 587   | -     | 444   | 454   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 447    | 451   | -     | 610   | 586   | -     |
| Platoon blocked, %   |        | - | -      |       | -      | - |        |       |       |       |       |       |
| Mov Cap-1 Maneuver   | 921    | - | -      | 1164  | -      | - | 184    | 207   | 657   | 186   | 208   | 461   |
| Mov Cap-2 Maneuver   | -      | - | -      | -     | -      | - | 184    | 207   | -     | 186   | 208   | -     |
| Stage 1              | -      | - | -      | -     | -      | - | 598    | 577   | -     | 442   | 452   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 435    | 449   | -     | 595   | 576   | -     |

| Approach          | EB   | WB   | NB    | SB   |
|-------------------|------|------|-------|------|
| HCM Ctrl Dly, s/v | 0.35 | 0.06 | 18.02 | 17.3 |
| HCM LOS           |      |      | C     | C    |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 287   | 921   | -   | -   | 1164  | -   | -   | 308   |
| HCM Lane V/C Ratio    | 0.037 | 0.017 | -   | -   | 0.005 | -   | -   | 0.051 |
| HCM Ctrl Dly (s/v)    | 18    | 9     | -   | -   | 8.1   | -   | -   | 17.3  |
| HCM Lane LOS          | C     | A     | -   | -   | A     | -   | -   | C     |
| HCM 95th %tile Q(veh) | 0.1   | 0.1   | -   | -   | 0     | -   | -   | 0.2   |

HCM 7th TWSC  
15: 57th Street & LCR13

Long Bkgrd AM

Intersection

Int Delay, s/veh 3.4

| Movement                 | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL  | NBT                                                                               | NBR  | SBL  | SBT                                                                                 | SBR                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Configurations      |  |  |      |  |  |  |      |  |      |      |  |  |
| Traffic Vol, veh/h       | 90                                                                                | 420                                                                               | 0    | 5                                                                                 | 235                                                                               | 30                                                                                | 5    | 0                                                                                 | 5    | 55   | 0                                                                                   | 85                                                                                  |
| Future Vol, veh/h        | 90                                                                                | 420                                                                               | 0    | 5                                                                                 | 235                                                                               | 30                                                                                | 5    | 0                                                                                 | 5    | 55   | 0                                                                                   | 85                                                                                  |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    | 0    | 0                                                                                   | 0                                                                                   |
| Sign Control             | Free                                                                              | Free                                                                              | Free | Free                                                                              | Free                                                                              | Free                                                                              | Stop | Stop                                                                              | Stop | Stop | Stop                                                                                | Stop                                                                                |
| RT Channelized           | -                                                                                 | -                                                                                 | None | -                                                                                 | -                                                                                 | None                                                                              | -    | -                                                                                 | None | -    | -                                                                                   | None                                                                                |
| Storage Length           | 250                                                                               | -                                                                                 | -    | 250                                                                               | -                                                                                 | 250                                                                               | -    | -                                                                                 | -    | -    | -                                                                                   | 250                                                                                 |
| Veh in Median Storage, # | -                                                                                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                   | -                                                                                   |
| Grade, %                 | -                                                                                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                   | -                                                                                   |
| Peak Hour Factor         | 95                                                                                | 95                                                                                | 95   | 95                                                                                | 95                                                                                | 95                                                                                | 95   | 95                                                                                | 95   | 95   | 95                                                                                  | 95                                                                                  |
| Heavy Vehicles, %        | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    | 2    | 2                                                                                   | 2                                                                                   |
| Mvmt Flow                | 95                                                                                | 442                                                                               | 0    | 5                                                                                 | 247                                                                               | 32                                                                                | 5    | 0                                                                                 | 5    | 58   | 0                                                                                   | 89                                                                                  |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 279    | 0 | 0 | 442    | 0 | 0 | 889    | 921   | 442   | 889    | 889   | 247   |
| Stage 1              | -      | - | - | -      | - | - | 632    | 632   | -     | 258    | 258   | -     |
| Stage 2              | -      | - | - | -      | - | - | 258    | 289   | -     | 632    | 632   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1284   | - | - | 1118   | - | - | 264    | 270   | 615   | 264    | 282   | 791   |
| Stage 1              | -      | - | - | -      | - | - | 469    | 474   | -     | 747    | 694   | -     |
| Stage 2              | -      | - | - | -      | - | - | 747    | 673   | -     | 469    | 474   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 1284   | - | - | 1118   | - | - | 216    | 249   | 615   | 241    | 260   | 791   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 216    | 249   | -     | 241    | 260   | -     |
| Stage 1              | -      | - | - | -      | - | - | 434    | 439   | -     | 743    | 691   | -     |
| Stage 2              | -      | - | - | -      | - | - | 659    | 669   | -     | 430    | 439   | -     |

| Approach          | EB   | WB   | NB    | SB    |
|-------------------|------|------|-------|-------|
| HCM Ctrl Dly, s/v | 1.42 | 0.15 | 16.66 | 15.81 |
| HCM LOS           |      |      | C     | C     |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|-------|
| Capacity (veh/h)      | 319   | 1284  | -   | -   | 1118  | -   | -   | 241   | 791   |
| HCM Lane V/C Ratio    | 0.033 | 0.074 | -   | -   | 0.005 | -   | -   | 0.24  | 0.113 |
| HCM Ctrl Dly (s/v)    | 16.7  | 8     | -   | -   | 8.2   | -   | -   | 24.6  | 10.1  |
| HCM Lane LOS          | C     | A     | -   | -   | A     | -   | -   | C     | B     |
| HCM 95th %tile Q(veh) | 0.1   | 0.2   | -   | -   | 0     | -   | -   | 0.9   | 0.4   |

HCM 7th TWSC  
15: 57th Street & LCR13

Long Bkgrd PM

Intersection

Int Delay, s/veh 4.3

| Movement                 | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL  | NBT                                                                               | NBR  | SBL  | SBT                                                                                 | SBR                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Configurations      |  |  |      |  |  |  |      |  |      |      |  |  |
| Traffic Vol, veh/h       | 80                                                                                | 300                                                                               | 5    | 5                                                                                 | 490                                                                               | 50                                                                                | 5    | 0                                                                                 | 5    | 65   | 0                                                                                   | 135                                                                                 |
| Future Vol, veh/h        | 80                                                                                | 300                                                                               | 5    | 5                                                                                 | 490                                                                               | 50                                                                                | 5    | 0                                                                                 | 5    | 65   | 0                                                                                   | 135                                                                                 |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    | 0    | 0                                                                                   | 0                                                                                   |
| Sign Control             | Free                                                                              | Free                                                                              | Free | Free                                                                              | Free                                                                              | Free                                                                              | Stop | Stop                                                                              | Stop | Stop | Stop                                                                                | Stop                                                                                |
| RT Channelized           | -                                                                                 | -                                                                                 | None | -                                                                                 | -                                                                                 | None                                                                              | -    | -                                                                                 | None | -    | -                                                                                   | None                                                                                |
| Storage Length           | 250                                                                               | -                                                                                 | -    | 250                                                                               | -                                                                                 | 250                                                                               | -    | -                                                                                 | -    | -    | -                                                                                   | 250                                                                                 |
| Veh in Median Storage, # | -                                                                                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                   | -                                                                                   |
| Grade, %                 | -                                                                                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                   | -                                                                                   |
| Peak Hour Factor         | 95                                                                                | 95                                                                                | 95   | 95                                                                                | 95                                                                                | 95                                                                                | 95   | 95                                                                                | 95   | 95   | 95                                                                                  | 95                                                                                  |
| Heavy Vehicles, %        | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    | 2    | 2                                                                                   | 2                                                                                   |
| Mvmt Flow                | 84                                                                                | 316                                                                               | 5    | 5                                                                                 | 516                                                                               | 53                                                                                | 5    | 0                                                                                 | 5    | 68   | 0                                                                                   | 142                                                                                 |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 568    | 0 | 0 | 321    | 0 | 0 | 1013   | 1066  | 318   | 1011   | 1016  | 516   |
| Stage 1              | -      | - | - | -      | - | - | 487    | 487   | -     | 526    | 526   | -     |
| Stage 2              | -      | - | - | -      | - | - | 526    | 579   | -     | 484    | 489   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1004   | - | - | 1239   | - | - | 217    | 222   | 722   | 218    | 238   | 559   |
| Stage 1              | -      | - | - | -      | - | - | 562    | 550   | -     | 535    | 529   | -     |
| Stage 2              | -      | - | - | -      | - | - | 535    | 501   | -     | 564    | 549   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 1004   | - | - | 1239   | - | - | 148    | 203   | 722   | 198    | 217   | 559   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 148    | 203   | -     | 198    | 217   | -     |
| Stage 1              | -      | - | - | -      | - | - | 515    | 504   | -     | 533    | 526   | -     |
| Stage 2              | -      | - | - | -      | - | - | 397    | 499   | -     | 513    | 503   | -     |

| Approach          | EB   | WB   | NB    | SB    |
|-------------------|------|------|-------|-------|
| HCM Ctrl Dly, s/v | 1.85 | 0.07 | 20.32 | 19.77 |
| HCM LOS           |      |      | C     | C     |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|-------|
| Capacity (veh/h)      | 245   | 1004  | -   | -   | 1239  | -   | -   | 198   | 559   |
| HCM Lane V/C Ratio    | 0.043 | 0.084 | -   | -   | 0.004 | -   | -   | 0.346 | 0.254 |
| HCM Ctrl Dly (s/v)    | 20.3  | 8.9   | -   | -   | 7.9   | -   | -   | 32.6  | 13.6  |
| HCM Lane LOS          | C     | A     | -   | -   | A     | -   | -   | D     | B     |
| HCM 95th %tile Q(veh) | 0.1   | 0.3   | -   | -   | 0     | -   | -   | 1.5   | 1     |

HCM 7th Roundabout  
23: Monroe & 65th Street

Long Bkgrd AM

Intersection

Intersection Delay, s/veh 3.3  
Intersection LOS A

| Approach                    | EB    | WB    | NB    |
|-----------------------------|-------|-------|-------|
| Entry Lanes                 | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 100   | 71    | 77    |
| Demand Flow Rate, veh/h     | 102   | 72    | 78    |
| Vehicles Circulating, veh/h | 12    | 66    | 54    |
| Vehicles Exiting, veh/h     | 126   | 66    | 60    |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 3.3   | 3.3   | 3.3   |
| Approach LOS                | A     | A     | A     |

| Lane                  | Left    | Left    | Left    |
|-----------------------|---------|---------|---------|
| Designated Moves      | TR      | LT      | LR      |
| Assumed Moves         | TR      | LT      | LR      |
| RT Channelized        |         |         |         |
| Lane Util             | 1.000   | 1.000   | 1.000   |
| Follow-Up Headway, s  | 2.609   | 2.609   | 2.609   |
| Critical Headway, s   | 4.976   | 4.976   | 4.976   |
| A (Intercept)         | 1380    | 1380    | 1380    |
| B (Slope)             | 1.02e-3 | 1.02e-3 | 1.02e-3 |
| Entry Flow, veh/h     | 102     | 72      | 78      |
| Cap Entry Lane, veh/h | 1363    | 1290    | 1306    |
| Entry HV Adj Factor   | 0.980   | 0.984   | 0.987   |
| Flow Entry, veh/h     | 100     | 71      | 77      |
| Cap Entry, veh/h      | 1336    | 1269    | 1289    |
| V/C Ratio             | 0.075   | 0.056   | 0.060   |
| Control Delay, s/veh  | 3.3     | 3.3     | 3.3     |
| LOS                   | A       | A       | A       |
| 95th %tile Queue, veh | 0       | 0       | 0       |

HCM 7th Roundabout  
23: Monroe & 65th Street

Long Bkgrd PM

Intersection

Intersection Delay, s/veh 3.5  
Intersection LOS A

| Approach                    | EB    | WB    | NB    |
|-----------------------------|-------|-------|-------|
| Entry Lanes                 | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 147   | 77    | 83    |
| Demand Flow Rate, veh/h     | 150   | 78    | 84    |
| Vehicles Circulating, veh/h | 12    | 72    | 72    |
| Vehicles Exiting, veh/h     | 138   | 84    | 90    |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 3.6   | 3.3   | 3.4   |
| Approach LOS                | A     | A     | A     |

| Lane                  | Left    | Left    | Left    |
|-----------------------|---------|---------|---------|
| Designated Moves      | TR      | LT      | LR      |
| Assumed Moves         | TR      | LT      | LR      |
| RT Channelized        |         |         |         |
| Lane Util             | 1.000   | 1.000   | 1.000   |
| Follow-Up Headway, s  | 2.609   | 2.609   | 2.609   |
| Critical Headway, s   | 4.976   | 4.976   | 4.976   |
| A (Intercept)         | 1380    | 1380    | 1380    |
| B (Slope)             | 1.02e-3 | 1.02e-3 | 1.02e-3 |
| Entry Flow, veh/h     | 150     | 78      | 84      |
| Cap Entry Lane, veh/h | 1363    | 1282    | 1282    |
| Entry HV Adj Factor   | 0.977   | 0.983   | 0.988   |
| Flow Entry, veh/h     | 147     | 77      | 83      |
| Cap Entry, veh/h      | 1332    | 1261    | 1267    |
| V/C Ratio             | 0.110   | 0.061   | 0.066   |
| Control Delay, s/veh  | 3.6     | 3.3     | 3.4     |
| LOS                   | A       | A       | A       |
| 95th %tile Queue, veh | 0       | 0       | 0       |

HCM 7th TWSC  
12: St. Louis & 65th Street

Long Bkgrd AM

Intersection

Int Delay, s/veh 1.4

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|----------|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|

|                          |                                                                                   |      |      |                                                                                   |                                                                                   |      |
|--------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |  |      |      |  |  |      |
| Traffic Vol, veh/h       | 50                                                                                | 5    | 5    | 50                                                                                | 10                                                                                | 5    |
| Future Vol, veh/h        | 50                                                                                | 5    | 5    | 50                                                                                | 10                                                                                | 5    |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Free                                                                              | Free | Free | Free                                                                              | Stop                                                                              | Stop |
| RT Channelized           | -                                                                                 | None | -    | None                                                                              | -                                                                                 | None |
| Storage Length           | -                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 85                                                                                | 85   | 85   | 85                                                                                | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2                                                                                 | 2    | 2    | 2                                                                                 | 2                                                                                 | 2    |
| Mvmt Flow                | 59                                                                                | 6    | 6    | 59                                                                                | 12                                                                                | 6    |

| Major/Minor | Major1 | Major2 | Minor1 |
|-------------|--------|--------|--------|
|-------------|--------|--------|--------|

|                      |   |   |       |   |       |       |
|----------------------|---|---|-------|---|-------|-------|
| Conflicting Flow All | 0 | 0 | 65    | 0 | 132   | 62    |
| Stage 1              | - | - | -     | - | 62    | -     |
| Stage 2              | - | - | -     | - | 71    | -     |
| Critical Hdwy        | - | - | 4.12  | - | 6.42  | 6.22  |
| Critical Hdwy Stg 1  | - | - | -     | - | 5.42  | -     |
| Critical Hdwy Stg 2  | - | - | -     | - | 5.42  | -     |
| Follow-up Hdwy       | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver   | - | - | 1537  | - | 862   | 1003  |
| Stage 1              | - | - | -     | - | 961   | -     |
| Stage 2              | - | - | -     | - | 952   | -     |
| Platoon blocked, %   | - | - | -     | - | -     | -     |
| Mov Cap-1 Maneuver   | - | - | 1537  | - | 858   | 1003  |
| Mov Cap-2 Maneuver   | - | - | -     | - | 858   | -     |
| Stage 1              | - | - | -     | - | 961   | -     |
| Stage 2              | - | - | -     | - | 948   | -     |

| Approach | EB | WB | NB |
|----------|----|----|----|
|----------|----|----|----|

|                   |   |      |      |
|-------------------|---|------|------|
| HCM Ctrl Dly, s/v | 0 | 0.67 | 9.07 |
| HCM LOS           |   |      | A    |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|-----------------------|-------|-----|-----|-----|-----|
|-----------------------|-------|-----|-----|-----|-----|

|                       |      |   |   |       |   |
|-----------------------|------|---|---|-------|---|
| Capacity (veh/h)      | 902  | - | - | 164   | - |
| HCM Lane V/C Ratio    | 0.02 | - | - | 0.004 | - |
| HCM Ctrl Dly (s/v)    | 9.1  | - | - | 7.4   | 0 |
| HCM Lane LOS          | A    | - | - | A     | A |
| HCM 95th %tile Q(veh) | 0.1  | - | - | 0     | - |

HCM 7th TWSC  
12: St. Louis & 65th Street

Long Bkgrd PM

Intersection

Int Delay, s/veh 0.9

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|----------|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|

|                          |                                                                                   |      |      |                                                                                   |                                                                                   |      |
|--------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |  |      |      |  |  |      |
| Traffic Vol, veh/h       | 60                                                                                | 10   | 5    | 60                                                                                | 5                                                                                 | 5    |
| Future Vol, veh/h        | 60                                                                                | 10   | 5    | 60                                                                                | 5                                                                                 | 5    |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Free                                                                              | Free | Free | Free                                                                              | Stop                                                                              | Stop |
| RT Channelized           | -                                                                                 | None | -    | None                                                                              | -                                                                                 | None |
| Storage Length           | -                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 85                                                                                | 85   | 85   | 85                                                                                | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2                                                                                 | 2    | 2    | 2                                                                                 | 2                                                                                 | 2    |
| Mvmt Flow                | 71                                                                                | 12   | 6    | 71                                                                                | 6                                                                                 | 6    |

| Major/Minor | Major1 | Major2 | Minor1 |
|-------------|--------|--------|--------|
|-------------|--------|--------|--------|

|                      |   |   |       |   |       |       |
|----------------------|---|---|-------|---|-------|-------|
| Conflicting Flow All | 0 | 0 | 82    | 0 | 159   | 76    |
| Stage 1              | - | - | -     | - | 76    | -     |
| Stage 2              | - | - | -     | - | 82    | -     |
| Critical Hdwy        | - | - | 4.12  | - | 6.42  | 6.22  |
| Critical Hdwy Stg 1  | - | - | -     | - | 5.42  | -     |
| Critical Hdwy Stg 2  | - | - | -     | - | 5.42  | -     |
| Follow-up Hdwy       | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver   | - | - | 1515  | - | 832   | 985   |
| Stage 1              | - | - | -     | - | 947   | -     |
| Stage 2              | - | - | -     | - | 941   | -     |
| Platoon blocked, %   | - | - | -     | - | -     | -     |
| Mov Cap-1 Maneuver   | - | - | 1515  | - | 829   | 985   |
| Mov Cap-2 Maneuver   | - | - | -     | - | 829   | -     |
| Stage 1              | - | - | -     | - | 947   | -     |
| Stage 2              | - | - | -     | - | 937   | -     |

| Approach | EB | WB | NB |
|----------|----|----|----|
|----------|----|----|----|

|                   |   |      |      |
|-------------------|---|------|------|
| HCM Ctrl Dly, s/v | 0 | 0.57 | 9.05 |
| HCM LOS           |   |      | A    |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|-----------------------|-------|-----|-----|-----|-----|
|-----------------------|-------|-----|-----|-----|-----|

|                       |       |   |   |       |   |
|-----------------------|-------|---|---|-------|---|
| Capacity (veh/h)      | 900   | - | - | 138   | - |
| HCM Lane V/C Ratio    | 0.013 | - | - | 0.004 | - |
| HCM Ctrl Dly (s/v)    | 9.1   | - | - | 7.4   | 0 |
| HCM Lane LOS          | A     | - | - | A     | A |
| HCM 95th %tile Q(veh) | 0     | - | - | 0     | - |

HCM 7th Roundabout  
6: LCR13 & 65th Street

Long Bkgrd AM

Intersection

Intersection Delay, s/veh 3.7  
Intersection LOS A

| Approach                    | EB    | WB    | NB    | SB    |
|-----------------------------|-------|-------|-------|-------|
| Entry Lanes                 | 1     | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 65    | 106   | 142   | 124   |
| Demand Flow Rate, veh/h     | 66    | 108   | 144   | 126   |
| Vehicles Circulating, veh/h | 162   | 150   | 54    | 102   |
| Vehicles Exiting, veh/h     | 66    | 48    | 174   | 156   |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 3.6   | 3.9   | 3.7   | 3.8   |
| Approach LOS                | A     | A     | A     | A     |

| Lane                  | Left    | Left    | Left    | Left    |
|-----------------------|---------|---------|---------|---------|
| Designated Moves      | LTR     | LTR     | LTR     | LTR     |
| Assumed Moves         | LTR     | LTR     | LTR     | LTR     |
| RT Channelized        |         |         |         |         |
| Lane Util             | 1.000   | 1.000   | 1.000   | 1.000   |
| Follow-Up Headway, s  | 2.609   | 2.609   | 2.609   | 2.609   |
| Critical Headway, s   | 4.976   | 4.976   | 4.976   | 4.976   |
| A (Intercept)         | 1380    | 1380    | 1380    | 1380    |
| B (Slope)             | 1.02e-3 | 1.02e-3 | 1.02e-3 | 1.02e-3 |
| Entry Flow, veh/h     | 66      | 108     | 144     | 126     |
| Cap Entry Lane, veh/h | 1170    | 1184    | 1306    | 1244    |
| Entry HV Adj Factor   | 0.980   | 0.983   | 0.984   | 0.984   |
| Flow Entry, veh/h     | 65      | 106     | 142     | 124     |
| Cap Entry, veh/h      | 1146    | 1164    | 1286    | 1224    |
| V/C Ratio             | 0.056   | 0.091   | 0.110   | 0.101   |
| Control Delay, s/veh  | 3.6     | 3.9     | 3.7     | 3.8     |
| LOS                   | A       | A       | A       | A       |
| 95th %tile Queue, veh | 0       | 0       | 0       | 0       |

HCM 7th Roundabout  
6: LCR13 & 65th Street

Long Bkgrd PM

Intersection

Intersection Delay, s/veh 4.1  
Intersection LOS A

| Approach                    | EB    | WB    | NB    | SB    |
|-----------------------------|-------|-------|-------|-------|
| Entry Lanes                 | 1     | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 77    | 70    | 153   | 235   |
| Demand Flow Rate, veh/h     | 78    | 72    | 156   | 240   |
| Vehicles Circulating, veh/h | 246   | 114   | 84    | 84    |
| Vehicles Exiting, veh/h     | 78    | 126   | 240   | 102   |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 4.0   | 3.5   | 3.9   | 4.5   |
| Approach LOS                | A     | A     | A     | A     |

| Lane                  | Left    | Left    | Left    | Left    |
|-----------------------|---------|---------|---------|---------|
| Designated Moves      | LTR     | LTR     | LTR     | LTR     |
| Assumed Moves         | LTR     | LTR     | LTR     | LTR     |
| RT Channelized        |         |         |         |         |
| Lane Util             | 1.000   | 1.000   | 1.000   | 1.000   |
| Follow-Up Headway, s  | 2.609   | 2.609   | 2.609   | 2.609   |
| Critical Headway, s   | 4.976   | 4.976   | 4.976   | 4.976   |
| A (Intercept)         | 1380    | 1380    | 1380    | 1380    |
| B (Slope)             | 1.02e-3 | 1.02e-3 | 1.02e-3 | 1.02e-3 |
| Entry Flow, veh/h     | 78      | 72      | 156     | 240     |
| Cap Entry Lane, veh/h | 1074    | 1228    | 1267    | 1267    |
| Entry HV Adj Factor   | 0.988   | 0.978   | 0.984   | 0.980   |
| Flow Entry, veh/h     | 77      | 70      | 153     | 235     |
| Cap Entry, veh/h      | 1061    | 1201    | 1246    | 1241    |
| V/C Ratio             | 0.073   | 0.059   | 0.123   | 0.189   |
| Control Delay, s/veh  | 4.0     | 3.5     | 3.9     | 4.5     |
| LOS                   | A       | A       | A       | A       |
| 95th %tile Queue, veh | 0       | 0       | 0       | 1       |

HCM 7th TWSC  
3: LCR13 & Bruns

Long Bkgrd AM

Intersection

Int Delay, s/veh 5.7

| Movement                 | EBL  | EBT                                                                               | WBT                                                                               | WBR  | SBL                                                                               | SBR  |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 95   | 35                                                                                | 55                                                                                | 10   | 10                                                                                | 100  |
| Future Vol, veh/h        | 95   | 35                                                                                | 55                                                                                | 10   | 10                                                                                | 100  |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 92   | 85                                                                                | 85                                                                                | 85   | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    |
| Mvmt Flow                | 103  | 41                                                                                | 65                                                                                | 12   | 12                                                                                | 118  |

| Major/Minor          | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 76     | 0      | 0      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | 4.12   | -      | -      |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | 2.218  | -      | -      |
| Pot Cap-1 Maneuver   | 1522   | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | 1522   | -      | -      |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach          | EB   | WB | SB   |
|-------------------|------|----|------|
| HCM Ctrl Dly, s/v | 5.39 | 0  | 9.43 |
| HCM LOS           |      |    | A    |

| Minor Lane/Major Mvmt | EBL   | EBT | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|
| Capacity (veh/h)      | 1287  | -   | -   | -   | 942   |
| HCM Lane V/C Ratio    | 0.068 | -   | -   | -   | 0.137 |
| HCM Ctrl Dly (s/v)    | 7.5   | 0   | -   | -   | 9.4   |
| HCM Lane LOS          | A     | A   | -   | -   | A     |
| HCM 95th %tile Q(veh) | 0.2   | -   | -   | -   | 0.5   |

HCM 7th TWSC  
3: LCR13 & Bruns

Long Bkgrd PM

Intersection

Int Delay, s/veh 1.5

Movement EBL EBT WBT WBR SBL SBR

|                          |      |                                                                                   |                                                                                   |      |                                                                                   |      |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 20   | 120                                                                               | 55                                                                                | 0    | 0                                                                                 | 20   |
| Future Vol, veh/h        | 20   | 120                                                                               | 55                                                                                | 0    | 0                                                                                 | 20   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 92   | 85                                                                                | 85                                                                                | 85   | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    |
| Mvmt Flow                | 22   | 141                                                                               | 65                                                                                | 0    | 0                                                                                 | 24   |

Major/Minor Major1 Major2 Minor2

|                      |       |   |   |   |       |       |
|----------------------|-------|---|---|---|-------|-------|
| Conflicting Flow All | 65    | 0 | - | 0 | 249   | 65    |
| Stage 1              | -     | - | - | - | 65    | -     |
| Stage 2              | -     | - | - | - | 185   | -     |
| Critical Hdwy        | 4.12  | - | - | - | 6.42  | 6.22  |
| Critical Hdwy Stg 1  | -     | - | - | - | 5.42  | -     |
| Critical Hdwy Stg 2  | -     | - | - | - | 5.42  | -     |
| Follow-up Hdwy       | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver   | 1537  | - | - | - | 739   | 999   |
| Stage 1              | -     | - | - | - | 958   | -     |
| Stage 2              | -     | - | - | - | 847   | -     |
| Platoon blocked, %   |       | - | - | - |       |       |
| Mov Cap-1 Maneuver   | 1537  | - | - | - | 728   | 999   |
| Mov Cap-2 Maneuver   | -     | - | - | - | 728   | -     |
| Stage 1              | -     | - | - | - | 943   | -     |
| Stage 2              | -     | - | - | - | 847   | -     |

Approach EB WB SB

|                   |      |   |      |
|-------------------|------|---|------|
| HCM Ctrl Dly, s/v | 0.98 | 0 | 8.69 |
| HCM LOS           |      |   | A    |

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

|                       |       |   |   |   |       |
|-----------------------|-------|---|---|---|-------|
| Capacity (veh/h)      | 240   | - | - | - | 999   |
| HCM Lane V/C Ratio    | 0.014 | - | - | - | 0.024 |
| HCM Ctrl Dly (s/v)    | 7.4   | 0 | - | - | 8.7   |
| HCM Lane LOS          | A     | A | - | - | A     |
| HCM 95th %tile Q(veh) | 0     | - | - | - | 0.1   |

## APPENDIX F

# HCM 7th Signalized Intersection Summary

## 3: US287 & 57th Street

Short Total AM

|                              |                                                                                    |  |  |                                                                                    |  |  |  |                                                                                      |  |  |                                                                                      |  |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                                                                                                                 | EBT                                                                               | EBR                                                                               | WBL                                                                                                                                                                 | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                                                                                                     | NBR                                                                                 | SBL                                                                                 | SBT                                                                                                                                                                     | SBR                                                                                 |
| Lane Configurations          |   |  |  |   |  |  |   |   |  |  |   |  |
| Traffic Volume (veh/h)       | 274                                                                                                                                                                 | 186                                                                               | 149                                                                               | 90                                                                                                                                                                  | 111                                                                               | 160                                                                               | 88                                                                                  | 1311                                                                                                                                                                    | 62                                                                                  | 99                                                                                  | 1232                                                                                                                                                                    | 227                                                                                 |
| Future Volume (veh/h)        | 274                                                                                                                                                                 | 186                                                                               | 149                                                                               | 90                                                                                                                                                                  | 111                                                                               | 160                                                                               | 88                                                                                  | 1311                                                                                                                                                                    | 62                                                                                  | 99                                                                                  | 1232                                                                                                                                                                    | 227                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                   | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                                                                                                                |                                                                                   | 1.00                                                                              | 1.00                                                                                                                                                                |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Work Zone On Approach        |                                                                                                                                                                     | No                                                                                |                                                                                   |                                                                                                                                                                     | No                                                                                |                                                                                   |                                                                                     | No                                                                                                                                                                      |                                                                                     |                                                                                     | No                                                                                                                                                                      |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                                                                                                                | 1870                                                                              | 1870                                                                              | 1870                                                                                                                                                                | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                                                                                                    | 1870                                                                                | 1870                                                                                | 1870                                                                                                                                                                    | 1870                                                                                |
| Adj Flow Rate, veh/h         | 291                                                                                                                                                                 | 198                                                                               | 0                                                                                 | 96                                                                                                                                                                  | 118                                                                               | 0                                                                                 | 94                                                                                  | 1395                                                                                                                                                                    | 0                                                                                   | 105                                                                                 | 1311                                                                                                                                                                    | 113                                                                                 |
| Peak Hour Factor             | 0.94                                                                                                                                                                | 0.94                                                                              | 0.94                                                                              | 0.94                                                                                                                                                                | 0.94                                                                              | 0.94                                                                              | 0.94                                                                                | 0.94                                                                                                                                                                    | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                                                                                                    | 0.94                                                                                |
| Percent Heavy Veh, %         | 2                                                                                                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                                                                                                       | 2                                                                                   | 2                                                                                   | 2                                                                                                                                                                       | 2                                                                                   |
| Cap, veh/h                   | 388                                                                                                                                                                 | 285                                                                               |                                                                                   | 183                                                                                                                                                                 | 174                                                                               |                                                                                   | 372                                                                                 | 2023                                                                                                                                                                    |                                                                                     | 272                                                                                 | 2025                                                                                                                                                                    | 903                                                                                 |
| Arrive On Green              | 0.11                                                                                                                                                                | 0.15                                                                              | 0.00                                                                              | 0.05                                                                                                                                                                | 0.09                                                                              | 0.00                                                                              | 0.05                                                                                | 0.57                                                                                                                                                                    | 0.00                                                                                | 0.11                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Sat Flow, veh/h              | 3456                                                                                                                                                                | 1870                                                                              | 1585                                                                              | 3456                                                                                                                                                                | 1870                                                                              | 1585                                                                              | 1781                                                                                | 3554                                                                                                                                                                    | 1585                                                                                | 1781                                                                                | 3554                                                                                                                                                                    | 1585                                                                                |
| Grp Volume(v), veh/h         | 291                                                                                                                                                                 | 198                                                                               | 0                                                                                 | 96                                                                                                                                                                  | 118                                                                               | 0                                                                                 | 94                                                                                  | 1395                                                                                                                                                                    | 0                                                                                   | 105                                                                                 | 1311                                                                                                                                                                    | 113                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1728                                                                                                                                                                | 1870                                                                              | 1585                                                                              | 1728                                                                                                                                                                | 1870                                                                              | 1585                                                                              | 1781                                                                                | 1777                                                                                                                                                                    | 1585                                                                                | 1781                                                                                | 1777                                                                                                                                                                    | 1585                                                                                |
| Q Serve(g_s), s              | 9.0                                                                                                                                                                 | 11.0                                                                              | 0.0                                                                               | 3.0                                                                                                                                                                 | 6.7                                                                               | 0.0                                                                               | 2.3                                                                                 | 30.6                                                                                                                                                                    | 0.0                                                                                 | 2.6                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 9.0                                                                                                                                                                 | 11.0                                                                              | 0.0                                                                               | 3.0                                                                                                                                                                 | 6.7                                                                               | 0.0                                                                               | 2.3                                                                                 | 30.6                                                                                                                                                                    | 0.0                                                                                 | 2.6                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                                                                                                                |                                                                                   | 1.00                                                                              | 1.00                                                                                                                                                                |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 388                                                                                                                                                                 | 285                                                                               |                                                                                   | 183                                                                                                                                                                 | 174                                                                               |                                                                                   | 372                                                                                 | 2023                                                                                                                                                                    |                                                                                     | 272                                                                                 | 2025                                                                                                                                                                    | 903                                                                                 |
| V/C Ratio(X)                 | 0.75                                                                                                                                                                | 0.69                                                                              |                                                                                   | 0.52                                                                                                                                                                | 0.68                                                                              |                                                                                   | 0.25                                                                                | 0.69                                                                                                                                                                    |                                                                                     | 0.39                                                                                | 0.65                                                                                                                                                                    | 0.13                                                                                |
| Avail Cap(c_a), veh/h        | 503                                                                                                                                                                 | 578                                                                               |                                                                                   | 408                                                                                                                                                                 | 527                                                                               |                                                                                   | 474                                                                                 | 2023                                                                                                                                                                    |                                                                                     | 372                                                                                 | 2025                                                                                                                                                                    | 903                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                                                                                                    | 2.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                                                                                                                | 1.00                                                                              | 0.00                                                                              | 0.96                                                                                                                                                                | 0.96                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                                                                                                    | 0.00                                                                                | 0.87                                                                                | 0.87                                                                                                                                                                    | 0.87                                                                                |
| Uniform Delay (d), s/veh     | 47.3                                                                                                                                                                | 44.2                                                                              | 0.0                                                                               | 50.7                                                                                                                                                                | 48.3                                                                              | 0.0                                                                               | 8.3                                                                                 | 16.8                                                                                                                                                                    | 0.0                                                                                 | 13.3                                                                                | 0.0                                                                                                                                                                     | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 4.5                                                                                                                                                                 | 3.0                                                                               | 0.0                                                                               | 2.2                                                                                                                                                                 | 4.4                                                                               | 0.0                                                                               | 0.4                                                                                 | 2.0                                                                                                                                                                     | 0.0                                                                                 | 0.8                                                                                 | 1.4                                                                                                                                                                     | 0.2                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                                                                                                                 | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                 | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 4.1                                                                                                                                                                 | 5.3                                                                               | 0.0                                                                               | 1.3                                                                                                                                                                 | 3.3                                                                               | 0.0                                                                               | 0.8                                                                                 | 11.3                                                                                                                                                                    | 0.0                                                                                 | 0.9                                                                                 | 0.4                                                                                                                                                                     | 0.1                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| LnGrp Delay(d), s/veh        | 51.9                                                                                                                                                                | 47.2                                                                              | 0.0                                                                               | 53.0                                                                                                                                                                | 52.7                                                                              | 0.0                                                                               | 8.7                                                                                 | 18.8                                                                                                                                                                    | 0.0                                                                                 | 14.1                                                                                | 1.4                                                                                                                                                                     | 0.2                                                                                 |
| LnGrp LOS                    | D                                                                                                                                                                   | D                                                                                 |                                                                                   | D                                                                                                                                                                   | D                                                                                 |                                                                                   | A                                                                                   | B                                                                                                                                                                       |                                                                                     | B                                                                                   | A                                                                                                                                                                       | A                                                                                   |
| Approach Vol, veh/h          |                                                                                                                                                                     | 489                                                                               |                                                                                   |                                                                                                                                                                     | 214                                                                               |                                                                                   |                                                                                     | 1489                                                                                                                                                                    |                                                                                     |                                                                                     | 1529                                                                                                                                                                    |                                                                                     |
| Approach Delay, s/veh        |                                                                                                                                                                     | 50.0                                                                              |                                                                                   |                                                                                                                                                                     | 52.8                                                                              |                                                                                   |                                                                                     | 18.1                                                                                                                                                                    |                                                                                     |                                                                                     | 2.2                                                                                                                                                                     |                                                                                     |
| Approach LOS                 |                                                                                                                                                                     | D                                                                                 |                                                                                   |                                                                                                                                                                     | D                                                                                 |                                                                                   |                                                                                     | B                                                                                                                                                                       |                                                                                     |                                                                                     | A                                                                                                                                                                       |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                                                                                                   | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                                                                                                       |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.8                                                                                                                                                                 | 69.6                                                                              | 9.8                                                                               | 20.8                                                                                                                                                                | 9.7                                                                               | 69.7                                                                              | 16.4                                                                                | 14.2                                                                                                                                                                    |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                                                                                                                 | 8.0                                                                               | 5.0                                                                               | 5.0                                                                                                                                                                 | 5.0                                                                               | 8.0                                                                               | 5.0                                                                                 | 5.0                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Max Green Setting (Gmax), s  | 11.0                                                                                                                                                                | 31.0                                                                              | 12.0                                                                              | 33.0                                                                                                                                                                | 11.0                                                                              | 31.0                                                                              | 15.0                                                                                | 30.0                                                                                                                                                                    |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 4.6                                                                                                                                                                 | 32.6                                                                              | 5.0                                                                               | 13.0                                                                                                                                                                | 4.3                                                                               | 2.0                                                                               | 11.0                                                                                | 8.7                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                                                                                                                 | 0.0                                                                               | 0.1                                                                               | 1.0                                                                                                                                                                 | 0.1                                                                               | 10.8                                                                              | 0.4                                                                                 | 0.5                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |

