

GENERAL MECHANICAL NOTES AND OUTLINE SPECIFICATIONS

(NOTE: ALL ITEMS DO NOT NECESSARILY PERTAIN TO THIS PROJECT)

1. ALL WORK INDICATED ON THE DRAWINGS AND DESCRIBED IN THESE OUTLINE SPECIFICATIONS WILL BE EXECUTED UNDER CONTRACTS BETWEEN OWNER, GENERAL CONTRACTOR AND MECHANICAL CONTRACTORS. COORDINATE WITH THE WORK BY OTHERS IN THE REVIEW OF SHOP DRAWINGS AND THE EXACT LOCATION OF ROUGH-INS FOR THEIR EQUIPMENT. COOPERATE IN THE SCHEDULING OF WORK AND IN THE USE OF SPACE. COORDINATE WORK AND RELATED ITEMS SUCH AS ROUGH-IN, BLOCKING AND STRUCTURAL SUPPORTS, GROUTING, ELECTRICAL ROUGH-IN, MECHANICAL ROUGH-IN, ETC.

2. THE MECHANICAL CONTRACTOR SHALL OBTAIN ALL PERMITS, PATENT RIGHTS, AND LICENSES THAT ARE REQUIRED FOR PERFORMING THE WORK UNDER ALL LAWS, ORDINANCES, RULES AND REGULATIONS, OR ORDERS OF ANY OFFICER AND/OR GOVERNING BODY, HAVING JURISDICTION FOR THE WORK UNDER THIS SECTION. THE CONTRACTOR SHALL GIVE ALL NOTICES NECESSARY IN CONNECTION WITH, PAY ALL FEES RELATING TO AND ALL COSTS AND EXPENSES INCURRED ON ACCOUNT OF THE WORK UNDER THIS SECTION. NO WORK SHALL BE COVERED BEFORE INSPECTION BY THE JURISDICTIONAL INSPECTOR AND THE OWNER'S REPRESENTATIVE. POST PERMITS AS REQUIRED.

3. PRECAUTIONS SHALL BE EXERCISED AT ALL TIMES TO CONTROL DUST CREATED AS A RESULT OF ANY OPERATIONS DURING THE CONSTRUCTION PERIOD. IF SERIOUS PROBLEMS ARISE DUE TO AIR BORNE DUST, AND WHEN DIRECTED BY OWNER, OPERATIONS CAUSING SUCH PROBLEMS SHALL BE TEMPORARILY DISCONTINUED AND NECESSARY STEPS TAKEN TO CONTROL THE DUST. MAINTAIN GOOD HOUSEKEEPING PRACTICES TO REDUCE THE RISK OF FIRE DAMAGE AND INJURY TO WORKMEN. ALL SCRAP MATERIALS, RUBBISH AND TRASH SHALL BE REMOVED ONLY FROM IN AND ABOUT THE WORK AREA AND SHALL NOT BE PERMITTED TO BE SCATTERED TO ADJACENT AREAS. A FIRE EXTINGUISHER SHALL BE AVAILABLE AT EACH LOCATION WHERE CUTTING OR WELDING IS BEING PERFORMED. WHERE ELECTRIC OR GAS WELDING OR CUTTING WORK IS DONE, INTERPOSED SHIELDS OF INCOMBUSTIBLE MATERIAL SHALL BE USED TO PROTECT AGAINST FIRE DAMAGE DUE TO SPARKS AND HOT MERARY WHEN TEMPORARY HEATING DEVICES ARE USED. WATCHMAN SHALL BE PRESENT TO COVER PERIODS WHEN OTHER WORKMEN ARE NOT ON THE PREMISES.

4. THE CONTRACT DOCUMENTS ARE DIAGRAMMATIC, SHOWING CERTAIN PHYSICAL RELATIONSHIPS WHICH MUST BE ESTABLISHED WITHIN THE MECHANICAL WORK AND ITS INTERFACE WITH OTHER WORK. SUCH ESTABLISHMENT IS THE EXCLUSIVE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACT DOCUMENTS INDICATE THE AVAILABLE INFORMATION ON EXISTING UTILITIES AND SERVICES, AND ON NEW SERVICES TO BE PROVIDED TO THE PROJECT BY UTILITY COMPANIES AND AGENCIES.

5. THE EQUIPMENT AND MATERIALS INDICATED ON THE CONTRACT DOCUMENTS REPRESENT A STANDARD OF QUALITY TO BE MAINTAINED. SUBSTITUTIONS MAY BE SUBMITTED TO THE ENGINEER FOR REVIEW. ALL EQUIPMENT AND MATERIALS SHALL BE NEW AND UNUSED AND INSTALLED BY ONLY QUALIFIED PERSONNEL. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS, IN ADDITION TO ANY STATE AND LOCAL CODES THAT MAY APPLY. WORKMANSHIP: ALL LABOR SHALL BE CAREFULLY SKILLED FOR THIS KIND OF WORK, THOROUGH IN ALL RESPECTS AND UNDER THE DIRECTION OF A COMPETENT FOREMAN.

6. GENERAL SUBMITTAL REQUIREMENTS: COORDINATE SUBMITTALS SO THAT WORK WILL NOT BE DELAYED BY SUBMITTALS. NO EXTENSION OF TIME WILL BE ALLOWED BECAUSE OF FAILURE TO PROPERLY COORDINATE AND SEQUENCE SUBMITTALS. DO NOT SUBMIT PRODUCT DATA, OR ALLOW ITS USE ON THE PROJECT, UNTIL COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS HAS BEEN CONFIRMED BY THE CONTRACTOR. SUBMITTAL IS FOR INFORMATION AND RECORD, UNLESS OTHERWISE INDICATED. PROVIDE PERMANENT MARKING ON EACH SUBMITTAL TO IDENTIFY USE, PROJECT, DATE, CONTRACTOR, SUBCONTRACTOR SUBMITTAL NAME AND SIMILAR INFORMATION TO DISTINGUISH IT FROM OTHER SUBMITTALS. INDICATE ANY PORTIONS OF WORK WHICH DEVIATE FROM THE CONTRACT DOCUMENTS. EXPLAIN THE REASONS FOR THE DEVIATIONS. SHOW HOW SUCH DEVIATIONS COORDINATE WITH INTERFACING PORTIONS OF OTHER WORK. SHOW CONTRACTORS EXECUTED REVIEW AND APPROVAL MARKING. PROVIDE SPACE FOR ENGINEERS "ACTION" MARKING. SUBMITTALS WHICH ARE RECEIVED FROM SOURCES OTHER THAN THROUGH CONTRACTORS OFFICE WILL BE RETURNED WITHOUT ACTION. EXCEPT AS OTHERWISE INDICATED, SUBMIT SIX (6) COPIES. WHERE A REQUIRED SUBMITTAL RELATES TO AN OPERATIONAL ITEM OF EQUIPMENT USED IN MORE THAN ONE SYSTEM, INCREASE THE NUMBER OF FINAL COPIES AS NECESSARY TO COMPLETE THE MAINTENANCE MANUALS FOR EACH SYSTEM. PROVIDE A PRELIMINARY TWO-COPY SUBMITTAL FOR AUTOMATIC TEMPERATURE CONTROLS AND, WHEN PRODUCT DATA IS REQUIRED OR DEEMED BY CONTRACT FOR SELECTION OF OPTIONS BY ENGINEER. PROVIDE ADDITIONAL DISTRIBUTION OF SUBMITTALS, NOT INCLUDED IN FOREGOING COPY SUBMITTAL REQUIREMENTS, TO SUBCONTRACTORS, SUPPLIERS, FABRICATORS, INSTALLERS, GOVERNING AUTHORITIES AND OTHERS AS NECESSARY FOR PROPER PERFORMANCE OF WORK. INCLUDE IN TRANSMITTAL TO ENGINEER COPIES OF ANY REQUIRED RECEIVE "ACTION" MARKING BEFORE FINAL DISTRIBUTION. SHOW SUCH DISTRIBUTIONS ON TRANSMITTAL FORMS.

7. EQUIPMENT FURNISHED UNDER THIS CONTRACT SHALL HAVE A PERMANENT LABEL CLEARLY INDICATING THE MAINTENANCE TO BE PERFORMED TO MAINTAIN THE EQUIPMENT IN EFFICIENT OPERATING CONDITION. EQUIPMENT SUPPLIERS SHALL FURNISH THE FULL AND PARTIAL INPUT AND OUTPUT CAPACITIES TO ENABLE THE DETERMINATION OF COMPLIANCE WITH THE ENERGY CONSERVATION CODE.

8. SUBMIT THREE TYPED AND BOUND COPIES OF OPERATING AND MAINTENANCE MANUALS PRIOR TO SCHEDULING SYSTEMS DEMONSTRATION FOR THE OWNER. MANUALS SHALL HAVE INDEX WITH TAB DIVIDERS FOR EACH MAJOR EQUIPMENT SECTION TO FACILITATE LOCATING INFORMATION ON A SPECIFIC PIECE OF EQUIPMENT. ALPHABETICAL LIST OF SYSTEM COMPONENTS, WITH THE NAME, ADDRESS AND 24 HOUR TELEPHONE NUMBER OF THE COMPANY RESPONSIBLE FOR SERVICING EACH ITEM DURING THE FIRST YEAR OF OPERATION.

9. DELIVERY AND STORAGE OF MATERIALS: PROVIDE FOR THE SAFETY AND GOOD CONDITION OF ALL MATERIALS AND EQUIPMENT. PROVIDE ACCEPTANCE BY THE OWNERS REPRESENTATIVE. PROTECT ALL MATERIALS AND EQUIPMENT FROM DAMAGE AND PROVIDE ADEQUATE AND PROPER STORAGE FACILITIES DURING THE PROGRESS OF THE WORK. REPLACE ALL DAMAGED AND DEFECTIVE WORK BEFORE FILING APPLICATION FOR FINAL ACCEPTANCE.

10. BEFORE SUBMITTING HIS BID, THE CONTRACTOR FOR THE WORK UNDER THIS SECTION SHALL CAREFULLY STUDY ALL DRAWINGS, AND SHALL MAKE A CAREFUL EXAMINATION OF THE PREMISES. HE SHALL DEFINITELY DETERMINE IN ADVANCE, THE METHODS OF INSTALLATION AND CONNECTING THE APPARATUS AND THE MEANS TO BE PROVIDED FOR GETTING THE EQUIPMENT INTO PLACE, AFTER AWARD OF THE CONTRACT. NO SUBSEQUENT ALLOWANCES WILL BE MADE TO THE CONTRACTOR DUE TO HIS FAILURE TO COMPLY WITH THE ABOVE REQUIREMENTS AND ANY OTHER CONDITIONS AFFECTING THE INSTALLATION AND COMPLETION OF ALL WORK.

11. ACCURATELY RECORD ALL CHANGES TO THE CONTRACT DOCUMENTS ON ONE SET OF DRAWINGS. TRANSMIT THE INFORMATION TO THE ENGINEER.

12. FURNISH WRITTEN CERTIFIED GUARANTEE, IN ACCEPTANCE FORM, TO THE OWNER AGAINST DEFECTIVE WORKMANSHIP, MATERIALS AND OPERATING EQUIPMENT. IN ADDITION TO THE GUARANTEES REQUIRED ELSEWHERE, ALL WORK, MATERIALS AND EQUIPMENT PROVIDED UNDER THE MECHANICAL SECTIONS SHALL BE GUARANTEED FOR A PERIOD OF (1) YEAR FROM THE DAY OF ACCEPTANCE OF THE WORK BY THE OWNER. THE CONTRACTOR UNDER THIS GUARANTEE, SHALL BE RESPONSIBLE FOR ALL DAMAGE TO ANY PART OF THE PREMISES CAUSED BY EQUIPMENT AND MATERIALS FURNISHED UNDER THIS SECTION. PROVIDE CERTIFICATES FOR ALL EQUIPMENT HAVING WARRANTIES IN EXCESS OF 1 YEAR.

13. ALL WORK AND MATERIALS SHALL BE IN FULL ACCORDANCE WITH CURRENT SAFETY ORDERS OF THE DIVISION OF INDUSTRIAL SAFETY, THE NATIONAL ELECTRIC CODE, LOCAL BUILDING CODES, THE INTERNATIONAL MECHANICAL CODE, THE INTERNATIONAL PLUMBING CODE, THE INTERNATIONAL BUILDING CODE AND OTHER APPLICABLE CODES, THE CITY OF LOVELAND, CO, LAWS OR REGULATIONS OF BODIES LAWFULLY EMPOWERED AND HAVING JURISDICTION OVER THIS PROJECT. NOTHING IN THE PLANS OR THESE SPECIFICATIONS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

14. RESOLVE ALL QUESTIONS, DISCREPANCIES OR CONFLICTS WITH ENGINEER BEFORE ANY EQUIPMENT IS ORDERED, MATERIALS FABRICATED OR SYSTEMS INSTALLED.

15. PROVIDE IDENTIFICATION TAGS FOR ALL SCHEDULED EQUIPMENT.

16. COORDINATE THE INSTALLATION OF MECHANICAL SYSTEMS WITH OTHER TRADES AND PROVIDE OFFSETS AS NECESSARY TO ACCOMMODATE STRUCTURE AND OTHER TRADES.

17. PROVIDE ACCESS PANELS IN CEILINGS AND/OR DUCTWORK WHERE REQUIRED FOR ACCESS TO ALL MOTORS, CONTROLS, FIRE DAMPERS, SMOKE/FIRE DAMPERS, VALVES, AND BALANCING DAMPERS.

18. LEVEL ALL EQUIPMENT CURBS/BASES PRIOR TO INSTALLATION OF ANY EQUIPMENT.

19. SEAL ALL WALL AND ROOF PENETRATIONS WATERTIGHT WITH SILICONE CAULKING AND BACKER ROD. U.L. CLASSIFIED AND FM APPROVED SEALANTS SHALL BE USED AT ALL PENETRATIONS OF RATED WALLS, CEILINGS AND FLOORS. PENETRATIONS OF THE ROOFING MEMBRANE SHALL BE COMPLETED BY A QUALIFIED ROOFING CONTRACTOR TO MAINTAIN THE INTEGRITY OF THE ROOFING SYSTEM AND RELATED EXISTING WARRANTIES.

20. COORDINATE ALL THE MISCELLANEOUS SUPPORT AND FRAMING REQUIRED FOR THE MECHANICAL EQUIPMENT, PROVIDED BY OTHERS.

21. COORDINATE AND VERIFY ALL OPENINGS IN STRUCTURAL WALLS, ABOVE CEILINGS, AND FLOORS WITH THE STRUCTURAL CONTRACTOR.

22. ALL SUPPLY AND RETURN DUCTWORK UNLESS SPECIFICALLY INDICATED SHALL BE IN ASTM A527 LOCK FRAMING QUALITY GALVANIZED SHEET METAL WITH ASTM A525 G90 ZINC COATING INSTALLED IN ACCORDANCE WITH CHAPTER 6 OF THE 2009 IMC AND THE SMACNA DUCT CONSTRUCTION STANDARDS, FOR PRESSURE CLASS "A" FOR 3" SP AND ABOVE, CLASS "B" FOR 2" TO 3" SP AND CLASS "C" FOR 0.5" TO 2" SP, WITH "HARD CAST" SEALED JOINTS. THE USE OF PRESSURE SENSITIVE TAPE WILL NOT BE ACCEPTABLE. DIMENSIONS SHOWN ARE AIRWAY DIMENSIONS.