### Intersection Summary

HCM 7th Control Delay, s/veh 17.8  
 HCM 7th LOS B

### Notes

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

# Timing Report, Sorted By Phase

## 3: US287 & 57th Street

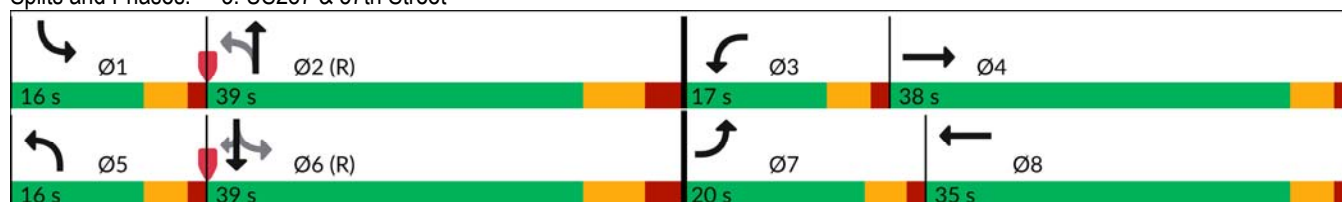
Short Total AM

|                        |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |
| Movement               | SBL                                                                               | NBTL                                                                              | WBL                                                                               | EBT                                                                               | NBL                                                                               | SBTL                                                                              | EBL                                                                                | WBT                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                               | Lag                                                                                 |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 |
| Recall Mode            | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                               | None                                                                                |
| Maximum Split (s)      | 16                                                                                | 39                                                                                | 17                                                                                | 38                                                                                | 16                                                                                | 39                                                                                | 20                                                                                 | 35                                                                                  |
| Maximum Split (%)      | 14.5%                                                                             | 35.5%                                                                             | 15.5%                                                                             | 34.5%                                                                             | 14.5%                                                                             | 35.5%                                                                             | 18.2%                                                                              | 31.8%                                                                               |
| Minimum Split (s)      | 10                                                                                | 35                                                                                | 10                                                                                | 28                                                                                | 10                                                                                | 35                                                                                | 10                                                                                 | 28                                                                                  |
| Yellow Time (s)        | 3.5                                                                               | 5                                                                                 | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 5                                                                                 | 3.5                                                                                | 3.5                                                                                 |
| All-Red Time (s)       | 1.5                                                                               | 3                                                                                 | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 3                                                                                 | 1.5                                                                                | 1.5                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                  | 5                                                                                   |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Walk Time (s)          |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   | 4                                                                                 |                                                                                    |                                                                                     |
| Flash Don't Walk (s)   |                                                                                   | 23                                                                                |                                                                                   |                                                                                   |                                                                                   | 23                                                                                |                                                                                    |                                                                                     |
| Dual Entry             | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                 | Yes                                                                                 |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 |
| Start Time (s)         | 90                                                                                | 106                                                                               | 35                                                                                | 52                                                                                | 90                                                                                | 106                                                                               | 35                                                                                 | 55                                                                                  |
| End Time (s)           | 106                                                                               | 35                                                                                | 52                                                                                | 90                                                                                | 106                                                                               | 35                                                                                | 55                                                                                 | 90                                                                                  |
| Yield/Force Off (s)    | 101                                                                               | 27                                                                                | 47                                                                                | 85                                                                                | 101                                                                               | 27                                                                                | 50                                                                                 | 85                                                                                  |
| Yield/Force Off 170(s) | 101                                                                               | 4                                                                                 | 47                                                                                | 85                                                                                | 101                                                                               | 4                                                                                 | 50                                                                                 | 85                                                                                  |
| Local Start Time (s)   | 94                                                                                | 0                                                                                 | 39                                                                                | 56                                                                                | 94                                                                                | 0                                                                                 | 39                                                                                 | 59                                                                                  |
| Local Yield (s)        | 105                                                                               | 31                                                                                | 51                                                                                | 89                                                                                | 105                                                                               | 31                                                                                | 54                                                                                 | 89                                                                                  |
| Local Yield 170(s)     | 105                                                                               | 8                                                                                 | 51                                                                                | 89                                                                                | 105                                                                               | 8                                                                                 | 54                                                                                 | 89                                                                                  |

### Intersection Summary

Cycle Length 110  
Control Type Actuated-Coordinated  
Natural Cycle 85  
Offset: 106 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

### Splits and Phases: 3: US287 & 57th Street



## Queues

Short Total AM

## 3: US287 &amp; 57th Street

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Group Flow (vph)   | 291                                                                               | 198                                                                               | 159                                                                               | 96                                                                                | 118                                                                               | 170                                                                               | 94                                                                                  | 1395                                                                                | 66                                                                                  | 105                                                                                 | 1311                                                                                | 241                                                                                 |
| v/c Ratio               | 0.64                                                                              | 0.62                                                                              | 0.10                                                                              | 0.33                                                                              | 0.51                                                                              | 0.11                                                                              | 0.38                                                                                | 0.81                                                                                | 0.04                                                                                | 0.47                                                                                | 0.73                                                                                | 0.26                                                                                |
| Control Delay (s/veh)   | 51.9                                                                              | 50.5                                                                              | 0.1                                                                               | 49.8                                                                              | 51.9                                                                              | 0.1                                                                               | 13.8                                                                                | 30.5                                                                                | 0.0                                                                                 | 26.1                                                                                | 35.9                                                                                | 11.8                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     | 51.9                                                                              | 50.5                                                                              | 0.1                                                                               | 49.8                                                                              | 51.9                                                                              | 0.1                                                                               | 13.8                                                                                | 30.5                                                                                | 0.0                                                                                 | 26.1                                                                                | 35.9                                                                                | 11.8                                                                                |
| Queue Length 50th (ft)  | 100                                                                               | 130                                                                               | 0                                                                                 | 33                                                                                | 79                                                                                | 0                                                                                 | 24                                                                                  | 427                                                                                 | 0                                                                                   | 44                                                                                  | 422                                                                                 | 22                                                                                  |
| Queue Length 95th (ft)  | 145                                                                               | 196                                                                               | 0                                                                                 | 58                                                                                | 130                                                                               | 0                                                                                 | 54                                                                                  | #687                                                                                | 0                                                                                   | 100                                                                                 | #609                                                                                | 107                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 644                                                                               |                                                                                   |                                                                                   | 2559                                                                              |                                                                                   |                                                                                     | 634                                                                                 |                                                                                     |                                                                                     | 2545                                                                                |                                                                                     |
| Turn Bay Length (ft)    | 250                                                                               |                                                                                   | 200                                                                               | 300                                                                               |                                                                                   | 350                                                                               | 350                                                                                 |                                                                                     | 450                                                                                 | 250                                                                                 |                                                                                     | 360                                                                                 |
| Base Capacity (vph)     | 499                                                                               | 575                                                                               | 1583                                                                              | 405                                                                               | 525                                                                               | 1583                                                                              | 297                                                                                 | 1716                                                                                | 1583                                                                                | 266                                                                                 | 1801                                                                                | 924                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.58                                                                              | 0.34                                                                              | 0.10                                                                              | 0.24                                                                              | 0.22                                                                              | 0.11                                                                              | 0.32                                                                                | 0.81                                                                                | 0.04                                                                                | 0.39                                                                                | 0.73                                                                                | 0.26                                                                                |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

# HCM 7th Signalized Intersection Summary

## 3: US287 & 57th Street

Short Total PM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 309                                                                               | 170                                                                               | 108                                                                               | 150                                                                               | 212                                                                               | 146                                                                               | 131                                                                                 | 1624                                                                                | 114                                                                                 | 215                                                                                 | 1523                                                                                | 441                                                                                 |
| Future Volume (veh/h)        | 309                                                                               | 170                                                                               | 108                                                                               | 150                                                                               | 212                                                                               | 146                                                                               | 131                                                                                 | 1624                                                                                | 114                                                                                 | 215                                                                                 | 1523                                                                                | 441                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 315                                                                               | 173                                                                               | 0                                                                                 | 153                                                                               | 216                                                                               | 0                                                                                 | 134                                                                                 | 1657                                                                                | 0                                                                                   | 219                                                                                 | 1554                                                                                | 234                                                                                 |
| Peak Hour Factor             | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 359                                                                               | 332                                                                               |                                                                                   | 233                                                                               | 263                                                                               |                                                                                   | 171                                                                                 | 1660                                                                                |                                                                                     | 242                                                                                 | 1802                                                                                | 804                                                                                 |
| Arrive On Green              | 0.10                                                                              | 0.18                                                                              | 0.00                                                                              | 0.07                                                                              | 0.14                                                                              | 0.00                                                                              | 0.10                                                                                | 0.47                                                                                | 0.00                                                                                | 0.27                                                                                | 1.00                                                                                | 1.00                                                                                |
| Sat Flow, veh/h              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 315                                                                               | 173                                                                               | 0                                                                                 | 153                                                                               | 216                                                                               | 0                                                                                 | 134                                                                                 | 1657                                                                                | 0                                                                                   | 219                                                                                 | 1554                                                                                | 234                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 11.2                                                                              | 10.5                                                                              | 0.0                                                                               | 5.4                                                                               | 14.0                                                                              | 0.0                                                                               | 9.2                                                                                 | 58.2                                                                                | 0.0                                                                                 | 14.8                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 11.2                                                                              | 10.5                                                                              | 0.0                                                                               | 5.4                                                                               | 14.0                                                                              | 0.0                                                                               | 9.2                                                                                 | 58.2                                                                                | 0.0                                                                                 | 14.8                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 359                                                                               | 332                                                                               |                                                                                   | 233                                                                               | 263                                                                               |                                                                                   | 171                                                                                 | 1660                                                                                |                                                                                     | 242                                                                                 | 1802                                                                                | 804                                                                                 |
| V/C Ratio(X)                 | 0.88                                                                              | 0.52                                                                              |                                                                                   | 0.66                                                                              | 0.82                                                                              |                                                                                   | 0.78                                                                                | 1.00                                                                                |                                                                                     | 0.90                                                                                | 0.86                                                                                | 0.29                                                                                |
| Avail Cap(c_a), veh/h        | 359                                                                               | 404                                                                               |                                                                                   | 276                                                                               | 359                                                                               |                                                                                   | 171                                                                                 | 1660                                                                                |                                                                                     | 242                                                                                 | 1802                                                                                | 804                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.86                                                                              | 0.86                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.66                                                                                | 0.66                                                                                | 0.66                                                                                |
| Uniform Delay (d), s/veh     | 55.2                                                                              | 46.6                                                                              | 0.0                                                                               | 56.9                                                                              | 52.2                                                                              | 0.0                                                                               | 55.2                                                                                | 33.2                                                                                | 0.0                                                                                 | 44.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 20.8                                                                              | 1.3                                                                               | 0.0                                                                               | 3.7                                                                               | 9.0                                                                               | 0.0                                                                               | 20.8                                                                                | 21.7                                                                                | 0.0                                                                                 | 24.9                                                                                | 3.9                                                                                 | 0.6                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 5.9                                                                               | 5.0                                                                               | 0.0                                                                               | 2.5                                                                               | 7.2                                                                               | 0.0                                                                               | 5.0                                                                                 | 27.9                                                                                | 0.0                                                                                 | 7.1                                                                                 | 1.0                                                                                 | 0.1                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 76.0                                                                              | 47.9                                                                              | 0.0                                                                               | 60.6                                                                              | 61.2                                                                              | 0.0                                                                               | 76.0                                                                                | 54.9                                                                                | 0.0                                                                                 | 69.6                                                                                | 3.9                                                                                 | 0.6                                                                                 |
| LnGrp LOS                    | E                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | E                                                                                 |                                                                                   | E                                                                                   | D                                                                                   |                                                                                     | E                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 488                                                                               |                                                                                   |                                                                                   | 369                                                                               |                                                                                   |                                                                                     | 1791                                                                                |                                                                                     |                                                                                     | 2007                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 66.1                                                                              |                                                                                   |                                                                                   | 60.9                                                                              |                                                                                   |                                                                                     | 56.5                                                                                |                                                                                     |                                                                                     | 10.7                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                     | E                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 21.0                                                                              | 65.4                                                                              | 12.4                                                                              | 26.2                                                                              | 16.0                                                                              | 70.4                                                                              | 17.0                                                                                | 21.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 8.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 8.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 16.0                                                                              | 51.0                                                                              | 9.0                                                                               | 26.0                                                                              | 11.0                                                                              | 56.0                                                                              | 12.0                                                                                | 23.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 16.8                                                                              | 60.2                                                                              | 7.4                                                                               | 12.5                                                                              | 11.2                                                                              | 2.0                                                                               | 13.2                                                                                | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               | 0.1                                                                               | 0.7                                                                               | 0.0                                                                               | 17.9                                                                              | 0.0                                                                                 | 0.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

HCM 7th Control Delay, s/veh 38.1  
 HCM 7th LOS D

### Notes

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

# Timing Report, Sorted By Phase

## 3: US287 & 57th Street

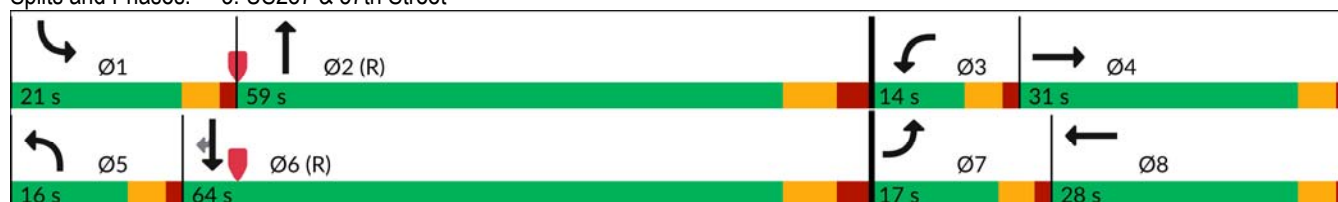
Short Total PM

|                        |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |
| Movement               | SBL                                                                               | NBT                                                                               | WBL                                                                               | EBT                                                                               | NBL                                                                               | SBT                                                                               | EBL                                                                                 | WBT                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Recall Mode            | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                                | None                                                                                |
| Maximum Split (s)      | 21                                                                                | 59                                                                                | 14                                                                                | 31                                                                                | 16                                                                                | 64                                                                                | 17                                                                                  | 28                                                                                  |
| Maximum Split (%)      | 16.8%                                                                             | 47.2%                                                                             | 11.2%                                                                             | 24.8%                                                                             | 12.8%                                                                             | 51.2%                                                                             | 13.6%                                                                               | 22.4%                                                                               |
| Minimum Split (s)      | 10                                                                                | 35                                                                                | 10                                                                                | 28                                                                                | 10                                                                                | 35                                                                                | 10                                                                                  | 28                                                                                  |
| Yellow Time (s)        | 3.5                                                                               | 5                                                                                 | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)       | 1.5                                                                               | 3                                                                                 | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 3                                                                                 | 1.5                                                                                 | 1.5                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                   | 5                                                                                   |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Walk Time (s)          |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   | 4                                                                                 |                                                                                     |                                                                                     |
| Flash Don't Walk (s)   |                                                                                   | 23                                                                                |                                                                                   |                                                                                   |                                                                                   | 23                                                                                |                                                                                     |                                                                                     |
| Dual Entry             | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                  | Yes                                                                                 |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Start Time (s)         | 43                                                                                | 64                                                                                | 123                                                                               | 12                                                                                | 43                                                                                | 59                                                                                | 123                                                                                 | 15                                                                                  |
| End Time (s)           | 64                                                                                | 123                                                                               | 12                                                                                | 43                                                                                | 59                                                                                | 123                                                                               | 15                                                                                  | 43                                                                                  |
| Yield/Force Off (s)    | 59                                                                                | 115                                                                               | 7                                                                                 | 38                                                                                | 54                                                                                | 115                                                                               | 10                                                                                  | 38                                                                                  |
| Yield/Force Off 170(s) | 59                                                                                | 92                                                                                | 7                                                                                 | 38                                                                                | 54                                                                                | 92                                                                                | 10                                                                                  | 38                                                                                  |
| Local Start Time (s)   | 104                                                                               | 0                                                                                 | 59                                                                                | 73                                                                                | 104                                                                               | 120                                                                               | 59                                                                                  | 76                                                                                  |
| Local Yield (s)        | 120                                                                               | 51                                                                                | 68                                                                                | 99                                                                                | 115                                                                               | 51                                                                                | 71                                                                                  | 99                                                                                  |
| Local Yield 170(s)     | 120                                                                               | 28                                                                                | 68                                                                                | 99                                                                                | 115                                                                               | 28                                                                                | 71                                                                                  | 99                                                                                  |

### Intersection Summary

Cycle Length 125  
Control Type Actuated-Coordinated  
Natural Cycle 125  
Offset: 64 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Green

### Splits and Phases: 3: US287 & 57th Street



Queues  
3: US287 & 57th Street

Short Total PM

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Group Flow (vph)   | 315                                                                               | 173                                                                               | 110                                                                               | 153                                                                               | 216                                                                               | 149                                                                               | 134                                                                                 | 1657                                                                                | 116                                                                                 | 219                                                                                 | 1554                                                                                | 450                                                                                 |
| v/c Ratio               | 0.88                                                                              | 0.50                                                                              | 0.07                                                                              | 0.57                                                                              | 0.72                                                                              | 0.09                                                                              | 0.72                                                                                | 1.08                                                                                | 0.07                                                                                | 0.83                                                                                | 0.92                                                                                | 0.46                                                                                |
| Control Delay (s/veh)   | 80.9                                                                              | 50.3                                                                              | 0.1                                                                               | 64.4                                                                              | 63.8                                                                              | 0.1                                                                               | 76.4                                                                                | 82.4                                                                                | 0.1                                                                                 | 88.9                                                                                | 29.1                                                                                | 2.8                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     | 80.9                                                                              | 50.3                                                                              | 0.1                                                                               | 64.4                                                                              | 63.8                                                                              | 0.1                                                                               | 76.4                                                                                | 82.4                                                                                | 0.1                                                                                 | 88.9                                                                                | 29.1                                                                                | 2.8                                                                                 |
| Queue Length 50th (ft)  | 131                                                                               | 126                                                                               | 0                                                                                 | 62                                                                                | 167                                                                               | 0                                                                                 | 104                                                                                 | ~814                                                                                | 0                                                                                   | 186                                                                                 | 571                                                                                 | 1                                                                                   |
| Queue Length 95th (ft)  | #213                                                                              | 193                                                                               | 0                                                                                 | 98                                                                                | 246                                                                               | 0                                                                                 | #214                                                                                | #953                                                                                | 0                                                                                   | m#300                                                                               | #787                                                                                | 47                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 644                                                                               |                                                                                   |                                                                                   | 2559                                                                              |                                                                                   |                                                                                     | 634                                                                                 |                                                                                     |                                                                                     | 2545                                                                                |                                                                                     |
| Turn Bay Length (ft)    | 250                                                                               |                                                                                   | 200                                                                               | 300                                                                               |                                                                                   | 350                                                                               | 350                                                                                 |                                                                                     | 450                                                                                 | 250                                                                                 |                                                                                     | 360                                                                                 |
| Base Capacity (vph)     | 357                                                                               | 402                                                                               | 1583                                                                              | 274                                                                               | 357                                                                               | 1583                                                                              | 187                                                                                 | 1535                                                                                | 1583                                                                                | 265                                                                                 | 1695                                                                                | 970                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.88                                                                              | 0.43                                                                              | 0.07                                                                              | 0.56                                                                              | 0.61                                                                              | 0.09                                                                              | 0.72                                                                                | 1.08                                                                                | 0.07                                                                                | 0.83                                                                                | 0.92                                                                                | 0.46                                                                                |

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

# HCM 7th Signalized Intersection Summary

## 18: US287 & 65th Street

Short Total AM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 145                                                                               | 12                                                                                | 104                                                                               | 215                                                                               | 37                                                                                | 111                                                                               | 155                                                                                 | 1343                                                                                | 67                                                                                  | 33                                                                                  | 1083                                                                                | 100                                                                                 |
| Future Volume (veh/h)        | 145                                                                               | 12                                                                                | 104                                                                               | 215                                                                               | 37                                                                                | 111                                                                               | 155                                                                                 | 1343                                                                                | 67                                                                                  | 33                                                                                  | 1083                                                                                | 100                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 149                                                                               | 12                                                                                | 0                                                                                 | 222                                                                               | 38                                                                                | 0                                                                                 | 160                                                                                 | 1385                                                                                | 24                                                                                  | 34                                                                                  | 1116                                                                                | 0                                                                                   |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 241                                                                               | 102                                                                               |                                                                                   | 313                                                                               | 141                                                                               |                                                                                   | 399                                                                                 | 2287                                                                                | 1020                                                                                | 371                                                                                 | 2210                                                                                |                                                                                     |
| Arrive On Green              | 0.07                                                                              | 0.05                                                                              | 0.00                                                                              | 0.09                                                                              | 0.08                                                                              | 0.00                                                                              | 0.12                                                                                | 1.00                                                                                | 1.00                                                                                | 0.04                                                                                | 0.62                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 149                                                                               | 12                                                                                | 0                                                                                 | 222                                                                               | 38                                                                                | 0                                                                                 | 160                                                                                 | 1385                                                                                | 24                                                                                  | 34                                                                                  | 1116                                                                                | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 4.6                                                                               | 0.7                                                                               | 0.0                                                                               | 6.9                                                                               | 2.1                                                                               | 0.0                                                                               | 3.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.7                                                                                 | 19.0                                                                                | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 4.6                                                                               | 0.7                                                                               | 0.0                                                                               | 6.9                                                                               | 2.1                                                                               | 0.0                                                                               | 3.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.7                                                                                 | 19.0                                                                                | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 241                                                                               | 102                                                                               |                                                                                   | 313                                                                               | 141                                                                               |                                                                                   | 399                                                                                 | 2287                                                                                | 1020                                                                                | 371                                                                                 | 2210                                                                                |                                                                                     |
| V/C Ratio(X)                 | 0.62                                                                              | 0.12                                                                              |                                                                                   | 0.71                                                                              | 0.27                                                                              |                                                                                   | 0.40                                                                                | 0.61                                                                                | 0.02                                                                                | 0.09                                                                                | 0.50                                                                                |                                                                                     |
| Avail Cap(c_a), veh/h        | 298                                                                               | 323                                                                               |                                                                                   | 361                                                                               | 357                                                                               |                                                                                   | 494                                                                                 | 2287                                                                                | 1020                                                                                | 408                                                                                 | 2210                                                                                |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.62                                                                                | 0.62                                                                                | 0.62                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 49.7                                                                              | 49.5                                                                              | 0.0                                                                               | 48.6                                                                              | 48.0                                                                              | 0.0                                                                               | 7.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 6.5                                                                                 | 11.5                                                                                | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 2.6                                                                               | 0.5                                                                               | 0.0                                                                               | 5.3                                                                               | 1.0                                                                               | 0.0                                                                               | 0.4                                                                                 | 0.7                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.8                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.1                                                                               | 0.3                                                                               | 0.0                                                                               | 3.2                                                                               | 1.0                                                                               | 0.0                                                                               | 0.9                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 6.4                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 52.3                                                                              | 50.0                                                                              | 0.0                                                                               | 53.9                                                                              | 49.0                                                                              | 0.0                                                                               | 8.3                                                                                 | 0.7                                                                                 | 0.0                                                                                 | 6.6                                                                                 | 12.3                                                                                | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | D                                                                                 |                                                                                   | D                                                                                 | D                                                                                 |                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | B                                                                                   |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 161                                                                               |                                                                                   |                                                                                   | 260                                                                               |                                                                                   |                                                                                     | 1569                                                                                |                                                                                     |                                                                                     | 1150                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 52.1                                                                              |                                                                                   |                                                                                   | 53.2                                                                              |                                                                                   |                                                                                     | 1.5                                                                                 |                                                                                     |                                                                                     | 12.1                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 7.7                                                                               | 77.8                                                                              | 13.5                                                                              | 11.0                                                                              | 10.1                                                                              | 75.4                                                                              | 11.2                                                                                | 13.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 8.0                                                                               | 4.5                                                                               | 6.0                                                                               | 4.5                                                                               | 8.0                                                                               | 4.5                                                                                 | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.5                                                                               | 53.0                                                                              | 10.5                                                                              | 18.0                                                                              | 11.5                                                                              | 47.0                                                                              | 8.5                                                                                 | 20.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.7                                                                               | 2.0                                                                               | 8.9                                                                               | 2.7                                                                               | 5.5                                                                               | 21.0                                                                              | 6.6                                                                                 | 4.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 12.6                                                                              | 0.1                                                                               | 0.0                                                                               | 0.2                                                                               | 7.7                                                                               | 0.1                                                                                 | 0.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

HCM 7th Control Delay, s/veh 12.3  
 HCM 7th LOS B

### Notes

Unsignalized Delay for [EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

# Timing Report, Sorted By Phase

## 18: US287 & 65th Street

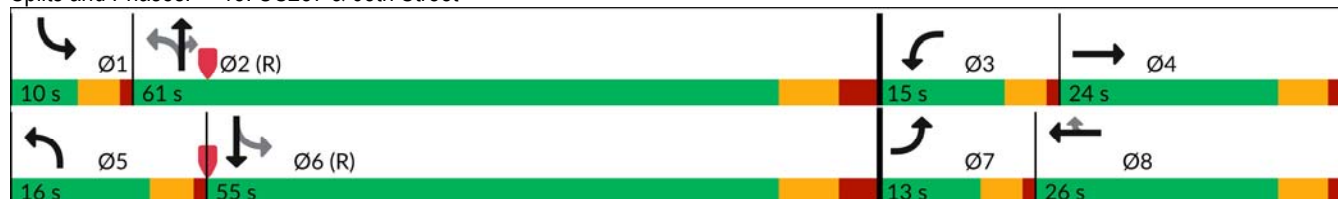
Short Total AM

|                        |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |
| Movement               | SBL                                                                               | NBTL                                                                              | WBL                                                                               | EBT                                                                               | NBL                                                                               | SBTL                                                                              | EBL                                                                                | WBT                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                               | Lag                                                                                 |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 |
| Recall Mode            | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                               | None                                                                                |
| Maximum Split (s)      | 10                                                                                | 61                                                                                | 15                                                                                | 24                                                                                | 16                                                                                | 55                                                                                | 13                                                                                 | 26                                                                                  |
| Maximum Split (%)      | 9.1%                                                                              | 55.5%                                                                             | 13.6%                                                                             | 21.8%                                                                             | 14.5%                                                                             | 50.0%                                                                             | 11.8%                                                                              | 23.6%                                                                               |
| Minimum Split (s)      | 9.5                                                                               | 26                                                                                | 10                                                                                | 24                                                                                | 9.5                                                                               | 26                                                                                | 10                                                                                 | 24                                                                                  |
| Yellow Time (s)        | 3.5                                                                               | 5                                                                                 | 3.5                                                                               | 4                                                                                 | 3.5                                                                               | 5                                                                                 | 3.5                                                                                | 4                                                                                   |
| All-Red Time (s)       | 1                                                                                 | 3                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 3                                                                                 | 1                                                                                  | 2                                                                                   |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                  | 5                                                                                   |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  | 3                                                                                   |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Walk Time (s)          |                                                                                   | 7                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 7                                                                                 |                                                                                    | 7                                                                                   |
| Flash Don't Walk (s)   |                                                                                   | 11                                                                                |                                                                                   | 11                                                                                |                                                                                   | 11                                                                                |                                                                                    | 11                                                                                  |
| Dual Entry             | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | Yes                                                                                | Yes                                                                                 |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 |
| Start Time (s)         | 94                                                                                | 104                                                                               | 55                                                                                | 70                                                                                | 94                                                                                | 0                                                                                 | 55                                                                                 | 68                                                                                  |
| End Time (s)           | 104                                                                               | 55                                                                                | 70                                                                                | 94                                                                                | 0                                                                                 | 55                                                                                | 68                                                                                 | 94                                                                                  |
| Yield/Force Off (s)    | 99.5                                                                              | 47                                                                                | 65.5                                                                              | 88                                                                                | 105.5                                                                             | 47                                                                                | 63.5                                                                               | 88                                                                                  |
| Yield/Force Off 170(s) | 99.5                                                                              | 36                                                                                | 65.5                                                                              | 77                                                                                | 105.5                                                                             | 36                                                                                | 63.5                                                                               | 77                                                                                  |
| Local Start Time (s)   | 94                                                                                | 104                                                                               | 55                                                                                | 70                                                                                | 94                                                                                | 0                                                                                 | 55                                                                                 | 68                                                                                  |
| Local Yield (s)        | 99.5                                                                              | 47                                                                                | 65.5                                                                              | 88                                                                                | 105.5                                                                             | 47                                                                                | 63.5                                                                               | 88                                                                                  |
| Local Yield 170(s)     | 99.5                                                                              | 36                                                                                | 65.5                                                                              | 77                                                                                | 105.5                                                                             | 36                                                                                | 63.5                                                                               | 77                                                                                  |

### Intersection Summary

Cycle Length 110  
Control Type Actuated-Coordinated  
Natural Cycle 80  
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

### Splits and Phases: 18: US287 & 65th Street



## Queues

Short Total AM

## 18: US287 &amp; 65th Street

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Group Flow (vph)   | 149                                                                               | 12                                                                                | 107                                                                               | 222                                                                               | 38                                                                                | 114                                                                               | 160                                                                                | 1385                                                                                | 69                                                                                  | 34                                                                                  | 1116                                                                                | 103                                                                                 |
| v/c Ratio               | 0.52                                                                              | 0.10                                                                              | 0.07                                                                              | 0.35                                                                              | 0.26                                                                              | 0.39                                                                              | 0.45                                                                               | 0.62                                                                                | 0.07                                                                                | 0.13                                                                                | 0.55                                                                                | 0.07                                                                                |
| Control Delay (s/veh)   | 54.9                                                                              | 49.2                                                                              | 0.1                                                                               | 42.0                                                                              | 51.3                                                                              | 4.6                                                                               | 14.0                                                                               | 11.7                                                                                | 1.8                                                                                 | 6.0                                                                                 | 16.4                                                                                | 0.1                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     | 54.9                                                                              | 49.2                                                                              | 0.1                                                                               | 42.0                                                                              | 51.3                                                                              | 4.6                                                                               | 14.0                                                                               | 11.7                                                                                | 1.8                                                                                 | 6.0                                                                                 | 16.4                                                                                | 0.1                                                                                 |
| Queue Length 50th (ft)  | 52                                                                                | 8                                                                                 | 0                                                                                 | 68                                                                                | 26                                                                                | 0                                                                                 | 29                                                                                 | 158                                                                                 | 1                                                                                   | 6                                                                                   | 241                                                                                 | 0                                                                                   |
| Queue Length 95th (ft)  | 86                                                                                | 28                                                                                | 0                                                                                 | 119                                                                               | 58                                                                                | 7                                                                                 | m82                                                                                | 269                                                                                 | m4                                                                                  | 16                                                                                  | 344                                                                                 | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   |                                                                                   | 2160                                                                              |                                                                                   |                                                                                    | 2545                                                                                |                                                                                     |                                                                                     | 694                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 275                                                                               |                                                                                   | 250                                                                               | 250                                                                               |                                                                                   | 250                                                                               | 460                                                                                |                                                                                     | 250                                                                                 | 250                                                                                 |                                                                                     | 470                                                                                 |
| Base Capacity (vph)     | 296                                                                               | 321                                                                               | 1583                                                                              | 627                                                                               | 355                                                                               | 450                                                                               | 393                                                                                | 2251                                                                                | 1050                                                                                | 259                                                                                 | 2035                                                                                | 1583                                                                                |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.50                                                                              | 0.04                                                                              | 0.07                                                                              | 0.35                                                                              | 0.11                                                                              | 0.25                                                                              | 0.41                                                                               | 0.62                                                                                | 0.07                                                                                | 0.13                                                                                | 0.55                                                                                | 0.07                                                                                |

## Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 7th Signalized Intersection Summary 18: US287 & 65th Street

Short Total PM

|                                                                                                                    |  |  |  |  |  |  |  |  |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                                           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                                                                                                |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)                                                                                             | 184                                                                               | 41                                                                                | 189                                                                               | 150                                                                               | 26                                                                                | 75                                                                                | 189                                                                                 | 1344                                                                                | 255                                                                                 | 127                                                                                 | 1497                                                                                | 161                                                                                 |
| Future Volume (veh/h)                                                                                              | 184                                                                               | 41                                                                                | 189                                                                               | 150                                                                               | 26                                                                                | 75                                                                                | 189                                                                                 | 1344                                                                                | 255                                                                                 | 127                                                                                 | 1497                                                                                | 161                                                                                 |
| Initial Q (Qb), veh                                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.                                                                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)                                                                                                | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach                                                                                              |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln                                                                                             | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h                                                                                               | 188                                                                               | 42                                                                                | 0                                                                                 | 153                                                                               | 27                                                                                | 0                                                                                 | 193                                                                                 | 1371                                                                                | 155                                                                                 | 130                                                                                 | 1528                                                                                | 0                                                                                   |
| Peak Hour Factor                                                                                                   | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Percent Heavy Veh, %                                                                                               | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                                                                         | 249                                                                               | 105                                                                               |                                                                                   | 221                                                                               | 90                                                                                |                                                                                   | 230                                                                                 | 2251                                                                                | 1004                                                                                | 168                                                                                 | 2128                                                                                |                                                                                     |
| Arrive On Green                                                                                                    | 0.07                                                                              | 0.06                                                                              | 0.00                                                                              | 0.06                                                                              | 0.05                                                                              | 0.00                                                                              | 0.17                                                                                | 0.84                                                                                | 0.84                                                                                | 0.09                                                                                | 0.60                                                                                | 0.00                                                                                |
| Sat Flow, veh/h                                                                                                    | 3456                                                                              | 1870                                                                              | 1585                                                                              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h                                                                                               | 188                                                                               | 42                                                                                | 0                                                                                 | 153                                                                               | 27                                                                                | 0                                                                                 | 193                                                                                 | 1371                                                                                | 155                                                                                 | 130                                                                                 | 1528                                                                                | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                                                                           | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s                                                                                                    | 6.7                                                                               | 2.7                                                                               | 0.0                                                                               | 5.4                                                                               | 1.7                                                                               | 0.0                                                                               | 13.1                                                                                | 15.6                                                                                | 2.2                                                                                 | 8.9                                                                                 | 37.8                                                                                | 0.0                                                                                 |
| Cycle Q Clear(g_c), s                                                                                              | 6.7                                                                               | 2.7                                                                               | 0.0                                                                               | 5.4                                                                               | 1.7                                                                               | 0.0                                                                               | 13.1                                                                                | 15.6                                                                                | 2.2                                                                                 | 8.9                                                                                 | 37.8                                                                                | 0.0                                                                                 |
| Prop In Lane                                                                                                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                                                                             | 249                                                                               | 105                                                                               |                                                                                   | 221                                                                               | 90                                                                                |                                                                                   | 230                                                                                 | 2251                                                                                | 1004                                                                                | 168                                                                                 | 2128                                                                                |                                                                                     |
| V/C Ratio(X)                                                                                                       | 0.76                                                                              | 0.40                                                                              |                                                                                   | 0.69                                                                              | 0.30                                                                              |                                                                                   | 0.84                                                                                | 0.61                                                                                | 0.15                                                                                | 0.77                                                                                | 0.72                                                                                |                                                                                     |
| Avail Cap(c_a), veh/h                                                                                              | 249                                                                               | 314                                                                               |                                                                                   | 221                                                                               | 299                                                                               |                                                                                   | 242                                                                                 | 2251                                                                                | 1004                                                                                | 185                                                                                 | 2128                                                                                |                                                                                     |
| HCM Platoon Ratio                                                                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.33                                                                                | 1.33                                                                                | 1.33                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                                                                 | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.14                                                                                | 0.14                                                                                | 0.14                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh                                                                                           | 56.9                                                                              | 57.0                                                                              | 0.0                                                                               | 57.3                                                                              | 57.5                                                                              | 0.0                                                                               | 50.5                                                                                | 4.8                                                                                 | 3.8                                                                                 | 55.3                                                                                | 17.6                                                                                | 0.0                                                                                 |
| Incr Delay (d2), s/veh                                                                                             | 12.4                                                                              | 2.5                                                                               | 0.0                                                                               | 8.9                                                                               | 1.9                                                                               | 0.0                                                                               | 3.7                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 16.6                                                                                | 2.1                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3), s/veh                                                                                         | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                                           | 3.3                                                                               | 1.3                                                                               | 0.0                                                                               | 2.6                                                                               | 0.9                                                                               | 0.0                                                                               | 5.6                                                                                 | 3.1                                                                                 | 0.7                                                                                 | 4.6                                                                                 | 14.0                                                                                | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh                                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh                                                                                              | 69.3                                                                              | 59.4                                                                              | 0.0                                                                               | 66.2                                                                              | 59.3                                                                              | 0.0                                                                               | 54.2                                                                                | 5.0                                                                                 | 3.8                                                                                 | 71.8                                                                                | 19.8                                                                                | 0.0                                                                                 |
| LnGrp LOS                                                                                                          | E                                                                                 | E                                                                                 |                                                                                   | E                                                                                 | E                                                                                 |                                                                                   | D                                                                                   | A                                                                                   | A                                                                                   | E                                                                                   | B                                                                                   |                                                                                     |
| Approach Vol, veh/h                                                                                                |                                                                                   | 230                                                                               |                                                                                   |                                                                                   | 180                                                                               |                                                                                   |                                                                                     | 1719                                                                                |                                                                                     |                                                                                     | 1658                                                                                |                                                                                     |
| Approach Delay, s/veh                                                                                              |                                                                                   | 67.5                                                                              |                                                                                   |                                                                                   | 65.1                                                                              |                                                                                   |                                                                                     | 10.4                                                                                |                                                                                     |                                                                                     | 23.8                                                                                |                                                                                     |
| Approach LOS                                                                                                       |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs                                                                                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                                           | 15.8                                                                              | 86.2                                                                              | 12.0                                                                              | 11.0                                                                              | 20.1                                                                              | 81.9                                                                              | 13.0                                                                                | 10.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                                                                            | 5.0                                                                               | 8.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 8.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                                                                        | 12.0                                                                              | 63.0                                                                              | 7.0                                                                               | 20.0                                                                              | 16.0                                                                              | 59.0                                                                              | 8.0                                                                                 | 19.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                                                                       | 10.9                                                                              | 17.6                                                                              | 7.4                                                                               | 4.7                                                                               | 15.1                                                                              | 39.8                                                                              | 8.7                                                                                 | 3.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                                                                            | 0.0                                                                               | 12.9                                                                              | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               | 10.1                                                                              | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh                                                                                       |                                                                                   |                                                                                   | 22.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                                                                                                        |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                                                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved pedestrian interval to be less than phase max green.                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Unsignalized Delay for [EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Timing Report, Sorted By Phase  
18: US287 & 65th Street

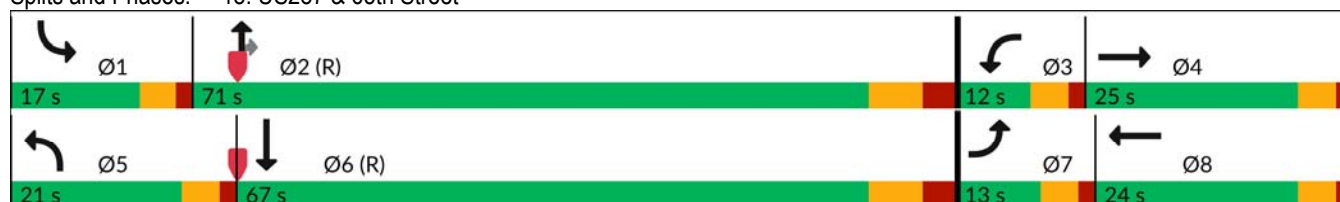
Short Total PM

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|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |
| Movement               | SBL                                                                               | NBT                                                                               | WBL                                                                               | EBT                                                                               | NBL                                                                               | SBT                                                                               | EBL                                                                                 | WBT                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Recall Mode            | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                                | None                                                                                |
| Maximum Split (s)      | 17                                                                                | 71                                                                                | 12                                                                                | 25                                                                                | 21                                                                                | 67                                                                                | 13                                                                                  | 24                                                                                  |
| Maximum Split (%)      | 13.6%                                                                             | 56.8%                                                                             | 9.6%                                                                              | 20.0%                                                                             | 16.8%                                                                             | 53.6%                                                                             | 10.4%                                                                               | 19.2%                                                                               |
| Minimum Split (s)      | 10                                                                                | 26                                                                                | 10                                                                                | 24                                                                                | 10                                                                                | 26                                                                                | 10                                                                                  | 24                                                                                  |
| Yellow Time (s)        | 3.5                                                                               | 5                                                                                 | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)       | 1.5                                                                               | 3                                                                                 | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 3                                                                                 | 1.5                                                                                 | 1.5                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                   | 5                                                                                   |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Walk Time (s)          |                                                                                   | 7                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 7                                                                                 |                                                                                     | 7                                                                                   |
| Flash Don't Walk (s)   |                                                                                   | 11                                                                                |                                                                                   | 11                                                                                |                                                                                   | 11                                                                                |                                                                                     | 11                                                                                  |
| Dual Entry             | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Start Time (s)         | 13                                                                                | 30                                                                                | 101                                                                               | 113                                                                               | 13                                                                                | 34                                                                                | 101                                                                                 | 114                                                                                 |
| End Time (s)           | 30                                                                                | 101                                                                               | 113                                                                               | 13                                                                                | 34                                                                                | 101                                                                               | 114                                                                                 | 13                                                                                  |
| Yield/Force Off (s)    | 25                                                                                | 93                                                                                | 108                                                                               | 8                                                                                 | 29                                                                                | 93                                                                                | 109                                                                                 | 8                                                                                   |
| Yield/Force Off 170(s) | 25                                                                                | 82                                                                                | 108                                                                               | 122                                                                               | 29                                                                                | 82                                                                                | 109                                                                                 | 122                                                                                 |
| Local Start Time (s)   | 104                                                                               | 121                                                                               | 67                                                                                | 79                                                                                | 104                                                                               | 0                                                                                 | 67                                                                                  | 80                                                                                  |
| Local Yield (s)        | 116                                                                               | 59                                                                                | 74                                                                                | 99                                                                                | 120                                                                               | 59                                                                                | 75                                                                                  | 99                                                                                  |
| Local Yield 170(s)     | 116                                                                               | 48                                                                                | 74                                                                                | 88                                                                                | 120                                                                               | 48                                                                                | 75                                                                                  | 88                                                                                  |

Intersection Summary

Cycle Length 125  
Control Type Actuated-Coordinated  
Natural Cycle 90  
Offset: 34 (27%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Splits and Phases: 18: US287 & 65th Street



## Queues

Short Total PM

## 18: US287 &amp; 65th Street

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Group Flow (vph)   | 188                                                                               | 42                                                                                | 193                                                                               | 153                                                                               | 27                                                                                | 77                                                                                | 193                                                                                 | 1371                                                                                | 260                                                                                 | 130                                                                                 | 1528                                                                                | 164                                                                                 |
| v/c Ratio               | 0.61                                                                              | 0.30                                                                              | 0.12                                                                              | 0.68                                                                              | 0.21                                                                              | 0.05                                                                              | 0.67                                                                                | 0.65                                                                                | 0.25                                                                                | 0.59                                                                                | 0.77                                                                                | 0.10                                                                                |
| Control Delay (s/veh)   | 64.4                                                                              | 59.8                                                                              | 0.2                                                                               | 73.0                                                                              | 58.3                                                                              | 0.1                                                                               | 34.8                                                                                | 39.8                                                                                | 14.7                                                                                | 61.7                                                                                | 26.3                                                                                | 0.1                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     | 64.4                                                                              | 59.8                                                                              | 0.2                                                                               | 73.0                                                                              | 58.3                                                                              | 0.1                                                                               | 34.8                                                                                | 39.8                                                                                | 14.7                                                                                | 61.7                                                                                | 26.3                                                                                | 0.1                                                                                 |
| Queue Length 50th (ft)  | 78                                                                                | 33                                                                                | 0                                                                                 | 63                                                                                | 21                                                                                | 0                                                                                 | 125                                                                                 | 615                                                                                 | 103                                                                                 | 101                                                                                 | 500                                                                                 | 0                                                                                   |
| Queue Length 95th (ft)  | #134                                                                              | 69                                                                                | 0                                                                                 | #109                                                                              | 51                                                                                | 0                                                                                 | m127                                                                                | m597                                                                                | m97                                                                                 | 161                                                                                 | 694                                                                                 | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   |                                                                                   | 2160                                                                              |                                                                                   |                                                                                     | 2545                                                                                |                                                                                     |                                                                                     | 694                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 275                                                                               |                                                                                   | 250                                                                               | 250                                                                               |                                                                                   | 250                                                                               | 460                                                                                 |                                                                                     | 250                                                                                 | 250                                                                                 |                                                                                     | 470                                                                                 |
| Base Capacity (vph)     | 307                                                                               | 312                                                                               | 1583                                                                              | 225                                                                               | 298                                                                               | 1583                                                                              | 296                                                                                 | 2121                                                                                | 1042                                                                                | 229                                                                                 | 1989                                                                                | 1583                                                                                |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.61                                                                              | 0.13                                                                              | 0.12                                                                              | 0.68                                                                              | 0.09                                                                              | 0.05                                                                              | 0.65                                                                                | 0.65                                                                                | 0.25                                                                                | 0.57                                                                                | 0.77                                                                                | 0.10                                                                                |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 7th Signalized Intersection Summary

## 5: Monroe & 57th Street

Short Total AM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |                                                                                     |  |  |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 4                                                                                 | 260                                                                               | 89                                                                                | 89                                                                                | 210                                                                               | 2                                                                                 | 125                                                                                 | 18                                                                                  | 111                                                                                 | 2                                                                                   | 58                                                                                  | 16                                                                                  |
| Future Volume (veh/h)        | 4                                                                                 | 260                                                                               | 89                                                                                | 89                                                                                | 210                                                                               | 2                                                                                 | 125                                                                                 | 18                                                                                  | 111                                                                                 | 2                                                                                   | 58                                                                                  | 16                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 4                                                                                 | 292                                                                               | 17                                                                                | 100                                                                               | 236                                                                               | 2                                                                                 | 140                                                                                 | 20                                                                                  | 16                                                                                  | 2                                                                                   | 65                                                                                  | 6                                                                                   |
| Peak Hour Factor             | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 562                                                                               | 491                                                                               | 416                                                                               | 560                                                                               | 642                                                                               | 5                                                                                 | 459                                                                                 | 39                                                                                  | 325                                                                                 | 113                                                                                 | 341                                                                                 | 31                                                                                  |
| Arrive On Green              | 0.03                                                                              | 0.26                                                                              | 0.26                                                                              | 0.12                                                                              | 0.35                                                                              | 0.32                                                                              | 0.18                                                                                | 0.20                                                                                | 0.20                                                                                | 0.18                                                                                | 0.20                                                                                | 0.18                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 1852                                                                              | 16                                                                                | 1267                                                                                | 190                                                                                 | 1585                                                                                | 20                                                                                  | 1665                                                                                | 151                                                                                 |
| Grp Volume(v), veh/h         | 4                                                                                 | 292                                                                               | 17                                                                                | 100                                                                               | 0                                                                                 | 238                                                                               | 160                                                                                 | 0                                                                                   | 16                                                                                  | 73                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 0                                                                                 | 1868                                                                              | 1458                                                                                | 0                                                                                   | 1585                                                                                | 1836                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.1                                                                               | 4.6                                                                               | 0.3                                                                               | 1.1                                                                               | 0.0                                                                               | 3.2                                                                               | 2.2                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.1                                                                               | 4.6                                                                               | 0.3                                                                               | 1.1                                                                               | 0.0                                                                               | 3.2                                                                               | 3.3                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 1.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.01                                                                              | 0.87                                                                                |                                                                                     | 1.00                                                                                | 0.03                                                                                |                                                                                     | 0.08                                                                                |
| Lane Grp Cap(c), veh/h       | 562                                                                               | 491                                                                               | 416                                                                               | 560                                                                               | 0                                                                                 | 648                                                                               | 455                                                                                 | 0                                                                                   | 325                                                                                 | 431                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.01                                                                              | 0.60                                                                              | 0.04                                                                              | 0.18                                                                              | 0.00                                                                              | 0.37                                                                              | 0.35                                                                                | 0.00                                                                                | 0.05                                                                                | 0.17                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 868                                                                               | 1104                                                                              | 936                                                                               | 715                                                                               | 0                                                                                 | 1103                                                                              | 946                                                                                 | 0                                                                                   | 889                                                                                 | 1081                                                                                | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 8.4                                                                               | 10.9                                                                              | 9.3                                                                               | 6.4                                                                               | 0.0                                                                               | 8.3                                                                               | 12.3                                                                                | 0.0                                                                                 | 10.8                                                                                | 11.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 1.2                                                                               | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 0.3                                                                               | 0.5                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 1.5                                                                               | 0.1                                                                               | 0.3                                                                               | 0.0                                                                               | 0.9                                                                               | 0.9                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 8.4                                                                               | 12.1                                                                              | 9.4                                                                               | 6.5                                                                               | 0.0                                                                               | 8.6                                                                               | 12.8                                                                                | 0.0                                                                                 | 10.9                                                                                | 11.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | A                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 | B                                                                                   |                                                                                     | B                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 313                                                                               |                                                                                   |                                                                                   | 338                                                                               |                                                                                   |                                                                                     | 176                                                                                 |                                                                                     |                                                                                     | 73                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 11.9                                                                              |                                                                                   |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                     | 12.6                                                                                |                                                                                     |                                                                                     | 11.4                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 7.0                                                                               | 14.9                                                                              |                                                                                   | 11.9                                                                              | 4.2                                                                               | 17.7                                                                              |                                                                                     | 11.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 6.0                                                                               | 4.0                                                                               | 7.0                                                                               |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 6.0                                                                               | 19.0                                                                              |                                                                                   | 18.0                                                                              | 6.0                                                                               | 19.0                                                                              |                                                                                     | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.1                                                                               | 6.6                                                                               |                                                                                   | 3.1                                                                               | 2.1                                                                               | 5.2                                                                               |                                                                                     | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 1.3                                                                               |                                                                                   | 0.2                                                                               | 0.0                                                                               | 1.0                                                                               |                                                                                     | 0.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh |                                                                                   |                                                                                   | 10.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timing Report, Sorted By Phase

## 5: Monroe & 57th Street

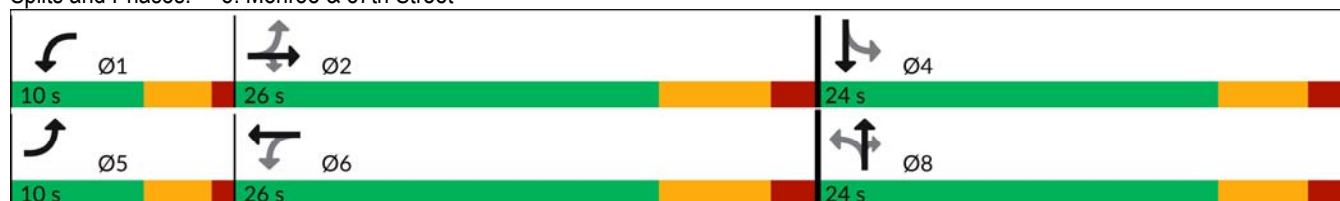
Short Total AM

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 8                                                                                 |
| Movement               | WBL                                                                               | EBTL                                                                              | SBTL                                                                              | EBL                                                                               | WBTL                                                                              | NBTL                                                                              |
| Lead/Lag               | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |
| Recall Mode            | None                                                                              | None                                                                              | Min                                                                               | None                                                                              | None                                                                              | Min                                                                               |
| Maximum Split (s)      | 10                                                                                | 26                                                                                | 24                                                                                | 10                                                                                | 26                                                                                | 24                                                                                |
| Maximum Split (%)      | 16.7%                                                                             | 43.3%                                                                             | 40.0%                                                                             | 16.7%                                                                             | 43.3%                                                                             | 40.0%                                                                             |
| Minimum Split (s)      | 10                                                                                | 25                                                                                | 24                                                                                | 10                                                                                | 25                                                                                | 24                                                                                |
| Yellow Time (s)        | 3                                                                                 | 5                                                                                 | 4                                                                                 | 3                                                                                 | 5                                                                                 | 4                                                                                 |
| All-Red Time (s)       | 1                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Walk Time (s)          |                                                                                   | 7                                                                                 | 7                                                                                 |                                                                                   | 7                                                                                 | 7                                                                                 |
| Flash Don't Walk (s)   |                                                                                   | 11                                                                                | 11                                                                                |                                                                                   | 11                                                                                | 11                                                                                |
| Dual Entry             | No                                                                                | Yes                                                                               | Yes                                                                               | No                                                                                | Yes                                                                               | Yes                                                                               |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |
| Start Time (s)         | 0                                                                                 | 10                                                                                | 36                                                                                | 0                                                                                 | 10                                                                                | 36                                                                                |
| End Time (s)           | 10                                                                                | 36                                                                                | 0                                                                                 | 10                                                                                | 36                                                                                | 0                                                                                 |
| Yield/Force Off (s)    | 6                                                                                 | 29                                                                                | 54                                                                                | 6                                                                                 | 29                                                                                | 54                                                                                |
| Yield/Force Off 170(s) | 6                                                                                 | 18                                                                                | 54                                                                                | 6                                                                                 | 18                                                                                | 54                                                                                |
| Local Start Time (s)   | 50                                                                                | 0                                                                                 | 26                                                                                | 50                                                                                | 0                                                                                 | 26                                                                                |
| Local Yield (s)        | 56                                                                                | 19                                                                                | 44                                                                                | 56                                                                                | 19                                                                                | 44                                                                                |
| Local Yield 170(s)     | 56                                                                                | 8                                                                                 | 44                                                                                | 56                                                                                | 8                                                                                 | 44                                                                                |

### Intersection Summary

|               |                        |
|---------------|------------------------|
| Cycle Length  | 60                     |
| Control Type  | Actuated-Uncoordinated |
| Natural Cycle | 60                     |

### Splits and Phases: 5: Monroe & 57th Street



## Queues

Short Total AM

## 5: Monroe &amp; 57th Street

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBT                                                                               | NBR                                                                                | SBT                                                                                 |
| Lane Group Flow (vph)   | 4                                                                                 | 292                                                                               | 100                                                                               | 100                                                                               | 238                                                                               | 160                                                                               | 125                                                                                | 85                                                                                  |
| v/c Ratio               | 0.01                                                                              | 0.49                                                                              | 0.17                                                                              | 0.16                                                                              | 0.32                                                                              | 0.43                                                                              | 0.22                                                                               | 0.16                                                                                |
| Control Delay (s/veh)   | 5.8                                                                               | 17.1                                                                              | 3.1                                                                               | 6.4                                                                               | 11.5                                                                              | 19.0                                                                              | 3.8                                                                                | 12.4                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Total Delay (s/veh)     | 5.8                                                                               | 17.1                                                                              | 3.1                                                                               | 6.4                                                                               | 11.5                                                                              | 19.0                                                                              | 3.8                                                                                | 12.4                                                                                |
| Queue Length 50th (ft)  | 1                                                                                 | 65                                                                                | 0                                                                                 | 10                                                                                | 32                                                                                | 36                                                                                | 0                                                                                  | 14                                                                                  |
| Queue Length 95th (ft)  | 4                                                                                 | 142                                                                               | 19                                                                                | 33                                                                                | 114                                                                               | 89                                                                                | 24                                                                                 | 43                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 2559                                                                              |                                                                                   |                                                                                   | 1310                                                                              | 458                                                                               |                                                                                    | 384                                                                                 |
| Turn Bay Length (ft)    | 330                                                                               |                                                                                   | 250                                                                               | 115                                                                               |                                                                                   |                                                                                   | 180                                                                                |                                                                                     |
| Base Capacity (vph)     | 652                                                                               | 947                                                                               | 867                                                                               | 618                                                                               | 1018                                                                              | 623                                                                               | 839                                                                                | 875                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Reduced v/c Ratio       | 0.01                                                                              | 0.31                                                                              | 0.12                                                                              | 0.16                                                                              | 0.23                                                                              | 0.26                                                                              | 0.15                                                                               | 0.10                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |

# HCM 7th Signalized Intersection Summary 5: Monroe & 57th Street

Short Total PM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |                                                                                     |  |  |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 11                                                                                | 243                                                                               | 161                                                                               | 132                                                                               | 357                                                                               | 5                                                                                 | 106                                                                                 | 71                                                                                  | 86                                                                                  | 2                                                                                   | 43                                                                                  | 7                                                                                   |
| Future Volume (veh/h)        | 11                                                                                | 243                                                                               | 161                                                                               | 132                                                                               | 357                                                                               | 5                                                                                 | 106                                                                                 | 71                                                                                  | 86                                                                                  | 2                                                                                   | 43                                                                                  | 7                                                                                   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 12                                                                                | 267                                                                               | 41                                                                                | 145                                                                               | 392                                                                               | 5                                                                                 | 116                                                                                 | 78                                                                                  | 19                                                                                  | 2                                                                                   | 47                                                                                  | 4                                                                                   |
| Peak Hour Factor             | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 441                                                                               | 461                                                                               | 390                                                                               | 576                                                                               | 623                                                                               | 8                                                                                 | 348                                                                                 | 159                                                                                 | 348                                                                                 | 112                                                                                 | 367                                                                                 | 30                                                                                  |
| Arrive On Green              | 0.04                                                                              | 0.25                                                                              | 0.25                                                                              | 0.14                                                                              | 0.34                                                                              | 0.31                                                                              | 0.19                                                                                | 0.22                                                                                | 0.22                                                                                | 0.19                                                                                | 0.22                                                                                | 0.19                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 1843                                                                              | 24                                                                                | 841                                                                                 | 722                                                                                 | 1585                                                                                | 25                                                                                  | 1671                                                                                | 138                                                                                 |
| Grp Volume(v), veh/h         | 12                                                                                | 267                                                                               | 41                                                                                | 145                                                                               | 0                                                                                 | 397                                                                               | 194                                                                                 | 0                                                                                   | 19                                                                                  | 53                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 0                                                                                 | 1866                                                                              | 1563                                                                                | 0                                                                                   | 1585                                                                                | 1834                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.2                                                                               | 4.4                                                                               | 0.7                                                                               | 1.7                                                                               | 0.0                                                                               | 6.3                                                                               | 3.1                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.2                                                                               | 4.4                                                                               | 0.7                                                                               | 1.7                                                                               | 0.0                                                                               | 6.3                                                                               | 3.9                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.01                                                                              | 0.60                                                                                |                                                                                     | 1.00                                                                                | 0.04                                                                                |                                                                                     | 0.08                                                                                |
| Lane Grp Cap(c), veh/h       | 441                                                                               | 461                                                                               | 390                                                                               | 576                                                                               | 0                                                                                 | 631                                                                               | 463                                                                                 | 0                                                                                   | 348                                                                                 | 457                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.03                                                                              | 0.58                                                                              | 0.11                                                                              | 0.25                                                                              | 0.00                                                                              | 0.63                                                                              | 0.42                                                                                | 0.00                                                                                | 0.05                                                                                | 0.12                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 716                                                                               | 1063                                                                              | 901                                                                               | 688                                                                               | 0                                                                                 | 1061                                                                              | 950                                                                                 | 0                                                                                   | 856                                                                                 | 1038                                                                                | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 9.1                                                                               | 11.7                                                                              | 10.3                                                                              | 6.7                                                                               | 0.0                                                                               | 9.8                                                                               | 12.4                                                                                | 0.0                                                                                 | 10.8                                                                                | 11.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 1.2                                                                               | 0.1                                                                               | 0.2                                                                               | 0.0                                                                               | 1.0                                                                               | 0.6                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 1.5                                                                               | 0.2                                                                               | 0.4                                                                               | 0.0                                                                               | 1.9                                                                               | 1.2                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 9.1                                                                               | 12.8                                                                              | 10.4                                                                              | 6.9                                                                               | 0.0                                                                               | 10.8                                                                              | 13.1                                                                                | 0.0                                                                                 | 10.9                                                                                | 11.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | A                                                                                 | B                                                                                 | B                                                                                 | A                                                                                 |                                                                                   | B                                                                                 | B                                                                                   |                                                                                     | B                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 320                                                                               |                                                                                   |                                                                                   | 542                                                                               |                                                                                   |                                                                                     | 213                                                                                 |                                                                                     |                                                                                     | 53                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 12.4                                                                              |                                                                                   |                                                                                   | 9.8                                                                               |                                                                                   |                                                                                     | 12.9                                                                                |                                                                                     |                                                                                     | 11.2                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 7.8                                                                               | 14.7                                                                              |                                                                                   | 12.7                                                                              | 4.6                                                                               | 17.9                                                                              |                                                                                     | 12.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 6.0                                                                               | 4.0                                                                               | 7.0                                                                               |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 6.0                                                                               | 19.0                                                                              |                                                                                   | 18.0                                                                              | 6.0                                                                               | 19.0                                                                              |                                                                                     | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.7                                                                               | 6.4                                                                               |                                                                                   | 2.8                                                                               | 2.2                                                                               | 8.3                                                                               |                                                                                     | 5.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 1.3                                                                               |                                                                                   | 0.1                                                                               | 0.0                                                                               | 1.7                                                                               |                                                                                     | 0.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh |                                                                                   |                                                                                   | 11.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Timing Report, Sorted By Phase  
5: Monroe & 57th Street

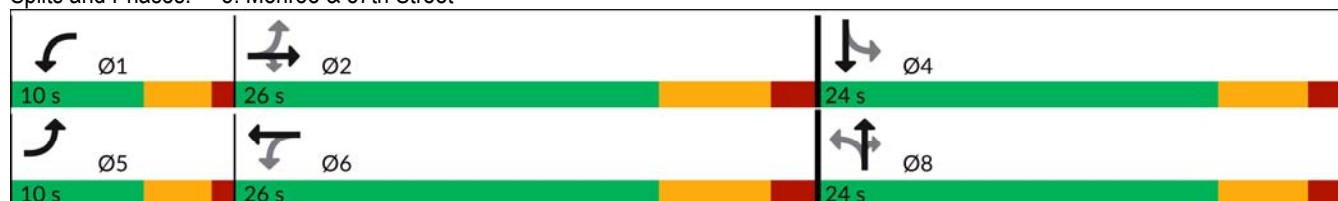
Short Total PM

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 8                                                                                 |
| Movement               | WBL                                                                               | EBTL                                                                              | SBTL                                                                              | EBL                                                                               | WBTL                                                                              | NBTL                                                                              |
| Lead/Lag               | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |
| Recall Mode            | None                                                                              | None                                                                              | Min                                                                               | None                                                                              | None                                                                              | Min                                                                               |
| Maximum Split (s)      | 10                                                                                | 26                                                                                | 24                                                                                | 10                                                                                | 26                                                                                | 24                                                                                |
| Maximum Split (%)      | 16.7%                                                                             | 43.3%                                                                             | 40.0%                                                                             | 16.7%                                                                             | 43.3%                                                                             | 40.0%                                                                             |
| Minimum Split (s)      | 10                                                                                | 25                                                                                | 24                                                                                | 10                                                                                | 25                                                                                | 24                                                                                |
| Yellow Time (s)        | 3                                                                                 | 5                                                                                 | 4                                                                                 | 3                                                                                 | 5                                                                                 | 4                                                                                 |
| All-Red Time (s)       | 1                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Walk Time (s)          |                                                                                   | 7                                                                                 | 7                                                                                 |                                                                                   | 7                                                                                 | 7                                                                                 |
| Flash Don't Walk (s)   |                                                                                   | 11                                                                                | 11                                                                                |                                                                                   | 11                                                                                | 11                                                                                |
| Dual Entry             | No                                                                                | Yes                                                                               | Yes                                                                               | No                                                                                | Yes                                                                               | Yes                                                                               |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |
| Start Time (s)         | 0                                                                                 | 10                                                                                | 36                                                                                | 0                                                                                 | 10                                                                                | 36                                                                                |
| End Time (s)           | 10                                                                                | 36                                                                                | 0                                                                                 | 10                                                                                | 36                                                                                | 0                                                                                 |
| Yield/Force Off (s)    | 6                                                                                 | 29                                                                                | 54                                                                                | 6                                                                                 | 29                                                                                | 54                                                                                |
| Yield/Force Off 170(s) | 6                                                                                 | 18                                                                                | 54                                                                                | 6                                                                                 | 18                                                                                | 54                                                                                |
| Local Start Time (s)   | 50                                                                                | 0                                                                                 | 26                                                                                | 50                                                                                | 0                                                                                 | 26                                                                                |
| Local Yield (s)        | 56                                                                                | 19                                                                                | 44                                                                                | 56                                                                                | 19                                                                                | 44                                                                                |
| Local Yield 170(s)     | 56                                                                                | 8                                                                                 | 44                                                                                | 56                                                                                | 8                                                                                 | 44                                                                                |