23. EXTERNALLY INSULATE ALL RECTANGULAR SUPPLY AND RETURN AIR DUCTWORK WITH MINIMUM 1.5"b DENSITY FIBERGLASS. ALL INSULATION SHALL HAVE MINIMUM INSTALLED "R" VALUE OF 6.0, FLAME SPREAD RATING OF 25 OR LESS, SMOKE DEVELOPED RATING OF 50 OR LESS AND BE RATED FOR OPERATING TEMPERATURES UP TO 250°F. LINE AIR EXHAUST, SUPPLY & RETURN DUCTWORK FOR 15 LF FROM FAN, DUCT LINERS SHALL HAVE AN ACRYLIC COATING ON SURFACE IN CONTACT WITH THE AIR STREAM. DUCT WRAP SHALL HAVE AN ALUMINUM FOIL FACING. DO NOT INSULATE EXPOSED SPIRAL DUCTWORK AND FITTINGS.

24. ALL ROUND SA & RA DUCTS TO BE INSULATED WITH 1-1/2" "INSULSLEEVE" THAT HAS A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE DEVELOPED INDEX NOT MORE THAN 50 (ASTM E 84) WITH VAPOR BARRIER (R VALUE = 6.0). DO NOT INSULATE EXPOSED SPIRAL DUCTWORK AND FITTINGS.

25. ALL DUCT PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS, DEMISING WALLS TO HAVE APPROVED AUTOMATIC FIRE DAMPERS OR TO PROVIDE APPROPRIATE FIRE RATED SHAFTS FOR ALL SUCH PENETRATIONS. VERIFY WITH I.B.C./I.M.C AND RESPECTIVE CITY.

26. ALL CONCEALED, ROUND SUPPLY AIR DUCTS 12" AND SMALLER SHALL BE GALVANIZED SHEET METAL SNAP-LOCK. ROUND SUPPLY DUCT GREATER THAN 12" SHALL BE GALVANIZED SHEET METAL SPIRAL. INSULATED FLEXIBLEDUCT MAY BE USED FOR THE CONNECTION TO THE AIR OUTLET PROVIDED THE LENGTH OF THE FLEXIBLE DUCT DOES NOT EXCEED 6 LINEAR FEET.

27. ALL BRANCH DUCT CONNECTIONS TO AIR OUTLETS AND AIR INLETS SHALL BE THE SAME SIZE AS THE DEVICE NECK UNLESS SHOWN OTHERWISE ON THE DRAWINGS.

28. PROVIDE EQUIPMENT VIBRATION ISOLATION FROM STRUCTURE AND ASSOCIATED DUCT/PIPE SYSTEMS.

29. ALL BALANCING SHALL BE COMPLETED BY AN INDEPENDENT QUALIFIED AND CERTIFIED TECHNICIAN (TABB, NEBB OR SIMILAR) WITH FIVE (5) OR MORE YEARS EXPERIENCE IN TESTING, ADJUSTING, AND BALANCING HVAC AND HYDRONIC SYSTEMS. ADJUST VALVES AND DAMPERS AS NECESSARY TO OBTAIN AIR AND WATER QUANTITIES SHOWN. PROVIDE COMPLETE WRITTEN TEST AND BALANCE REPORT INDICATING QUANTITIES AT INLET AND OUTLET. USE VOLUME DAMPERS FOR ALL REGISTERS FOR BALANCING OF THE SYSTEMS. AIR DISTRIBUTION SHALL BE BALANCED FOR WITHIN 5% OF INDICATED VALUES.

30. EXAMINE THE AREAS TO BE EXCAVATED AND THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. REMOVE ALL ROCK AND BOULDERS FROM EXCAVATION BEFORE INSTALLING MECHANICAL WORK. SLOPE SIDES OF EXCAVATIONS AS REQUIRED FOR STABILITY, OR PROVIDE NECESSARY SHORING. LOCATE AND PROTECT EXISTING UTILITIES AND OTHER UNDERGROUND WORK IN A MANNER WHICH WILL ENSURE THAT NO DAMAGE OR SERVICE INTERRUPTION WILL RESULT FROM EXCAVATING AND BACKFILLING. DO NOT INSTALL MECHANICAL WORK ON FROZEN EXCAVATION BASES OR SUB-BASES. MAINTAIN DRY EXCAVATIONS FOR MECHANICAL WORK BY REMOVING WATER. PROTECT EXCAVATIONS FROM INFLOW OF SURFACE WATER. PUMP MINOR INFLOW OF GROUND WATER FROM EXCAVATIONS. STORE EXCAVATED MATERIAL (TEMPORARILY) NEAR THE EXCAVATION. RETAIN EXCAVATED MATERIAL WHICH COMPLIES WITH THE REQUIREMENTS FOR BACKFILL MATERIAL. DO NOT BACKFILL UNTIL INSTALLED MECHANICAL WORK HAS BEEN TESTED AND ACCEPTED. CONDITION BACKFILL MATERIAL BY EITHER DRYING OR ADDING WATER UNIFORMLY, TO FACILITATE COMPACTION TO ACCEPTABLE DENSITIES. BACKFILL TO ELEVATIONS MATCHING ADJACENT GRADES. BACKFILL EXCAVATIONS IN 8" HIGH COURSES OF BACKFILL MATERIAL, UNIFORMLY COMPACTED USING POWER-DRIVEN OR HAND-OPERATED COMPACTION EQUIPMENT.

31. COORDINATE WITH THE GENERAL CONTRACTOR TO PROVIDE OPENINGS THROUGH CONCRETE FOR PIPE PENETRATION AND SIMILAR SERVICES BY CORE DRILLING AND SAWING. REVIEW THE PROPOSED CUTTING WITH THE INSTALLER OF THE WORK TO BE CUT, AND COMPLY WITH HIS RECOMMENDATIONS TO MINIMIZE DAMAGE.

32. INSTALL IONIZATION TYPE SMOKE DETECTOR AND SAMPLING TUBE IN THE RETURN AIR DUCT FROM THE RTU'S (IF/WHERE INDICATED ON THE DRAWINGS). THE DETECTOR SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND SHALL HAVE AN AUXILIARY SET OF CONTACTS FOR CONNECTION TO THE FIRE ALARM SYSTEM. THE DETECTOR SHALL BE WIRED TO SHUT DOWN THE UNITS SUPPLY FAN.

33. ALL DUCT, PIPING AND EQUIPMENT LOCATIONS INDICATED ON THESE DOCUMENTS ARE FOR REFERENCE ONLY AND SHALL BE USED TO LOCATE ALL ELEVATIONS AND FLOOR TO FLOOR HEIGHTS. THEY SHALL BE VERIFIED PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY DUCT OR PIPING SYSTEM.

34. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE MECHANICAL REQUIREMENTS FOR ALL CUTTING AND PATCHING OF EXISTING FACILITIES TO BE COMPLETED BY THE GENERAL CONTRACTOR OR OTHERS.

35. USE ADJUSTABLE PIPE HANGERS ON SUSPENDED PIPE. ISOLATE HANGERS COMING IN CONTACT WITH BARE COPPER PIPE WITH DIELECTRIC HANGER LINERS. PROVIDE SUPPORTS BETWEEN PIPING AND BUILDING STRUCTURE WHERE NECESSARY TO PREVENT SWAYING. CONFORM TO THE INTERNATIONAL PLUMBING AND MECHANICAL CODE FOR HANGER SIZES AND SPACING. DO NOT SUPPORT PIPE FROM OTHER PIPE OR DUCT SYSTEMS. INSTALL HANGERS AND SUPPORTS TO ALLOW CONTROLLED MOVEMENT OF PIPING SYSTEM AND TO PERMIT PROPER MOVEMENT BETWEEN PIPE ANCHORS.

36. INSTALL PIPE, TUBE AND FITTINGS IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES WHICH WILL ACHIEVE PERMANENTLY-LEAKPROOF PIPING SYSTEMS, CAPABLE OF PERFORMING EACH INDICATED SERVICE WITHOUT PIPING FAILURE. INSTALL EACH RUN WITH A MINIMUM OF JOINTS AND COUPLINGS, BUT WITH ADEQUATE AND ACCESSIBLE UNIONS FOR DISASSEMBLY, MAINTENANCE OR REPLACEMENT OF VALVES AND EQUIPMENT. REDUCE SIZES BY USE OF REDUCING FITTINGS. INSTALL PIPING WITHOUT SPRINGING OR FORCING. SUPPORT PIPING INDEPENDENTLY AT EQUIPMENT SO ITS WEIGHT WILL NOT BE SUPPORTED BY THE EQUIPMENT. FURNISH ALL DEVICES NECESSARY FOR FINAL CONNECTION, INCLUDING BUT NOT LIMITED TO TAIL PIECES, STOPS AND SUPPLIES. LOCATE PIPING RUNS, EXCEPT AS OTHERWISE INDICATED, VERTICALLY AND HORIZONTALLY. AVOID DIAGONAL RUNS WHEREVER POSSIBLE. ORIENT HORIZONTAL RUNS PARALLEL WITH WALLS AND COLUMN LINES. HOLD PIPING CLOSE TO WALLS, OVERHEAD CONSTRUCTION, COLUMNS AND OTHER STRUCTURAL AND PERMANENT-ENCLOSURE ELEMENTS OF THE BUILDING. LIMIT CLEARANCE OF 0.5" WHERE FURNISHING IS SHOWN FOR ENCLOSURE OR CONCEALMENT OF PIPING, BUT ALLOW FOR INSULATION THICKNESS, IF ANY. WHERE POSSIBLE, LOCATE INSULATED PIPING FOR 1.0" CLEARANCE OUTSIDE INSULATION. WHEREVER POSSIBLE IN FINISHED AND OCCUPIED SPACES, CONCEAL PIPING FROM VIEW BY LOCATING IN COLUMN ENCLOSURES, IN HOLLOW WALL CONSTRUCTION OR ABOVE SUSPENDED CEILINGS.

37. FLUSH OUT PIPING SYSTEMS WITH CLEAN WATER BEFORE PROCEEDING WITH THE REQUIRED TESTS. PROVIDE TEMPORARY EQUIPMENT FOR TESTING, INCLUDING PUMP AND GAUGES. TEST PIPING SYSTEM BEFORE INSULATION IS INSTALLED WHEREVER FEASIBLE. TEST EACH NATURAL SECTION OF EACH PIPING SYSTEM INDEPENDENTLY, BUT DO NOT USE PIPING SYSTEM VALVES TO ISOLATE SECTIONS WHERE TEST PRESSURE EXCEEDS VALVE PRESSURE RATING. FILL EACH SECTION OF WATER, DRAIN OR VENT PIPING WITH WATER AND PRESSURIZE FOR TWO HOURS AT 150% OF OPERATING PRESSURE, BUT NOT LESS THAN 50 PSIG FOR PRESSURE PIPING AND TEN FEET FOR DRAIN AND VENT PIPING. TEST FAILS IF LEAKAGE IS OBSERVED OR IF PRESSURE DROP EXCEEDS 5% OF TEST PRESSURE. REPAIR PIPING SYSTEMS SECTIONS WHICH FAIL BY DISASSEMBLY AND RE-INSTALLATIONS, USING NEW MATERIALS TO THE EXTENT REQUIRED TO OVERCOME LEAKAGE. DO NOT USE CHEMICALS, STOP-LEAK COMPOUNDS, MASTICS OR OTHER TEMPORARY REPAIR METHODS. AFTER TESTING AND REPAIR WORK HAVE BEEN COMPLETED, DRAIN TEST WATER FROM PIPING SYSTEMS.

38. FILL ALL DOMESTIC WATER LINES WITH A CHLORINE WATER SOLUTION OF 50 PARTS PER MILLION, MINIMUM. HOLD SOLUTION IN PIPE FOR AT LEAST 24 HOURS. OPEN AND CLOSE ALL VALVES 3 TIMES DURING CHLORINATION. WASTE CHLORINE SOLUTION FROM EACH OUTLET. MEASURE SOLUTION AT END. IF NOT 10 PPM, REPEAT. ALL NEW POTABLE WATER SYSTEMS SHALL BE CLEANED AS HEREIN SPECIFIED PRIOR TO TESTING OR APPLICATION OF INSULATION. COMPLY WITH CITY OF LOVELAND, CO STANDARDS OR LARIMER COUNTY DEPARTMENT OF HEALTH REQUIREMENTS WHICHEVER IS MORE STRINGENT.

39. BALL VALVES 1" AND SMALLER: NIBCO TS85 (THREADED ENDS) OR NIBCO S585 (SOLDERED ENDS). RATED FOR 150 PSI NON-SHOCK WOG 2-PIECE CAST BRONZE BODIES, TFE SEAT, FULL PORT, BRONZE TRIM, BLOWOUT PROOF STEMS BRASS/BRONZE BALL. VALVE ENDS SHALL HAVE FULL DEPTH ANSI THREADS OR EXTENDED SOLDER CONNECTIONS.

40. CHECK VALVES 2 1/2" AND SMALLER: NIBCO T413 (THREADED ENDS) OR NIBCO S413 (SOLDERED ENDS). PATTERN HORIZONTAL SWING-TYPE, CLASS 125, RATED FOR 200 PSI WOG BRONZE ASTM B-62 BODY WITH TFE SEAT DISC.

41. INSTALL VALVES WITH STEMS POINTING UP, AND AS CLOSE TO VERTICAL AS POSSIBLE. INSTALL VALVES AT EACH PIECE OF EQUIPMENT, FIXTURE OR APPLIANCE SO THAT THE SUPPLY AND RETURN SERVICES CAN BE SHUT OFF TO REMOVE THE ITEM WITHOUT DISTURBING THE PIPING SYSTEM. INSTALL VALVES WHERE REQUIRED FOR PROPER OPERATION OF PIPING AND EQUIPMENT, INCLUDING VALVES IN BRANCH LINES TO ISOLATE SECTIONS OF PIPING WHERE BRANCH FLOW IS MORE THAN 10% OF THE TOTAL.

42. NATURAL GAS PIPING ABOVE GROUND 2" AND SMALLER SHALL BE SCHEDULE 40 BLACK STEEL SCREWED WITH 150 LB. MALLEABLE IRON, THREADED FITTINGS. NATURAL GAS ABOVE GROUND OVER 2" SHALL BE SCHEDULE 40 BLACK STEEL, PLAIN END WITH STANDARD WEIGHT, BUTT WELD FITTINGS. REMOVE CUTTING AND THREADING BURRS BEFORE ASSEMBLING PIPING. DO NOT INSTALL DEFECTIVE PIPING OR FITTINGS. DO NOT USE PIPE WITH THREADS WHICH ARE CHIPPED, STRIPPED OR DAMAGED. USE TEFLON TAPE ON MALE PIPE THREADS. PLUG EACH GAS OUTLET INCLUDING VALVES WITH A THREADED PLUG OR CAP, IMMEDIATELY AFTER INSTALLATION, AND RETAIN UNTIL CONTINUING PIPING OR EQUIPMENT CONNECTION IS COMPLETED. AFTER ROUGH-IN OR PRIOR TO INITIAL OPERATION, TEST AND PURGE GAS PIPING IN ACCORDANCE WITH INTERNATIONAL PLUMBING CODE. TEST PIPING SYSTEM AT 100 PSIG. REPAIR OR REPLACE PIPING AS REQUIRED TO ELIMINATE LEAKS AND RE-TEST. AFTER EQUIPMENT INSTALLATION, TEST ALL PIPING AND VALVES UP TO GAS REGULATOR WITH 1/4" TUBE MANOMETER AT 10 PSIG. PAINT ALL PIPING EXPOSED TO THE ELEMENTS.

43. NOTE: FOR UNDERGROUND APPLICATIONS MEDIUM DENSITY ("YELLOW") POLYETHYLENE PLASTIC PIPE CAN BE UTILIZED (PE2406) PER NFPA 54 REGULATIONS. PIPING MUST BE BURIED AT A MINIMUM DEPTH OF 18" BELOW GRADE AND BE PROVIDED WITH 14g TRACER WIRE FOR LOCATION PURPOSES. CONTRACTOR SHALL VERIFY LOCAL CODE ACCEPTANCE AND CONFIRM FINAL SIZING WITH THE PIPING MANUFACTURERS' GUIDELINES.

44. DOMESTIC WATER PIPING: ABOVE GROUND INSIDE BUILDINGS, SIZE 4" AND UNDER SHALL BE COPPER TUBE, HARD TEMPER, TYPE "L" PIPE WITH WROUGHT COPPER, OR CAST BRONZE FITTINGS AND ANTIOMONY FREE AND LEAD FREE SOLDER. BELOW GROUND, SIZE 2" AND UNDER SHALL BE COPPER TUBE, ANNEALED, TYPE "K" PIPE WITH WROUGHT COPPER, BRAZED FITTINGS.

45. COMPRESSED AIR PIPING SHALL BE TYPE K COPPER TUBE WITH WROUGHT COPPER FITTINGS. AIR COMPRESSORS, ASSEMBLY AND ASSOCIATED PIPING SPECIALTIES DESIGNED, FURNISHED AND INSTALLED BY OTHERS.

46. SOIL AND VENT PIPING: ABOVE AND BELOW GROUND SHALL BE SCHEDULE 40 PVC WITH SOLVENT GLUED FITTINGS AND JOINTS. IF LOCATED IN A RETURN AIR PLENUM SHALL BE CAST IRON NO HUB NEOPRENE GASKET AND STAINLESS STEEL SLEEVE JOINT.

47. STORM/ROOF DRAINAGE PIPING: ABOVE GROUND SHALL BE CAST IRON NO HUB NEOPRENE GASKET AND STAINLESS STEEL SLEEVE JOINT. BELOW GROUND SHALL BE SCHEDULE 40 PVC WITH SOLVENT GLUED FITTINGS AND JOINTS.

48. INSTALL FULL SIZE CONDENSATE DRAIN WITH TRAP SEAL DEPTH EQUAL TO 1.5 x UNIT TOTAL STATIC PRESSURE FOR EACH COOLING COIL.

49. CLEAN AND DRY PIPE SURFACES PRIOR TO INSULATING. EXTEND PIPING INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS AND SIMILAR PIPING PENETRATIONS, EXCEPT WHERE OTHERWISE INDICATED. INSTALL PROTECTIVE SHEETMETAL SHIELD AROUND BOTTOM HALF OF PIPE INSULATION AT EACH PIPE SUPPORT SUFFICIENT TO PREVENT CRUSHING OF THE INSULATION. AT CONTRACTORS OPTION, INSTALL PRE-MANUFACTURED HEAVY DENSITY PIPE SHIELDS IN LIEU OF PIPE INSULATION AT EACH PIPE SUPPORT. EXCEPT AS NOTED, COVER VALVES, FLANGES, FITTINGS AND SIMILAR ITEMS IN EACH PIPING SYSTEM WITH EQUIVALENT THICKNESS AND COMPOSITION OF INSULATION AS APPLIED TO ADJOINING PIPE RUN. DO NOT COVER VALVE OPERATORS, THREADED OR SOLDER JOINT, STRAINERS OR BLOWDOWN END OF STRAINERS. MARK LOCATION OF UNIONS AND FLANGES COVERED BY INSULATION WITH PERMANENT PAINT OR INK, PAINTED STENCIL OR APPROVED LABEL. MAINTAIN INTEGRITY OF VAPOR-BARRIER JACKETS ON INSULATION OF COLD PIPES AND PROTECT TO PREVENT PUNCTURE OR OTHER DAMAGE. INSULATE BETWEEN PIPE AND PIPE SADDLES ON UNDERGROUND PIPE INSULATION. INSTALL UNICELLULAR INSULATION ON PIPE WITHOUT SLITTING INSULATION. SEAL ALL TRANSVERSE JOINTS WITH ADHESIVE. PROVIDE COMPOSITE INSTALLATION (INSULATION, JACKET, COVERING, SEALER, MASTIC AND ADHESIVE) COMPLYING WITH THE FOLLOWING: FLAME SPREAD: 25 OR LESS. SMOKE DEVELOPED: 50 OR LESS. METHOD: ASTM E84 (NFPA 255). FIBERGLASS PIPE INSULATION: SCHULLER MICRO-LOK 850. HEAVY DENSITY PIPE INSULATION WITH AP-T JACKET. FIBERGLASS FITTING INSULATION: SCHULLER "ZESTON" FITTING COVERS WITH FACTORY-CUT FIBERGLASS INSULATION INSERT. DOMESTIC HOT WATER PIPING (ABOVE GRADE): 2" AND SMALLER PIPING: 1" FIBERGLASS. 2-1/2" AND LARGER PIPING: 1-1/2" FIBERGLASS, RUNOUT PIPING UP TO 2" NOT EXCEEDING 12 FEET IN LENGTH: 1/2" FIBERGLASS. DOMESTIC COLD WATER PIPING (ABOVE GRADE): ALL SIZES = 1/2" FIBERGLASS. ROOF DRAIN BOWLS AND DOWN LEADERS: 1" FIBERGLASS.
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- DESIGN
CONCEPTS
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- GENERAL MECH.
NOTES AND
SPECIFICATIONS
- PM-1

CONTROL SEQUENCES

EXHAUST FANS

- EF-1 – SHALL RUN CONTINUOUSLY VIA INTERLOCK WITH TIME CLOCK PER OWNER'S SCHEDULE.
- EF-2 – SHALL RUN CONTINUOUSLY VIA INTERLOCK WITH TIME CLOCK PER OWNER'S SCHEDULE. INTERLOCK WITH MOTORIZED DAMPER @ INTAKE LOUVER 1-1.

ELECTRIC UNIT HEATERS

- EUH-1 – HEATER ELEMENT SHALL ENERGIZE VIA THE BUILT-IN THERMOSTAT TO MAINTAIN SET POINT TEMPERATURE OF 55° F (ADJUSTABLE).
- EUH-2 – HEATER ELEMENT SHALL ENERGIZE VIA THE BUILT-IN THERMOSTAT TO MAINTAIN SET POINT TEMPERATURE OF 55° F (ADJUSTABLE).

ELECTRIC BASEBOARD HEATERS

- EBB-1 – HEATER ELEMENT SHALL ENERGIZE VIA THE BUILT-IN THERMOSTAT TO MAINTAIN SET POINT TEMPERATURE OF 55° F (ADJUSTABLE).

WARRANTY NOTES:

- ALL PARTIES INVOLVED IN THIS PROJECT ACKNOWLEDGE THAT THERE ARE NO WARRANTIES OR PERFORMANCE GUARANTEES EITHER IMPLIED OR EXPRESSED ON THE EXISTING PRE-PURCHASED EQUIPMENT, THE BUILDING OWNER, TENANTS, AND ALL PARTIES INVOLVED WITH THIS PROJECT AGREE TO INDEMNIFY PIVOTAL ENGINEERING LLC FROM AND AGAINST ALL DAMAGE, LOSS, CLAIM OR INJURY (INCLUDING DEATH) IN CONNECTION WITH THE PERFORMANCE OF THE EXISTING EQUIPMENT.
- THE CONTRACTOR SHALL INSPECT THE EXISTING EQUIPMENT FOR ADEQUATE OPERATION OF ALL MODES AS WELL AS CONTROL FUNCTIONS. THE EQUIPMENT SHALL BE VERIFIED AS PERFORMING AS EXPECTED. DRIVE BELTS AND AIR FILTERS SHALL BE REPLACED AS NECESSARY. PROVIDE ALL OTHER NORMAL SERVICE PROCEDURES AS REQUIRED.

PROJECT NOTE

INASMUCH AS THE REMODELING OR REHABILITATION OF AN EXISTING BUILDING REQUIRES THAT CERTAIN ASSUMPTIONS BE MADE REGARDING EXISTING CONDITIONS, AND BECAUSE SOME OF THE ASSUMPTIONS MAY NOT BE VERIFIABLE WITHOUT DESTROYING ADEQUATE OR SERVICEABLE PORTIONS OF THE BUILDING, THE CONTRACTOR SHALL VERIFY ALL QUESTIONS, CONDITIONS AND PROCEDURES WITH THE ENGINEER PRIOR TO THE COMMENCEMENT OF EACH PART OF THE NEW WORK.

LOUVER SCHEDULE

TAG	LOCATION	SERVICE	MANUFACTURER	MODEL	WIDTH (IN.)	HEIGHT (IN.)	DEPTH (IN.)	FREE AREA (%)	MAX. CFM	MAX. VEL. FPM	MAX. AIR P.D. (IN. W.G.)	BLADE TYPE	MAX. BLADE ANGLE	NOTES	TAG
L-1	CONCESSIONS (Mixed-use Bldg. 2)	VENTILATION AIR	LOUVERS AND DAMPERS	IF-21	24	12	4.0	41.6	230	500	0.03	FIXED	45	1,2,3,4,5	L-1
NOTES: 1. FORMED 16 GA. GALVANIZED STEEL CHANNEL FRAME. 2. FORMED 20 GA. GALVANIZED STEEL BLADES. 3. MILL FINISH. 4. EXPANDED 1/2"x1/2" ALUMINUM BIRD SCREEN. 5. 120v POWER OPEN/SPRING CLOSED MOTORIZED DAMPER, INTERLOCK WITH EF-2 TO OPEN WHEN IN OPERATION.															

GENERAL NOTES

- OUTSIDE AIR VENTILATION CALCULATIONS ARE BASED ON POPULATION FIGURES PER 2015 INTERNATIONAL MECHANICAL AND BUILDING CODES. ASSUMED NON-SMOKING (MINIMUM SETTING) AND/OR THE MAKE UP AIR REQUIREMENTS FOR THE EXHAUST SYSTEMS.
- UPON COMPLETION OF JOB, FURNISH OWNER COMPLETE OPERATION AND MAINTENANCE MANUALS. MEET WITH OWNER OR OWNER'S REPRESENTATIVE TO INSTRUCT ON OPERATIONS PROCEDURES.
- UPON COMPLETION OF JOB, VERIFY AND PROVIDE REPORT THAT ALL TEMPERATURE CONTROLS ARE OPERATING PROPERLY AND THAT NIGHT SET BACK AND ALL ENERGY SAVING DEVICES HAVE BEEN SET AND THE OWNER IS INSTRUCTED TO PROPER USE.
- MECHANICAL PLANS ARE DIAGRAMMATIC AND SCHEMATIC IN NATURE, COORDINATE ALL DUCT ROUTING AND EQUIPMENT LOCATIONS WITH STRUCTURE. FIELD VERIFY REQUIREMENTS. CHANGES TO DUCTWORK DIMENSIONS FOR CLEARANCE REASONS IS ACCEPTABLE WHERE THE CROSS-SECTIONAL AREA OF THE AIRWAY SIZE SPECIFIED ON THESE PLANS IS MAINTAINED.
- ALL MECHANICAL EQUIPMENT & MATERIALS SELECTIONS SCHEDULED ON THESE DRAWINGS ARE USED FOR THE DESIGN BASIS OF THE MECHANICAL SYSTEMS. MANUFACTURER SUBSTITUTIONS OF EQUIPMENT & MATERIALS MUST ACQUIRE THE ENGINEER'S APPROVAL AT OR BEFORE THE EQUIPMENT SUBMITTAL PHASE OF PROJECT.

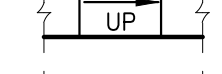
LEGEND



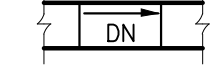
SUPPLY, RETURN, EXHAUST DUCTS UP



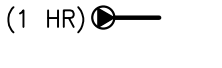
SUPPLY, RETURN, EXHAUST DUCTS DN



DUCT OFFSET UP



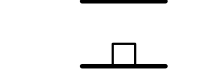
DUCT OFFSET DOWN



TYPE 'B' FIRE DAMPER (1 HOUR RATED)



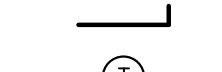
TYPE 'B' FIRE DAMPER (2 HOUR RATED)



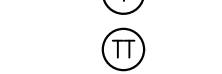
SPIN-IN CONNECTION WITH MANUAL LOCKABLE DAMPER



SPIN-IN CONNECTION



SHOE TAP CONNECTION



MANUAL OPPOSED BLADE VOLUME DAMPER (MVD)



THERMOSTAT



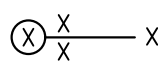
TEMPERATURE TRANSMITTER



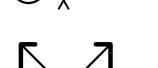
REMOTE CONTROL PANEL (MAU)



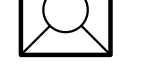
EMERGENCY SHUT-DOWN STATION



DIFFUSER / GRILLE TAG



SUPPLY DIFFUSER



SIDEWALL SUPPLY GRILLE



RETURN GRILLE



DUCT SMOKE DETECTOR



POINT OF NEW CONNECTION



DUCT TRANSITION



SUPPLY AIR
RETURN AIR
EXHAUST AIR
ABOVE FINISHED FLOOR

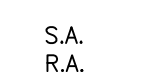
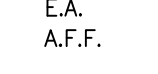


DIAGRAM OR RISER



SHEET NUMBER

DESIGN CRITERIA

PROJECT SITE: LOVELAND, COLORADO

PROJECT ELEVATION: 4,984 FEET
SUMMER OUTSIDE: 95° DB/ 60° WB
WINTER OUTSIDE: -10° DB

EXTERIOR CONSTRUCTION
"U" VALUES: WALLS: = EXISTING
ROOF/CEILING = EXISTING
GLAZING: = EXISTING

CODES: 2012 INTERNATIONAL BUILDING CODE
2012 INTERNATIONAL MECHANICAL CODE
2012 INTERNATIONAL PLUMBING CODE
2012 INTERNATIONAL ENERGY CONSERVATION CODE
2014 NATIONAL ELECTRIC CODE

OUTSIDE AIR VENTILATION CALCULATIONS ARE BASED ON POPULATION DENSITIES AS SET FORTH BY CHAPTER 4 – TABLE 403.3 OF THE INTERNATIONAL MECHANICAL AND CHAPTER 12 OF THE INTERNATIONAL BUILDING CODE. FOR A NON-SMOKING FACILITY.