Intersection Summary

|               |                        |
|---------------|------------------------|
| Cycle Length  | 60                     |
| Control Type  | Actuated-Uncoordinated |
| Natural Cycle | 60                     |

Splits and Phases: 5: Monroe & 57th Street



## Queues

Short Total PM

## 5: Monroe &amp; 57th Street

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBT                                                                               | NBR                                                                                | SBT                                                                                 |
| Lane Group Flow (vph)   | 12                                                                                | 267                                                                               | 177                                                                               | 145                                                                               | 397                                                                               | 194                                                                               | 95                                                                                 | 57                                                                                  |
| v/c Ratio               | 0.02                                                                              | 0.48                                                                              | 0.29                                                                              | 0.23                                                                              | 0.50                                                                              | 0.48                                                                              | 0.17                                                                               | 0.11                                                                                |
| Control Delay (s/veh)   | 5.8                                                                               | 17.7                                                                              | 4.4                                                                               | 6.8                                                                               | 13.5                                                                              | 19.8                                                                              | 2.1                                                                                | 13.0                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Total Delay (s/veh)     | 5.8                                                                               | 17.7                                                                              | 4.4                                                                               | 6.8                                                                               | 13.5                                                                              | 19.8                                                                              | 2.1                                                                                | 13.0                                                                                |
| Queue Length 50th (ft)  | 1                                                                                 | 59                                                                                | 0                                                                                 | 16                                                                                | 61                                                                                | 43                                                                                | 0                                                                                  | 10                                                                                  |
| Queue Length 95th (ft)  | 8                                                                                 | 131                                                                               | 35                                                                                | 46                                                                                | 202                                                                               | 105                                                                               | 13                                                                                 | 34                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 2559                                                                              |                                                                                   |                                                                                   | 1310                                                                              | 458                                                                               |                                                                                    | 384                                                                                 |
| Turn Bay Length (ft)    | 330                                                                               |                                                                                   | 250                                                                               | 115                                                                               |                                                                                   |                                                                                   | 180                                                                                |                                                                                     |
| Base Capacity (vph)     | 607                                                                               | 875                                                                               | 837                                                                               | 627                                                                               | 947                                                                               | 651                                                                               | 786                                                                                | 809                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Reduced v/c Ratio       | 0.02                                                                              | 0.31                                                                              | 0.21                                                                              | 0.23                                                                              | 0.42                                                                              | 0.30                                                                              | 0.12                                                                               | 0.07                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |

HCM 7th TWSC  
11: 57th Street & St. Louis

Short Total AM

Intersection

Int Delay, s/veh 1

| Movement                 | EBL  | EBT                                                                               | EBR  | WBL  | WBT                                                                               | WBR  | NBL  | NBT                                                                               | NBR  | SBL  | SBT                                                                                 | SBR  |
|--------------------------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |      |      |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h       | 6    | 365                                                                               | 0    | 1    | 249                                                                               | 2    | 10   | 0                                                                                 | 6    | 15   | 0                                                                                   | 14   |
| Future Vol, veh/h        | 6    | 365                                                                               | 0    | 1    | 249                                                                               | 2    | 10   | 0                                                                                 | 6    | 15   | 0                                                                                   | 14   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                   | 0    |
| Sign Control             | Free | Free                                                                              | Free | Free | Free                                                                              | Free | Stop | Stop                                                                              | Stop | Stop | Stop                                                                                | Stop |
| RT Channelized           | -    | -                                                                                 | None | -    | -                                                                                 | None | -    | -                                                                                 | None | -    | -                                                                                   | None |
| Storage Length           | -    | -                                                                                 | -    | -    | -                                                                                 | -    | -    | -                                                                                 | -    | -    | -                                                                                   | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Grade, %                 | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Peak Hour Factor         | 92   | 92                                                                                | 92   | 92   | 92                                                                                | 92   | 92   | 92                                                                                | 92   | 92   | 92                                                                                  | 92   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2    | 2    | 2                                                                                 | 2    | 2    | 2                                                                                 | 2    | 2    | 2                                                                                   | 2    |
| Mvmt Flow                | 7    | 397                                                                               | 0    | 1    | 271                                                                               | 2    | 11   | 0                                                                                 | 7    | 16   | 0                                                                                   | 15   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 273    | 0 | 0 | 397    | 0 | 0 | 683    | 685   | 397   | 684    | 684   | 272   |
| Stage 1              | -      | - | - | -      | - | - | 410    | 410   | -     | 274    | 274   | -     |
| Stage 2              | -      | - | - | -      | - | - | 273    | 275   | -     | 410    | 410   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1290   | - | - | 1162   | - | - | 364    | 371   | 653   | 363    | 371   | 767   |
| Stage 1              | -      | - | - | -      | - | - | 619    | 596   | -     | 732    | 683   | -     |
| Stage 2              | -      | - | - | -      | - | - | 733    | 683   | -     | 619    | 596   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 1290   | - | - | 1162   | - | - | 354    | 368   | 653   | 357    | 369   | 767   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 354    | 368   | -     | 357    | 369   | -     |
| Stage 1              | -      | - | - | -      | - | - | 615    | 592   | -     | 731    | 683   | -     |
| Stage 2              | -      | - | - | -      | - | - | 718    | 682   | -     | 609    | 592   | -     |

| Approach          | EB   | WB   | NB    | SB    |
|-------------------|------|------|-------|-------|
| HCM Ctrl Dly, s/v | 0.13 | 0.03 | 13.79 | 13.01 |
| HCM LOS           |      |      | B     | B     |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 427   | 29    | -   | -   | 7     | -   | -   | 481   |
| HCM Lane V/C Ratio    | 0.041 | 0.005 | -   | -   | 0.001 | -   | -   | 0.066 |
| HCM Ctrl Dly (s/v)    | 13.8  | 7.8   | 0   | -   | 8.1   | 0   | -   | 13    |
| HCM Lane LOS          | B     | A     | A   | -   | A     | A   | -   | B     |
| HCM 95th %tile Q(veh) | 0.1   | 0     | -   | -   | 0     | -   | -   | 0.2   |

HCM 7th TWSC  
11: 57th Street & St. Louis

Short Total PM

Intersection

Int Delay, s/veh 0.6

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

|                          |      |                                                                                   |      |      |                                                                                   |      |      |                                                                                   |      |      |                                                                                     |      |
|--------------------------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |      |      |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h       | 15   | 285                                                                               | 3    | 1    | 474                                                                               | 9    | 2    | 0                                                                                 | 3    | 8    | 0                                                                                   | 10   |
| Future Vol, veh/h        | 15   | 285                                                                               | 3    | 1    | 474                                                                               | 9    | 2    | 0                                                                                 | 3    | 8    | 0                                                                                   | 10   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                   | 0    |
| Sign Control             | Free | Free                                                                              | Free | Free | Free                                                                              | Free | Stop | Stop                                                                              | Stop | Stop | Stop                                                                                | Stop |
| RT Channelized           | -    | -                                                                                 | None | -    | -                                                                                 | None | -    | -                                                                                 | None | -    | -                                                                                   | None |
| Storage Length           | -    | -                                                                                 | -    | -    | -                                                                                 | -    | -    | -                                                                                 | -    | -    | -                                                                                   | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Grade, %                 | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Peak Hour Factor         | 95   | 95                                                                                | 95   | 95   | 95                                                                                | 95   | 95   | 95                                                                                | 95   | 95   | 95                                                                                  | 95   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2    | 2    | 2                                                                                 | 2    | 2    | 2                                                                                 | 2    | 2    | 2                                                                                   | 2    |
| Mvmt Flow                | 16   | 300                                                                               | 3    | 1    | 499                                                                               | 9    | 2    | 0                                                                                 | 3    | 8    | 0                                                                                   | 11   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 508    | 0 | 0 | 303    | 0 | 0 | 834    | 844   | 302   | 837    | 841   | 504   |
| Stage 1              | -      | - | - | -      | - | - | 333    | 333   | -     | 506    | 506   | -     |
| Stage 2              | -      | - | - | -      | - | - | 501    | 511   | -     | 332    | 335   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1057   | - | - | 1258   | - | - | 287    | 300   | 738   | 286    | 301   | 568   |
| Stage 1              | -      | - | - | -      | - | - | 680    | 644   | -     | 549    | 540   | -     |
| Stage 2              | -      | - | - | -      | - | - | 552    | 537   | -     | 682    | 643   | -     |
| Platoon blocked, %   |        | - | - |        | - | - |        |       |       |        |       |       |
| Mov Cap-1 Maneuver   | 1057   | - | - | 1258   | - | - | 277    | 294   | 738   | 279    | 296   | 568   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 277    | 294   | -     | 279    | 296   | -     |
| Stage 1              | -      | - | - | -      | - | - | 668    | 632   | -     | 548    | 539   | -     |
| Stage 2              | -      | - | - | -      | - | - | 541    | 537   | -     | 667    | 631   | -     |

| Approach          | EB   | WB   | NB    | SB    |
|-------------------|------|------|-------|-------|
| HCM Ctrl Dly, s/v | 0.42 | 0.02 | 13.23 | 14.72 |
| HCM LOS           |      |      | B     | B     |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 443   | 89    | -   | -   | 4     | -   | -   | 389   |
| HCM Lane V/C Ratio    | 0.012 | 0.015 | -   | -   | 0.001 | -   | -   | 0.049 |
| HCM Ctrl Dly (s/v)    | 13.2  | 8.5   | 0   | -   | 7.9   | 0   | -   | 14.7  |
| HCM Lane LOS          | B     | A     | A   | -   | A     | A   | -   | B     |
| HCM 95th %tile Q(veh) | 0     | 0     | -   | -   | 0     | -   | -   | 0.2   |

Intersection

Int Delay, s/veh 2.6

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 74   | 314  | 0    | 1    | 176  | 12   | 1    | 0    | 2    | 29   | 0    | 60   |
| Future Vol, veh/h        | 74   | 314  | 0    | 1    | 176  | 12   | 1    | 0    | 2    | 29   | 0    | 60   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 94   | 94   | 94   | 94   | 94   | 94   | 94   | 94   | 94   | 94   | 94   | 94   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 79   | 334  | 0    | 1    | 187  | 13   | 1    | 0    | 2    | 31   | 0    | 64   |

| Major/Minor          | Major1 |   | Major2 |       | Minor1 |   | Minor2 |       |       |       |       |       |
|----------------------|--------|---|--------|-------|--------|---|--------|-------|-------|-------|-------|-------|
| Conflicting Flow All | 200    | 0 | 0      | 334   | 0      | 0 | 681    | 694   | 334   | 687   | 687   | 194   |
| Stage 1              | -      | - | -      | -     | -      | - | 491    | 491   | -     | 196   | 196   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 189    | 202   | -     | 491   | 491   | -     |
| Critical Hdwy        | 4.12   | - | -      | 4.12  | -      | - | 7.12   | 6.52  | 6.22  | 7.12  | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | -      | 2.218 | -      | - | 3.518  | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1372   | - | -      | 1225  | -      | - | 364    | 366   | 708   | 361   | 370   | 848   |
| Stage 1              | -      | - | -      | -     | -      | - | 559    | 548   | -     | 806   | 739   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 812    | 734   | -     | 559   | 548   | -     |
| Platoon blocked, %   |        | - | -      |       | -      | - |        |       |       |       |       |       |
| Mov Cap-1 Maneuver   | 1372   | - | -      | 1225  | -      | - | 313    | 340   | 708   | 334   | 343   | 848   |
| Mov Cap-2 Maneuver   | -      | - | -      | -     | -      | - | 313    | 340   | -     | 334   | 343   | -     |
| Stage 1              | -      | - | -      | -     | -      | - | 519    | 509   | -     | 805   | 738   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 750    | 733   | -     | 518   | 509   | -     |

| Approach          | EB   | WB   | NB    | SB    |
|-------------------|------|------|-------|-------|
| HCM Ctrl Dly, s/v | 1.48 | 0.04 | 12.27 | 12.65 |
| HCM LOS           |      |      | B     | B     |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 498   | 343   | -   | -   | 9     | -   | -   | 565   |
| HCM Lane V/C Ratio    | 0.006 | 0.057 | -   | -   | 0.001 | -   | -   | 0.168 |
| HCM Ctrl Dly (s/v)    | 12.3  | 7.8   | 0   | -   | 7.9   | 0   | -   | 12.7  |
| HCM Lane LOS          | B     | A     | A   | -   | A     | A   | -   | B     |
| HCM 95th %tile Q(veh) | 0     | 0.2   | -   | -   | 0     | -   | -   | 0.6   |

HCM 7th TWSC  
15: 57th Street & LCR13

Short Total PM

Intersection

Int Delay, s/veh 3.5

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

|                          |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 45   | 235  | 3    | 1    | 380  | 36   | 2    | 0    | 3    | 39   | 0    | 110  |
| Future Vol, veh/h        | 45   | 235  | 3    | 1    | 380  | 36   | 2    | 0    | 3    | 39   | 0    | 110  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 50   | 261  | 3    | 1    | 422  | 40   | 2    | 0    | 3    | 43   | 0    | 122  |

| Major/Minor          | Major1 |   | Major2 |       | Minor1 |   | Minor2 |       |       |       |       |       |
|----------------------|--------|---|--------|-------|--------|---|--------|-------|-------|-------|-------|-------|
| Conflicting Flow All | 462    | 0 | 0      | 264   | 0      | 0 | 787    | 827   | 263   | 806   | 809   | 442   |
| Stage 1              | -      | - | -      | -     | -      | - | 363    | 363   | -     | 444   | 444   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 424    | 464   | -     | 361   | 364   | -     |
| Critical Hdwy        | 4.12   | - | -      | 4.12  | -      | - | 7.12   | 6.52  | 6.22  | 7.12  | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | -      | 2.218 | -      | - | 3.518  | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1099   | - | -      | 1300  | -      | - | 309    | 307   | 776   | 301   | 314   | 615   |
| Stage 1              | -      | - | -      | -     | -      | - | 656    | 625   | -     | 593   | 575   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 608    | 563   | -     | 657   | 624   | -     |
| Platoon blocked, %   |        | - | -      |       | -      | - |        |       |       |       |       |       |
| Mov Cap-1 Maneuver   | 1099   | - | -      | 1300  | -      | - | 234    | 290   | 776   | 283   | 297   | 615   |
| Mov Cap-2 Maneuver   | -      | - | -      | -     | -      | - | 234    | 290   | -     | 283   | 297   | -     |
| Stage 1              | -      | - | -      | -     | -      | - | 621    | 591   | -     | 592   | 574   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 486    | 563   | -     | 620   | 590   | -     |

| Approach          | EB   | WB   | NB    | SB    |
|-------------------|------|------|-------|-------|
| HCM Ctrl Dly, s/v | 1.34 | 0.02 | 14.06 | 16.74 |
| HCM LOS           |      |      | B     | C     |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 403   | 285   | -   | -   | 4     | -   | -   | 471   |
| HCM Lane V/C Ratio    | 0.014 | 0.045 | -   | -   | 0.001 | -   | -   | 0.352 |
| HCM Ctrl Dly (s/v)    | 14.1  | 8.4   | 0   | -   | 7.8   | 0   | -   | 16.7  |
| HCM Lane LOS          | B     | A     | A   | -   | A     | A   | -   | C     |
| HCM 95th %tile Q(veh) | 0     | 0.1   | -   | -   | 0     | -   | -   | 1.6   |

HCM 7th Roundabout  
23: Monroe & 65th Street

Short Total AM

Intersection

Intersection Delay, s/veh 3.5  
Intersection LOS A

| Approach                    | EB    | WB    | NB    |
|-----------------------------|-------|-------|-------|
| Entry Lanes                 | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 95    | 150   | 63    |
| Demand Flow Rate, veh/h     | 97    | 153   | 64    |
| Vehicles Circulating, veh/h | 19    | 53    | 61    |
| Vehicles Exiting, veh/h     | 187   | 72    | 55    |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 3.3   | 3.8   | 3.2   |
| Approach LOS                | A     | A     | A     |

| Lane                  | Left    | Left    | Left    |
|-----------------------|---------|---------|---------|
| Designated Moves      | TR      | LT      | LR      |
| Assumed Moves         | TR      | LT      | LR      |
| RT Channelized        |         |         |         |
| Lane Util             | 1.000   | 1.000   | 1.000   |
| Follow-Up Headway, s  | 2.609   | 2.609   | 2.609   |
| Critical Headway, s   | 4.976   | 4.976   | 4.976   |
| A (Intercept)         | 1380    | 1380    | 1380    |
| B (Slope)             | 1.02e-3 | 1.02e-3 | 1.02e-3 |
| Entry Flow, veh/h     | 97      | 153     | 64      |
| Cap Entry Lane, veh/h | 1353    | 1307    | 1297    |
| Entry HV Adj Factor   | 0.977   | 0.983   | 0.984   |
| Flow Entry, veh/h     | 95      | 150     | 63      |
| Cap Entry, veh/h      | 1323    | 1285    | 1276    |
| V/C Ratio             | 0.072   | 0.117   | 0.049   |
| Control Delay, s/veh  | 3.3     | 3.8     | 3.2     |
| LOS                   | A       | A       | A       |
| 95th %tile Queue, veh | 0       | 0       | 0       |

HCM 7th Roundabout  
23: Monroe & 65th Street

Short Total PM

Intersection

Intersection Delay, s/veh 4.0  
Intersection LOS A

| Approach                    | EB    | WB    | NB    |
|-----------------------------|-------|-------|-------|
| Entry Lanes                 | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 235   | 146   | 76    |
| Demand Flow Rate, veh/h     | 240   | 149   | 77    |
| Vehicles Circulating, veh/h | 20    | 53    | 178   |
| Vehicles Exiting, veh/h     | 182   | 203   | 81    |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 4.2   | 3.7   | 3.7   |
| Approach LOS                | A     | A     | A     |

| Lane                  | Left    | Left    | Left    |
|-----------------------|---------|---------|---------|
| Designated Moves      | TR      | LT      | LR      |
| Assumed Moves         | TR      | LT      | LR      |
| RT Channelized        |         |         |         |
| Lane Util             | 1.000   | 1.000   | 1.000   |
| Follow-Up Headway, s  | 2.609   | 2.609   | 2.609   |
| Critical Headway, s   | 4.976   | 4.976   | 4.976   |
| A (Intercept)         | 1380    | 1380    | 1380    |
| B (Slope)             | 1.02e-3 | 1.02e-3 | 1.02e-3 |
| Entry Flow, veh/h     | 240     | 149     | 77      |
| Cap Entry Lane, veh/h | 1352    | 1307    | 1151    |
| Entry HV Adj Factor   | 0.981   | 0.983   | 0.987   |
| Flow Entry, veh/h     | 235     | 146     | 76      |
| Cap Entry, veh/h      | 1327    | 1285    | 1136    |
| V/C Ratio             | 0.178   | 0.114   | 0.067   |
| Control Delay, s/veh  | 4.2     | 3.7     | 3.7     |
| LOS                   | A       | A       | A       |
| 95th %tile Queue, veh | 1       | 0       | 0       |

HCM 7th TWSC  
25: 65th Street & Access A

Short Total AM

Intersection

Int Delay, s/veh 2.5

Movement EBL EBT WBT WBR SBL SBR

|                          |      |                                                                                   |                                                                                   |      |                                                                                   |      |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 11   | 49                                                                                | 84                                                                                | 1    | 2                                                                                 | 42   |
| Future Vol, veh/h        | 11   | 49                                                                                | 84                                                                                | 1    | 2                                                                                 | 42   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 85   | 85                                                                                | 85                                                                                | 85   | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    |
| Mvmt Flow                | 13   | 58                                                                                | 99                                                                                | 1    | 2                                                                                 | 49   |

Major/Minor Major1 Major2 Minor2

|                      |       |   |   |   |       |       |
|----------------------|-------|---|---|---|-------|-------|
| Conflicting Flow All | 100   | 0 | - | 0 | 183   | 99    |
| Stage 1              | -     | - | - | - | 99    | -     |
| Stage 2              | -     | - | - | - | 84    | -     |
| Critical Hdwy        | 4.12  | - | - | - | 6.42  | 6.22  |
| Critical Hdwy Stg 1  | -     | - | - | - | 5.42  | -     |
| Critical Hdwy Stg 2  | -     | - | - | - | 5.42  | -     |
| Follow-up Hdwy       | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver   | 1493  | - | - | - | 806   | 956   |
| Stage 1              | -     | - | - | - | 925   | -     |
| Stage 2              | -     | - | - | - | 940   | -     |
| Platoon blocked, %   |       | - | - | - |       |       |
| Mov Cap-1 Maneuver   | 1493  | - | - | - | 799   | 956   |
| Mov Cap-2 Maneuver   | -     | - | - | - | 799   | -     |
| Stage 1              | -     | - | - | - | 916   | -     |
| Stage 2              | -     | - | - | - | 940   | -     |

Approach EB WB SB

|                   |      |   |      |
|-------------------|------|---|------|
| HCM Ctrl Dly, s/v | 1.36 | 0 | 9.02 |
| HCM LOS           |      |   | A    |

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

|                       |       |   |   |   |       |
|-----------------------|-------|---|---|---|-------|
| Capacity (veh/h)      | 330   | - | - | - | 948   |
| HCM Lane V/C Ratio    | 0.009 | - | - | - | 0.055 |
| HCM Ctrl Dly (s/v)    | 7.4   | 0 | - | - | 9     |
| HCM Lane LOS          | A     | A | - | - | A     |
| HCM 95th %tile Q(veh) | 0     | - | - | - | 0.2   |

HCM 7th TWSC  
25: 65th Street & Access A

Short Total PM

Intersection

Int Delay, s/veh 2.5

Movement EBL EBT WBT WBR SBL SBR

|                          |      |                                                                                   |                                                                                   |      |                                                                                   |      |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 56   | 113                                                                               | 88                                                                                | 2    | 2                                                                                 | 33   |
| Future Vol, veh/h        | 56   | 113                                                                               | 88                                                                                | 2    | 2                                                                                 | 33   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 85   | 85                                                                                | 85                                                                                | 85   | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    |
| Mvmt Flow                | 66   | 133                                                                               | 104                                                                               | 2    | 2                                                                                 | 39   |

Major/Minor Major1 Major2 Minor2

|                      |       |   |   |   |       |       |
|----------------------|-------|---|---|---|-------|-------|
| Conflicting Flow All | 106   | 0 | - | 0 | 369   | 105   |
| Stage 1              | -     | - | - | - | 105   | -     |
| Stage 2              | -     | - | - | - | 265   | -     |
| Critical Hdwy        | 4.12  | - | - | - | 6.42  | 6.22  |
| Critical Hdwy Stg 1  | -     | - | - | - | 5.42  | -     |
| Critical Hdwy Stg 2  | -     | - | - | - | 5.42  | -     |
| Follow-up Hdwy       | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver   | 1485  | - | - | - | 631   | 950   |
| Stage 1              | -     | - | - | - | 920   | -     |
| Stage 2              | -     | - | - | - | 780   | -     |
| Platoon blocked, %   |       | - | - | - |       |       |
| Mov Cap-1 Maneuver   | 1485  | - | - | - | 601   | 950   |
| Mov Cap-2 Maneuver   | -     | - | - | - | 601   | -     |
| Stage 1              | -     | - | - | - | 876   | -     |
| Stage 2              | -     | - | - | - | 780   | -     |

Approach EB WB SB

|                   |     |   |     |
|-------------------|-----|---|-----|
| HCM Ctrl Dly, s/v | 2.5 | 0 | 9.1 |
| HCM LOS           |     |   | A   |

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

|                       |       |   |   |   |       |
|-----------------------|-------|---|---|---|-------|
| Capacity (veh/h)      | 596   | - | - | - | 919   |
| HCM Lane V/C Ratio    | 0.044 | - | - | - | 0.045 |
| HCM Ctrl Dly (s/v)    | 7.5   | 0 | - | - | 9.1   |
| HCM Lane LOS          | A     | A | - | - | A     |
| HCM 95th %tile Q(veh) | 0.1   | - | - | - | 0.1   |

HCM 7th TWSC  
12: St. Louis/Access B & 65th Street

Short Total AM

Intersection

Int Delay, s/veh 3.9

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

|                          |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 8    | 41   | 2    | 1    | 40   | 2    | 6    | 0    | 3    | 8    | 3    | 39   |
| Future Vol, veh/h        | 8    | 41   | 2    | 1    | 40   | 2    | 6    | 0    | 3    | 8    | 3    | 39   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 9    | 48   | 2    | 1    | 47   | 2    | 7    | 0    | 4    | 9    | 4    | 46   |

| Major/Minor          | Major1 |   | Major2 |       | Minor1 |   | Minor2 |       |       |       |       |       |
|----------------------|--------|---|--------|-------|--------|---|--------|-------|-------|-------|-------|-------|
| Conflicting Flow All | 49     | 0 | 0      | 51    | 0      | 0 | 119    | 120   | 49    | 118   | 120   | 48    |
| Stage 1              | -      | - | -      | -     | -      | - | 68     | 68    | -     | 51    | 51    | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 51     | 52    | -     | 67    | 69    | -     |
| Critical Hdwy        | 4.12   | - | -      | 4.12  | -      | - | 7.12   | 6.52  | 6.22  | 7.12  | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | -      | 2.218 | -      | - | 3.518  | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1557   | - | -      | 1556  | -      | - | 856    | 770   | 1019  | 858   | 770   | 1021  |
| Stage 1              | -      | - | -      | -     | -      | - | 942    | 838   | -     | 962   | 853   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 962    | 852   | -     | 943   | 837   | -     |
| Platoon blocked, %   |        | - | -      |       | -      | - |        |       |       |       |       |       |
| Mov Cap-1 Maneuver   | 1557   | - | -      | 1556  | -      | - | 808    | 765   | 1019  | 849   | 765   | 1021  |
| Mov Cap-2 Maneuver   | -      | - | -      | -     | -      | - | 808    | 765   | -     | 849   | 765   | -     |
| Stage 1              | -      | - | -      | -     | -      | - | 936    | 833   | -     | 962   | 852   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 914    | 851   | -     | 934   | 832   | -     |

| Approach          | EB   | WB   | NB  | SB   |
|-------------------|------|------|-----|------|
| HCM Ctrl Dly, s/v | 1.15 | 0.17 | 9.2 | 8.95 |
| HCM LOS           |      |      | A   | A    |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 868   | 280   | -   | -   | 41    | -   | -   | 970   |
| HCM Lane V/C Ratio    | 0.012 | 0.006 | -   | -   | 0.001 | -   | -   | 0.061 |
| HCM Ctrl Dly (s/v)    | 9.2   | 7.3   | 0   | -   | 7.3   | 0   | -   | 9     |
| HCM Lane LOS          | A     | A     | A   | -   | A     | A   | -   | A     |
| HCM 95th %tile Q(veh) | 0     | 0     | -   | -   | 0     | -   | -   | 0.2   |

HCM 7th TWSC  
12: St. Louis/Access B & 65th Street

Short Total PM

Intersection

Int Delay, s/veh 3.6

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

|                          |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 52   | 56   | 7    | 2    | 58   | 10   | 4    | 4    | 1    | 7    | 1    | 28   |
| Future Vol, veh/h        | 52   | 56   | 7    | 2    | 58   | 10   | 4    | 4    | 1    | 7    | 1    | 28   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 61   | 66   | 8    | 2    | 68   | 12   | 5    | 5    | 1    | 8    | 1    | 33   |

| Major/Minor          | Major1 |   | Major2 |       | Minor1 |   | Minor2 |       |       |       |       |       |
|----------------------|--------|---|--------|-------|--------|---|--------|-------|-------|-------|-------|-------|
| Conflicting Flow All | 80     | 0 | 0      | 74    | 0      | 0 | 266    | 277   | 70    | 269   | 275   | 74    |
| Stage 1              | -      | - | -      | -     | -      | - | 192    | 192   | -     | 79    | 79    | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 74     | 85    | -     | 191   | 196   | -     |
| Critical Hdwy        | 4.12   | - | -      | 4.12  | -      | - | 7.12   | 6.52  | 6.22  | 7.12  | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | -      | 2.218 | -      | - | 3.518  | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1518   | - | -      | 1525  | -      | - | 687    | 631   | 993   | 683   | 632   | 988   |
| Stage 1              | -      | - | -      | -     | -      | - | 809    | 741   | -     | 930   | 829   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 936    | 825   | -     | 811   | 738   | -     |
| Platoon blocked, %   |        | - | -      |       | -      | - |        |       |       |       |       |       |
| Mov Cap-1 Maneuver   | 1518   | - | -      | 1525  | -      | - | 634    | 603   | 993   | 648   | 605   | 988   |
| Mov Cap-2 Maneuver   | -      | - | -      | -     | -      | - | 634    | 603   | -     | 648   | 605   | -     |
| Stage 1              | -      | - | -      | -     | -      | - | 775    | 710   | -     | 928   | 828   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 902    | 823   | -     | 771   | 707   | -     |

| Approach          | EB   | WB   | NB    | SB   |
|-------------------|------|------|-------|------|
| HCM Ctrl Dly, s/v | 3.38 | 0.21 | 10.67 | 9.29 |
| HCM LOS           |      |      | B     | A    |

| Minor Lane/Major Mvmt | NBLn1 | EBL  | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 645   | 796  | -   | -   | 50    | -   | -   | 882   |
| HCM Lane V/C Ratio    | 0.016 | 0.04 | -   | -   | 0.002 | -   | -   | 0.048 |
| HCM Ctrl Dly (s/v)    | 10.7  | 7.5  | 0   | -   | 7.4   | 0   | -   | 9.3   |
| HCM Lane LOS          | B     | A    | A   | -   | A     | A   | -   | A     |
| HCM 95th %tile Q(veh) | 0.1   | 0.1  | -   | -   | 0     | -   | -   | 0.2   |

HCM 7th TWSC  
7: 65th Street & Access C

Short Total AM

Intersection

Int Delay, s/veh 3.5

Movement EBL EBT WBT WBR SBL SBR

|                          |      |                                                                                   |                                                                                   |      |                                                                                   |      |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 7    | 45                                                                                | 16                                                                                | 5    | 11                                                                                | 27   |
| Future Vol, veh/h        | 7    | 45                                                                                | 16                                                                                | 5    | 11                                                                                | 27   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 85   | 85                                                                                | 85                                                                                | 85   | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    |
| Mvmt Flow                | 8    | 53                                                                                | 19                                                                                | 6    | 13                                                                                | 32   |

Major/Minor Major1 Major2 Minor2

|                      |       |   |   |   |       |       |
|----------------------|-------|---|---|---|-------|-------|
| Conflicting Flow All | 25    | 0 | - | 0 | 91    | 22    |
| Stage 1              | -     | - | - | - | 22    | -     |
| Stage 2              | -     | - | - | - | 69    | -     |
| Critical Hdwy        | 4.12  | - | - | - | 6.42  | 6.22  |
| Critical Hdwy Stg 1  | -     | - | - | - | 5.42  | -     |
| Critical Hdwy Stg 2  | -     | - | - | - | 5.42  | -     |
| Follow-up Hdwy       | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver   | 1590  | - | - | - | 909   | 1055  |
| Stage 1              | -     | - | - | - | 1001  | -     |
| Stage 2              | -     | - | - | - | 953   | -     |
| Platoon blocked, %   |       | - | - | - |       |       |
| Mov Cap-1 Maneuver   | 1590  | - | - | - | 904   | 1055  |
| Mov Cap-2 Maneuver   | -     | - | - | - | 904   | -     |
| Stage 1              | -     | - | - | - | 996   | -     |
| Stage 2              | -     | - | - | - | 953   | -     |

Approach EB WB SB

|                   |      |   |      |
|-------------------|------|---|------|
| HCM Ctrl Dly, s/v | 0.98 | 0 | 8.74 |
| HCM LOS           |      |   | A    |

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

|                       |       |   |   |   |       |
|-----------------------|-------|---|---|---|-------|
| Capacity (veh/h)      | 242   | - | - | - | 1007  |
| HCM Lane V/C Ratio    | 0.005 | - | - | - | 0.044 |
| HCM Ctrl Dly (s/v)    | 7.3   | 0 | - | - | 8.7   |
| HCM Lane LOS          | A     | A | - | - | A     |
| HCM 95th %tile Q(veh) | 0     | - | - | - | 0.1   |

HCM 7th TWSC  
7: 65th Street & Access C

Short Total PM

Intersection

Int Delay, s/veh 3.3

Movement EBL EBT WBT WBR SBL SBR

|                          |      |                                                                                   |                                                                                   |      |                                                                                   |      |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 34   | 30                                                                                | 48                                                                                | 10   | 5                                                                                 | 22   |
| Future Vol, veh/h        | 34   | 30                                                                                | 48                                                                                | 10   | 5                                                                                 | 22   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 85   | 85                                                                                | 85                                                                                | 85   | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    |
| Mvmt Flow                | 40   | 35                                                                                | 56                                                                                | 12   | 6                                                                                 | 26   |

Major/Minor Major1 Major2 Minor2

|                      |       |   |   |   |       |       |
|----------------------|-------|---|---|---|-------|-------|
| Conflicting Flow All | 68    | 0 | - | 0 | 178   | 62    |
| Stage 1              | -     | - | - | - | 62    | -     |
| Stage 2              | -     | - | - | - | 115   | -     |
| Critical Hdwy        | 4.12  | - | - | - | 6.42  | 6.22  |
| Critical Hdwy Stg 1  | -     | - | - | - | 5.42  | -     |
| Critical Hdwy Stg 2  | -     | - | - | - | 5.42  | -     |
| Follow-up Hdwy       | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver   | 1533  | - | - | - | 812   | 1002  |
| Stage 1              | -     | - | - | - | 960   | -     |
| Stage 2              | -     | - | - | - | 910   | -     |
| Platoon blocked, %   |       | - | - | - |       |       |
| Mov Cap-1 Maneuver   | 1533  | - | - | - | 790   | 1002  |
| Mov Cap-2 Maneuver   | -     | - | - | - | 790   | -     |
| Stage 1              | -     | - | - | - | 935   | -     |
| Stage 2              | -     | - | - | - | 910   | -     |

Approach EB WB SB

|                   |      |   |     |
|-------------------|------|---|-----|
| HCM Ctrl Dly, s/v | 3.94 | 0 | 8.9 |
| HCM LOS           |      |   | A   |

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

|                       |       |   |   |   |       |
|-----------------------|-------|---|---|---|-------|
| Capacity (veh/h)      | 956   | - | - | - | 955   |
| HCM Lane V/C Ratio    | 0.026 | - | - | - | 0.033 |
| HCM Ctrl Dly (s/v)    | 7.4   | 0 | - | - | 8.9   |
| HCM Lane LOS          | A     | A | - | - | A     |
| HCM 95th %tile Q(veh) | 0.1   | - | - | - | 0.1   |

HCM 7th Roundabout  
6: LCR13 & 65th Street

Short Total AM

Intersection

Intersection Delay, s/veh 3.3  
Intersection LOS A

| Approach                    | EB    | NB    | SB    |
|-----------------------------|-------|-------|-------|
| Entry Lanes                 | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 66    | 101   | 96    |
| Demand Flow Rate, veh/h     | 68    | 103   | 98    |
| Vehicles Circulating, veh/h | 82    | 42    | 8     |
| Vehicles Exiting, veh/h     | 24    | 108   | 137   |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 3.4   | 3.4   | 3.2   |
| Approach LOS                | A     | A     | A     |

| Lane                  | Left    | Left    | Left    |
|-----------------------|---------|---------|---------|
| Designated Moves      | LR      | LT      | TR      |
| Assumed Moves         | LR      | LT      | TR      |
| RT Channelized        |         |         |         |
| Lane Util             | 1.000   | 1.000   | 1.000   |
| Follow-Up Headway, s  | 2.609   | 2.609   | 2.609   |
| Critical Headway, s   | 4.976   | 4.976   | 4.976   |
| A (Intercept)         | 1380    | 1380    | 1380    |
| B (Slope)             | 1.02e-3 | 1.02e-3 | 1.02e-3 |
| Entry Flow, veh/h     | 68      | 103     | 98      |
| Cap Entry Lane, veh/h | 1269    | 1322    | 1369    |
| Entry HV Adj Factor   | 0.971   | 0.982   | 0.984   |
| Flow Entry, veh/h     | 66      | 101     | 96      |
| Cap Entry, veh/h      | 1232    | 1298    | 1346    |
| V/C Ratio             | 0.054   | 0.078   | 0.072   |
| Control Delay, s/veh  | 3.4     | 3.4     | 3.2     |
| LOS                   | A       | A       | A       |
| 95th %tile Queue, veh | 0       | 0       | 0       |

HCM 7th Roundabout  
6: LCR13 & 65th Street

Short Total PM

Intersection

Intersection Delay, s/veh 3.7  
Intersection LOS A

| Approach                    | EB    | NB    | SB    |
|-----------------------------|-------|-------|-------|
| Entry Lanes                 | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 41    | 96    | 194   |
| Demand Flow Rate, veh/h     | 41    | 98    | 198   |
| Vehicles Circulating, veh/h | 159   | 22    | 32    |
| Vehicles Exiting, veh/h     | 71    | 178   | 88    |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 3.4   | 3.3   | 4.0   |
| Approach LOS                | A     | A     | A     |

| Lane                  | Left    | Left    | Left    |
|-----------------------|---------|---------|---------|
| Designated Moves      | LR      | LT      | TR      |
| Assumed Moves         | LR      | LT      | TR      |
| RT Channelized        |         |         |         |
| Lane Util             | 1.000   | 1.000   | 1.000   |
| Follow-Up Headway, s  | 2.609   | 2.609   | 2.609   |
| Critical Headway, s   | 4.976   | 4.976   | 4.976   |
| A (Intercept)         | 1380    | 1380    | 1380    |
| B (Slope)             | 1.02e-3 | 1.02e-3 | 1.02e-3 |
| Entry Flow, veh/h     | 41      | 98      | 198     |
| Cap Entry Lane, veh/h | 1173    | 1349    | 1336    |
| Entry HV Adj Factor   | 1.000   | 0.977   | 0.979   |
| Flow Entry, veh/h     | 41      | 96      | 194     |
| Cap Entry, veh/h      | 1173    | 1318    | 1308    |
| V/C Ratio             | 0.035   | 0.073   | 0.148   |
| Control Delay, s/veh  | 3.4     | 3.3     | 4.0     |
| LOS                   | A       | A       | A       |
| 95th %tile Queue, veh | 0       | 0       | 1       |

HCM 7th TWSC  
3: LCR13 & Bruns

Short Total AM

Intersection

Int Delay, s/veh 5.6

| Movement                 | EBL  | EBT                                                                               | WBT                                                                               | WBR  | SBL                                                                               | SBR  |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 11   | 28                                                                                | 49                                                                                | 13   | 11                                                                                | 117  |
| Future Vol, veh/h        | 11   | 28                                                                                | 49                                                                                | 13   | 11                                                                                | 117  |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 92   | 85                                                                                | 85                                                                                | 85   | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    |
| Mvmt Flow                | 12   | 33                                                                                | 58                                                                                | 15   | 13                                                                                | 138  |

| Major/Minor          | Major1 | Major2 | Minor2        |
|----------------------|--------|--------|---------------|
| Conflicting Flow All | 73     | 0      | 0 122 65      |
| Stage 1              | -      | -      | - 65 -        |
| Stage 2              | -      | -      | - 57 -        |
| Critical Hdwy        | 4.12   | -      | - 6.42 6.22   |
| Critical Hdwy Stg 1  | -      | -      | - 5.42 -      |
| Critical Hdwy Stg 2  | -      | -      | - 5.42 -      |
| Follow-up Hdwy       | 2.218  | -      | - 3.518 3.318 |
| Pot Cap-1 Maneuver   | 1527   | -      | - 873 999     |
| Stage 1              | -      | -      | - 957 -       |
| Stage 2              | -      | -      | - 966 -       |
| Platoon blocked, %   | -      | -      | -             |
| Mov Cap-1 Maneuver   | 1527   | -      | - 866 999     |
| Mov Cap-2 Maneuver   | -      | -      | - 866 -       |
| Stage 1              | -      | -      | - 950 -       |
| Stage 2              | -      | -      | - 966 -       |

| Approach          | EB   | WB | SB   |
|-------------------|------|----|------|
| HCM Ctrl Dly, s/v | 1.96 | 0  | 9.31 |
| HCM LOS           |      |    | A    |

| Minor Lane/Major Mvmt | EBL   | EBT | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|
| Capacity (veh/h)      | 479   | -   | -   | -   | 986   |
| HCM Lane V/C Ratio    | 0.008 | -   | -   | -   | 0.153 |
| HCM Ctrl Dly (s/v)    | 7.4   | 0   | -   | -   | 9.3   |
| HCM Lane LOS          | A     | A   | -   | -   | A     |
| HCM 95th %tile Q(veh) | 0     | -   | -   | -   | 0.5   |

# HCM 7th TWSC 3: LCR13 & Bruns

Short Total PM

## Intersection

Int Delay, s/veh 1.9

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|----------|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|

|                          |      |                                                                                   |                                                                                   |      |                                                                                   |      |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 22   | 109                                                                               | 48                                                                                | 1    | 1                                                                                 | 26   |
| Future Vol, veh/h        | 22   | 109                                                                               | 48                                                                                | 1    | 1                                                                                 | 26   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 92   | 85                                                                                | 85                                                                                | 85   | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    |
| Mvmt Flow                | 24   | 128                                                                               | 56                                                                                | 1    | 1                                                                                 | 31   |

| Major/Minor | Major1 | Major2 | Minor2 |
|-------------|--------|--------|--------|
|-------------|--------|--------|--------|

|                      |       |   |   |       |       |
|----------------------|-------|---|---|-------|-------|
| Conflicting Flow All | 58    | 0 | 0 | 233   | 57    |
| Stage 1              | -     | - | - | 57    | -     |
| Stage 2              | -     | - | - | 176   | -     |
| Critical Hdwy        | 4.12  | - | - | 6.42  | 6.22  |
| Critical Hdwy Stg 1  | -     | - | - | 5.42  | -     |
| Critical Hdwy Stg 2  | -     | - | - | 5.42  | -     |
| Follow-up Hdwy       | 2.218 | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver   | 1547  | - | - | 755   | 1009  |
| Stage 1              | -     | - | - | 965   | -     |
| Stage 2              | -     | - | - | 855   | -     |
| Platoon blocked, %   | -     | - | - | -     | -     |
| Mov Cap-1 Maneuver   | 1547  | - | - | 742   | 1009  |
| Mov Cap-2 Maneuver   | -     | - | - | 742   | -     |
| Stage 1              | -     | - | - | 949   | -     |
| Stage 2              | -     | - | - | 855   | -     |

| Approach | EB | WB | SB |
|----------|----|----|----|
|----------|----|----|----|

|                   |      |   |      |
|-------------------|------|---|------|
| HCM Ctrl Dly, s/v | 1.16 | 0 | 8.73 |
| HCM LOS           |      |   | A    |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|-----------------------|-----|-----|-----|-----|-------|
|-----------------------|-----|-----|-----|-----|-------|

|                       |       |   |   |   |       |
|-----------------------|-------|---|---|---|-------|
| Capacity (veh/h)      | 283   | - | - | - | 996   |
| HCM Lane V/C Ratio    | 0.015 | - | - | - | 0.032 |
| HCM Ctrl Dly (s/v)    | 7.4   | 0 | - | - | 8.7   |
| HCM Lane LOS          | A     | A | - | - | A     |
| HCM 95th %tile Q(veh) | 0     | - | - | - | 0.1   |

## APPENDIX G

# HCM 7th Signalized Intersection Summary

## 3: US287 & 57th Street

Long Total AM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 350                                                                               | 235                                                                               | 195                                                                               | 100                                                                               | 120                                                                               | 195                                                                               | 115                                                                                 | 1695                                                                                | 80                                                                                  | 135                                                                                 | 1550                                                                                | 265                                                                                 |
| Future Volume (veh/h)        | 350                                                                               | 235                                                                               | 195                                                                               | 100                                                                               | 120                                                                               | 195                                                                               | 115                                                                                 | 1695                                                                                | 80                                                                                  | 135                                                                                 | 1550                                                                                | 265                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 368                                                                               | 247                                                                               | 0                                                                                 | 105                                                                               | 126                                                                               | 0                                                                                 | 121                                                                                 | 1784                                                                                | 79                                                                                  | 142                                                                                 | 1632                                                                                | 108                                                                                 |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 468                                                                               | 526                                                                               |                                                                                   | 198                                                                               | 248                                                                               |                                                                                   | 166                                                                                 | 2529                                                                                | 112                                                                                 | 178                                                                                 | 2610                                                                                | 810                                                                                 |
| Arrive On Green              | 0.14                                                                              | 0.15                                                                              | 0.00                                                                              | 0.06                                                                              | 0.07                                                                              | 0.00                                                                              | 0.09                                                                                | 0.50                                                                                | 0.50                                                                                | 0.03                                                                                | 0.17                                                                                | 0.17                                                                                |
| Sat Flow, veh/h              | 3456                                                                              | 3554                                                                              | 1585                                                                              | 3456                                                                              | 3554                                                                              | 1585                                                                              | 1781                                                                                | 5013                                                                                | 222                                                                                 | 1781                                                                                | 5106                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 368                                                                               | 247                                                                               | 0                                                                                 | 105                                                                               | 126                                                                               | 0                                                                                 | 121                                                                                 | 1211                                                                                | 652                                                                                 | 142                                                                                 | 1632                                                                                | 108                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1728                                                                              | 1777                                                                              | 1585                                                                              | 1728                                                                              | 1777                                                                              | 1585                                                                              | 1781                                                                                | 1702                                                                                | 1830                                                                                | 1781                                                                                | 1702                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 10.3                                                                              | 6.4                                                                               | 0.0                                                                               | 3.0                                                                               | 3.4                                                                               | 0.0                                                                               | 6.6                                                                                 | 27.4                                                                                | 27.4                                                                                | 7.9                                                                                 | 29.7                                                                                | 5.8                                                                                 |
| Cycle Q Clear(g_c), s        | 10.3                                                                              | 6.4                                                                               | 0.0                                                                               | 3.0                                                                               | 3.4                                                                               | 0.0                                                                               | 6.6                                                                                 | 27.4                                                                                | 27.4                                                                                | 7.9                                                                                 | 29.7                                                                                | 5.8                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.12                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 468                                                                               | 526                                                                               |                                                                                   | 198                                                                               | 248                                                                               |                                                                                   | 166                                                                                 | 1718                                                                                | 924                                                                                 | 178                                                                                 | 2610                                                                                | 810                                                                                 |
| V/C Ratio(X)                 | 0.79                                                                              | 0.47                                                                              |                                                                                   | 0.53                                                                              | 0.51                                                                              |                                                                                   | 0.73                                                                                | 0.70                                                                                | 0.71                                                                                | 0.80                                                                                | 0.63                                                                                | 0.13                                                                                |
| Avail Cap(c_a), veh/h        | 518                                                                               | 1173                                                                              |                                                                                   | 207                                                                               | 853                                                                               |                                                                                   | 196                                                                                 | 1718                                                                                | 924                                                                                 | 178                                                                                 | 2610                                                                                | 810                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.68                                                                                | 0.68                                                                                | 0.68                                                                                |
| Uniform Delay (d), s/veh     | 41.8                                                                              | 39.0                                                                              | 0.0                                                                               | 45.8                                                                              | 44.8                                                                              | 0.0                                                                               | 44.1                                                                                | 19.0                                                                                | 19.1                                                                                | 47.3                                                                                | 32.7                                                                                | 22.7                                                                                |
| Incr Delay (d2), s/veh       | 7.2                                                                               | 0.7                                                                               | 0.0                                                                               | 2.2                                                                               | 1.5                                                                               | 0.0                                                                               | 10.6                                                                                | 2.5                                                                                 | 4.5                                                                                 | 15.7                                                                                | 0.8                                                                                 | 0.2                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 4.8                                                                               | 2.8                                                                               | 0.0                                                                               | 1.3                                                                               | 1.5                                                                               | 0.0                                                                               | 3.3                                                                                 | 10.0                                                                                | 11.3                                                                                | 4.3                                                                                 | 13.5                                                                                | 2.2                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 49.0                                                                              | 39.6                                                                              | 0.0                                                                               | 48.0                                                                              | 46.4                                                                              | 0.0                                                                               | 54.7                                                                                | 21.5                                                                                | 23.6                                                                                | 63.1                                                                                | 33.4                                                                                | 23.0                                                                                |
| LnGrp LOS                    | D                                                                                 | D                                                                                 |                                                                                   | D                                                                                 | D                                                                                 |                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   | E                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 615                                                                               |                                                                                   |                                                                                   | 231                                                                               |                                                                                   |                                                                                     | 1984                                                                                |                                                                                     |                                                                                     | 1882                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 45.2                                                                              |                                                                                   |                                                                                   | 47.1                                                                              |                                                                                   |                                                                                     | 24.2                                                                                |                                                                                     |                                                                                     | 35.1                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 14.0                                                                              | 57.5                                                                              | 9.7                                                                               | 18.8                                                                              | 13.3                                                                              | 58.1                                                                              | 17.6                                                                                | 11.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 8.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 8.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.0                                                                               | 31.0                                                                              | 5.0                                                                               | 32.0                                                                              | 10.0                                                                              | 30.0                                                                              | 14.0                                                                                | 23.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 9.9                                                                               | 29.4                                                                              | 5.0                                                                               | 8.4                                                                               | 8.6                                                                               | 31.7                                                                              | 12.3                                                                                | 5.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.4                                                                               | 0.0                                                                               | 1.5                                                                               | 0.0                                                                               | 0.0                                                                               | 0.2                                                                                 | 0.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

HCM 7th Control Delay, s/veh 32.4  
 HCM 7th LOS C

### Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

# Timing Report, Sorted By Phase

## 3: US287 & 57th Street

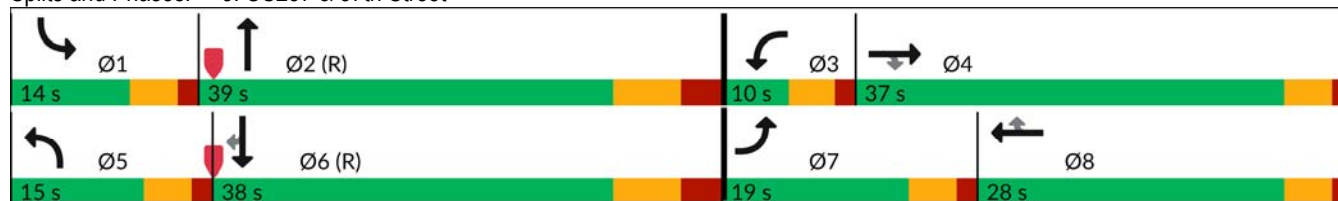
Long Total AM

|                        |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |
| Movement               | SBL                                                                               | NBT                                                                               | WBL                                                                               | EBT                                                                               | NBL                                                                               | SBT                                                                               | EBL                                                                                 | WBT                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Recall Mode            | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                                | None                                                                                |
| Maximum Split (s)      | 14                                                                                | 39                                                                                | 10                                                                                | 37                                                                                | 15                                                                                | 38                                                                                | 19                                                                                  | 28                                                                                  |
| Maximum Split (%)      | 14.0%                                                                             | 39.0%                                                                             | 10.0%                                                                             | 37.0%                                                                             | 15.0%                                                                             | 38.0%                                                                             | 19.0%                                                                               | 28.0%                                                                               |
| Minimum Split (s)      | 10                                                                                | 35                                                                                | 10                                                                                | 28                                                                                | 10                                                                                | 35                                                                                | 10                                                                                  | 28                                                                                  |
| Yellow Time (s)        | 3.5                                                                               | 5                                                                                 | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)       | 1.5                                                                               | 3                                                                                 | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 3                                                                                 | 1.5                                                                                 | 1.5                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                   | 5                                                                                   |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Walk Time (s)          |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   | 4                                                                                 |                                                                                     |                                                                                     |
| Flash Don't Walk (s)   |                                                                                   | 23                                                                                |                                                                                   |                                                                                   |                                                                                   | 23                                                                                |                                                                                     |                                                                                     |
| Dual Entry             | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                  | Yes                                                                                 |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Start Time (s)         | 85                                                                                | 99                                                                                | 38                                                                                | 48                                                                                | 85                                                                                | 0                                                                                 | 38                                                                                  | 57                                                                                  |
| End Time (s)           | 99                                                                                | 38                                                                                | 48                                                                                | 85                                                                                | 0                                                                                 | 38                                                                                | 57                                                                                  | 85                                                                                  |
| Yield/Force Off (s)    | 94                                                                                | 30                                                                                | 43                                                                                | 80                                                                                | 95                                                                                | 30                                                                                | 52                                                                                  | 80                                                                                  |
| Yield/Force Off 170(s) | 94                                                                                | 7                                                                                 | 43                                                                                | 80                                                                                | 95                                                                                | 7                                                                                 | 52                                                                                  | 80                                                                                  |
| Local Start Time (s)   | 85                                                                                | 99                                                                                | 38                                                                                | 48                                                                                | 85                                                                                | 0                                                                                 | 38                                                                                  | 57                                                                                  |
| Local Yield (s)        | 94                                                                                | 30                                                                                | 43                                                                                | 80                                                                                | 95                                                                                | 30                                                                                | 52                                                                                  | 80                                                                                  |
| Local Yield 170(s)     | 94                                                                                | 7                                                                                 | 43                                                                                | 80                                                                                | 95                                                                                | 7                                                                                 | 52                                                                                  | 80                                                                                  |

### Intersection Summary

Cycle Length 100  
Control Type Actuated-Coordinated  
Natural Cycle 95  
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

### Splits and Phases: 3: US287 & 57th Street



Queues  
3: US287 & 57th Street

Long Total AM

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Group Flow (vph)   | 368                                                                               | 247                                                                               | 205                                                                               | 105                                                                               | 126                                                                               | 205                                                                               | 121                                                                                | 1868                                                                                | 142                                                                                 | 1632                                                                                | 279                                                                                 |
| v/c Ratio               | 0.74                                                                              | 0.33                                                                              | 0.42                                                                              | 0.51                                                                              | 0.35                                                                              | 0.57                                                                              | 0.52                                                                               | 0.90                                                                                | 0.54                                                                                | 0.75                                                                                | 0.33                                                                                |
| Control Delay (s/veh)   | 50.6                                                                              | 35.2                                                                              | 7.5                                                                               | 54.8                                                                              | 43.6                                                                              | 11.5                                                                              | 47.8                                                                               | 35.8                                                                                | 54.4                                                                                | 19.3                                                                                | 2.7                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     | 50.6                                                                              | 35.2                                                                              | 7.5                                                                               | 54.8                                                                              | 43.6                                                                              | 11.5                                                                              | 47.8                                                                               | 35.8                                                                                | 54.4                                                                                | 19.3                                                                                | 2.7                                                                                 |
| Queue Length 50th (ft)  | 116                                                                               | 73                                                                                | 0                                                                                 | 34                                                                                | 40                                                                                | 0                                                                                 | 73                                                                                 | 399                                                                                 | 73                                                                                  | 345                                                                                 | 23                                                                                  |
| Queue Length 95th (ft)  | 165                                                                               | 104                                                                               | 56                                                                                | 61                                                                                | 65                                                                                | 55                                                                                | 124                                                                                | #609                                                                                | m111                                                                                | #474                                                                                | m43                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 644                                                                               |                                                                                   |                                                                                   | 2559                                                                              |                                                                                   |                                                                                    | 634                                                                                 |                                                                                     | 2545                                                                                |                                                                                     |
| Turn Bay Length (ft)    | 250                                                                               |                                                                                   | 200                                                                               | 300                                                                               |                                                                                   | 350                                                                               | 350                                                                                |                                                                                     | 250                                                                                 |                                                                                     | 360                                                                                 |
| Base Capacity (vph)     | 514                                                                               | 1167                                                                              | 659                                                                               | 205                                                                               | 849                                                                               | 545                                                                               | 241                                                                                | 2081                                                                                | 265                                                                                 | 2185                                                                                | 839                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.72                                                                              | 0.21                                                                              | 0.31                                                                              | 0.51                                                                              | 0.15                                                                              | 0.38                                                                              | 0.50                                                                               | 0.90                                                                                | 0.54                                                                                | 0.75                                                                                | 0.33                                                                                |

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 7th Signalized Intersection Summary

## 3: US287 & 57th Street

Long Total PM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 355                                                                               | 185                                                                               | 140                                                                               | 195                                                                               | 270                                                                               | 195                                                                               | 165                                                                                 | 1985                                                                                | 125                                                                                 | 245                                                                                 | 1915                                                                                | 510                                                                                 |
| Future Volume (veh/h)        | 355                                                                               | 185                                                                               | 140                                                                               | 195                                                                               | 270                                                                               | 195                                                                               | 165                                                                                 | 1985                                                                                | 125                                                                                 | 245                                                                                 | 1915                                                                                | 510                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 362                                                                               | 189                                                                               | 0                                                                                 | 199                                                                               | 276                                                                               | 0                                                                                 | 168                                                                                 | 2026                                                                                | 123                                                                                 | 250                                                                                 | 1954                                                                                | 304                                                                                 |
| Peak Hour Factor             | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 444                                                                               | 555                                                                               |                                                                                   | 280                                                                               | 387                                                                               |                                                                                   | 206                                                                                 | 2298                                                                                | 139                                                                                 | 257                                                                                 | 2526                                                                                | 784                                                                                 |
| Arrive On Green              | 0.13                                                                              | 0.16                                                                              | 0.00                                                                              | 0.08                                                                              | 0.11                                                                              | 0.00                                                                              | 0.12                                                                                | 0.47                                                                                | 0.47                                                                                | 0.29                                                                                | 0.99                                                                                | 0.99                                                                                |
| Sat Flow, veh/h              | 3456                                                                              | 3554                                                                              | 1585                                                                              | 3456                                                                              | 3554                                                                              | 1585                                                                              | 1781                                                                                | 4923                                                                                | 298                                                                                 | 1781                                                                                | 5106                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 362                                                                               | 189                                                                               | 0                                                                                 | 199                                                                               | 276                                                                               | 0                                                                                 | 168                                                                                 | 1398                                                                                | 751                                                                                 | 250                                                                                 | 1954                                                                                | 304                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1728                                                                              | 1777                                                                              | 1585                                                                              | 1728                                                                              | 1777                                                                              | 1585                                                                              | 1781                                                                                | 1702                                                                                | 1817                                                                                | 1781                                                                                | 1702                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 12.7                                                                              | 5.9                                                                               | 0.0                                                                               | 7.0                                                                               | 9.4                                                                               | 0.0                                                                               | 11.5                                                                                | 46.5                                                                                | 47.0                                                                                | 17.4                                                                                | 2.1                                                                                 | 0.4                                                                                 |
| Cycle Q Clear(g_c), s        | 12.7                                                                              | 5.9                                                                               | 0.0                                                                               | 7.0                                                                               | 9.4                                                                               | 0.0                                                                               | 11.5                                                                                | 46.5                                                                                | 47.0                                                                                | 17.4                                                                                | 2.1                                                                                 | 0.4                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.16                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 444                                                                               | 555                                                                               |                                                                                   | 280                                                                               | 387                                                                               |                                                                                   | 206                                                                                 | 1589                                                                                | 848                                                                                 | 257                                                                                 | 2526                                                                                | 784                                                                                 |
| V/C Ratio(X)                 | 0.82                                                                              | 0.34                                                                              |                                                                                   | 0.71                                                                              | 0.71                                                                              |                                                                                   | 0.81                                                                                | 0.88                                                                                | 0.89                                                                                | 0.97                                                                                | 0.77                                                                                | 0.39                                                                                |
| Avail Cap(c_a), veh/h        | 498                                                                               | 853                                                                               |                                                                                   | 332                                                                               | 682                                                                               |                                                                                   | 214                                                                                 | 1589                                                                                | 848                                                                                 | 257                                                                                 | 2526                                                                                | 784                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.76                                                                              | 0.76                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                |
| Uniform Delay (d), s/veh     | 53.0                                                                              | 47.0                                                                              | 0.0                                                                               | 56.0                                                                              | 53.8                                                                              | 0.0                                                                               | 53.9                                                                                | 30.2                                                                                | 30.3                                                                                | 44.3                                                                                | 0.3                                                                                 | 0.3                                                                                 |
| Incr Delay (d2), s/veh       | 9.2                                                                               | 0.4                                                                               | 0.0                                                                               | 4.3                                                                               | 1.9                                                                               | 0.0                                                                               | 20.4                                                                                | 7.3                                                                                 | 13.1                                                                                | 26.0                                                                                | 0.8                                                                                 | 0.5                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 6.1                                                                               | 2.6                                                                               | 0.0                                                                               | 3.2                                                                               | 4.3                                                                               | 0.0                                                                               | 6.2                                                                                 | 19.1                                                                                | 22.0                                                                                | 8.0                                                                                 | 0.4                                                                                 | 0.2                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 62.3                                                                              | 47.4                                                                              | 0.0                                                                               | 60.3                                                                              | 55.7                                                                              | 0.0                                                                               | 74.3                                                                                | 37.5                                                                                | 43.4                                                                                | 70.3                                                                                | 1.1                                                                                 | 0.8                                                                                 |
| LnGrp LOS                    | E                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | E                                                                                 |                                                                                   | E                                                                                   | D                                                                                   | D                                                                                   | E                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 551                                                                               |                                                                                   |                                                                                   | 475                                                                               |                                                                                   |                                                                                     | 2317                                                                                |                                                                                     |                                                                                     | 2508                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 57.1                                                                              |                                                                                   |                                                                                   | 57.6                                                                              |                                                                                   |                                                                                     | 42.1                                                                                |                                                                                     |                                                                                     | 8.0                                                                                 |                                                                                     |
| Approach LOS                 |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 22.0                                                                              | 65.3                                                                              | 14.1                                                                              | 23.5                                                                              | 18.5                                                                              | 68.8                                                                              | 20.1                                                                                | 17.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 8.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 8.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 17.0                                                                              | 45.0                                                                              | 11.0                                                                              | 29.0                                                                              | 14.0                                                                              | 48.0                                                                              | 17.0                                                                                | 23.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 19.4                                                                              | 49.0                                                                              | 9.0                                                                               | 7.9                                                                               | 13.5                                                                              | 4.1                                                                               | 14.7                                                                                | 11.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               | 0.1                                                                               | 1.0                                                                               | 0.0                                                                               | 23.1                                                                              | 0.3                                                                                 | 1.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

HCM 7th Control Delay, s/veh 30.1  
 HCM 7th LOS C

### Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

# Timing Report, Sorted By Phase

## 3: US287 & 57th Street

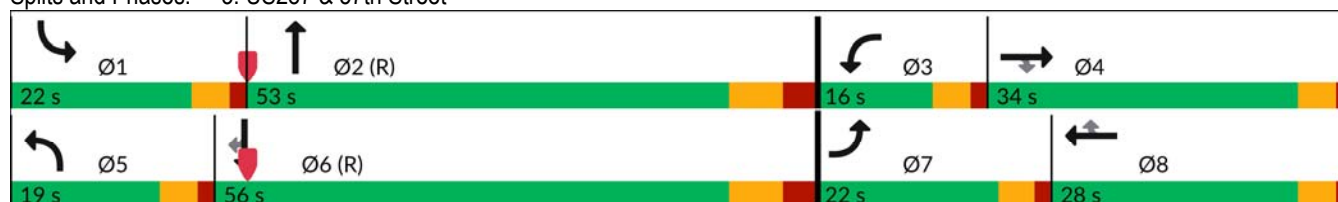
Long Total PM

|                        |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |
| Movement               | SBL                                                                               | NBT                                                                               | WBL                                                                               | EBT                                                                               | NBL                                                                               | SBT                                                                               | EBL                                                                                 | WBT                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Recall Mode            | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                                | None                                                                                |
| Maximum Split (s)      | 22                                                                                | 53                                                                                | 16                                                                                | 34                                                                                | 19                                                                                | 56                                                                                | 22                                                                                  | 28                                                                                  |
| Maximum Split (%)      | 17.6%                                                                             | 42.4%                                                                             | 12.8%                                                                             | 27.2%                                                                             | 15.2%                                                                             | 44.8%                                                                             | 17.6%                                                                               | 22.4%                                                                               |
| Minimum Split (s)      | 10                                                                                | 35                                                                                | 10                                                                                | 28                                                                                | 10                                                                                | 35                                                                                | 10                                                                                  | 28                                                                                  |
| Yellow Time (s)        | 3.5                                                                               | 5                                                                                 | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)       | 1.5                                                                               | 3                                                                                 | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 3                                                                                 | 1.5                                                                                 | 1.5                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                   | 5                                                                                   |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Walk Time (s)          |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   | 4                                                                                 |                                                                                     |                                                                                     |
| Flash Don't Walk (s)   |                                                                                   | 23                                                                                |                                                                                   |                                                                                   |                                                                                   | 23                                                                                |                                                                                     |                                                                                     |
| Dual Entry             | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                  | Yes                                                                                 |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Start Time (s)         | 42                                                                                | 64                                                                                | 117                                                                               | 8                                                                                 | 42                                                                                | 61                                                                                | 117                                                                                 | 14                                                                                  |
| End Time (s)           | 64                                                                                | 117                                                                               | 8                                                                                 | 42                                                                                | 61                                                                                | 117                                                                               | 14                                                                                  | 42                                                                                  |
| Yield/Force Off (s)    | 59                                                                                | 109                                                                               | 3                                                                                 | 37                                                                                | 56                                                                                | 109                                                                               | 9                                                                                   | 37                                                                                  |
| Yield/Force Off 170(s) | 59                                                                                | 86                                                                                | 3                                                                                 | 37                                                                                | 56                                                                                | 86                                                                                | 9                                                                                   | 37                                                                                  |
| Local Start Time (s)   | 103                                                                               | 0                                                                                 | 53                                                                                | 69                                                                                | 103                                                                               | 122                                                                               | 53                                                                                  | 75                                                                                  |
| Local Yield (s)        | 120                                                                               | 45                                                                                | 64                                                                                | 98                                                                                | 117                                                                               | 45                                                                                | 70                                                                                  | 98                                                                                  |
| Local Yield 170(s)     | 120                                                                               | 22                                                                                | 64                                                                                | 98                                                                                | 117                                                                               | 22                                                                                | 70                                                                                  | 98                                                                                  |

### Intersection Summary

Cycle Length 125  
Control Type Actuated-Coordinated  
Natural Cycle 125  
Offset: 64 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Green

### Splits and Phases: 3: US287 & 57th Street



Queues  
3: US287 & 57th Street

Long Total PM

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Group Flow (vph)   | 362                                                                               | 189                                                                               | 143                                                                               | 199                                                                               | 276                                                                               | 199                                                                               | 168                                                                                | 2154                                                                                | 250                                                                                 | 1954                                                                                | 520                                                                                 |
| v/c Ratio               | 0.77                                                                              | 0.30                                                                              | 0.36                                                                              | 0.62                                                                              | 0.60                                                                              | 0.52                                                                              | 0.69                                                                               | 1.10                                                                                | 0.74                                                                                | 0.87                                                                                | 0.57                                                                                |
| Control Delay (s/veh)   | 63.4                                                                              | 45.3                                                                              | 9.2                                                                               | 63.7                                                                              | 56.3                                                                              | 11.5                                                                              | 65.8                                                                               | 88.2                                                                                | 79.7                                                                                | 20.7                                                                                | 2.7                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     | 63.4                                                                              | 45.3                                                                              | 9.2                                                                               | 63.7                                                                              | 56.3                                                                              | 11.5                                                                              | 65.8                                                                               | 88.2                                                                                | 79.7                                                                                | 20.7                                                                                | 2.7                                                                                 |
| Queue Length 50th (ft)  | 146                                                                               | 71                                                                                | 0                                                                                 | 80                                                                                | 112                                                                               | 0                                                                                 | 129                                                                                | ~754                                                                                | 205                                                                                 | 273                                                                                 | 5                                                                                   |
| Queue Length 95th (ft)  | 200                                                                               | 102                                                                               | 55                                                                                | 122                                                                               | 153                                                                               | 68                                                                                | 208                                                                                | #851                                                                                | m247                                                                                | m#651                                                                               | m14                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 644                                                                               |                                                                                   |                                                                                   | 2559                                                                              |                                                                                   |                                                                                    | 634                                                                                 |                                                                                     | 2545                                                                                |                                                                                     |
| Turn Bay Length (ft)    | 250                                                                               |                                                                                   | 200                                                                               | 300                                                                               |                                                                                   | 350                                                                               | 350                                                                                |                                                                                     | 250                                                                                 |                                                                                     | 360                                                                                 |
| Base Capacity (vph)     | 494                                                                               | 849                                                                               | 488                                                                               | 329                                                                               | 679                                                                               | 464                                                                               | 251                                                                                | 1966                                                                                | 336                                                                                 | 2240                                                                                | 917                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.73                                                                              | 0.22                                                                              | 0.29                                                                              | 0.60                                                                              | 0.41                                                                              | 0.43                                                                              | 0.67                                                                               | 1.10                                                                                | 0.74                                                                                | 0.87                                                                                | 0.57                                                                                |