DESCRIPTION	OCCUPIED AREA	BUILDING	DENSITY (SF/PERSON)	CFM PER PERSON	CFM PER SQ. FT.	SYSTEM	REQUIRED	PROVIDED
Office 101	378	Maintenance	5	5	---	(E)AHU/1-CU-1	44.6	50
New Office	95	Maintenance	5	5	---	(E)AHU/1-CU-1	15.6	20
New Open Office	130	Maintenance	5	5	---	(E)AHU/1-CU-1	17.8	20
Break 102	122	Maintenance	5	5	---	(E)AHU/1-CU-1	16.5	20
Total	725					(E)AHU/1-CU-1	94.5	110
Concessions	198	Mixed-Use 2	---	---	0.7	EF-2/L-1	138	230

DRAWING INDEX

NUMBER	DRAWING TITLE	REVIEW SET 02/28/2018 BD SET 04/05/2018		
PM-1	GENERAL MECHANICAL NOTES AND OUTLINE SPECIFICATIONS.	*	*	
M-0	LEGEND, INDEX, GENERAL NOTES, DESIGN CRITERIA, CONTROL SEQUENCES, AND SCHEDULES.	*	*	
M-1.0	MAINTENANCE BUILDING – MECHANICAL FLOOR PLAN.	*	*	
M-1.1	MIXED USE BUILDING #2 – MECHANICAL FLOOR PLAN.	*	*	
M-1.2	MIXED USE BUILDING #3 – MECHANICAL FLOOR PLAN.	*	*	
COORDINATION: 03/27/18 – ARCHITECTURAL DRAWING SET 04/05/18 – ELECTRICAL DRAWING SET 04/05/18 – PLUMBING DRAWING SET				

SPLIT SYSTEM AIR HANDLING UNIT SCHEDULE (EXISTING)

TAG	LOCATION	SERVICE	MANUF.	MODEL	UNIT TYPE	FAN DATA @ 5,000 FT. ELEVATION							COOLING COIL DATA @ 5,000 FT. ELEVATION						REF. CONNS.		HEATING DATA @ 5,000 FT ELEVATION						FILTER DATA			GENERAL				
						TOTAL CFM	MIN O.A. CFM	E.S.P. (IN W.G.) MAX.	TYPE	DIAM (IN)	H.P.	VOLTS/PH	AMPS	COIL TYPE	FACE AREA	TOTAL MBH	SENS MBH	E.A.T.	L.A.T.	SUCT.	LIQ.	FUEL	INPUT MBH @ S.L.	OUTPUT MBH	E.A.T.	L.A.T.	AFUE	GAS CONN.	TYPE	SIZE	PRESS. DROP (IN W.G.)	OP. WT. (LBS)	OPTIONS	TAG
(E)AHU-1	CEILING (Maint. Bldg.)	OFFICE	CARRIER	58STA045-12108	MULTI-POSITION	900	110	0.75	PSC	10"x6"	1/3	115/1	5.2	DX	-	21.25	19.4	77.0° F	53.4° F	7/8"	3/8"	NAT. GAS	45	27.2	61.6° F	95.2° F	82.0%	1/2"	TAW	FIELD SUPPLIED	0.40	150	A	(E)AHU-1
FACTORY INSTALLED OPTIONS:					FIELD INSTALLED OPTIONS: A. 24/7 PROGRAMMABLE HEATING/FAN/OFF AUTO-CHANGE-OVER THERMOSTAT WITH FAN SUB-BASE.																													

DUCTLESS SPLIT SYSTEM AIR HANDLING UNIT SCHEDULE (DUCTLESS)

TAG	LOCATION	MANUF.	MODEL	UNIT TYPE	FAN DATA @ 5,000 FT. ELEVATION								COOLING COIL DATA @ 5,000 FT. ELEVATION						REF. CONNS.		HEATING DATA @ 5,000 FT ELEVATION						FILTER DATA			GENERAL		TAG
					TOTAL CFM	MIN O.A. CFM	T.S.P. (IN W.G.)	QTY.	DIAM (IN)	H.P.	VOLTS/PH	AMPS	COIL TYPE	FACE AREA	TOTAL MBH	SENS MBH	E.A.T.	L.A.T.	SUCT.	LIQ.	FUEL	INPUT MBH @ S.L.	OUTPUT MBH	E.A.T.	L.A.T.	AFUE	GAS CONN.	TYPE	SIZE	PRESS. DROP (IN W.G.)	OP. WT. (LBS)	
AHU-1	CONCESSIONS (Mixed-Use Bldg. 2)	DAIKIN	FTKN18NMVJU	HORZ. FLOW	560	—	—	—	—	—	208/230 1-PHASE	0.45	DX	N/A	16.2	15.4	75.2	55.0	¼"	½"	—	—	—	—	—	—	WASHABLE	N/A	0.10	26	A,B,C,D	AHU-1
FACTORY INSTALLED OPTIONS:										FIELD INSTALLED OPTIONS: A. TXV VALVE. B. VIBRATION ISOLATION C. INTERNAL CONDENSATE PUMP. D. WIRELESS REMOTE CONTROL W/HOLDER.																						

AIR DEVICE SCHEDULE

TAG	MANUF.	MODEL	DESCRIPTION	OPTIONS
A	TITUS	TMS-3	SUPPLY DIFFUSER, 12"x12" LOUVER FACE, ALUMINUM CONSTRUCTION, OPPOSED BLADE DAMPER.	A, B
B	TITUS	50F	RETURN GRILLE, 1/2"x1/2" ALUMINUM CORE GRID, ALUMINUM BORDER.	A, B
C	TITUS	50F	EXHAUST GRILLE, 1/2"x1/2" ALUMINUM CORE GRID, ALUMINUM BORDER, OPPOSED BLADE BALANCE DAMPER.	A, B
D	RUSKIN	BV100	BRICK VENT EXTRUDED ALUMINUM CORE AND BLADES. CLEAR ANODIZED MILL FINISH.	A, B
OPTIONS: A. FACTORY STANDARD FINISH. B. REFER TO DRAWINGS FOR NECK SIZE AND AIR QUANTITY. NOTE: VERIFY CEILING/DOOR TYPE WITH ARCHITECTURAL PLANS AND PROVIDE CORRECT MOUNTING FRAME.				

CONDENSING UNIT SCHEDULE (EXISTING)

TAG	LOCATION	SERVICE	MANUF.	MODEL	COOLING COIL MODEL	NOMINAL CAPACITY @ 5,000 FT. ELEV. (MBH)	REFRIG.	SEER	AMB. TEMP	COMPRESSORS		COND. FANS			UNIT MCA	MAX. FUSE (AMPS)	VOLTS/PH	REF. PIPING		OP. WT. (LBS)	OPTIONS	TAG
										QTY	TYPE	QTY	TYPE	DRIVE				SUCT.	LIQ.			
(E)CU-1	GRADE (Maint. Bldg.)	(E)AHU-1	CARRIER	38CKC024-3	----	24.0	R-22	11.5	95°	1	RECIP.	1	PROP.	DIRECT	15.5	20	208/230 1 PH	---	---	117	----	(E)CU-1
FACTORY INSTALLED OPTIONS:						FIELD INSTALLED OPTIONS:																

CONDENSING UNIT SCHEDULE

TAG	LOCATION	SERVICE	MANUF.	MODEL	COOLING COIL MODEL	NOMINAL CAPACITY @ 5,000 FT. ELEV. (MBH)	AMB. TEMP	COMPRESSORS		COND. FANS			UNIT MCA	MAX. FUSE (AMPS)	VOLTS/PH	REF. PIPING		OP. WT. (LBS)	OPTIONS	TAG
								QTY	TYPE	QTY	TYPE	DRIVE				SUCT.	LIQ.			
CU-1	Concessions (Mixed-Use 2)	AHU-1	DAIKIN	RKN18NMVJU	–	16.2	95°	1	INVERTER	1	PROP.	DIRECT	9.5	20	208/230 1-PHASE	PER MFG.		97	A,B,C,D,E,F,G,H,I,J,K	CU-1
FACTORY INSTALLED OPTIONS: A. ISOLATION RELAY. B. VIBRATION ISOLATION.					FIELD INSTALLED OPTIONS: C. DISCONNECT. D. LIQUID LINE SOLENOID. E. LIQUID LINE FILTER-DRYER. F. INSULATED LIQUID & SUCTION REFRIGERANT PIPING.															

FAN SCHEDULE

TAG	LOCATION	SERVICE	MANUF.	MODEL	FAN DATA							MOTOR DATA			OP. WT. (LBS)	OPTIONS	TAG
					TOTAL CFM	E.S.P. (IN W.G.)	TYPE	DIAM. (IN)	MAX RPM	MAX SONES	MOUNT	DRIVE	H.P.	VOLTS/PH			
EF-1	CEILING (Mixed-use Bldg. 3)	MENS/WOMENS RESTROOMS	PENN BARRY	ZC10	770	0.50	CENTRIF.	---	786	11.0	IN-LINE	BELT	0.13	115/1	45	A,B,C,D	EF-1
EF-2	CONCESSIONS (Mixed-use Bldg. 2)	CONCESSIONS	PENN BARRY	P10VA	230	0.125	PROP.	10	1050	5.9	SIDEWALL	DIRECT	0.033	115/1	21	A,B,D,E,F	EF-2
FACTORY INSTALLED OPTIONS: A. BACKDRAFT DAMPER. B. DISCONNECT SWITCH.			FIELD INSTALLED OPTIONS: C. VIBRATION ISOLATION. D. REMOTE WALL MOUNTED TIME CLOCK. E. STEEL WALL SHUTTER. F. REMOTE WALL MOUNTED SPEED CONTROL.														

ELECTRIC UNIT HEATER SCHEDULE

TAG	LOCATION	SERVICE	MANUF.	MODEL	TYPE	CFM	BTU	KW	HP	VOLTS/PH	AMPS	MOUNTING	EMER. POWER	OP. WT. (LBS)	OPTIONS	TAG
EUH-1	PLUMB. CHASE (Mixed-use Bldg. 3)	PLUMB. CHASE	MARKEL	560 SERIES HF5605T	SUSPENDED	275	11,365	3.332	---	240/1	14.0	HORIZONTAL	N	32	A, B, C	EUH-1
EUH-2	STORAGE 3 (Maint. Bldg.)	STORAGE 3	MARKEL	HLA 12-208 160-3.0-24	SUSPENDED EXPLOSION PROOF	580	10,250	3.0	---	208/1	16.3	HORIZONTAL	N	167	A, B, C	EUH-2
EUH-3	STORAGE 4 (Maint. Bldg.)	STORAGE 4	MARKEL	HLA 12-208 160-3.0-24	SUSPENDED EXPLOSION PROOF	580	10,250	3.0	---	208/1	16.3	HORIZONTAL	N	167	A, B, C	EUH-3
EUH-4	CONCESSIONS (Mixed-use Bldg. 2)	CONCESSIONS	MARKEL	560 SERIES HF5605T	SUSPENDED	275	11,365	3.332	---	240/1	14.0	HORIZONTAL	N	32	A, B, C	EUH-4
FACTORY INSTALLED OPTIONS: A. SINGLE POLE 24V INTERNAL THERMOSTAT.								FIELD INSTALLED OPTIONS: C. CEILING/WALL MOUNTING BRACKETS.								
B. DISCONNECT SWITCH.																

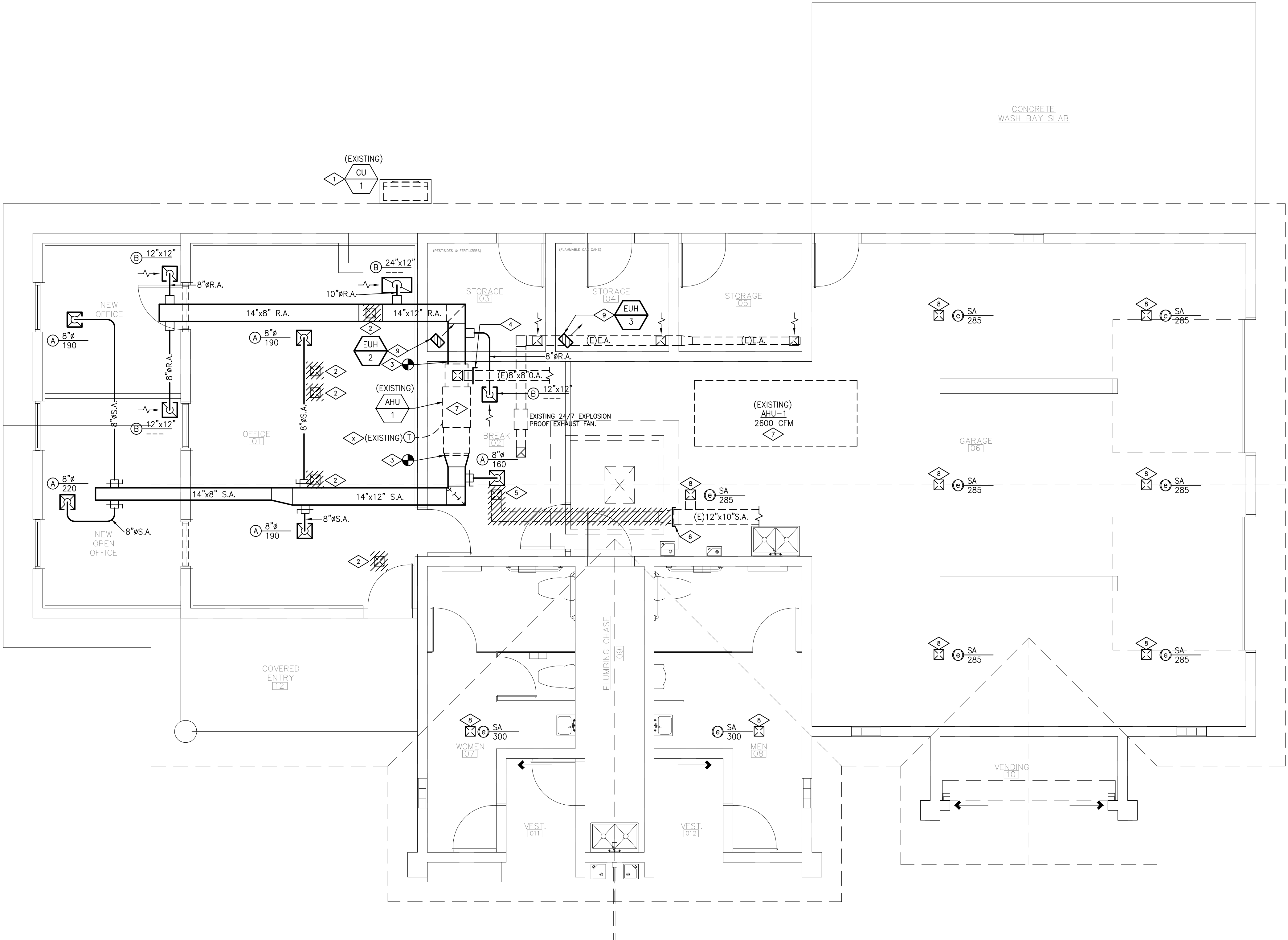
KEY NOTES (THIS SHEET ONLY)

- 1 EXISTING CONDENSING UNIT TO REMAIN. INSPECT FOR PROPER OPERATION.
- 2 REMOVE EXISTING CEILING GRILLES/DIFFUSERS AND RELATED DUCTWORK. GC TO PATCH CEILING AS REQUIRED.
- 3 CONNECT NEW DUCTWORK TO EXISTING, FIELD VERIFY REQUIREMENTS.
- 4 BALANCE O.A. TO QUANTITY SHOWN ON EXISTING AHU SCHEDULE. PROVIDE BALANCE DAMPER IF NECESSARY.
- 5 REMOVE PORTION OF S.A. DUCTWORK AND CEILING GRILLE AS SHOWN. RE-USE EXISTING GRILLE OPENING IF FEASIBLE.
- 6 CAP EXISTING S.A. DUCT AIR-TIGHT.
- 7 EXISTING AIR-HANDLING UNIT TO REMAIN. CONTRACTOR TO SERVICE AS REQUIRED TO ENSURE OPTIMUM OPERATION.
- 8 RE-BALANCE DIFFUSERS TO AIR-QUANTITIES SHOWN.
- 9 SUSPEND ELECTRIC UNIT HEATER FROM CEILING WITH SUPPLIED BRACKETS.



DESIGN
CONCEPTS
Community + Landscape Architects
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303 664 5301 www.dcla.net

pivotal
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A Full Service MEP, Civil and Environmental Firm
521 DAKOTA COURT WINDSOR, CO 80550
(970) 310-3201
1515 POYORAS STREET, STE. 1875 NEW ORLEANS, LA 70112
(504) 799-3653
www.pivotaleng.com



EXISTING MAINTENANCE BUILDING – MECHANICAL FLOOR PLAN

SCALE = 1/4" = 1'-0"

CONSTRUCTION NOTES:

1. MECHANICAL CONTRACTOR TO FIELD VERIFY LOCATIONS OF ALL HVAC EQUIPMENT, DUCTWORK AND GRD'S PRIOR TO INSTALLATION. MECHANICAL CONTRACTOR TO MODIFY DUCTWORK LAYOUT WHEN NECESSARY TO ACHIEVE DESIRED AIR DISTRIBUTION DESIGN.
2. MECHANICAL CONTRACTOR TO PROVIDE ACCESS DOORS FOR ALL HVAC EQUIPMENT ABOVE GYP. BOARD CEILINGS.
3. MECHANICAL CONTRACTOR TO COORDINATE ALL GRD LOCATIONS WITH REFLECTED CEILING PLAN AND LIGHTING PRIOR TO INSTALLATION.
4. MECHANICAL CONTRACTOR TO COORDINATE ALL EXTERIOR AIR INTAKE AND EXHAUST LOCATIONS WITH 2006 IMC AND 2006 IBC GUIDELINES PRIOR TO INSTALLATION.

PROJECT NOTE:

INASMUCH AS THE REMODELING OR REHABILITATION OF AN EXISTING BUILDING REQUIRES THAT CERTAIN ASSUMPTIONS BE MADE REGARDING EXISTING CONDITIONS, AND BECAUSE SOME OF THE ASSUMPTIONS MAY NOT BE VERIFIABLE WITHOUT DESTROYING ADEQUATE OR SERVICEABLE PORTIONS OF THE BUILDING, THE CONTRACTOR SHALL VERIFY ALL QUESTIONS, CONDITIONS AND PROCEDURES WITH THE ENGINEER PRIOR TO THE COMMENCEMENT OF EACH PART OF THE NEW WORK.

WARRANTY NOTES:

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LOVELAND SPORTS PARK
PHASE TWO

950 North Boyd Lake Ave.
Loveland, CO 80537



Project No.: 17-037

Issued For: Bid Set
Date: 04.05.18

Drafted By: VR
Checked By: VR, JA

All drawings and written material appearing herein constitute original and unpublished work of Design Concepts and may not be duplicated, used or disclosed.

MAINTENANCE BLDG
MECHANICAL
FLOOR PLAN

M-1.0

KEY NOTES

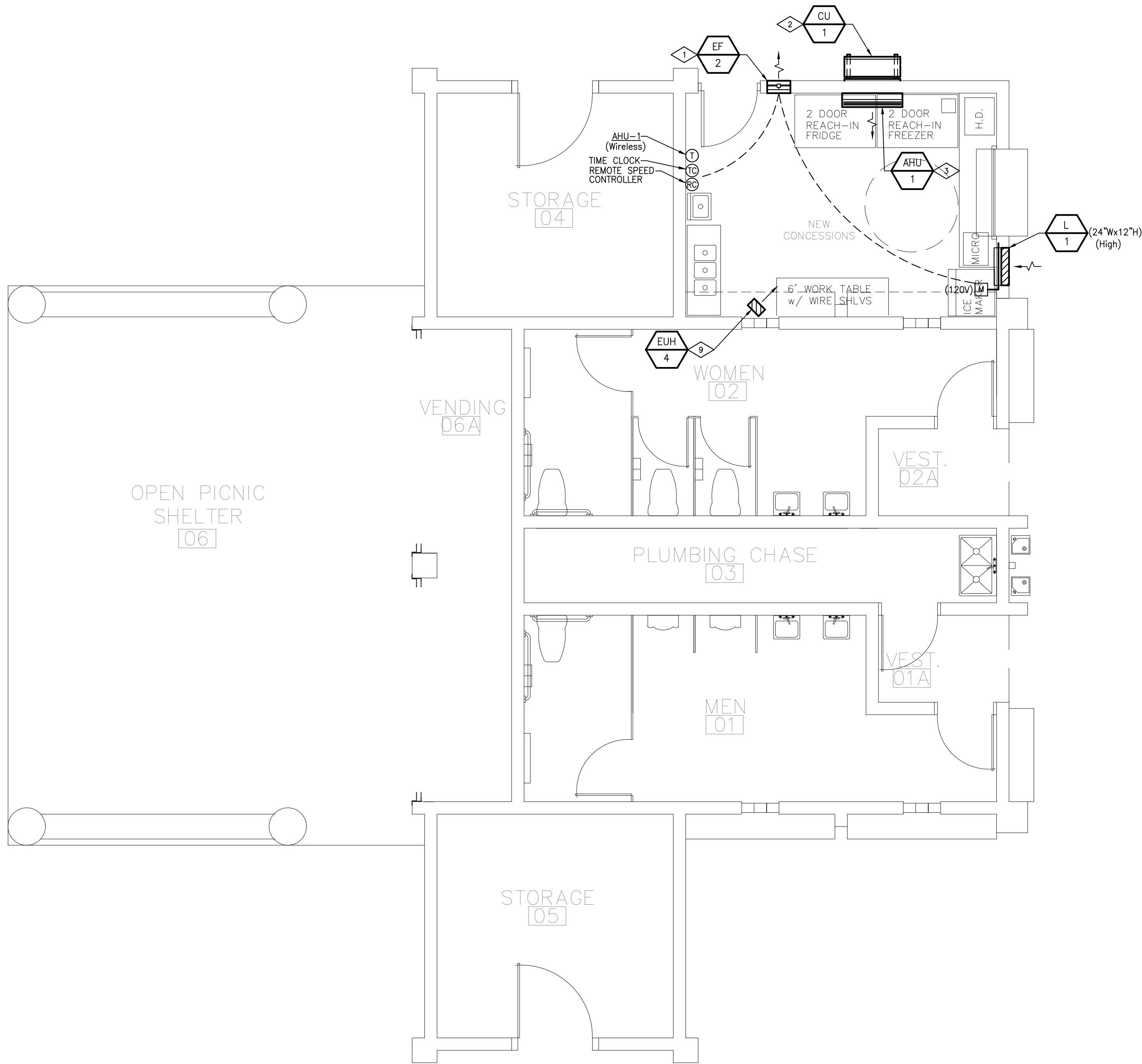
(THIS SHEET ONLY)

- 1

INSTALL EXHAUST IN WALL AS HIGH AS POSSIBLE.
- 2

MOUNT CONDENSING UNIT HIGH ON WALL WITH ANGLE IRON SUPPORTS. PROVIDE MIN. CLEARANCE FROM WALL PER MANUFACTURERS' INSTALLATION INSTRUCTIONS.
- 3

MOUNT AIR HANDLER HIGH ON WALL WITH BRACKETS INCLUDED WITH UNIT. PROVIDE MIN. CLEARANCE FROM CEILING PER MANUFACTURERS' INSTALLATION INSTRUCTIONS. ROUTE CONDENSATE DRAIN PIPING TO FLOOR SINK (RE: PLUMBING).



EXISTING MIXED USE BUILDING – MECHANICAL FLOOR PLAN

SCALE = 1/4" = 1'-0"

CONSTRUCTION NOTES:

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DESIGN
CONCEPTS

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LOVELAND SPORTS PARK
PHASE TWO

950 North Boyd Lake Ave.
Loveland, CO 80537

MIXED USE BLDG#2
MECHANICAL FLOOR PLAN

NOT FOR
CONSTRUCTION

Project No.: 17-037

Issued For: Bid Set Date: 04.05.18

Drafted By: VR
Checked By: VR, JA

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MIXED USE BLDG#2
MECHANICAL
FLOOR PLAN

M-1.1

KEY NOTES

(THIS SHEET ONLY)

- 1

INSTALL BRICK VENT ABOVE DOOR, COORDINATE WITH MASONRY AS REQUIRED.
- 2

EXHAUST FAN LOCATED IN ATTIC, SUSPEND FROM ABOVE WITH ALL-THREAD ROD AND VIBRATION ISOLATION. PROVIDE FLEXIBLE DUCT CONNECTIONS ON INLET AND OUTLET OF FAN.
- 3

12"x12" E.A. UP TO CUPOLA LOUVER, REFER TO CUPOLA DIAGRAM THIS SHEET.
- 4

PROVIDE FULL-SIZE 12" DEEP S.M. PLENUM ON INLET SIDE OF FAN.
- 5

SUSPEND ELECTRIC UNIT HEATER FROM CEILING WITH SUPPLIED BRACKETS.



DESIGN
CONCEPTS

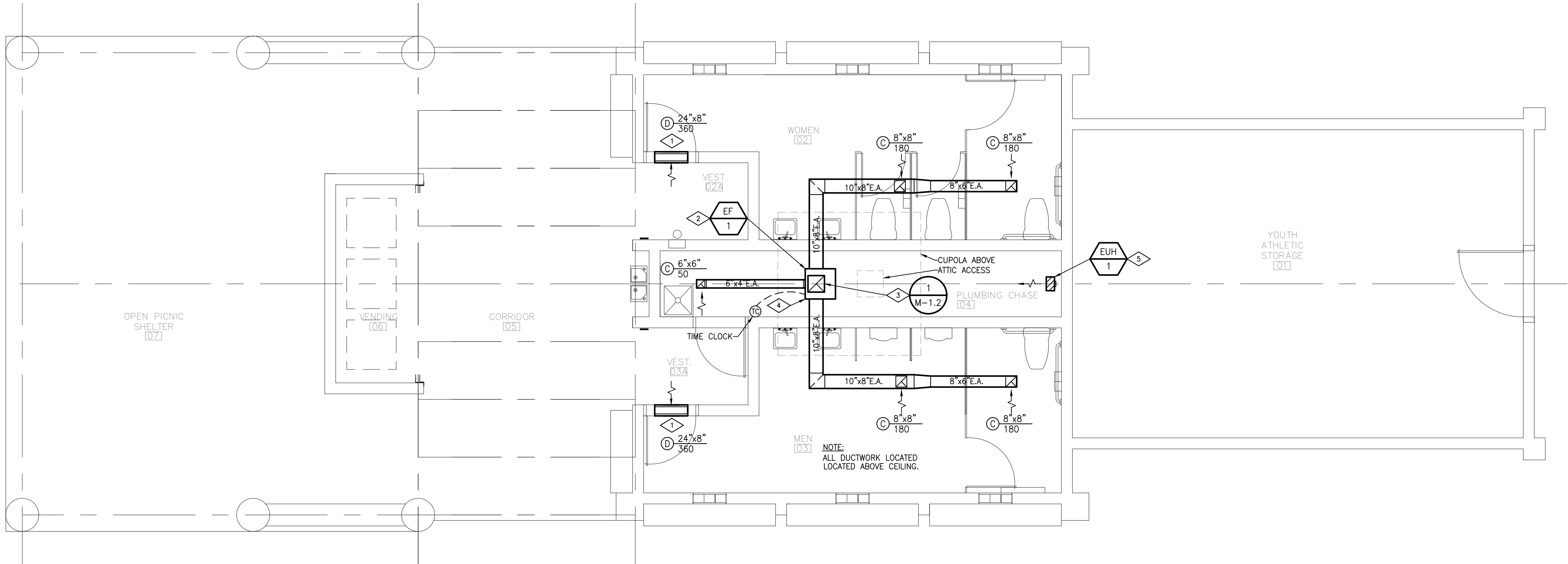
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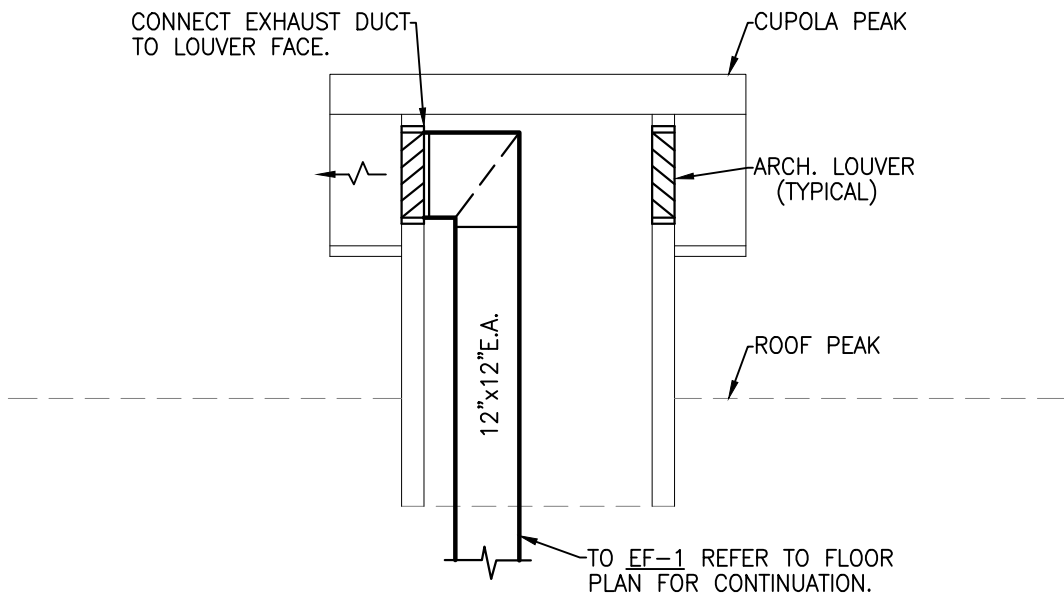
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NEW MIXED USE BUILDING 3 – MECHANICAL FLOOR PLAN

SCALE = 1/4" = 1'-0"



EXHAUST @ CUPOLA

NOT TO SCALE

1
M-1.2

CONSTRUCTION NOTES:

- MECHANICAL CONTRACTOR TO FIELD VERIFY LOCATIONS OF ALL HVAC EQUIPMENT, DUCTWORK AND GRD'S PRIOR TO INSTALLATION. MECHANICAL CONTRACTOR TO MODIFY DUCTWORK LAYOUT WHEN NECESSARY TO ACHIEVE DESIRED AIR DISTRIBUTION DESIGN.
- MECHANICAL CONTRACTOR TO PROVIDE ACCESS DOORS FOR ALL HVAC EQUIPMENT ABOVE GYP. BOARD CEILINGS.
- MECHANICAL CONTRACTOR TO COORDINATE ALL GRD LOCATIONS WITH REFLECTED CEILING PLAN AND LIGHTING PRIOR TO INSTALLATION.
- MECHANICAL CONTRACTOR TO COORDINATE ALL EXTERIOR AIR INTAKE AND EXHAUST LOCATIONS WITH 2006 IMC AND 2006 IBC GUIDELINES PRIOR TO INSTALLATION.

PROJECT NOTE:

INASMUCH AS THE REMODELING OR REHABILITATION OF AN EXISTING BUILDING REQUIRES THAT CERTAIN ASSUMPTIONS BE MADE REGARDING EXISTING CONDITIONS, AND BECAUSE SOME OF THE ASSUMPTIONS MAY NOT BE VERIFIABLE WITHOUT DESTROYING ADEQUATE OR SERVICEABLE PORTIONS OF THE BUILDING, THE CONTRACTOR SHALL VERIFY ALL QUESTIONS, CONDITIONS AND PROCEDURES WITH THE ENGINEER PRIOR TO THE COMMENCEMENT OF EACH PART OF THE NEW WORK.