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

# HCM 7th Signalized Intersection Summary 18: US287 & 65th Street

Long Total AM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 180                                                                               | 15                                                                                | 130                                                                               | 220                                                                               | 35                                                                                | 145                                                                               | 190                                                                                 | 1800                                                                                | 70                                                                                  | 50                                                                                  | 1445                                                                                | 125                                                                                 |
| Future Volume (veh/h)        | 180                                                                               | 15                                                                                | 130                                                                               | 220                                                                               | 35                                                                                | 145                                                                               | 190                                                                                 | 1800                                                                                | 70                                                                                  | 50                                                                                  | 1445                                                                                | 125                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 186                                                                               | 15                                                                                | 0                                                                                 | 227                                                                               | 36                                                                                | 0                                                                                 | 196                                                                                 | 1856                                                                                | 12                                                                                  | 52                                                                                  | 1490                                                                                | 120                                                                                 |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 286                                                                               | 112                                                                               |                                                                                   | 325                                                                               | 133                                                                               |                                                                                   | 238                                                                                 | 3104                                                                                | 963                                                                                 | 86                                                                                  | 2516                                                                                | 203                                                                                 |
| Arrive On Green              | 0.08                                                                              | 0.06                                                                              | 0.00                                                                              | 0.09                                                                              | 0.07                                                                              | 0.00                                                                              | 0.27                                                                                | 1.00                                                                                | 1.00                                                                                | 0.05                                                                                | 0.52                                                                                | 0.52                                                                                |
| Sat Flow, veh/h              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 5106                                                                                | 1585                                                                                | 1781                                                                                | 4817                                                                                | 388                                                                                 |
| Grp Volume(v), veh/h         | 186                                                                               | 15                                                                                | 0                                                                                 | 227                                                                               | 36                                                                                | 0                                                                                 | 196                                                                                 | 1856                                                                                | 12                                                                                  | 52                                                                                  | 1053                                                                                | 557                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 1702                                                                                | 1585                                                                                | 1781                                                                                | 1702                                                                                | 1801                                                                                |
| Q Serve(g_s), s              | 5.2                                                                               | 0.8                                                                               | 0.0                                                                               | 6.4                                                                               | 1.8                                                                               | 0.0                                                                               | 10.3                                                                                | 0.0                                                                                 | 0.0                                                                                 | 2.9                                                                                 | 21.4                                                                                | 21.4                                                                                |
| Cycle Q Clear(g_c), s        | 5.2                                                                               | 0.8                                                                               | 0.0                                                                               | 6.4                                                                               | 1.8                                                                               | 0.0                                                                               | 10.3                                                                                | 0.0                                                                                 | 0.0                                                                                 | 2.9                                                                                 | 21.4                                                                                | 21.4                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.22                                                                                |
| Lane Grp Cap(c), veh/h       | 286                                                                               | 112                                                                               |                                                                                   | 325                                                                               | 133                                                                               |                                                                                   | 238                                                                                 | 3104                                                                                | 963                                                                                 | 86                                                                                  | 1778                                                                                | 941                                                                                 |
| V/C Ratio(X)                 | 0.65                                                                              | 0.13                                                                              |                                                                                   | 0.70                                                                              | 0.27                                                                              |                                                                                   | 0.82                                                                                | 0.60                                                                                | 0.01                                                                                | 0.61                                                                                | 0.59                                                                                | 0.59                                                                                |
| Avail Cap(c_a), veh/h        | 311                                                                               | 374                                                                               |                                                                                   | 346                                                                               | 393                                                                               |                                                                                   | 267                                                                                 | 3104                                                                                | 963                                                                                 | 107                                                                                 | 1778                                                                                | 941                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.42                                                                                | 0.42                                                                                | 0.42                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 44.5                                                                              | 44.5                                                                              | 0.0                                                                               | 43.9                                                                              | 44.0                                                                              | 0.0                                                                               | 35.5                                                                                | 0.0                                                                                 | 0.0                                                                                 | 46.7                                                                                | 16.5                                                                                | 16.5                                                                                |
| Incr Delay (d2), s/veh       | 4.2                                                                               | 0.5                                                                               | 0.0                                                                               | 5.7                                                                               | 1.1                                                                               | 0.0                                                                               | 7.8                                                                                 | 0.4                                                                                 | 0.0                                                                                 | 6.7                                                                                 | 1.5                                                                                 | 2.7                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.4                                                                               | 0.4                                                                               | 0.0                                                                               | 2.9                                                                               | 0.9                                                                               | 0.0                                                                               | 4.2                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 1.4                                                                                 | 7.4                                                                                 | 8.2                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 48.7                                                                              | 45.1                                                                              | 0.0                                                                               | 49.6                                                                              | 45.0                                                                              | 0.0                                                                               | 43.4                                                                                | 0.4                                                                                 | 0.0                                                                                 | 53.4                                                                                | 18.0                                                                                | 19.3                                                                                |
| LnGrp LOS                    | D                                                                                 | D                                                                                 |                                                                                   | D                                                                                 | D                                                                                 |                                                                                   | D                                                                                   | A                                                                                   | A                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 201                                                                               |                                                                                   |                                                                                   | 263                                                                               |                                                                                   |                                                                                     | 2064                                                                                |                                                                                     |                                                                                     | 1662                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 48.4                                                                              |                                                                                   |                                                                                   | 49.0                                                                              |                                                                                   |                                                                                     | 4.4                                                                                 |                                                                                     |                                                                                     | 19.5                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.8                                                                               | 67.8                                                                              | 13.4                                                                              | 10.0                                                                              | 17.4                                                                              | 59.2                                                                              | 12.3                                                                                | 11.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 8.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 8.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.0                                                                               | 44.0                                                                              | 9.0                                                                               | 19.0                                                                              | 14.0                                                                              | 35.0                                                                              | 8.0                                                                                 | 20.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 4.9                                                                               | 2.0                                                                               | 8.4                                                                               | 2.8                                                                               | 12.3                                                                              | 23.4                                                                              | 7.2                                                                                 | 3.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 18.2                                                                              | 0.0                                                                               | 0.0                                                                               | 0.1                                                                               | 7.1                                                                               | 0.0                                                                                 | 0.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Intersection Summary

HCM 7th Control Delay, s/veh 15.3  
HCM 7th LOS B

## Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Timing Report, Sorted By Phase  
18: US287 & 65th Street

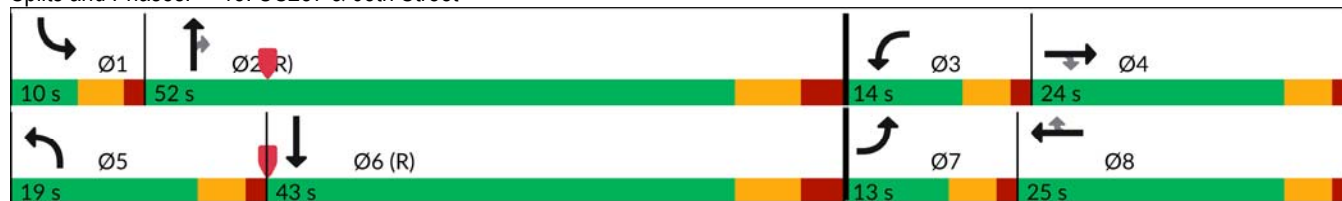
Long Total AM

|                        |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |
| Movement               | SBL                                                                               | NBT                                                                               | WBL                                                                               | EBT                                                                               | NBL                                                                               | SBT                                                                               | EBL                                                                                 | WBT                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Recall Mode            | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                                | None                                                                                |
| Maximum Split (s)      | 10                                                                                | 52                                                                                | 14                                                                                | 24                                                                                | 19                                                                                | 43                                                                                | 13                                                                                  | 25                                                                                  |
| Maximum Split (%)      | 10.0%                                                                             | 52.0%                                                                             | 14.0%                                                                             | 24.0%                                                                             | 19.0%                                                                             | 43.0%                                                                             | 13.0%                                                                               | 25.0%                                                                               |
| Minimum Split (s)      | 10                                                                                | 26                                                                                | 10                                                                                | 24                                                                                | 10                                                                                | 26                                                                                | 10                                                                                  | 24                                                                                  |
| Yellow Time (s)        | 3.5                                                                               | 5                                                                                 | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)       | 1.5                                                                               | 3                                                                                 | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 3                                                                                 | 1.5                                                                                 | 1.5                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                   | 5                                                                                   |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Walk Time (s)          |                                                                                   | 7                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 7                                                                                 |                                                                                     | 7                                                                                   |
| Flash Don't Walk (s)   |                                                                                   | 11                                                                                |                                                                                   | 11                                                                                |                                                                                   | 11                                                                                |                                                                                     | 11                                                                                  |
| Dual Entry             | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Start Time (s)         | 31                                                                                | 41                                                                                | 93                                                                                | 7                                                                                 | 31                                                                                | 50                                                                                | 93                                                                                  | 6                                                                                   |
| End Time (s)           | 41                                                                                | 93                                                                                | 7                                                                                 | 31                                                                                | 50                                                                                | 93                                                                                | 6                                                                                   | 31                                                                                  |
| Yield/Force Off (s)    | 36                                                                                | 85                                                                                | 2                                                                                 | 26                                                                                | 45                                                                                | 85                                                                                | 1                                                                                   | 26                                                                                  |
| Yield/Force Off 170(s) | 36                                                                                | 74                                                                                | 2                                                                                 | 15                                                                                | 45                                                                                | 74                                                                                | 1                                                                                   | 15                                                                                  |
| Local Start Time (s)   | 81                                                                                | 91                                                                                | 43                                                                                | 57                                                                                | 81                                                                                | 0                                                                                 | 43                                                                                  | 56                                                                                  |
| Local Yield (s)        | 86                                                                                | 35                                                                                | 52                                                                                | 76                                                                                | 95                                                                                | 35                                                                                | 51                                                                                  | 76                                                                                  |
| Local Yield 170(s)     | 86                                                                                | 24                                                                                | 52                                                                                | 65                                                                                | 95                                                                                | 24                                                                                | 51                                                                                  | 65                                                                                  |

Intersection Summary

Cycle Length 100  
Control Type Actuated-Coordinated  
Natural Cycle 80  
Offset: 50 (50%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Splits and Phases: 18: US287 & 65th Street



## Queues

Long Total AM

## 18: US287 &amp; 65th Street

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Group Flow (vph)   | 186                                                                               | 15                                                                                | 134                                                                               | 227                                                                               | 36                                                                                | 149                                                                               | 196                                                                                | 1856                                                                                | 72                                                                                  | 52                                                                                  | 1619                                                                                |
| v/c Ratio               | 0.61                                                                              | 0.11                                                                              | 0.42                                                                              | 0.67                                                                              | 0.22                                                                              | 0.44                                                                              | 0.63                                                                               | 0.65                                                                                | 0.08                                                                                | 0.32                                                                                | 0.70                                                                                |
| Control Delay (s/veh)   | 52.9                                                                              | 43.8                                                                              | 4.2                                                                               | 53.7                                                                              | 45.4                                                                              | 5.6                                                                               | 50.2                                                                               | 6.7                                                                                 | 0.3                                                                                 | 46.6                                                                                | 24.3                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     | 52.9                                                                              | 43.8                                                                              | 4.2                                                                               | 53.7                                                                              | 45.4                                                                              | 5.6                                                                               | 50.2                                                                               | 6.7                                                                                 | 0.3                                                                                 | 46.6                                                                                | 24.3                                                                                |
| Queue Length 50th (ft)  | 59                                                                                | 9                                                                                 | 0                                                                                 | 73                                                                                | 22                                                                                | 0                                                                                 | 97                                                                                 | 204                                                                                 | 0                                                                                   | 32                                                                                  | 288                                                                                 |
| Queue Length 95th (ft)  | 95                                                                                | 29                                                                                | 3                                                                                 | 112                                                                               | 52                                                                                | 14                                                                                | m113                                                                               | 433                                                                                 | m0                                                                                  | 67                                                                                  | 397                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   |                                                                                   | 2160                                                                              |                                                                                   |                                                                                    | 2545                                                                                |                                                                                     |                                                                                     | 694                                                                                 |
| Turn Bay Length (ft)    | 275                                                                               |                                                                                   | 250                                                                               | 250                                                                               |                                                                                   | 250                                                                               | 460                                                                                |                                                                                     | 250                                                                                 | 250                                                                                 |                                                                                     |
| Base Capacity (vph)     | 308                                                                               | 372                                                                               | 491                                                                               | 343                                                                               | 391                                                                               | 504                                                                               | 321                                                                                | 2854                                                                                | 946                                                                                 | 165                                                                                 | 2313                                                                                |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.60                                                                              | 0.04                                                                              | 0.27                                                                              | 0.66                                                                              | 0.09                                                                              | 0.30                                                                              | 0.61                                                                               | 0.65                                                                                | 0.08                                                                                | 0.32                                                                                | 0.70                                                                                |

## Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 7th Signalized Intersection Summary 18: US287 & 65th Street

Long Total PM

|                                                                                                               |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                                      | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)                                                                                        | 230                                                                               | 45                                                                                | 235                                                                               | 155                                                                               | 25                                                                                | 100                                                                               | 235                                                                                 | 1790                                                                                | 255                                                                                 | 165                                                                                 | 2000                                                                                | 225                                                                                 |
| Future Volume (veh/h)                                                                                         | 230                                                                               | 45                                                                                | 235                                                                               | 155                                                                               | 25                                                                                | 100                                                                               | 235                                                                                 | 1790                                                                                | 255                                                                                 | 165                                                                                 | 2000                                                                                | 225                                                                                 |
| Initial Q (Qb), veh                                                                                           | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.                                                                                               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)                                                                                           | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach                                                                                         |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln                                                                                        | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h                                                                                          | 235                                                                               | 46                                                                                | 0                                                                                 | 158                                                                               | 26                                                                                | 0                                                                                 | 240                                                                                 | 1827                                                                                | 147                                                                                 | 168                                                                                 | 2041                                                                                | 220                                                                                 |
| Peak Hour Factor                                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Percent Heavy Veh, %                                                                                          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                                                                    | 316                                                                               | 131                                                                               |                                                                                   | 239                                                                               | 90                                                                                |                                                                                   | 257                                                                                 | 3023                                                                                | 938                                                                                 | 208                                                                                 | 2645                                                                                | 282                                                                                 |
| Arrive On Green                                                                                               | 0.09                                                                              | 0.07                                                                              | 0.00                                                                              | 0.07                                                                              | 0.05                                                                              | 0.00                                                                              | 0.10                                                                                | 0.40                                                                                | 0.40                                                                                | 0.12                                                                                | 0.56                                                                                | 0.56                                                                                |
| Sat Flow, veh/h                                                                                               | 3456                                                                              | 1870                                                                              | 1585                                                                              | 3456                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 5106                                                                                | 1585                                                                                | 1781                                                                                | 4685                                                                                | 500                                                                                 |
| Grp Volume(v), veh/h                                                                                          | 235                                                                               | 46                                                                                | 0                                                                                 | 158                                                                               | 26                                                                                | 0                                                                                 | 240                                                                                 | 1827                                                                                | 147                                                                                 | 168                                                                                 | 1477                                                                                | 784                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                                                                      | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1728                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 1702                                                                                | 1585                                                                                | 1781                                                                                | 1702                                                                                | 1780                                                                                |
| Q Serve(g_s), s                                                                                               | 8.3                                                                               | 2.9                                                                               | 0.0                                                                               | 5.6                                                                               | 1.7                                                                               | 0.0                                                                               | 16.7                                                                                | 35.5                                                                                | 7.5                                                                                 | 11.5                                                                                | 41.7                                                                                | 42.8                                                                                |
| Cycle Q Clear(g_c), s                                                                                         | 8.3                                                                               | 2.9                                                                               | 0.0                                                                               | 5.6                                                                               | 1.7                                                                               | 0.0                                                                               | 16.7                                                                                | 35.5                                                                                | 7.5                                                                                 | 11.5                                                                                | 41.7                                                                                | 42.8                                                                                |
| Prop In Lane                                                                                                  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.28                                                                                |
| Lane Grp Cap(c), veh/h                                                                                        | 316                                                                               | 131                                                                               |                                                                                   | 239                                                                               | 90                                                                                |                                                                                   | 257                                                                                 | 3023                                                                                | 938                                                                                 | 208                                                                                 | 1922                                                                                | 1005                                                                                |
| V/C Ratio(X)                                                                                                  | 0.74                                                                              | 0.35                                                                              |                                                                                   | 0.66                                                                              | 0.29                                                                              |                                                                                   | 0.94                                                                                | 0.60                                                                                | 0.16                                                                                | 0.81                                                                                | 0.77                                                                                | 0.78                                                                                |
| Avail Cap(c_a), veh/h                                                                                         | 359                                                                               | 359                                                                               |                                                                                   | 304                                                                               | 329                                                                               |                                                                                   | 257                                                                                 | 3023                                                                                | 938                                                                                 | 257                                                                                 | 1922                                                                                | 1005                                                                                |
| HCM Platoon Ratio                                                                                             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.67                                                                                | 0.67                                                                                | 0.67                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                                                            | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.09                                                                                | 0.09                                                                                | 0.09                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                                                                      | 55.4                                                                              | 55.4                                                                              | 0.0                                                                               | 56.7                                                                              | 57.4                                                                              | 0.0                                                                               | 55.9                                                                                | 26.1                                                                                | 17.6                                                                                | 53.8                                                                                | 20.9                                                                                | 21.2                                                                                |
| Incr Delay (d2), s/veh                                                                                        | 7.1                                                                               | 1.6                                                                               | 0.0                                                                               | 3.5                                                                               | 1.8                                                                               | 0.0                                                                               | 6.7                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 14.4                                                                                | 3.0                                                                                 | 6.0                                                                                 |
| Initial Q Delay(d3), s/veh                                                                                    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                                      | 3.9                                                                               | 1.4                                                                               | 0.0                                                                               | 2.5                                                                               | 0.8                                                                               | 0.0                                                                               | 8.0                                                                                 | 14.7                                                                                | 2.8                                                                                 | 5.8                                                                                 | 15.3                                                                                | 17.3                                                                                |
| Unsig. Movement Delay, s/veh                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh                                                                                         | 62.5                                                                              | 57.0                                                                              | 0.0                                                                               | 60.3                                                                              | 59.2                                                                              | 0.0                                                                               | 62.6                                                                                | 26.2                                                                                | 17.7                                                                                | 68.2                                                                                | 23.9                                                                                | 27.1                                                                                |
| LnGrp LOS                                                                                                     | E                                                                                 | E                                                                                 |                                                                                   | E                                                                                 | E                                                                                 |                                                                                   | E                                                                                   | C                                                                                   | B                                                                                   | E                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h                                                                                           |                                                                                   | 281                                                                               |                                                                                   |                                                                                   | 184                                                                               |                                                                                   |                                                                                     | 2214                                                                                |                                                                                     |                                                                                     | 2429                                                                                |                                                                                     |
| Approach Delay, s/veh                                                                                         |                                                                                   | 61.6                                                                              |                                                                                   |                                                                                   | 60.1                                                                              |                                                                                   |                                                                                     | 29.6                                                                                |                                                                                     |                                                                                     | 28.0                                                                                |                                                                                     |
| Approach LOS                                                                                                  |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs                                                                                          | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                                      | 18.6                                                                              | 81.0                                                                              | 12.6                                                                              | 12.8                                                                              | 22.0                                                                              | 77.6                                                                              | 15.4                                                                                | 10.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                                                                       | 5.0                                                                               | 8.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 8.0                                                                               | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                                                                   | 17.0                                                                              | 52.0                                                                              | 10.0                                                                              | 23.0                                                                              | 17.0                                                                              | 52.0                                                                              | 12.0                                                                                | 21.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                                                                  | 13.5                                                                              | 37.5                                                                              | 7.6                                                                               | 4.9                                                                               | 18.7                                                                              | 44.8                                                                              | 10.3                                                                                | 3.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                                                                       | 0.1                                                                               | 10.0                                                                              | 0.1                                                                               | 0.1                                                                               | 0.0                                                                               | 6.1                                                                               | 0.1                                                                                 | 0.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                                                                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh                                                                                  |                                                                                   |                                                                                   | 31.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                                                                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Timing Report, Sorted By Phase  
18: US287 & 65th Street

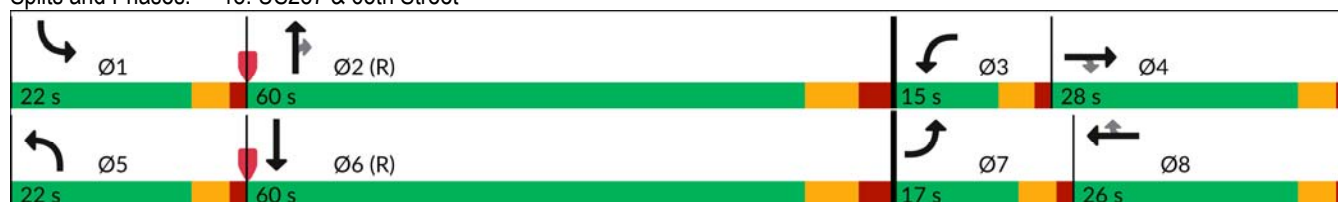
Long Total PM

|                        |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |
| Movement               | SBL                                                                               | NBT                                                                               | WBL                                                                               | EBT                                                                               | NBL                                                                               | SBT                                                                               | EBL                                                                                 | WBT                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Recall Mode            | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                                | None                                                                                |
| Maximum Split (s)      | 22                                                                                | 60                                                                                | 15                                                                                | 28                                                                                | 22                                                                                | 60                                                                                | 17                                                                                  | 26                                                                                  |
| Maximum Split (%)      | 17.6%                                                                             | 48.0%                                                                             | 12.0%                                                                             | 22.4%                                                                             | 17.6%                                                                             | 48.0%                                                                             | 13.6%                                                                               | 20.8%                                                                               |
| Minimum Split (s)      | 10                                                                                | 26                                                                                | 10                                                                                | 24                                                                                | 10                                                                                | 26                                                                                | 10                                                                                  | 24                                                                                  |
| Yellow Time (s)        | 3.5                                                                               | 5                                                                                 | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)       | 1.5                                                                               | 3                                                                                 | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 3                                                                                 | 1.5                                                                                 | 1.5                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                   | 5                                                                                   |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |
| Walk Time (s)          |                                                                                   | 7                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 7                                                                                 |                                                                                     | 7                                                                                   |
| Flash Don't Walk (s)   |                                                                                   | 11                                                                                |                                                                                   | 11                                                                                |                                                                                   | 11                                                                                |                                                                                     | 11                                                                                  |
| Dual Entry             | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | No                                                                                | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 |
| Start Time (s)         | 6                                                                                 | 28                                                                                | 88                                                                                | 103                                                                               | 6                                                                                 | 28                                                                                | 88                                                                                  | 105                                                                                 |
| End Time (s)           | 28                                                                                | 88                                                                                | 103                                                                               | 6                                                                                 | 28                                                                                | 88                                                                                | 105                                                                                 | 6                                                                                   |
| Yield/Force Off (s)    | 23                                                                                | 80                                                                                | 98                                                                                | 1                                                                                 | 23                                                                                | 80                                                                                | 100                                                                                 | 1                                                                                   |
| Yield/Force Off 170(s) | 23                                                                                | 69                                                                                | 98                                                                                | 115                                                                               | 23                                                                                | 69                                                                                | 100                                                                                 | 115                                                                                 |
| Local Start Time (s)   | 103                                                                               | 0                                                                                 | 60                                                                                | 75                                                                                | 103                                                                               | 0                                                                                 | 60                                                                                  | 77                                                                                  |
| Local Yield (s)        | 120                                                                               | 52                                                                                | 70                                                                                | 98                                                                                | 120                                                                               | 52                                                                                | 72                                                                                  | 98                                                                                  |
| Local Yield 170(s)     | 120                                                                               | 41                                                                                | 70                                                                                | 87                                                                                | 120                                                                               | 41                                                                                | 72                                                                                  | 87                                                                                  |

Intersection Summary

Cycle Length 125  
Control Type Actuated-Coordinated  
Natural Cycle 110  
Offset: 28 (22%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Splits and Phases: 18: US287 & 65th Street



## Queues

Long Total PM

## 18: US287 &amp; 65th Street

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Group Flow (vph)   | 235                                                                               | 46                                                                                | 240                                                                               | 158                                                                               | 26                                                                                | 102                                                                               | 240                                                                                 | 1827                                                                                | 260                                                                                 | 168                                                                                 | 2271                                                                                |
| v/c Ratio               | 0.68                                                                              | 0.28                                                                              | 0.67                                                                              | 0.54                                                                              | 0.19                                                                              | 0.43                                                                              | 0.70                                                                                | 0.68                                                                                | 0.28                                                                                | 0.66                                                                                | 0.94                                                                                |
| Control Delay (s/veh)   | 64.7                                                                              | 56.4                                                                              | 16.1                                                                              | 62.2                                                                              | 56.4                                                                              | 9.7                                                                               | 30.1                                                                                | 38.4                                                                                | 15.9                                                                                | 62.4                                                                                | 40.5                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     | 64.7                                                                              | 56.4                                                                              | 16.1                                                                              | 62.2                                                                              | 56.4                                                                              | 9.7                                                                               | 30.1                                                                                | 38.4                                                                                | 15.9                                                                                | 62.4                                                                                | 40.5                                                                                |
| Queue Length 50th (ft)  | 95                                                                                | 36                                                                                | 0                                                                                 | 63                                                                                | 20                                                                                | 0                                                                                 | 133                                                                                 | 570                                                                                 | 119                                                                                 | 130                                                                                 | 627                                                                                 |
| Queue Length 95th (ft)  | 140                                                                               | 72                                                                                | 77                                                                                | 100                                                                               | 48                                                                                | 31                                                                                | m170                                                                                | m547                                                                                | m116                                                                                | 196                                                                                 | #834                                                                                |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   |                                                                                   | 2160                                                                              |                                                                                   |                                                                                     | 2545                                                                                |                                                                                     |                                                                                     | 694                                                                                 |
| Turn Bay Length (ft)    | 275                                                                               |                                                                                   | 250                                                                               | 250                                                                               |                                                                                   | 250                                                                               | 460                                                                                 |                                                                                     | 250                                                                                 | 250                                                                                 |                                                                                     |
| Base Capacity (vph)     | 357                                                                               | 357                                                                               | 497                                                                               | 302                                                                               | 327                                                                               | 386                                                                               | 345                                                                                 | 2696                                                                                | 939                                                                                 | 279                                                                                 | 2411                                                                                |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.66                                                                              | 0.13                                                                              | 0.48                                                                              | 0.52                                                                              | 0.08                                                                              | 0.26                                                                              | 0.70                                                                                | 0.68                                                                                | 0.28                                                                                | 0.60                                                                                | 0.94                                                                                |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 7th Signalized Intersection Summary

## 5: Monroe & 57th Street

Long Total AM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |                                                                                     |  |  |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 5                                                                                 | 355                                                                               | 100                                                                               | 100                                                                               | 260                                                                               | 5                                                                                 | 135                                                                                 | 20                                                                                  | 125                                                                                 | 5                                                                                   | 60                                                                                  | 20                                                                                  |
| Future Volume (veh/h)        | 5                                                                                 | 355                                                                               | 100                                                                               | 100                                                                               | 260                                                                               | 5                                                                                 | 135                                                                                 | 20                                                                                  | 125                                                                                 | 5                                                                                   | 60                                                                                  | 20                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 5                                                                                 | 374                                                                               | 26                                                                                | 105                                                                               | 274                                                                               | 4                                                                                 | 142                                                                                 | 21                                                                                  | 27                                                                                  | 5                                                                                   | 63                                                                                  | 8                                                                                   |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 570                                                                               | 568                                                                               | 482                                                                               | 538                                                                               | 712                                                                               | 10                                                                                | 439                                                                                 | 37                                                                                  | 300                                                                                 | 117                                                                                 | 297                                                                                 | 36                                                                                  |
| Arrive On Green              | 0.03                                                                              | 0.30                                                                              | 0.30                                                                              | 0.12                                                                              | 0.39                                                                              | 0.36                                                                              | 0.16                                                                                | 0.19                                                                                | 0.19                                                                                | 0.16                                                                                | 0.19                                                                                | 0.16                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 1839                                                                              | 27                                                                                | 1334                                                                                | 197                                                                                 | 1585                                                                                | 55                                                                                  | 1569                                                                                | 191                                                                                 |
| Grp Volume(v), veh/h         | 5                                                                                 | 374                                                                               | 26                                                                                | 105                                                                               | 0                                                                                 | 278                                                                               | 163                                                                                 | 0                                                                                   | 27                                                                                  | 76                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 0                                                                                 | 1866                                                                              | 1532                                                                                | 0                                                                                   | 1585                                                                                | 1815                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.1                                                                               | 6.3                                                                               | 0.4                                                                               | 1.2                                                                               | 0.0                                                                               | 3.9                                                                               | 1.2                                                                                 | 0.0                                                                                 | 0.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.1                                                                               | 6.3                                                                               | 0.4                                                                               | 1.2                                                                               | 0.0                                                                               | 3.9                                                                               | 3.3                                                                                 | 0.0                                                                                 | 0.5                                                                                 | 1.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.01                                                                              | 0.87                                                                                |                                                                                     | 1.00                                                                                | 0.07                                                                                |                                                                                     | 0.11                                                                                |
| Lane Grp Cap(c), veh/h       | 570                                                                               | 568                                                                               | 482                                                                               | 538                                                                               | 0                                                                                 | 723                                                                               | 434                                                                                 | 0                                                                                   | 300                                                                                 | 399                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.01                                                                              | 0.66                                                                              | 0.05                                                                              | 0.20                                                                              | 0.00                                                                              | 0.38                                                                              | 0.38                                                                                | 0.00                                                                                | 0.09                                                                                | 0.19                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 855                                                                               | 1039                                                                              | 881                                                                               | 674                                                                               | 0                                                                                 | 1037                                                                              | 902                                                                                 | 0                                                                                   | 837                                                                                 | 1006                                                                                | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 7.9                                                                               | 10.9                                                                              | 8.9                                                                               | 6.3                                                                               | 0.0                                                                               | 7.9                                                                               | 13.5                                                                                | 0.0                                                                                 | 12.0                                                                                | 12.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 1.3                                                                               | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 0.3                                                                               | 0.5                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 2.0                                                                               | 0.1                                                                               | 0.3                                                                               | 0.0                                                                               | 1.1                                                                               | 1.0                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 7.9                                                                               | 12.2                                                                              | 8.9                                                                               | 6.5                                                                               | 0.0                                                                               | 8.3                                                                               | 14.0                                                                                | 0.0                                                                                 | 12.2                                                                                | 12.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | A                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 | B                                                                                   |                                                                                     | B                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 405                                                                               |                                                                                   |                                                                                   | 383                                                                               |                                                                                   |                                                                                     | 190                                                                                 |                                                                                     |                                                                                     | 76                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 11.9                                                                              |                                                                                   |                                                                                   | 7.8                                                                               |                                                                                   |                                                                                     | 13.8                                                                                |                                                                                     |                                                                                     | 12.7                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 7.3                                                                               | 16.9                                                                              |                                                                                   | 11.9                                                                              | 4.2                                                                               | 19.9                                                                              |                                                                                     | 11.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 6.0                                                                               | 4.0                                                                               | 7.0                                                                               |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 6.0                                                                               | 19.0                                                                              |                                                                                   | 18.0                                                                              | 6.0                                                                               | 19.0                                                                              |                                                                                     | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.2                                                                               | 8.3                                                                               |                                                                                   | 3.3                                                                               | 2.1                                                                               | 5.9                                                                               |                                                                                     | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 1.7                                                                               |                                                                                   | 0.2                                                                               | 0.0                                                                               | 1.2                                                                               |                                                                                     | 0.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh |                                                                                   |                                                                                   | 10.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timing Report, Sorted By Phase