WARRANTY NOTES:

- ALL PARTIES INVOLVED IN THIS PROJECT ACKNOWLEDGE THAT THERE ARE NO WARRANTIES OR PERFORMANCE GUARANTEES EITHER IMPLIED OR EXPRESSED ON THE EXISTING PRE-PURCHASED EQUIPMENT. THE BUILDING OWNER, TENANTS, AND ALL PARTIES INVOLVED WITH THIS PROJECT AGREE TO INDEMNIFY PIVOTAL ENGINEERING, LLC FROM AND AGAINST ALL DAMAGE, LOSS, CLAIM OR INJURY (INCLUDING DEATH) IN CONNECTION WITH THE PERFORMANCE OF THE EXISTING EQUIPMENT.
- THE CONTRACTOR SHALL INSPECT THE EXISTING EQUIPMENT FOR ADEQUATE OPERATION OF ALL MODES AS WELL AS CONTROL FUNCTIONS. THE EQUIPMENT SHALL BE VERIFIED AS PERFORMING AS EXPECTED. DRIVE BELTS AND AIR FILTERS SHALL BE REPLACED AS NECESSARY. PROVIDE ALL OTHER NORMAL SERVICE PROCEDURES AS REQUIRED.

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MIXED-USE BLDG#3
MECHANICAL
FLOOR PLAN

M-1.2

PLUMBING FIXTURE SCHEDULE	
TAG	DESCRIPTION
WC-1	WATER CLOSET ACORN, MODEL 2120-W-1-FVH, WALL MOUNTED BACK OUTLET FLUSH VALVE TYPE, ELONGATED BOWL, WITH CONCEALED PUSH-BUTTON FLUSH VALVE. WALL CARRIERS TO BE J.R. SMITH 0310L/RV, WITH ANGLE SUPPLY VALVES WITH LOOSE KEY STOP, RISER, COUPLING NUTS, ESCUTCHEONS, STAINLESS STEEL FINISH. 1.6 GPF 3"SS, 2"V, 1½"CW. (OR APPROVED EQUAL)
WC-2	WATER CLOSET (HANDICAP) SAME AS WC-1 EXCEPT WITH "-ADA" OPTION. 3"SS, 2"V, 1½"CW. (OR APPROVED EQUAL)
L-1	LAVATORY (HANDICAP) ACORN, MODEL 1652, WALL HUNG, 18" STAINLESS STEEL, 14-3/4"x9-½"x4-½" BOWL, INTEGRAL ADA FAUCET 0.5 GPM AERATOR, OPEN GRID DRAIN, TAILPIECE, CONCEALED PIPING CONNECTIONS. ASSE 1070 TEMPERING DEVICE. 1½"SS, 1½"V, ½"CW, ½"HW. (OR APPROVED EQUAL)
UR-1	URINAL (HANDICAP) ACORN, MODEL 1707-W-1, WALL HUNG, 1.0 GALLON PER FLUSH WITH CONCEALED FHV FLUSH VALVE. WALL HANGERS, ADA/ANSI COMPLIANT. 2"SS, 2"V, 3/4"CW. (OR APPROVED EQUAL)
DF-1	DRINKING FOUNTAIN HALSEY-TAYLOR, MODEL HRFSEBP BI-LEVEL BARRIER-FREE, ONE PIECE, STAINLESS STEEL BRUSHED SATIN FINISH, SELF-CLOSING PUSHBUTTON ACTUATOR, INLET STRAINER, ADA/ANSI COMPLIANT. ½"CW, 1¼"SS.
DWH-1	DOMESTIC WATER HEATER - ELECTRIC (MIXED-USE 3) BRADFORD-WHITE, MODEL LE120WV3-1, 19 GALLON ELECTRIC WATER HEATER, GLASS LINED AND INSULATED TANK WITH TEMPERATURE AND RELIEF VALVE, 1-3500W HEATING ELEMENT, 240V/1PH, 14 GPH RECOVERY @ 100 F RISE. WALL MOUNTING KIT. 240 lbs. OP. WT. (OR APPROVED EQUAL)
DWH-2	DOMESTIC WATER HEATER - ELECTRIC (MIXED-USE 2 - CONCESSIONS) BRADFORD-WHITE, MODEL LE120WV3-1, 19 GALLON ELECTRIC WATER HEATER, GLASS LINED AND INSULATED TANK WITH TEMPERATURE AND RELIEF VALVE, 1-4500W HEATING ELEMENT, 240V/1PH, 19 GPH RECOVERY @ 100 F RISE. WALL MOUNTING KIT. 240 lbs. OP. WT. (OR APPROVED EQUAL)
ET-1	EXPANSION TANK AMTROL, MODEL EXTROL ST-5 THERMAL EXPANSION TANK 2.0 GAL. TOTAL VOLUME, DIAPHRAGM TYPE, 150 MAX psi. 3/4" NPTM CONNECTION. (OR APPROVED EQUAL)
FD-1	FLOOR DRAIN PROSET, MODEL T(X)5630-F-P, 5 INCH DIAMETER NICKEL BRONZE STRAINER, PVC BODY WITH FLASHING CLAMP, INTEGRAL 'TRAP-GUARD' ACCESSORY. REFER TO FLOOR PLANS FOR SIZES. (OR APPROVED EQUAL)
FS-1	FLOOR SINK ZURN, MODEL Z-1900 12"x12"x6" DEEP CAST IRON BODY, SQUARE SLOTTED MEDIUM DUTY HALF GRATE, BOTTOM ANTI-SPLASH DOME STRAINER, WHITE ENAMEL TOP AND INTERIOR. (OR APPROVED EQUAL)
WHA-1	WATER HAMMER ARRESTOR WATTS MODEL 15, PRE-CHARGED AIR CHAMBER, NPT SOLID BRASS HEX ADAPTER, 3/4"CW. (OR APPROVED EQUAL)
MSB-1	MOP SINK BASIN FLORESTONE MODEL MSR-2424 MOLDED MOP SINK BASIN, INTEGRAL DRAIN, 'SPEAKMAN' MODEL SC-5811-RCP SERVICE SINK FITTINGS, ASSE 1070 TEMP. VALVE. 1/2"H&CW, 2"SS, 2"V. (OR APPROVED EQUAL)
WPRV-1	WATER PRESSURE REDUCING VALVE (MIXED-USE 3) WATTS SERIES 223-S, BRONZE BODY, STAINLESS STEEL DIAPHRAGM AND DISC. 2"CW (OR APPROVED EQUAL)
RPBP-1	REDUCED PRESSURE BACKFLOW PREVENTER (MIXED-USE 3) WATTS MODEL 909-M1. SIZE 2"CW (OR APPROVED EQUAL)
WCO	WALL CLEANOUT ZURN MODEL ZN01446 WITH SMOOTH STAINLESS STEEL ACCESS COVER AND SECURING SCREW. (OR APPROVED EQUAL)
FCO	FLOOR CLEANOUT ZURN, MODEL ZN-1400 WITH NICKEL BRONZE TOP IN FINISHED AREAS. (OR APPROVED EQUAL)
GCO	GRADE CLEAN-OUT J.R. SMITH, MODEL 4023, CAST IRON WITH DOUBLE FLANGED HOUSING AND SECURED SCORRIATED CAST IRON COVER WITH LIFTING DEVICE. PROVIDE BI-DIRECTIONAL TEE. (OR APPROVED EQUAL)

- GENERAL NOTES
1. UPON COMPLETION OF JOB, FURNISH OWNER COMPLETE OPERATION AND MAINTENANCE MANUALS. MEET WITH OWNER OR OWNER'S REPRESENTATIVE TO INSTRUCT ON OPERATIONS PROCEDURES.

2. COORDINATE EXACT LOCATIONS AND ELEVATIONS FOR ALL PLUMBING PIPING SYSTEMS AND EQUIPMENT WITH STRUCTURE, FOUNDATION AND ALL OTHER TRADES AS REQUIRED.

3. ALL WORK IS TO BE IN COMPLIANCE WITH THE CITY OF LOVELAND, CO BUILDING DEPARTMENT, THE INTERNATIONAL PLUMBING CODE, AND THE INTERNATIONAL BUILDING AND MECHANICAL CODES.

4. REINFORCEMENT OF STRUCTURE FOR ALL NEW PLUMBING EQUIPMENT IS TO BE DESIGNED, PROVIDED AND INSTALLED BY OTHERS.

5. MAINTAIN MINIMUM 10'-0" SEPARATION BETWEEN PLUMBING VENTS AND OUTSIDE AIR INLETS.

6. PLUMBING PLANS ARE DIAGRAMMATIC AND SCHEMATIC IN NATURE, COORDINATE ALL PIPE ROUTING AND EQUIPMENT LOCATIONS WITH STRUCTURE. FIELD VERIFY REQUIREMENTS.

7. ALL PLUMBING EQUIPMENT & MATERIALS SELECTIONS SCHEDULED ON THESE DRAWINGS ARE USED FOR THE DESIGN BASIS OF THE PLUMBING SYSTEMS. MANUFACTURER SUBSTITUTIONS OF EQUIPMENT & MATERIALS MUST ACQUIRE THE ENGINEER'S APPROVAL AT OR BEFORE THE EQUIPMENT SUBMITTAL PHASE OF PROJECT.

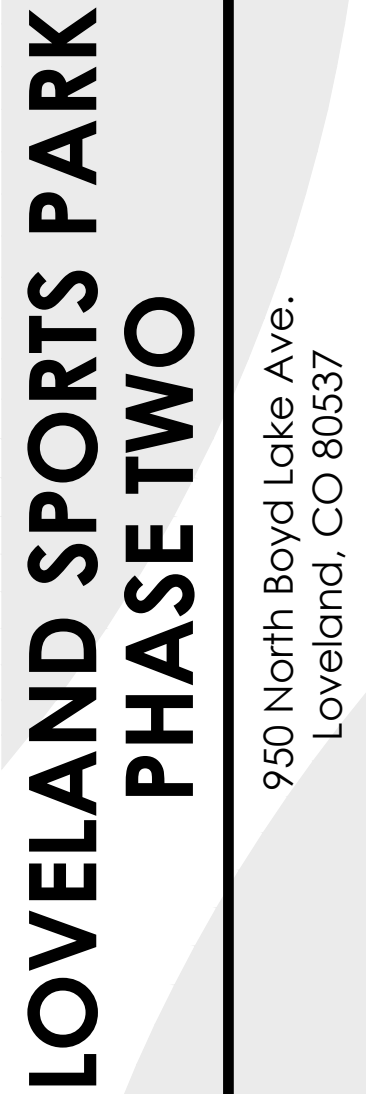
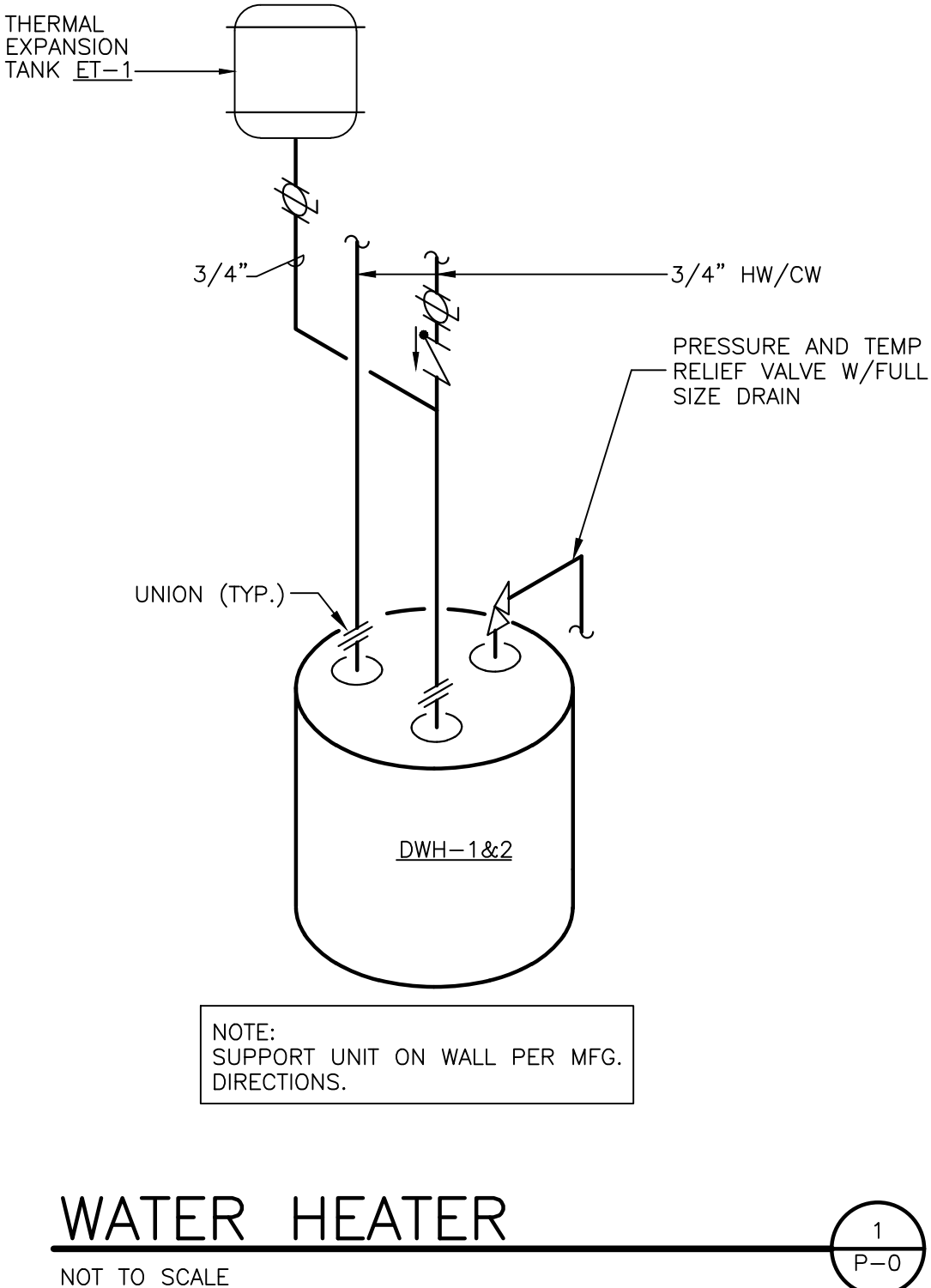
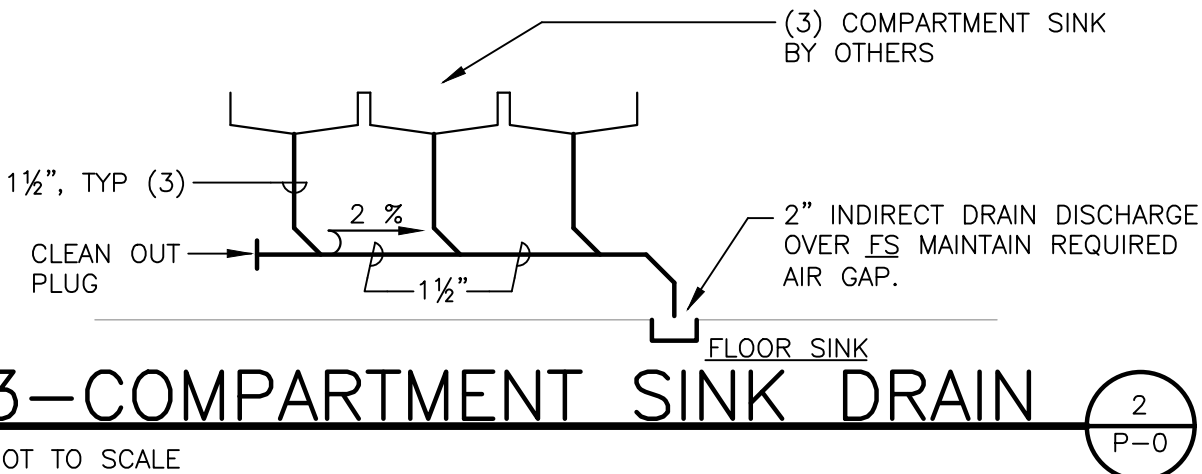
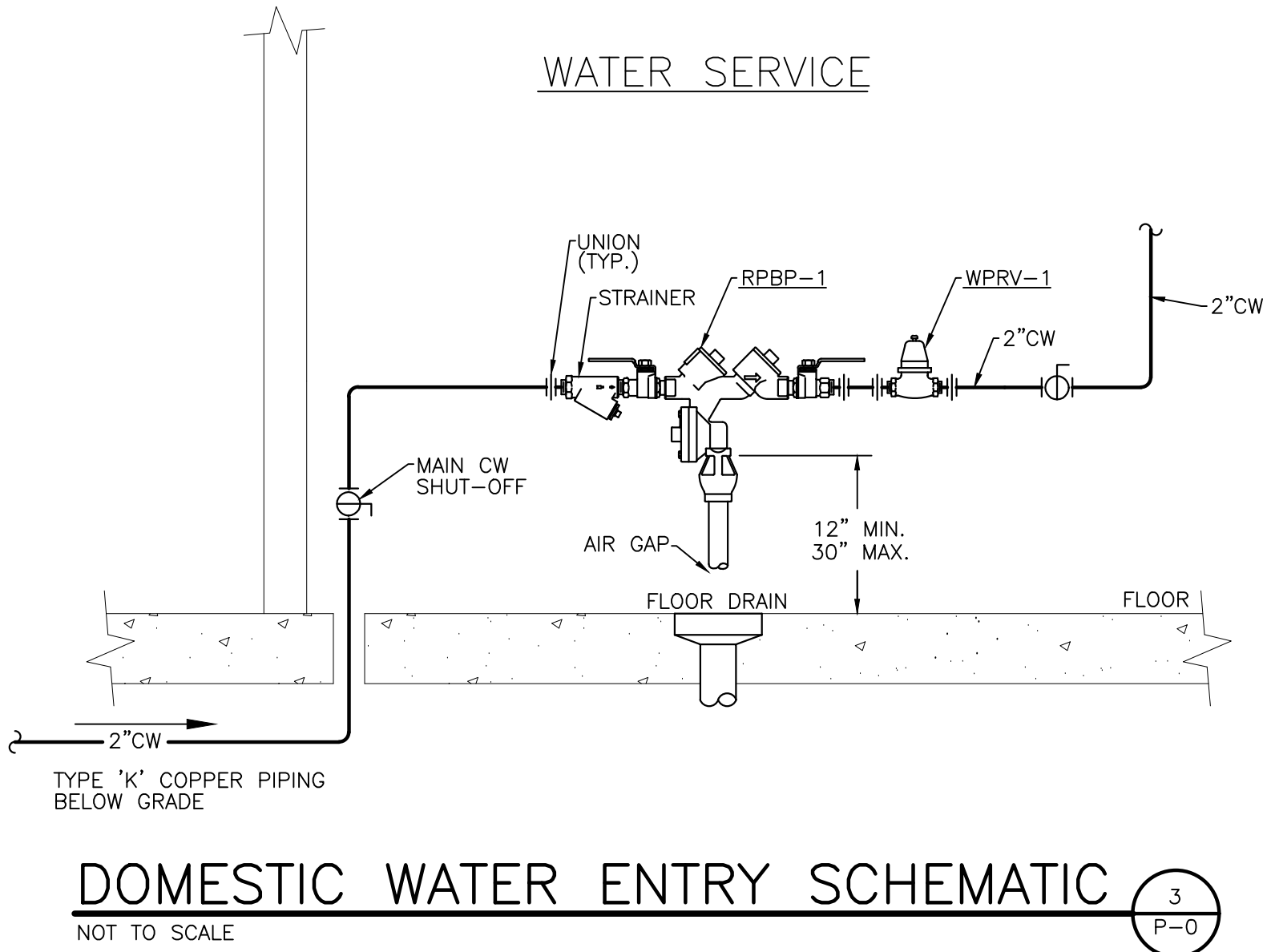
- CONSTRUCTION NOTES
1. PLUMBING CONTRACTOR TO COORDINATE ANY PLUMBING DESIGN CONFLICTS WITH MECHANICAL ENGINEER, ARCHITECT & STRUCTURAL ENGINEER VIA REQUEST FOR INFORMATION OR SUBMITTAL PACKAGE PRIOR TO FABRICATION AND INSTALLATION.