## 5: Monroe & 57th Street

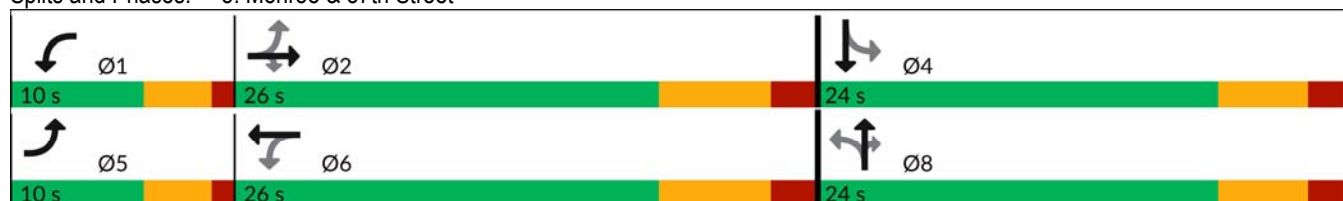
Long Total AM

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 8                                                                                 |
| Movement               | WBL                                                                               | EBTL                                                                              | SBTL                                                                              | EBL                                                                               | WBTL                                                                              | NBTL                                                                              |
| Lead/Lag               | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |
| Recall Mode            | None                                                                              | None                                                                              | Min                                                                               | None                                                                              | None                                                                              | Min                                                                               |
| Maximum Split (s)      | 10                                                                                | 26                                                                                | 24                                                                                | 10                                                                                | 26                                                                                | 24                                                                                |
| Maximum Split (%)      | 16.7%                                                                             | 43.3%                                                                             | 40.0%                                                                             | 16.7%                                                                             | 43.3%                                                                             | 40.0%                                                                             |
| Minimum Split (s)      | 10                                                                                | 25                                                                                | 24                                                                                | 10                                                                                | 25                                                                                | 24                                                                                |
| Yellow Time (s)        | 3                                                                                 | 5                                                                                 | 4                                                                                 | 3                                                                                 | 5                                                                                 | 4                                                                                 |
| All-Red Time (s)       | 1                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Walk Time (s)          |                                                                                   | 7                                                                                 | 7                                                                                 |                                                                                   | 7                                                                                 | 7                                                                                 |
| Flash Don't Walk (s)   |                                                                                   | 11                                                                                | 11                                                                                |                                                                                   | 11                                                                                | 11                                                                                |
| Dual Entry             | No                                                                                | Yes                                                                               | Yes                                                                               | No                                                                                | Yes                                                                               | Yes                                                                               |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |
| Start Time (s)         | 0                                                                                 | 10                                                                                | 36                                                                                | 0                                                                                 | 10                                                                                | 36                                                                                |
| End Time (s)           | 10                                                                                | 36                                                                                | 0                                                                                 | 10                                                                                | 36                                                                                | 0                                                                                 |
| Yield/Force Off (s)    | 6                                                                                 | 29                                                                                | 54                                                                                | 6                                                                                 | 29                                                                                | 54                                                                                |
| Yield/Force Off 170(s) | 6                                                                                 | 18                                                                                | 54                                                                                | 6                                                                                 | 18                                                                                | 54                                                                                |
| Local Start Time (s)   | 50                                                                                | 0                                                                                 | 26                                                                                | 50                                                                                | 0                                                                                 | 26                                                                                |
| Local Yield (s)        | 56                                                                                | 19                                                                                | 44                                                                                | 56                                                                                | 19                                                                                | 44                                                                                |
| Local Yield 170(s)     | 56                                                                                | 8                                                                                 | 44                                                                                | 56                                                                                | 8                                                                                 | 44                                                                                |

### Intersection Summary

|               |                        |
|---------------|------------------------|
| Cycle Length  | 60                     |
| Control Type  | Actuated-Uncoordinated |
| Natural Cycle | 60                     |

### Splits and Phases: 5: Monroe & 57th Street



## Queues

Long Total AM

## 5: Monroe &amp; 57th Street

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBT                                                                               | NBR                                                                                | SBT                                                                                 |
| Lane Group Flow (vph)   | 5                                                                                 | 374                                                                               | 105                                                                               | 105                                                                               | 279                                                                               | 163                                                                               | 132                                                                                | 89                                                                                  |
| v/c Ratio               | 0.01                                                                              | 0.62                                                                              | 0.17                                                                              | 0.19                                                                              | 0.33                                                                              | 0.47                                                                              | 0.25                                                                               | 0.18                                                                                |
| Control Delay (s/veh)   | 5.6                                                                               | 19.9                                                                              | 3.3                                                                               | 6.4                                                                               | 11.3                                                                              | 21.6                                                                              | 4.4                                                                                | 13.2                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Total Delay (s/veh)     | 5.6                                                                               | 19.9                                                                              | 3.3                                                                               | 6.4                                                                               | 11.3                                                                              | 21.6                                                                              | 4.4                                                                                | 13.2                                                                                |
| Queue Length 50th (ft)  | 1                                                                                 | 90                                                                                | 0                                                                                 | 11                                                                                | 40                                                                                | 40                                                                                | 0                                                                                  | 15                                                                                  |
| Queue Length 95th (ft)  | 4                                                                                 | 189                                                                               | 21                                                                                | 35                                                                                | 136                                                                               | 92                                                                                | 27                                                                                 | 45                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 2559                                                                              |                                                                                   |                                                                                   | 1310                                                                              | 458                                                                               |                                                                                    | 384                                                                                 |
| Turn Bay Length (ft)    | 330                                                                               |                                                                                   | 250                                                                               | 115                                                                               |                                                                                   |                                                                                   | 180                                                                                |                                                                                     |
| Base Capacity (vph)     | 659                                                                               | 850                                                                               | 792                                                                               | 565                                                                               | 985                                                                               | 558                                                                               | 769                                                                                | 777                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Reduced v/c Ratio       | 0.01                                                                              | 0.44                                                                              | 0.13                                                                              | 0.19                                                                              | 0.28                                                                              | 0.29                                                                              | 0.17                                                                               | 0.11                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |

# HCM 7th Signalized Intersection Summary

## 5: Monroe & 57th Street

Long Total PM

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |                                                                                     |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 15                                                                                | 315                                                                               | 175                                                                               | 145                                                                               | 500                                                                               | 5                                                                                 | 115                                                                                 | 70                                                                                  | 95                                                                                  | 5                                                                                   | 45                                                                                  | 10                                                                                  |
| Future Volume (veh/h)        | 15                                                                                | 315                                                                               | 175                                                                               | 145                                                                               | 500                                                                               | 5                                                                                 | 115                                                                                 | 70                                                                                  | 95                                                                                  | 5                                                                                   | 45                                                                                  | 10                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 16                                                                                | 332                                                                               | 55                                                                                | 153                                                                               | 526                                                                               | 4                                                                                 | 121                                                                                 | 74                                                                                  | 16                                                                                  | 5                                                                                   | 47                                                                                  | 4                                                                                   |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 405                                                                               | 585                                                                               | 496                                                                               | 580                                                                               | 735                                                                               | 6                                                                                 | 347                                                                                 | 136                                                                                 | 313                                                                                 | 114                                                                                 | 318                                                                                 | 25                                                                                  |
| Arrive On Green              | 0.05                                                                              | 0.31                                                                              | 0.31                                                                              | 0.13                                                                              | 0.40                                                                              | 0.37                                                                              | 0.17                                                                                | 0.20                                                                                | 0.20                                                                                | 0.17                                                                                | 0.20                                                                                | 0.17                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 1854                                                                              | 14                                                                                | 997                                                                                 | 691                                                                                 | 1585                                                                                | 67                                                                                  | 1611                                                                                | 129                                                                                 |
| Grp Volume(v), veh/h         | 16                                                                                | 332                                                                               | 55                                                                                | 153                                                                               | 0                                                                                 | 530                                                                               | 195                                                                                 | 0                                                                                   | 16                                                                                  | 56                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 0                                                                                 | 1868                                                                              | 1689                                                                                | 0                                                                                   | 1585                                                                                | 1808                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.2                                                                               | 5.8                                                                               | 1.0                                                                               | 1.8                                                                               | 0.0                                                                               | 9.3                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.2                                                                               | 5.8                                                                               | 1.0                                                                               | 1.8                                                                               | 0.0                                                                               | 9.3                                                                               | 3.9                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 3.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.01                                                                              | 0.62                                                                                |                                                                                     | 1.00                                                                                | 0.09                                                                                |                                                                                     | 0.07                                                                                |
| Lane Grp Cap(c), veh/h       | 405                                                                               | 585                                                                               | 496                                                                               | 580                                                                               | 0                                                                                 | 741                                                                               | 440                                                                                 | 0                                                                                   | 313                                                                                 | 411                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.04                                                                              | 0.57                                                                              | 0.11                                                                              | 0.26                                                                              | 0.00                                                                              | 0.72                                                                              | 0.44                                                                                | 0.00                                                                                | 0.05                                                                                | 0.14                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 644                                                                               | 1443                                                                              | 1223                                                                              | 670                                                                               | 0                                                                                 | 1442                                                                              | 881                                                                                 | 0                                                                                   | 775                                                                                 | 930                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 8.5                                                                               | 11.2                                                                              | 9.5                                                                               | 6.4                                                                               | 0.0                                                                               | 9.9                                                                               | 14.3                                                                                | 0.0                                                                                 | 12.7                                                                                | 13.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.9                                                                               | 0.1                                                                               | 0.2                                                                               | 0.0                                                                               | 1.3                                                                               | 0.7                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.1                                                                               | 1.9                                                                               | 0.3                                                                               | 0.4                                                                               | 0.0                                                                               | 2.8                                                                               | 1.4                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 8.6                                                                               | 12.0                                                                              | 9.6                                                                               | 6.6                                                                               | 0.0                                                                               | 11.2                                                                              | 15.1                                                                                | 0.0                                                                                 | 12.7                                                                                | 13.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | A                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | B                                                                                 | B                                                                                   |                                                                                     | B                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 403                                                                               |                                                                                   |                                                                                   | 683                                                                               |                                                                                   |                                                                                     | 211                                                                                 |                                                                                     |                                                                                     | 56                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 11.6                                                                              |                                                                                   |                                                                                   | 10.2                                                                              |                                                                                   |                                                                                     | 14.9                                                                                |                                                                                     |                                                                                     | 13.1                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.0                                                                               | 18.2                                                                              |                                                                                   | 12.7                                                                              | 4.8                                                                               | 21.4                                                                              |                                                                                     | 12.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 6.0                                                                               | 4.0                                                                               | 7.0                                                                               |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 6.0                                                                               | 29.0                                                                              |                                                                                   | 18.0                                                                              | 6.0                                                                               | 29.0                                                                              |                                                                                     | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.8                                                                               | 7.8                                                                               |                                                                                   | 5.8                                                                               | 2.2                                                                               | 11.3                                                                              |                                                                                     | 5.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 2.0                                                                               |                                                                                   | 0.1                                                                               | 0.0                                                                               | 3.1                                                                               |                                                                                     | 0.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Timing Report, Sorted By Phase  
5: Monroe & 57th Street

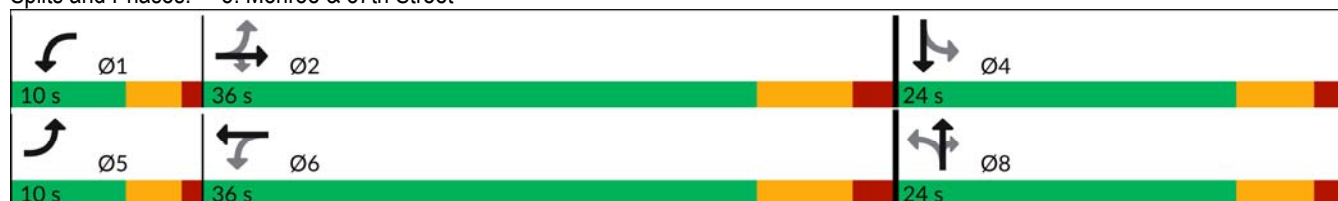
Long Total PM

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Phase Number           | 1                                                                                 | 2                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 8                                                                                 |
| Movement               | WBL                                                                               | EBTL                                                                              | SBTL                                                                              | EBL                                                                               | WBTL                                                                              | NBTL                                                                              |
| Lead/Lag               | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   |
| Lead-Lag Optimize      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |
| Recall Mode            | None                                                                              | None                                                                              | Min                                                                               | None                                                                              | None                                                                              | Min                                                                               |
| Maximum Split (s)      | 10                                                                                | 36                                                                                | 24                                                                                | 10                                                                                | 36                                                                                | 24                                                                                |
| Maximum Split (%)      | 14.3%                                                                             | 51.4%                                                                             | 34.3%                                                                             | 14.3%                                                                             | 51.4%                                                                             | 34.3%                                                                             |
| Minimum Split (s)      | 10                                                                                | 25                                                                                | 24                                                                                | 10                                                                                | 25                                                                                | 24                                                                                |
| Yellow Time (s)        | 3                                                                                 | 5                                                                                 | 4                                                                                 | 3                                                                                 | 5                                                                                 | 4                                                                                 |
| All-Red Time (s)       | 1                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 |
| Minimum Initial (s)    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 |
| Vehicle Extension (s)  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Minimum Gap (s)        | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Time Before Reduce (s) | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Time To Reduce (s)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Walk Time (s)          |                                                                                   | 7                                                                                 | 7                                                                                 |                                                                                   | 7                                                                                 | 7                                                                                 |
| Flash Don't Walk (s)   |                                                                                   | 11                                                                                | 11                                                                                |                                                                                   | 11                                                                                | 11                                                                                |
| Dual Entry             | No                                                                                | Yes                                                                               | Yes                                                                               | No                                                                                | Yes                                                                               | Yes                                                                               |
| Inhibit Max            | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |
| Start Time (s)         | 0                                                                                 | 10                                                                                | 46                                                                                | 0                                                                                 | 10                                                                                | 46                                                                                |
| End Time (s)           | 10                                                                                | 46                                                                                | 0                                                                                 | 10                                                                                | 46                                                                                | 0                                                                                 |
| Yield/Force Off (s)    | 6                                                                                 | 39                                                                                | 64                                                                                | 6                                                                                 | 39                                                                                | 64                                                                                |
| Yield/Force Off 170(s) | 6                                                                                 | 28                                                                                | 64                                                                                | 6                                                                                 | 28                                                                                | 64                                                                                |
| Local Start Time (s)   | 60                                                                                | 0                                                                                 | 36                                                                                | 60                                                                                | 0                                                                                 | 36                                                                                |
| Local Yield (s)        | 66                                                                                | 29                                                                                | 54                                                                                | 66                                                                                | 29                                                                                | 54                                                                                |
| Local Yield 170(s)     | 66                                                                                | 18                                                                                | 54                                                                                | 66                                                                                | 18                                                                                | 54                                                                                |

Intersection Summary

|               |                        |
|---------------|------------------------|
| Cycle Length  | 70                     |
| Control Type  | Actuated-Uncoordinated |
| Natural Cycle | 60                     |

Splits and Phases: 5: Monroe & 57th Street



## Queues

Long Total PM

## 5: Monroe &amp; 57th Street

|                         |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBT                                                                               | NBR                                                                                | SBT                                                                                 |
| Lane Group Flow (vph)   | 16                                                                                | 332                                                                               | 184                                                                               | 153                                                                               | 531                                                                               | 195                                                                               | 100                                                                                | 63                                                                                  |
| v/c Ratio               | 0.03                                                                              | 0.51                                                                              | 0.27                                                                              | 0.25                                                                              | 0.61                                                                              | 0.51                                                                              | 0.20                                                                               | 0.13                                                                                |
| Control Delay (s/veh)   | 5.3                                                                               | 17.0                                                                              | 3.6                                                                               | 6.5                                                                               | 14.4                                                                              | 23.5                                                                              | 4.1                                                                                | 15.3                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 |
| Total Delay (s/veh)     | 5.3                                                                               | 17.0                                                                              | 3.6                                                                               | 6.5                                                                               | 14.4                                                                              | 23.5                                                                              | 4.1                                                                                | 15.3                                                                                |
| Queue Length 50th (ft)  | 2                                                                                 | 78                                                                                | 0                                                                                 | 17                                                                                | 92                                                                                | 49                                                                                | 0                                                                                  | 12                                                                                  |
| Queue Length 95th (ft)  | 9                                                                                 | 158                                                                               | 32                                                                                | 46                                                                                | 279                                                                               | 131                                                                               | 23                                                                                 | 44                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 2559                                                                              |                                                                                   |                                                                                   | 1310                                                                              | 458                                                                               |                                                                                    | 384                                                                                 |
| Turn Bay Length (ft)    | 330                                                                               |                                                                                   | 250                                                                               | 115                                                                               |                                                                                   |                                                                                   | 180                                                                                |                                                                                     |
| Base Capacity (vph)     | 545                                                                               | 1204                                                                              | 1088                                                                              | 608                                                                               | 1203                                                                              | 590                                                                               | 722                                                                                | 727                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |
| Reduced v/c Ratio       | 0.03                                                                              | 0.28                                                                              | 0.17                                                                              | 0.25                                                                              | 0.44                                                                              | 0.33                                                                              | 0.14                                                                               | 0.09                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |

HCM 7th TWSC  
11: 57th Street & St. Louis

Long Total AM

Intersection

Int Delay, s/veh 1.1

| Movement                 | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR  | NBL  | NBT                                                                               | NBR  | SBL  | SBT                                                                                 | SBR  |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations      |  |  |      |  |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h       | 5                                                                                 | 490                                                                               | 0    | 5                                                                                 | 315                                                                               | 5    | 15   | 0                                                                                 | 5    | 20   | 0                                                                                   | 15   |
| Future Vol, veh/h        | 5                                                                                 | 490                                                                               | 0    | 5                                                                                 | 315                                                                               | 5    | 15   | 0                                                                                 | 5    | 20   | 0                                                                                   | 15   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                   | 0    |
| Sign Control             | Free                                                                              | Free                                                                              | Free | Free                                                                              | Free                                                                              | Free | Stop | Stop                                                                              | Stop | Stop | Stop                                                                                | Stop |
| RT Channelized           | -                                                                                 | -                                                                                 | None | -                                                                                 | -                                                                                 | None | -    | -                                                                                 | None | -    | -                                                                                   | None |
| Storage Length           | 250                                                                               | -                                                                                 | -    | 250                                                                               | -                                                                                 | -    | -    | -                                                                                 | -    | -    | -                                                                                   | -    |
| Veh in Median Storage, # | -                                                                                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Grade, %                 | -                                                                                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Peak Hour Factor         | 95                                                                                | 95                                                                                | 95   | 95                                                                                | 95                                                                                | 95   | 95   | 95                                                                                | 95   | 95   | 95                                                                                  | 95   |
| Heavy Vehicles, %        | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2                                                                                 | 2    | 2    | 2                                                                                 | 2    | 2    | 2                                                                                   | 2    |
| Mvmt Flow                | 5                                                                                 | 516                                                                               | 0    | 5                                                                                 | 332                                                                               | 5    | 16   | 0                                                                                 | 5    | 21   | 0                                                                                   | 16   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 337    | 0 | 0 | 516    | 0 | 0 | 868    | 874   | 516   | 871    | 871   | 334   |
| Stage 1              | -      | - | - | -      | - | - | 526    | 526   | -     | 345    | 345   | -     |
| Stage 2              | -      | - | - | -      | - | - | 342    | 347   | -     | 526    | 526   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1222   | - | - | 1050   | - | - | 273    | 288   | 559   | 271    | 289   | 708   |
| Stage 1              | -      | - | - | -      | - | - | 535    | 529   | -     | 671    | 636   | -     |
| Stage 2              | -      | - | - | -      | - | - | 673    | 635   | -     | 535    | 529   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 1222   | - | - | 1050   | - | - | 264    | 286   | 559   | 266    | 287   | 708   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 264    | 286   | -     | 266    | 287   | -     |
| Stage 1              | -      | - | - | -      | - | - | 533    | 526   | -     | 667    | 633   | -     |
| Stage 2              | -      | - | - | -      | - | - | 655    | 631   | -     | 528    | 526   | -     |

| Approach          | EB   | WB   | NB    | SB    |
|-------------------|------|------|-------|-------|
| HCM Ctrl Dly, s/v | 0.08 | 0.13 | 17.72 | 16.02 |
| HCM LOS           |      |      | C     | C     |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 304   | 1222  | -   | -   | 1050  | -   | -   | 364   |
| HCM Lane V/C Ratio    | 0.069 | 0.004 | -   | -   | 0.005 | -   | -   | 0.101 |
| HCM Ctrl Dly (s/v)    | 17.7  | 8     | -   | -   | 8.4   | -   | -   | 16    |
| HCM Lane LOS          | C     | A     | -   | -   | A     | -   | -   | C     |
| HCM 95th %tile Q(veh) | 0.2   | 0     | -   | -   | 0     | -   | -   | 0.3   |

HCM 7th TWSC  
11: 57th Street & St. Louis

Long Total PM

Intersection

Int Delay, s/veh 0.6

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

|                          |                                                                                   |                                                                                   |      |                                                                                   |                                                                                   |      |      |                                                                                   |      |      |                                                                                     |      |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations      |  |  |      |  |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h       | 15                                                                                | 370                                                                               | 5    | 5                                                                                 | 625                                                                               | 15   | 5    | 0                                                                                 | 5    | 5    | 0                                                                                   | 10   |
| Future Vol, veh/h        | 15                                                                                | 370                                                                               | 5    | 5                                                                                 | 625                                                                               | 15   | 5    | 0                                                                                 | 5    | 5    | 0                                                                                   | 10   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                   | 0    |
| Sign Control             | Free                                                                              | Free                                                                              | Free | Free                                                                              | Free                                                                              | Free | Stop | Stop                                                                              | Stop | Stop | Stop                                                                                | Stop |
| RT Channelized           | -                                                                                 | -                                                                                 | None | -                                                                                 | -                                                                                 | None | -    | -                                                                                 | None | -    | -                                                                                   | None |
| Storage Length           | 250                                                                               | -                                                                                 | -    | 250                                                                               | -                                                                                 | -    | -    | -                                                                                 | -    | -    | -                                                                                   | -    |
| Veh in Median Storage, # | -                                                                                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Grade, %                 | -                                                                                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Peak Hour Factor         | 95                                                                                | 95                                                                                | 95   | 95                                                                                | 95                                                                                | 95   | 95   | 95                                                                                | 95   | 95   | 95                                                                                  | 95   |
| Heavy Vehicles, %        | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2                                                                                 | 2    | 2    | 2                                                                                 | 2    | 2    | 2                                                                                   | 2    |
| Mvmt Flow                | 16                                                                                | 389                                                                               | 5    | 5                                                                                 | 658                                                                               | 16   | 5    | 0                                                                                 | 5    | 5    | 0                                                                                   | 11   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 674    | 0 | 0 | 395    | 0 | 0 | 1092   | 1108  | 392   | 1097   | 1103  | 666   |
| Stage 1              | -      | - | - | -      | - | - | 424    | 424   | -     | 676    | 676   | -     |
| Stage 2              | -      | - | - | -      | - | - | 668    | 684   | -     | 421    | 426   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 917    | - | - | 1164   | - | - | 192    | 210   | 657   | 190    | 211   | 460   |
| Stage 1              | -      | - | - | -      | - | - | 608    | 587   | -     | 443    | 452   | -     |
| Stage 2              | -      | - | - | -      | - | - | 447    | 449   | -     | 610    | 586   | -     |
| Platoon blocked, %   |        | - | - |        | - | - |        |       |       |        |       |       |
| Mov Cap-1 Maneuver   | 917    | - | - | 1164   | - | - | 184    | 205   | 657   | 185    | 207   | 460   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 184    | 205   | -     | 185    | 207   | -     |
| Stage 1              | -      | - | - | -      | - | - | 598    | 577   | -     | 441    | 450   | -     |
| Stage 2              | -      | - | - | -      | - | - | 435    | 447   | -     | 595    | 576   | -     |

| Approach          | EB   | WB   | NB    | SB    |
|-------------------|------|------|-------|-------|
| HCM Ctrl Dly, s/v | 0.35 | 0.06 | 18.03 | 17.35 |
| HCM LOS           |      |      | C     | C     |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 287   | 917   | -   | -   | 1164  | -   | -   | 307   |
| HCM Lane V/C Ratio    | 0.037 | 0.017 | -   | -   | 0.005 | -   | -   | 0.051 |
| HCM Ctrl Dly (s/v)    | 18    | 9     | -   | -   | 8.1   | -   | -   | 17.4  |
| HCM Lane LOS          | C     | A     | -   | -   | A     | -   | -   | C     |
| HCM 95th %tile Q(veh) | 0.1   | 0.1   | -   | -   | 0     | -   | -   | 0.2   |

HCM 7th TWSC  
15: 57th Street & LCR13

Long Total AM

Intersection

Int Delay, s/veh 3.7

| Movement                 | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL  | NBT                                                                               | NBR  | SBL  | SBT                                                                                 | SBR                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Configurations      |  |  |      |  |  |  |      |  |      |      |  |  |
| Traffic Vol, veh/h       | 90                                                                                | 425                                                                               | 0    | 5                                                                                 | 235                                                                               | 35                                                                                | 5    | 0                                                                                 | 5    | 65   | 0                                                                                   | 85                                                                                  |
| Future Vol, veh/h        | 90                                                                                | 425                                                                               | 0    | 5                                                                                 | 235                                                                               | 35                                                                                | 5    | 0                                                                                 | 5    | 65   | 0                                                                                   | 85                                                                                  |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    | 0    | 0                                                                                   | 0                                                                                   |
| Sign Control             | Free                                                                              | Free                                                                              | Free | Free                                                                              | Free                                                                              | Free                                                                              | Stop | Stop                                                                              | Stop | Stop | Stop                                                                                | Stop                                                                                |
| RT Channelized           | -                                                                                 | -                                                                                 | None | -                                                                                 | -                                                                                 | None                                                                              | -    | -                                                                                 | None | -    | -                                                                                   | None                                                                                |
| Storage Length           | 250                                                                               | -                                                                                 | -    | 250                                                                               | -                                                                                 | 250                                                                               | -    | -                                                                                 | -    | -    | -                                                                                   | 250                                                                                 |
| Veh in Median Storage, # | -                                                                                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                   | -                                                                                   |
| Grade, %                 | -                                                                                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                   | -                                                                                   |
| Peak Hour Factor         | 95                                                                                | 95                                                                                | 95   | 95                                                                                | 95                                                                                | 95                                                                                | 95   | 95                                                                                | 95   | 95   | 95                                                                                  | 95                                                                                  |
| Heavy Vehicles, %        | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    | 2    | 2                                                                                   | 2                                                                                   |
| Mvmt Flow                | 95                                                                                | 447                                                                               | 0    | 5                                                                                 | 247                                                                               | 37                                                                                | 5    | 0                                                                                 | 5    | 68   | 0                                                                                   | 89                                                                                  |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 284    | 0 | 0 | 447    | 0 | 0 | 895    | 932   | 447   | 895    | 895   | 247   |
| Stage 1              | -      | - | - | -      | - | - | 637    | 637   | -     | 258    | 258   | -     |
| Stage 2              | -      | - | - | -      | - | - | 258    | 295   | -     | 637    | 637   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1278   | - | - | 1113   | - | - | 262    | 267   | 611   | 262    | 280   | 791   |
| Stage 1              | -      | - | - | -      | - | - | 466    | 471   | -     | 747    | 694   | -     |
| Stage 2              | -      | - | - | -      | - | - | 747    | 669   | -     | 466    | 471   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 1278   | - | - | 1113   | - | - | 214    | 246   | 611   | 239    | 258   | 791   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 214    | 246   | -     | 239    | 258   | -     |
| Stage 1              | -      | - | - | -      | - | - | 431    | 437   | -     | 743    | 691   | -     |
| Stage 2              | -      | - | - | -      | - | - | 659    | 666   | -     | 427    | 437   | -     |

| Approach          | EB   | WB   | NB    | SB    |
|-------------------|------|------|-------|-------|
| HCM Ctrl Dly, s/v | 1.41 | 0.15 | 16.75 | 17.01 |
| HCM LOS           |      |      | C     | C     |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|-------|
| Capacity (veh/h)      | 317   | 1278  | -   | -   | 1113  | -   | -   | 239   | 791   |
| HCM Lane V/C Ratio    | 0.033 | 0.074 | -   | -   | 0.005 | -   | -   | 0.286 | 0.113 |
| HCM Ctrl Dly (s/v)    | 16.8  | 8     | -   | -   | 8.3   | -   | -   | 26    | 10.1  |
| HCM Lane LOS          | C     | A     | -   | -   | A     | -   | -   | D     | B     |
| HCM 95th %tile Q(veh) | 0.1   | 0.2   | -   | -   | 0     | -   | -   | 1.1   | 0.4   |

HCM 7th TWSC  
15: 57th Street & LCR13

Long Total PM

Intersection

Int Delay, s/veh 4.7

| Movement                 | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL  | NBT                                                                               | NBR  | SBL  | SBT                                                                                 | SBR                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Configurations      |  |  |      |  |  |  |      |  |      |      |  |  |
| Traffic Vol, veh/h       | 80                                                                                | 300                                                                               | 5    | 5                                                                                 | 495                                                                               | 65                                                                                | 5    | 0                                                                                 | 5    | 75   | 0                                                                                   | 135                                                                                 |
| Future Vol, veh/h        | 80                                                                                | 300                                                                               | 5    | 5                                                                                 | 495                                                                               | 65                                                                                | 5    | 0                                                                                 | 5    | 75   | 0                                                                                   | 135                                                                                 |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    | 0    | 0                                                                                   | 0                                                                                   |
| Sign Control             | Free                                                                              | Free                                                                              | Free | Free                                                                              | Free                                                                              | Free                                                                              | Stop | Stop                                                                              | Stop | Stop | Stop                                                                                | Stop                                                                                |
| RT Channelized           | -                                                                                 | -                                                                                 | None | -                                                                                 | -                                                                                 | None                                                                              | -    | -                                                                                 | None | -    | -                                                                                   | None                                                                                |
| Storage Length           | 250                                                                               | -                                                                                 | -    | 250                                                                               | -                                                                                 | 250                                                                               | -    | -                                                                                 | -    | -    | -                                                                                   | 250                                                                                 |
| Veh in Median Storage, # | -                                                                                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                   | -                                                                                   |
| Grade, %                 | -                                                                                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                   | -                                                                                   |
| Peak Hour Factor         | 95                                                                                | 95                                                                                | 95   | 95                                                                                | 95                                                                                | 95                                                                                | 95   | 95                                                                                | 95   | 95   | 95                                                                                  | 95                                                                                  |
| Heavy Vehicles, %        | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    | 2    | 2                                                                                   | 2                                                                                   |
| Mvmt Flow                | 84                                                                                | 316                                                                               | 5    | 5                                                                                 | 521                                                                               | 68                                                                                | 5    | 0                                                                                 | 5    | 79   | 0                                                                                   | 142                                                                                 |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 589    | 0 | 0 | 321    | 0 | 0 | 1018   | 1087  | 318   | 1016   | 1021  | 521   |
| Stage 1              | -      | - | - | -      | - | - | 487    | 487   | -     | 532    | 532   | -     |
| Stage 2              | -      | - | - | -      | - | - | 532    | 600   | -     | 484    | 489   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 986    | - | - | 1239   | - | - | 216    | 216   | 722   | 216    | 236   | 555   |
| Stage 1              | -      | - | - | -      | - | - | 562    | 550   | -     | 531    | 526   | -     |
| Stage 2              | -      | - | - | -      | - | - | 531    | 490   | -     | 564    | 549   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 986    | - | - | 1239   | - | - | 146    | 197   | 722   | 196    | 215   | 555   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 146    | 197   | -     | 196    | 215   | -     |
| Stage 1              | -      | - | - | -      | - | - | 514    | 503   | -     | 529    | 524   | -     |
| Stage 2              | -      | - | - | -      | - | - | 394    | 488   | -     | 512    | 502   | -     |

| Approach          | EB   | WB   | NB    | SB    |
|-------------------|------|------|-------|-------|
| HCM Ctrl Dly, s/v | 1.87 | 0.07 | 20.48 | 21.42 |
| HCM LOS           |      |      | C     | C     |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|-------|
| Capacity (veh/h)      | 243   | 986   | -   | -   | 1239  | -   | -   | 196   | 555   |
| HCM Lane V/C Ratio    | 0.043 | 0.085 | -   | -   | 0.004 | -   | -   | 0.403 | 0.256 |
| HCM Ctrl Dly (s/v)    | 20.5  | 9     | -   | -   | 7.9   | -   | -   | 35.3  | 13.7  |
| HCM Lane LOS          | C     | A     | -   | -   | A     | -   | -   | E     | B     |
| HCM 95th %tile Q(veh) | 0.1   | 0.3   | -   | -   | 0     | -   | -   | 1.8   | 1     |

HCM 7th Roundabout  
23: Monroe & 65th Street

Long Total AM

Intersection

Intersection Delay, s/veh 3.8  
Intersection LOS A

| Approach                    | EB    | WB    | NB    |
|-----------------------------|-------|-------|-------|
| Entry Lanes                 | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 129   | 200   | 83    |
| Demand Flow Rate, veh/h     | 132   | 204   | 84    |
| Vehicles Circulating, veh/h | 30    | 66    | 84    |
| Vehicles Exiting, veh/h     | 240   | 102   | 78    |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 3.5   | 4.2   | 3.4   |
| Approach LOS                | A     | A     | A     |

| Lane                  | Left    | Left    | Left    |
|-----------------------|---------|---------|---------|
| Designated Moves      | TR      | LT      | LR      |
| Assumed Moves         | TR      | LT      | LR      |
| RT Channelized        |         |         |         |
| Lane Util             | 1.000   | 1.000   | 1.000   |
| Follow-Up Headway, s  | 2.609   | 2.609   | 2.609   |
| Critical Headway, s   | 4.976   | 4.976   | 4.976   |
| A (Intercept)         | 1380    | 1380    | 1380    |
| B (Slope)             | 1.02e-3 | 1.02e-3 | 1.02e-3 |
| Entry Flow, veh/h     | 132     | 204     | 84      |
| Cap Entry Lane, veh/h | 1338    | 1290    | 1267    |
| Entry HV Adj Factor   | 0.980   | 0.978   | 0.988   |
| Flow Entry, veh/h     | 129     | 200     | 83      |
| Cap Entry, veh/h      | 1311    | 1262    | 1251    |
| V/C Ratio             | 0.099   | 0.158   | 0.066   |
| Control Delay, s/veh  | 3.5     | 4.2     | 3.4     |
| LOS                   | A       | A       | A       |
| 95th %tile Queue, veh | 0       | 1       | 0       |

HCM 7th Roundabout  
23: Monroe & 65th Street

Long Total PM

Intersection

Intersection Delay, s/veh 4.4  
Intersection LOS A

| Approach                    | EB    | WB    | NB    |
|-----------------------------|-------|-------|-------|
| Entry Lanes                 | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 294   | 177   | 100   |
| Demand Flow Rate, veh/h     | 300   | 180   | 102   |
| Vehicles Circulating, veh/h | 24    | 72    | 222   |
| Vehicles Exiting, veh/h     | 228   | 252   | 102   |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 4.6   | 4.0   | 4.1   |
| Approach LOS                | A     | A     | A     |

| Lane                  | Left    | Left    | Left    |
|-----------------------|---------|---------|---------|
| Designated Moves      | TR      | LT      | LR      |
| Assumed Moves         | TR      | LT      | LR      |
| RT Channelized        |         |         |         |
| Lane Util             | 1.000   | 1.000   | 1.000   |
| Follow-Up Headway, s  | 2.609   | 2.609   | 2.609   |
| Critical Headway, s   | 4.976   | 4.976   | 4.976   |
| A (Intercept)         | 1380    | 1380    | 1380    |
| B (Slope)             | 1.02e-3 | 1.02e-3 | 1.02e-3 |
| Entry Flow, veh/h     | 300     | 180     | 102     |
| Cap Entry Lane, veh/h | 1346    | 1282    | 1100    |
| Entry HV Adj Factor   | 0.979   | 0.983   | 0.980   |
| Flow Entry, veh/h     | 294     | 177     | 100     |
| Cap Entry, veh/h      | 1318    | 1260    | 1079    |
| V/C Ratio             | 0.223   | 0.140   | 0.093   |
| Control Delay, s/veh  | 4.6     | 4.0     | 4.1     |
| LOS                   | A       | A       | A       |
| 95th %tile Queue, veh | 1       | 0       | 0       |