2. PROVIDE ISOLATION AS REQUIRED BY THE INTERNATIONAL BUILDING CODES FOR ALL PIPING PENETRATIONS THROUGH THE FLOOR SLAB.

DESIGN CRITERIA	
PROJECT SITE:	LOVELAND, COLORADO
CODES:	2012 INTERNATIONAL BUILDING CODE 2012 INTERNATIONAL MECHANICAL CODE 2012 INTERNATIONAL PLUMBING CODE 2012 INTERNATIONAL ENERGY CONSERVATION CODE 2014 NATIONAL ELECTRIC CODE

LEGEND	
	SANITARY SEWER VENT PIPING
	SANITARY SEWER PIPING
	SERVICE DRAIN PIPING
	DOMESTIC COLD WATER PIPING
	DOMESTIC HOT WATER PIPING
	ROOF DRAIN LEADER PIPING
	OVERFLOW ROOF DRAIN LEADER PIPING
	NON-POTABLE WATER PIPING
	NATURAL GAS PIPING (DELIVERY PRESSURE)
	EXISTING PIPING
	PIPE CAP
	GAS COCK
	UNION
	INCREASER/REDUCER
	CHECK VALVE
	BALL VALVE
	PRESSURE REDUCING VALVE
	RELIEF VALVE
	REDUCED PRESSURE BACKFLOW PREVENTER
	PIPE OFFSET UP
	PIPE OFFSET DOWN
	MINIMUM PIPING SLOPE IN DIRECTION OF FLOW
	PIPE ELBOW DOWN
	PIPE ELBOW UP
	TEE OFF BOTTOM OF PIPE
	TEE OFF TOP OF PIPE
	POINT OF NEW CONNECTION
	ABOVE FINISHED FLOOR
	WALL CLEAN-OUT
	FLOOR CLEAN-OUT
	GRADE CLEAN OUT
	VENT THROUGH ROOF
	COLD WATER
	HOT WATER
	DIAGRAM OR RISER
	SHEET NUMBER

DRAWING INDEX							
NUMBER	DRAWING TITLE	REVIEW SET 02/28/18 BY 04/02/18					
PM-1	GENERAL MECHANICAL NOTES AND OUTLINE SPECIFICATIONS.	•	•				
P-0	LEGEND, INDEX, GENERAL NOTES, DESIGN CRITERIA, DIAGRAMS AND SCHEDULES.	•	•				
P-1.0	MIXED USE BUILDING #2 - PLUMBING FLOOR PLANS.	•	•				
P-1.1	MIXED USE BUILDING #3 - PLUMBING FLOOR PLANS.	•	•				
COORDINATION:		03/27/18 - ARCHITECTURAL DRAWING SET 04/05/18- ELECTRICAL DRAWING SET 04/05/18 - MECHANICAL DRAWING SET					



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LEGEND, INDEX GENERAL NOTES AND SCHEDULES

P-0



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**LOVELAND SPORTS PARK
PHASE TWO**
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MIXED USE BLDG#2
MECH
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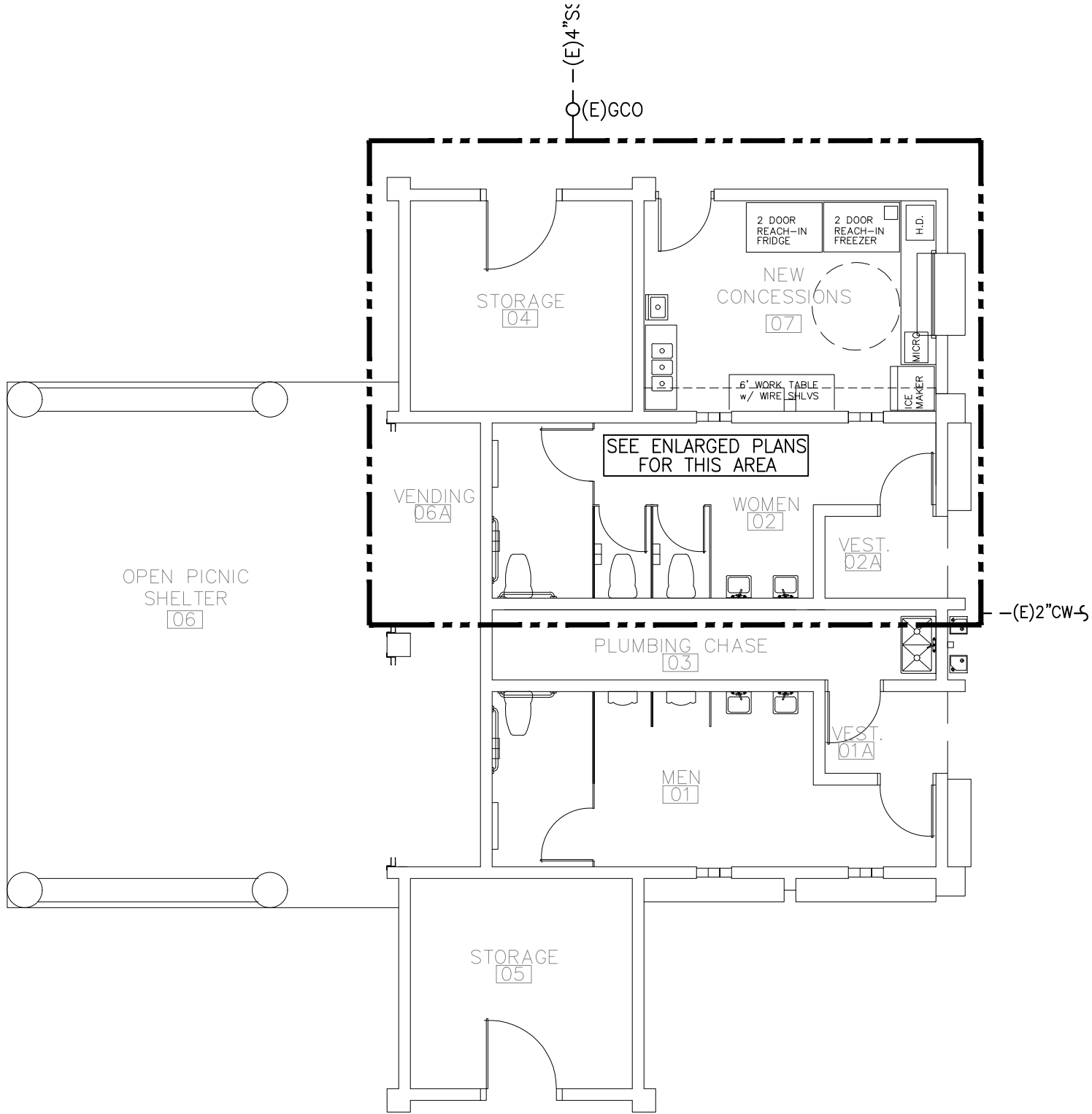
MIXED USE BLDG#2
PLUMBING
FLOOR PLANS

P-1.0

KEY NOTES

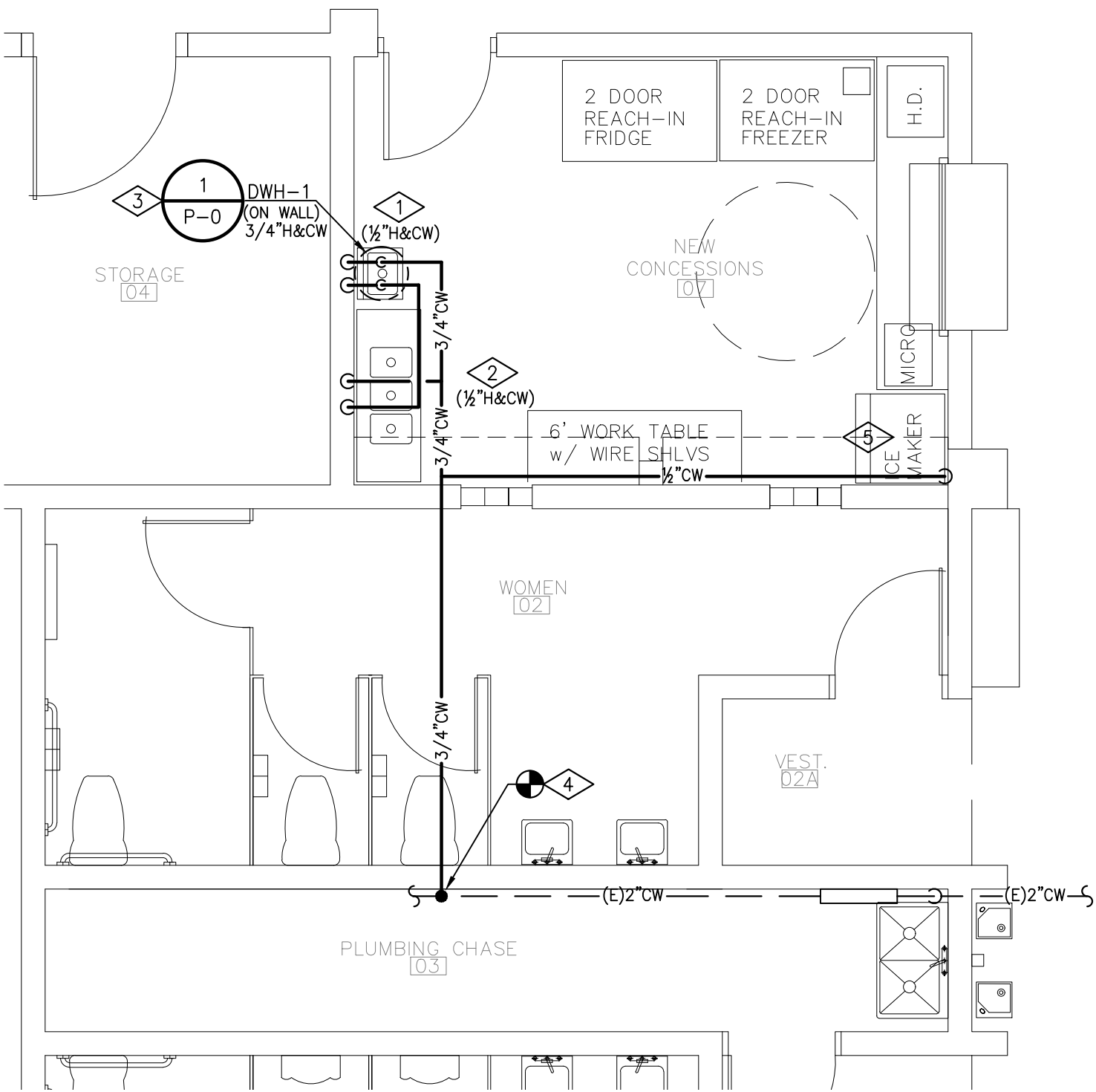
(THIS SHEET ONLY)

- 1 HAND WASH SINK SPECIFICATION BY OWNER.
- 2 3-COMPARTMENT SINK SPECIFICATION BY OWNER.
- 3 SUPPORT WATER HEATER ON WALL WITH PROVIDED BRACKETS.
- 4 CONNECT (N)3/4"CW TO (E)2"CW. PROVIDE BALL VALVE, FIELD COORDINATE.
- 5 CONNECT (N)1/2"CW TO ICE MAKER. PROVIDE BALL VALVE & VACUUM BREAKER.
- 6 ROUTE FULL SIZE DRAIN FROM ICE MAKER TO FS-1, PROVIDE AIR-GAP.
- 7 CONNECT (N)2"SS TO EXISTING 4"SS, FIELD COORDINATE.