HCM 7th TWSC  
25: 65th Street & Access A

Long Total AM

Intersection

Int Delay, s/veh 2.2

| Movement                 | EBL  | EBT                                                                               | WBT                                                                               | WBR  | SBL                                                                               | SBR  |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 15   | 70                                                                                | 125                                                                               | 0    | 5                                                                                 | 45   |
| Future Vol, veh/h        | 15   | 70                                                                                | 125                                                                               | 0    | 5                                                                                 | 45   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 85   | 85                                                                                | 85                                                                                | 85   | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    |
| Mvmt Flow                | 18   | 82                                                                                | 147                                                                               | 0    | 6                                                                                 | 53   |

| Major/Minor          | Major1 | Major2 | Minor2        |
|----------------------|--------|--------|---------------|
| Conflicting Flow All | 147    | 0      | 0 265 147     |
| Stage 1              | -      | -      | - 147 -       |
| Stage 2              | -      | -      | - 118 -       |
| Critical Hdwy        | 4.12   | -      | - 6.42 6.22   |
| Critical Hdwy Stg 1  | -      | -      | - 5.42 -      |
| Critical Hdwy Stg 2  | -      | -      | - 5.42 -      |
| Follow-up Hdwy       | 2.218  | -      | - 3.518 3.318 |
| Pot Cap-1 Maneuver   | 1435   | -      | - 724 900     |
| Stage 1              | -      | -      | - 880 -       |
| Stage 2              | -      | -      | - 907 -       |
| Platoon blocked, %   | -      | -      | -             |
| Mov Cap-1 Maneuver   | 1435   | -      | - 715 900     |
| Mov Cap-2 Maneuver   | -      | -      | - 715 -       |
| Stage 1              | -      | -      | - 869 -       |
| Stage 2              | -      | -      | - 907 -       |

| Approach          | EB   | WB | SB  |
|-------------------|------|----|-----|
| HCM Ctrl Dly, s/v | 1.33 | 0  | 9.4 |
| HCM LOS           |      |    | A   |

| Minor Lane/Major Mvmt | EBL   | EBT | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|
| Capacity (veh/h)      | 318   | -   | -   | -   | 877   |
| HCM Lane V/C Ratio    | 0.012 | -   | -   | -   | 0.067 |
| HCM Ctrl Dly (s/v)    | 7.5   | 0   | -   | -   | 9.4   |
| HCM Lane LOS          | A     | A   | -   | -   | A     |
| HCM 95th %tile Q(veh) | 0     | -   | -   | -   | 0.2   |

HCM 7th TWSC  
25: 65th Street & Access A

Long Total PM

Intersection

Int Delay, s/veh 2.2

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|----------|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|

|                          |      |                                                                                   |                                                                                   |      |                                                                                   |      |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 55   | 155                                                                               | 115                                                                               | 5    | 5                                                                                 | 35   |
| Future Vol, veh/h        | 55   | 155                                                                               | 115                                                                               | 5    | 5                                                                                 | 35   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 85   | 85                                                                                | 85                                                                                | 85   | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    |
| Mvmt Flow                | 65   | 182                                                                               | 135                                                                               | 6    | 6                                                                                 | 41   |

| Major/Minor | Major1 | Major2 | Minor2 |
|-------------|--------|--------|--------|
|-------------|--------|--------|--------|

|                      |       |   |   |       |       |
|----------------------|-------|---|---|-------|-------|
| Conflicting Flow All | 141   | 0 | 0 | 450   | 138   |
| Stage 1              | -     | - | - | 138   | -     |
| Stage 2              | -     | - | - | 312   | -     |
| Critical Hdwy        | 4.12  | - | - | 6.42  | 6.22  |
| Critical Hdwy Stg 1  | -     | - | - | 5.42  | -     |
| Critical Hdwy Stg 2  | -     | - | - | 5.42  | -     |
| Follow-up Hdwy       | 2.218 | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver   | 1442  | - | - | 567   | 910   |
| Stage 1              | -     | - | - | 888   | -     |
| Stage 2              | -     | - | - | 742   | -     |
| Platoon blocked, %   | -     | - | - | -     | -     |
| Mov Cap-1 Maneuver   | 1442  | - | - | 539   | 910   |
| Mov Cap-2 Maneuver   | -     | - | - | 539   | -     |
| Stage 1              | -     | - | - | 844   | -     |
| Stage 2              | -     | - | - | 742   | -     |

| Approach | EB | WB | SB |
|----------|----|----|----|
|----------|----|----|----|

|                   |      |   |      |
|-------------------|------|---|------|
| HCM Ctrl Dly, s/v | 1.99 | 0 | 9.55 |
| HCM LOS           |      |   | A    |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|-----------------------|-----|-----|-----|-----|-------|
|-----------------------|-----|-----|-----|-----|-------|

|                       |       |   |   |   |       |
|-----------------------|-------|---|---|---|-------|
| Capacity (veh/h)      | 471   | - | - | - | 838   |
| HCM Lane V/C Ratio    | 0.045 | - | - | - | 0.056 |
| HCM Ctrl Dly (s/v)    | 7.6   | 0 | - | - | 9.6   |
| HCM Lane LOS          | A     | A | - | - | A     |
| HCM 95th %tile Q(veh) | 0.1   | - | - | - | 0.2   |

HCM 7th TWSC  
12: St. Louis/Access B & 65th Street

Long Total AM

Intersection

Int Delay, s/veh 3.4

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

|                          |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 10   | 60   | 5    | 5    | 75   | 5    | 10   | 0    | 5    | 10   | 5    | 40   |
| Future Vol, veh/h        | 10   | 60   | 5    | 5    | 75   | 5    | 10   | 0    | 5    | 10   | 5    | 40   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 12   | 71   | 6    | 6    | 88   | 6    | 12   | 0    | 6    | 12   | 6    | 47   |

| Major/Minor          | Major1 |   | Major2 |       | Minor1 |   | Minor2 |       |       |       |       |       |
|----------------------|--------|---|--------|-------|--------|---|--------|-------|-------|-------|-------|-------|
| Conflicting Flow All | 94     | 0 | 0      | 76    | 0      | 0 | 200    | 203   | 74    | 197   | 203   | 91    |
| Stage 1              | -      | - | -      | -     | -      | - | 97     | 97    | -     | 103   | 103   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 103    | 106   | -     | 94    | 100   | -     |
| Critical Hdwy        | 4.12   | - | -      | 4.12  | -      | - | 7.12   | 6.52  | 6.22  | 7.12  | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | -      | -     | -      | - | 6.12   | 5.52  | -     | 6.12  | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | -      | 2.218 | -      | - | 3.518  | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1500   | - | -      | 1522  | -      | - | 759    | 693   | 988   | 762   | 693   | 966   |
| Stage 1              | -      | - | -      | -     | -      | - | 909    | 815   | -     | 903   | 810   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 903    | 808   | -     | 913   | 812   | -     |
| Platoon blocked, %   | -      | - | -      | -     | -      | - | -      | -     | -     | -     | -     | -     |
| Mov Cap-1 Maneuver   | 1500   | - | -      | 1522  | -      | - | 707    | 685   | 988   | 748   | 685   | 966   |
| Mov Cap-2 Maneuver   | -      | - | -      | -     | -      | - | 707    | 685   | -     | 748   | 685   | -     |
| Stage 1              | -      | - | -      | -     | -      | - | 902    | 808   | -     | 899   | 807   | -     |
| Stage 2              | -      | - | -      | -     | -      | - | 849    | 804   | -     | 900   | 806   | -     |

| Approach          | EB   | WB   | NB   | SB   |
|-------------------|------|------|------|------|
| HCM Ctrl Dly, s/v | 0.99 | 0.43 | 9.72 | 9.38 |
| HCM LOS           |      |      | A    | A    |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 781   | 236   | -   | -   | 105   | -   | -   | 886   |
| HCM Lane V/C Ratio    | 0.023 | 0.008 | -   | -   | 0.004 | -   | -   | 0.073 |
| HCM Ctrl Dly (s/v)    | 9.7   | 7.4   | 0   | -   | 7.4   | 0   | -   | 9.4   |
| HCM Lane LOS          | A     | A     | A   | -   | A     | A   | -   | A     |
| HCM 95th %tile Q(veh) | 0.1   | 0     | -   | -   | 0     | -   | -   | 0.2   |

HCM 7th TWSC  
12: St. Louis/Access B & 65th Street

Long Total PM

Intersection

Int Delay, s/veh 2.9

| Movement                 | EBL  | EBT                                                                               | EBR  | WBL  | WBT                                                                               | WBR  | NBL  | NBT                                                                               | NBR  | SBL  | SBT                                                                                 | SBR  |
|--------------------------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |      |      |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h       | 50   | 100                                                                               | 10   | 5    | 85                                                                                | 10   | 5    | 5                                                                                 | 5    | 5    | 0                                                                                   | 30   |
| Future Vol, veh/h        | 50   | 100                                                                               | 10   | 5    | 85                                                                                | 10   | 5    | 5                                                                                 | 5    | 5    | 0                                                                                   | 30   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                   | 0    |
| Sign Control             | Free | Free                                                                              | Free | Free | Free                                                                              | Free | Stop | Stop                                                                              | Stop | Stop | Stop                                                                                | Stop |
| RT Channelized           | -    | -                                                                                 | None | -    | -                                                                                 | None | -    | -                                                                                 | None | -    | -                                                                                   | None |
| Storage Length           | -    | -                                                                                 | -    | -    | -                                                                                 | -    | -    | -                                                                                 | -    | -    | -                                                                                   | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Grade, %                 | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Peak Hour Factor         | 85   | 85                                                                                | 85   | 85   | 85                                                                                | 85   | 85   | 85                                                                                | 85   | 85   | 85                                                                                  | 85   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2    | 2    | 2                                                                                 | 2    | 2    | 2                                                                                 | 2    | 2    | 2                                                                                   | 2    |
| Mvmt Flow                | 59   | 118                                                                               | 12   | 6    | 100                                                                               | 12   | 6    | 6                                                                                 | 6    | 6    | 0                                                                                   | 35   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 112    | 0 | 0 | 129    | 0 | 0 | 353    | 365   | 124   | 356    | 365   | 106   |
| Stage 1              | -      | - | - | -      | - | - | 241    | 241   | -     | 118    | 118   | -     |
| Stage 2              | -      | - | - | -      | - | - | 112    | 124   | -     | 238    | 247   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 1478   | - | - | 1456   | - | - | 602    | 563   | 927   | 599    | 563   | 948   |
| Stage 1              | -      | - | - | -      | - | - | 762    | 706   | -     | 887    | 798   | -     |
| Stage 2              | -      | - | - | -      | - | - | 893    | 794   | -     | 765    | 702   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 1478   | - | - | 1456   | - | - | 552    | 537   | 927   | 562    | 537   | 948   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 552    | 537   | -     | 562    | 537   | -     |
| Stage 1              | -      | - | - | -      | - | - | 730    | 676   | -     | 883    | 795   | -     |
| Stage 2              | -      | - | - | -      | - | - | 856    | 790   | -     | 721    | 672   | -     |

| Approach          | EB   | WB   | NB    | SB   |
|-------------------|------|------|-------|------|
| HCM Ctrl Dly, s/v | 2.36 | 0.37 | 10.87 | 9.38 |
| HCM LOS           |      |      | B     | A    |

| Minor Lane/Major Mvmt | NBLn1 | EBL  | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 631   | 552  | -   | -   | 88    | -   | -   | 863   |
| HCM Lane V/C Ratio    | 0.028 | 0.04 | -   | -   | 0.004 | -   | -   | 0.048 |
| HCM Ctrl Dly (s/v)    | 10.9  | 7.5  | 0   | -   | 7.5   | 0   | -   | 9.4   |
| HCM Lane LOS          | B     | A    | A   | -   | A     | A   | -   | A     |
| HCM 95th %tile Q(veh) | 0.1   | 0.1  | -   | -   | 0     | -   | -   | 0.2   |

HCM 7th TWSC  
7: 65th Street & Access C

Long Total AM

Intersection

Int Delay, s/veh 2

Movement EBL EBT WBT WBR SBL SBR

|                          |      |                                                                                   |                                                                                   |      |                                                                                   |      |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 5    | 70                                                                                | 60                                                                                | 5    | 10                                                                                | 25   |
| Future Vol, veh/h        | 5    | 70                                                                                | 60                                                                                | 5    | 10                                                                                | 25   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 85   | 85                                                                                | 85                                                                                | 85   | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    |
| Mvmt Flow                | 6    | 82                                                                                | 71                                                                                | 6    | 12                                                                                | 29   |

Major/Minor Major1 Major2 Minor2

|                      |       |   |   |   |       |       |
|----------------------|-------|---|---|---|-------|-------|
| Conflicting Flow All | 76    | 0 | - | 0 | 168   | 74    |
| Stage 1              | -     | - | - | - | 74    | -     |
| Stage 2              | -     | - | - | - | 94    | -     |
| Critical Hdwy        | 4.12  | - | - | - | 6.42  | 6.22  |
| Critical Hdwy Stg 1  | -     | - | - | - | 5.42  | -     |
| Critical Hdwy Stg 2  | -     | - | - | - | 5.42  | -     |
| Follow-up Hdwy       | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver   | 1522  | - | - | - | 823   | 988   |
| Stage 1              | -     | - | - | - | 949   | -     |
| Stage 2              | -     | - | - | - | 930   | -     |
| Platoon blocked, %   |       | - | - | - |       |       |
| Mov Cap-1 Maneuver   | 1522  | - | - | - | 819   | 988   |
| Mov Cap-2 Maneuver   | -     | - | - | - | 819   | -     |
| Stage 1              | -     | - | - | - | 946   | -     |
| Stage 2              | -     | - | - | - | 930   | -     |

Approach EB WB SB

|                   |      |   |      |
|-------------------|------|---|------|
| HCM Ctrl Dly, s/v | 0.49 | 0 | 9.04 |
| HCM LOS           |      |   | A    |

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

|                       |       |   |   |   |       |
|-----------------------|-------|---|---|---|-------|
| Capacity (veh/h)      | 120   | - | - | - | 933   |
| HCM Lane V/C Ratio    | 0.004 | - | - | - | 0.044 |
| HCM Ctrl Dly (s/v)    | 7.4   | 0 | - | - | 9     |
| HCM Lane LOS          | A     | A | - | - | A     |
| HCM 95th %tile Q(veh) | 0     | - | - | - | 0.1   |

HCM 7th TWSC  
7: 65th Street & Access C

Long Total PM

Intersection

Int Delay, s/veh 2.2

| Movement                 | EBL  | EBT                                                                               | WBT                                                                               | WBR  | SBL                                                                               | SBR  |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 35   | 75                                                                                | 80                                                                                | 10   | 5                                                                                 | 20   |
| Future Vol, veh/h        | 35   | 75                                                                                | 80                                                                                | 10   | 5                                                                                 | 20   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 85   | 85                                                                                | 85                                                                                | 85   | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    |
| Mvmt Flow                | 41   | 88                                                                                | 94                                                                                | 12   | 6                                                                                 | 24   |

| Major/Minor          | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 106    | 0      | 0      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | 4.12   | -      | -      |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | 2.218  | -      | -      |
| Pot Cap-1 Maneuver   | 1485   | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | 1485   | -      | -      |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach          | EB   | WB | SB   |
|-------------------|------|----|------|
| HCM Ctrl Dly, s/v | 2.38 | 0  | 9.18 |
| HCM LOS           |      |    | A    |

| Minor Lane/Major Mvmt | EBL   | EBT | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|
| Capacity (veh/h)      | 573   | -   | -   | -   | 890   |
| HCM Lane V/C Ratio    | 0.028 | -   | -   | -   | 0.033 |
| HCM Ctrl Dly (s/v)    | 7.5   | 0   | -   | -   | 9.2   |
| HCM Lane LOS          | A     | A   | -   | -   | A     |
| HCM 95th %tile Q(veh) | 0.1   | -   | -   | -   | 0.1   |

HCM 7th Roundabout  
6: LCR13 & 65th Street

Long Total AM

Intersection

Intersection Delay, s/veh 3.9  
Intersection LOS A

| Approach                    | EB    | WB    | NB    | SB    |
|-----------------------------|-------|-------|-------|-------|
| Entry Lanes                 | 1     | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 94    | 106   | 148   | 130   |
| Demand Flow Rate, veh/h     | 96    | 108   | 150   | 132   |
| Vehicles Circulating, veh/h | 162   | 174   | 72    | 108   |
| Vehicles Exiting, veh/h     | 78    | 48    | 186   | 174   |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 3.8   | 4.0   | 3.8   | 3.8   |
| Approach LOS                | A     | A     | A     | A     |

| Lane                  | Left    | Left    | Left    | Left    |
|-----------------------|---------|---------|---------|---------|
| Designated Moves      | LTR     | LTR     | LTR     | LTR     |
| Assumed Moves         | LTR     | LTR     | LTR     | LTR     |
| RT Channelized        |         |         |         |         |
| Lane Util             | 1.000   | 1.000   | 1.000   | 1.000   |
| Follow-Up Headway, s  | 2.609   | 2.609   | 2.609   | 2.609   |
| Critical Headway, s   | 4.976   | 4.976   | 4.976   | 4.976   |
| A (Intercept)         | 1380    | 1380    | 1380    | 1380    |
| B (Slope)             | 1.02e-3 | 1.02e-3 | 1.02e-3 | 1.02e-3 |
| Entry Flow, veh/h     | 96      | 108     | 150     | 132     |
| Cap Entry Lane, veh/h | 1170    | 1155    | 1282    | 1236    |
| Entry HV Adj Factor   | 0.975   | 0.983   | 0.985   | 0.985   |
| Flow Entry, veh/h     | 94      | 106     | 148     | 130     |
| Cap Entry, veh/h      | 1141    | 1136    | 1263    | 1217    |
| V/C Ratio             | 0.082   | 0.093   | 0.117   | 0.107   |
| Control Delay, s/veh  | 3.8     | 4.0     | 3.8     | 3.8     |
| LOS                   | A       | A       | A       | A       |
| 95th %tile Queue, veh | 0       | 0       | 0       | 0       |

HCM 7th Roundabout  
6: LCR13 & 65th Street

Long Total PM

Intersection

Intersection Delay, s/veh 4.3  
Intersection LOS A

| Approach                    | EB    | WB    | NB    | SB    |
|-----------------------------|-------|-------|-------|-------|
| Entry Lanes                 | 1     | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 95    | 70    | 170   | 247   |
| Demand Flow Rate, veh/h     | 96    | 72    | 174   | 252   |
| Vehicles Circulating, veh/h | 246   | 138   | 90    | 102   |
| Vehicles Exiting, veh/h     | 108   | 126   | 252   | 108   |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 4.2   | 3.6   | 4.1   | 4.7   |
| Approach LOS                | A     | A     | A     | A     |

| Lane                  | Left    | Left    | Left    | Left    |
|-----------------------|---------|---------|---------|---------|
| Designated Moves      | LTR     | LTR     | LTR     | LTR     |
| Assumed Moves         | LTR     | LTR     | LTR     | LTR     |
| RT Channelized        |         |         |         |         |
| Lane Util             | 1.000   | 1.000   | 1.000   | 1.000   |
| Follow-Up Headway, s  | 2.609   | 2.609   | 2.609   | 2.609   |
| Critical Headway, s   | 4.976   | 4.976   | 4.976   | 4.976   |
| A (Intercept)         | 1380    | 1380    | 1380    | 1380    |
| B (Slope)             | 1.02e-3 | 1.02e-3 | 1.02e-3 | 1.02e-3 |
| Entry Flow, veh/h     | 96      | 72      | 174     | 252     |
| Cap Entry Lane, veh/h | 1074    | 1199    | 1259    | 1244    |
| Entry HV Adj Factor   | 0.990   | 0.978   | 0.980   | 0.981   |
| Flow Entry, veh/h     | 95      | 70      | 170     | 247     |
| Cap Entry, veh/h      | 1063    | 1172    | 1233    | 1220    |
| V/C Ratio             | 0.089   | 0.060   | 0.138   | 0.203   |
| Control Delay, s/veh  | 4.2     | 3.6     | 4.1     | 4.7     |
| LOS                   | A       | A       | A       | A       |
| 95th %tile Queue, veh | 0       | 0       | 0       | 1       |

# HCM 7th TWSC 3: LCR13 & Bruns

Long Total AM

## Intersection

Int Delay, s/veh 6.1

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|----------|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|

|                          |      |                                                                                   |                                                                                   |      |                                                                                   |      |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 115  | 35                                                                                | 55                                                                                | 15   | 15                                                                                | 115  |
| Future Vol, veh/h        | 115  | 35                                                                                | 55                                                                                | 15   | 15                                                                                | 115  |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 92   | 85                                                                                | 85                                                                                | 85   | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    |
| Mvmt Flow                | 125  | 41                                                                                | 65                                                                                | 18   | 18                                                                                | 135  |

| Major/Minor | Major1 | Major2 | Minor2 |
|-------------|--------|--------|--------|
|-------------|--------|--------|--------|

|                      |       |   |   |       |       |
|----------------------|-------|---|---|-------|-------|
| Conflicting Flow All | 82    | 0 | 0 | 365   | 74    |
| Stage 1              | -     | - | - | 74    | -     |
| Stage 2              | -     | - | - | 291   | -     |
| Critical Hdwy        | 4.12  | - | - | 6.42  | 6.22  |
| Critical Hdwy Stg 1  | -     | - | - | 5.42  | -     |
| Critical Hdwy Stg 2  | -     | - | - | 5.42  | -     |
| Follow-up Hdwy       | 2.218 | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver   | 1515  | - | - | 635   | 988   |
| Stage 1              | -     | - | - | 949   | -     |
| Stage 2              | -     | - | - | 758   | -     |
| Platoon blocked, %   | -     | - | - | -     | -     |
| Mov Cap-1 Maneuver   | 1515  | - | - | 581   | 988   |
| Mov Cap-2 Maneuver   | -     | - | - | 581   | -     |
| Stage 1              | -     | - | - | 869   | -     |
| Stage 2              | -     | - | - | 758   | -     |

| Approach | EB | WB | SB |
|----------|----|----|----|
|----------|----|----|----|

|                   |      |   |      |
|-------------------|------|---|------|
| HCM Ctrl Dly, s/v | 5.71 | 0 | 9.73 |
| HCM LOS           |      |   | A    |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|-----------------------|-----|-----|-----|-----|-------|
|-----------------------|-----|-----|-----|-----|-------|

|                       |       |   |   |   |       |
|-----------------------|-------|---|---|---|-------|
| Capacity (veh/h)      | 1354  | - | - | - | 914   |
| HCM Lane V/C Ratio    | 0.083 | - | - | - | 0.167 |
| HCM Ctrl Dly (s/v)    | 7.6   | 0 | - | - | 9.7   |
| HCM Lane LOS          | A     | A | - | - | A     |
| HCM 95th %tile Q(veh) | 0.3   | - | - | - | 0.6   |

# HCM 7th TWSC 3: LCR13 & Bruns

Long Total PM

## Intersection

Int Delay, s/veh 1.9

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|----------|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|

|                          |      |                                                                                   |                                                                                   |      |                                                                                   |      |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 25   | 120                                                                               | 55                                                                                | 5    | 5                                                                                 | 25   |
| Future Vol, veh/h        | 25   | 120                                                                               | 55                                                                                | 5    | 5                                                                                 | 25   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 92   | 85                                                                                | 85                                                                                | 85   | 85                                                                                | 85   |
| Heavy Vehicles, %        | 2    | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2    |
| Mvmt Flow                | 27   | 141                                                                               | 65                                                                                | 6    | 6                                                                                 | 29   |

| Major/Minor | Major1 | Major2 | Minor2 |
|-------------|--------|--------|--------|
|-------------|--------|--------|--------|

|                      |       |   |   |       |       |
|----------------------|-------|---|---|-------|-------|
| Conflicting Flow All | 71    | 0 | 0 | 263   | 68    |
| Stage 1              | -     | - | - | 68    | -     |
| Stage 2              | -     | - | - | 196   | -     |
| Critical Hdwy        | 4.12  | - | - | 6.42  | 6.22  |
| Critical Hdwy Stg 1  | -     | - | - | 5.42  | -     |
| Critical Hdwy Stg 2  | -     | - | - | 5.42  | -     |
| Follow-up Hdwy       | 2.218 | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver   | 1530  | - | - | 726   | 996   |
| Stage 1              | -     | - | - | 955   | -     |
| Stage 2              | -     | - | - | 838   | -     |
| Platoon blocked, %   | -     | - | - | -     | -     |
| Mov Cap-1 Maneuver   | 1530  | - | - | 712   | 996   |
| Mov Cap-2 Maneuver   | -     | - | - | 712   | -     |
| Stage 1              | -     | - | - | 937   | -     |
| Stage 2              | -     | - | - | 838   | -     |

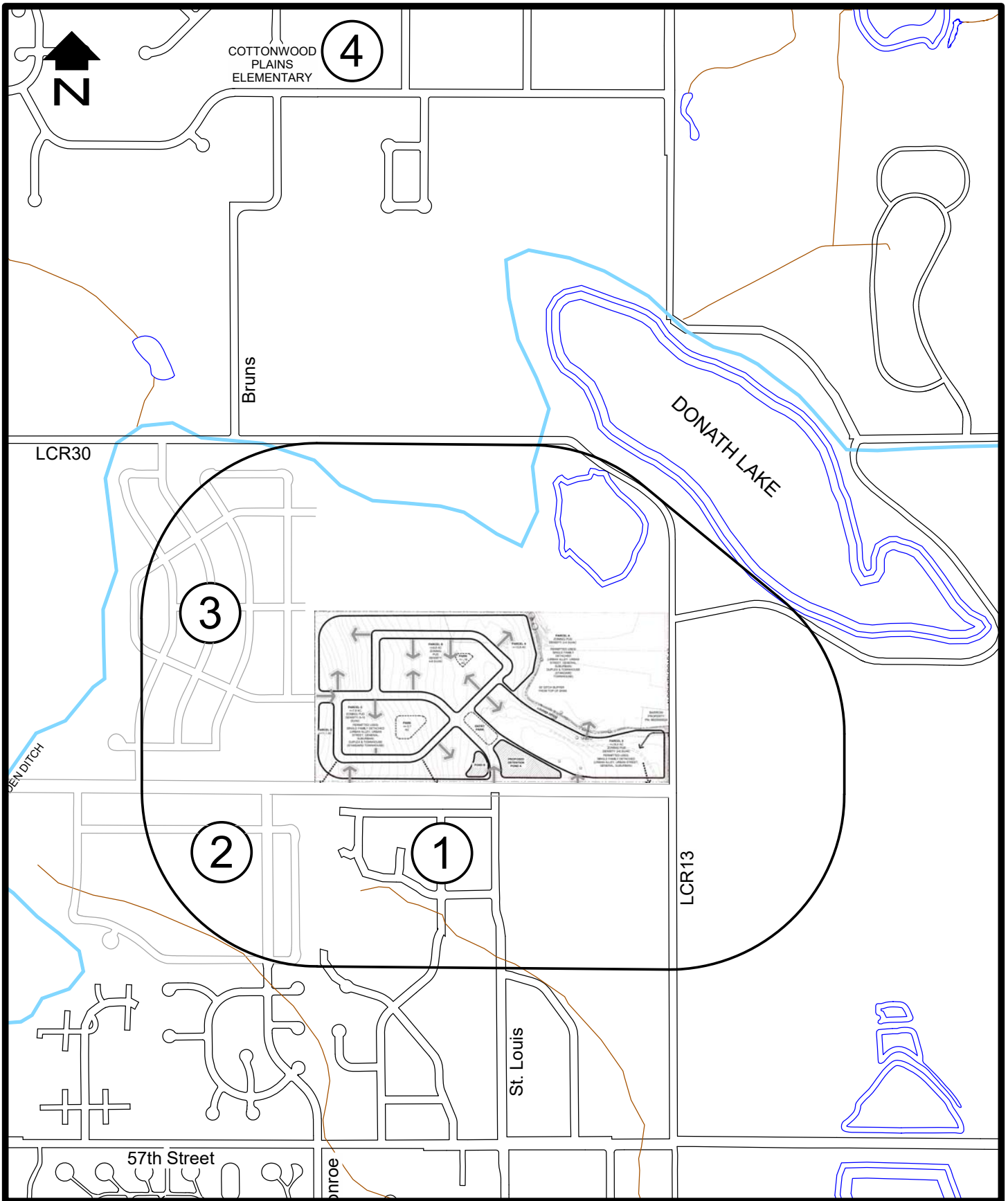
| Approach | EB | WB | SB |
|----------|----|----|----|
|----------|----|----|----|

|                   |      |   |      |
|-------------------|------|---|------|
| HCM Ctrl Dly, s/v | 1.19 | 0 | 9.01 |
| HCM LOS           |      |   | A    |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|-----------------------|-----|-----|-----|-----|-------|
|-----------------------|-----|-----|-----|-----|-------|

|                       |       |   |   |   |       |
|-----------------------|-------|---|---|---|-------|
| Capacity (veh/h)      | 291   | - | - | - | 934   |
| HCM Lane V/C Ratio    | 0.018 | - | - | - | 0.038 |
| HCM Ctrl Dly (s/v)    | 7.4   | 0 | - | - | 9     |
| HCM Lane LOS          | A     | A | - | - | A     |
| HCM 95th %tile Q(veh) | 0.1   | - | - | - | 0.1   |

## APPENDIX H



SCALE: 1"=1000'

## PEDESTRIAN INFLUENCE AREA

## Pedestrian LOS Worksheet

Project Location Classification:

|    | Description of Applicable Destination Area Within 1320' | Destination Area Classification |          | Level of Service (minimum based on project location classification) |            |                  |                             |          |
|----|---------------------------------------------------------|---------------------------------|----------|---------------------------------------------------------------------|------------|------------------|-----------------------------|----------|
|    |                                                         |                                 |          | Directness                                                          | Continuity | Street Crossings | Visual Interest & Amenities | Security |
| 1  | Residential neighborhood to the south of the site       | Residential                     | Minimum  | -                                                                   | -          | -                | -                           | -        |
|    |                                                         |                                 | Actual   | A                                                                   | E          | A                | C                           | C        |
|    |                                                         |                                 | Proposed | A                                                                   | A          | A                | C                           | C        |
| 2  | Sugar Creek Multifamily to the southwest of the site    | Residential                     | Minimum  | -                                                                   | -          | -                | -                           | -        |
|    |                                                         |                                 | Actual   | A                                                                   | E          | A                | C                           | C        |
|    |                                                         |                                 | Proposed | A                                                                   | A          | A                | C                           | C        |
| 3  | Sugar Creek neighborhood to the west of the site        | Residential                     | Minimum  | -                                                                   | -          | -                | -                           | -        |
|    |                                                         |                                 | Actual   | A                                                                   | E          | A                | C                           | C        |
|    |                                                         |                                 | Proposed | A                                                                   | A          | A                | C                           | C        |
| 4  | Cottonwood Plains Elementary to the north of the site   | Institutional                   | Minimum  | -                                                                   | -          | -                | -                           | -        |
|    |                                                         |                                 | Actual   | B                                                                   | E          | B                | C                           | C        |
|    |                                                         |                                 | Proposed | B                                                                   | C          | B                | C                           | C        |
| 5  |                                                         |                                 | Minimum  |                                                                     |            |                  |                             |          |
|    |                                                         |                                 | Actual   |                                                                     |            |                  |                             |          |
|    |                                                         |                                 | Proposed |                                                                     |            |                  |                             |          |
| 6  |                                                         |                                 | Minimum  |                                                                     |            |                  |                             |          |
|    |                                                         |                                 | Actual   |                                                                     |            |                  |                             |          |
|    |                                                         |                                 | Proposed |                                                                     |            |                  |                             |          |
| 7  |                                                         |                                 | Minimum  |                                                                     |            |                  |                             |          |
|    |                                                         |                                 | Actual   |                                                                     |            |                  |                             |          |
|    |                                                         |                                 | Proposed |                                                                     |            |                  |                             |          |
| 8  |                                                         |                                 | Minimum  |                                                                     |            |                  |                             |          |
|    |                                                         |                                 | Actual   |                                                                     |            |                  |                             |          |
|    |                                                         |                                 | Proposed |                                                                     |            |                  |                             |          |
| 9  |                                                         |                                 | Minimum  |                                                                     |            |                  |                             |          |
|    |                                                         |                                 | Actual   |                                                                     |            |                  |                             |          |
|    |                                                         |                                 | Proposed |                                                                     |            |                  |                             |          |
| 10 |                                                         |                                 | Minimum  |                                                                     |            |                  |                             |          |
|    |                                                         |                                 | Actual   |                                                                     |            |                  |                             |          |
|    |                                                         |                                 | Proposed |                                                                     |            |                  |                             |          |

## APPENDIX I

## Katy Thompson

---

**From:** Ryan Baker <[ryan.baker@tsd.org](mailto:ryan.baker@tsd.org)>  
**Sent:** Thursday, May 15, 2025 10:01 AM  
**To:** Katy Thompson  
**Subject:** Re: Annexation - TSD

Hello Katy,

Yes, our answer at this time is to defer to our board policy. Bussing will be provided to students living outside of the 1.5 mile boundary for elementary, 2.5 mile boundary for middle and 3 mile boundary for high school.

Let me know if you have any additional questions.

Best,

Ryan

On Mon, May 12, 2025 at 10:23 AM Katy Thompson <[katy@schroyerresources.com](mailto:katy@schroyerresources.com)> wrote:

Hi Ryan,

Just emailing to see if you heard back from the Director of Transportation.

Thanks,

**Katy Thompson**

**SCHROYER RESOURCES**

719-248-3763 cell

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**From:** Ryan Baker <[ryan.baker@tsd.org](mailto:ryan.baker@tsd.org)>  
**Sent:** Thursday, May 1, 2025 2:40 PM  
**To:** Katy Thompson <[katy@schroyerresources.com](mailto:katy@schroyerresources.com)>  
**Subject:** Re: Annexation - TSD