EXISTING MIXED USE BUILDING - PLUMBING FLOOR PLAN

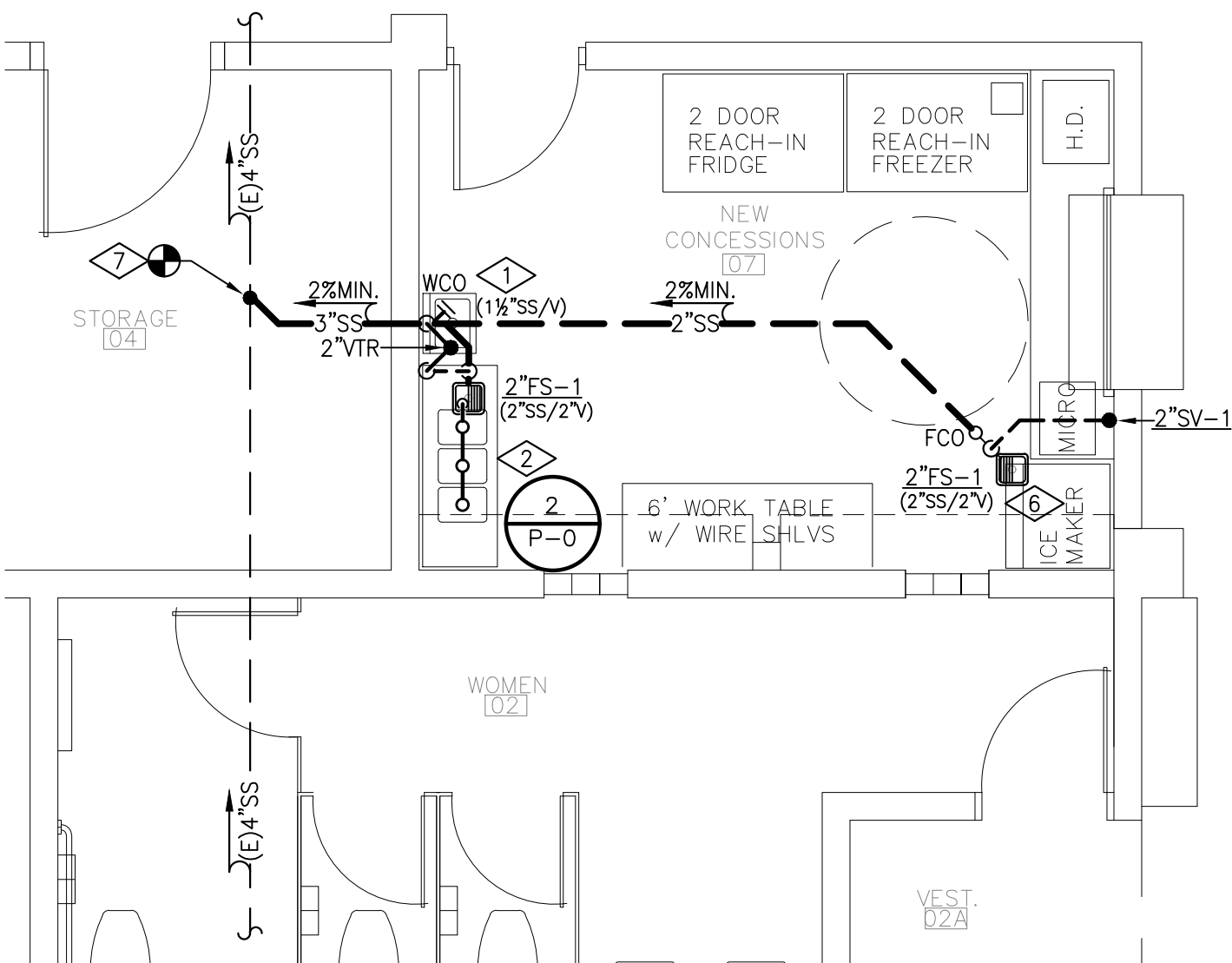
SCALE = 1/8" = 1'-0"



ENLARGED PLUMBING FLOOR PLAN

SCALE = 1/4" = 1'-0"

DOMESTIC WATER



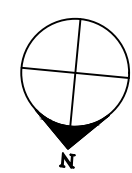
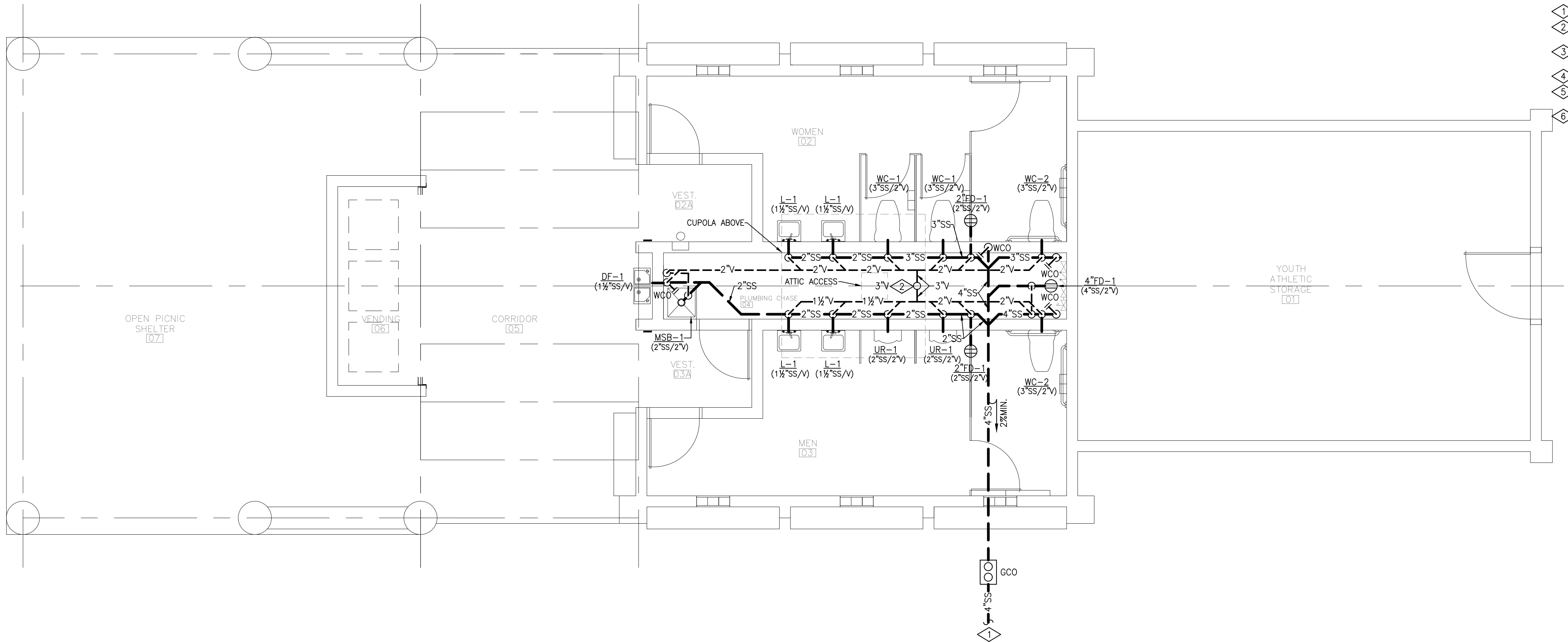
ENLARGED PLUMBING FLOOR PLAN

SCALE = 1/4" = 1'-0"

SANITARY SEWER AND VENT

PROJECT NOTE:

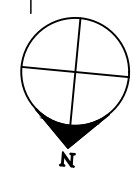
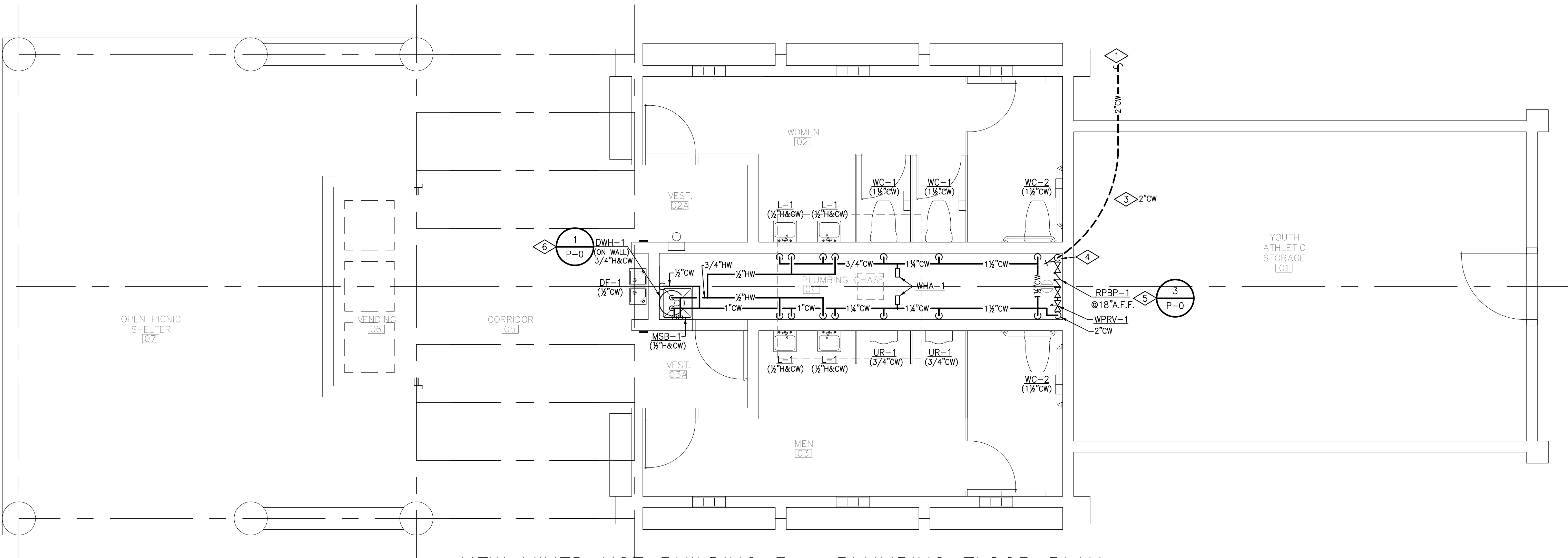
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NEW MIXED USE BUILDING 3 – PLUMBING FLOOR PLAN

SCALE = 1/4" = 1'-0"

SANITARY SEWER & VENT



NEW MIXED USE BUILDING 3 – PLUMBING FLOOR PLAN

SCALE = 1/4" = 1'-0"

SANITARY SEWER & VENT

KEY NOTES

(THIS SHEET ONLY)

- 1 REFER TO CIVIL SITE UTILITIES DRAWINGS FOR CONTINUATION.
- 2 3"V. UP INSIDE CUPOLA, TERMINATE THROUGH WALL WITH VANDAL PROOF DOME CAP. EXTEND 12" FROM WALL.
- 3 2"CW LOOPED BELOW FLOOR, TYPE 'K' SOFT COPPER, NO SPLICES OR FITTINGS BELOW THE FLOOR.
- 4 PROVIDE SHUT-OFF VALVE IN RISE, WITH HOSE END DRAIN VALVE.
- 5 ROUTE FULL-SIZE DRAIN FROM RPBP DRIP FUNNEL TO FLOOR DRAIN WITH REQUIRED AIR-GAP.
- 6 MOUNT WATER HEATER ON WALL WITH SUPPLIED BRACKETS ABOVE MOP SINK BASIN.



**DESIGN
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MIXED USE BLDG#3
PLUMBING
FLOOR PLANS

P-1.1

ELECTRICAL SPECIFICATIONS

1. Scope

The scope of the work covered herein consists of furnishing all labor, materials, necessary equipment and services to complete the Electrical Work and related work in full accordance as indicated on the drawings, as specified herein or both and subject to the terms and conditions of the Contract.

2. Codes, Rules, Permits, Fees

Electrical Contractor is generally responsible to insure all work, both old and new, complies with the NEC and any applicable local and state codes and ordinances.

3. Drawings

Drawings are diagrammatic and indicate the general arrangement of systems and work included in the contract. Drawings are not to be scaled. The Architectural drawings and details shall be examined for exact location of fixtures and equipment. Any conflict shall be immediately brought to the attention of the Architect or Engineer before proceeding with the work.

4. Shop Drawings

Materials or products specified herein and/or indicated on drawings by trade name, manufacturer's name or catalog number shall be provided as specified.

5. Cooperation With Other Trades

The Subcontractor shall give full cooperation to other trades and shall furnish in writing to the contractor, with copies to the Engineer, any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delay. Coordinate all conduit runs and equipment with other trades. Verify nameplate electrical data of actual equipment furnished by others before beginning installation.

6. Cutting, Patching, And Finishing

The Electrical Contractor shall do all cutting, drilling, etc. required for work under this section of the specifications, inside the building.

7. Excavation And Backfilling

The Subcontractor shall do all trench and pit excavating and backfilling required for work under this section of the specifications, inside and outside the building, all required shoring, bracing, pumping and all protection for safety of persons and property.

8. Material And Workmanship

All materials and apparatus required for the work shall be new unless indicated otherwise on the plans.

Electrical Contractor shall provide and install all electrical as shown, verifying all mounting heights and exact locations of all wall-mounted electrical devices with architect prior to rough-in.

Connections and junction boxes to equipment are diagrammatic. Verify exact location of connection to specific equipment and devices.

9. Panelboards

Panels shall be as manufactured by Square-D, G.E., Siemens or equivalent of sizes, ratings, and requirements shown on the plans. Panels shall be of dead front construction. All bussing shall be as specified on panel schedules.

Multi-pole breakers shall have a single handle to trip all poles at once.

A laminated black plastic with white lettering plastic nameplates with the identification number as shown on the panel schedule shall be mounted on the outside of the door with sheet metal screws. Nameplate size shall be 3" wide X 1-1/2" high with 1/2" high engraving. Provide a completed circuit directory, typed and mounted in a clear plastic sleeve, on the interior of the panel door.

10. Grounding

Provide a complete grounding network for the entire electrical system to comply with NEC requirements. All conduits shall have a ground wire installed. A conduit system shall not be used.

Bond service entrance ground to building steel, metal water mains, made electrodes, etc. Panelboards serving patient care areas shall be bonded together with #10cu insulated conductor per NEC 517.

11. Disconnect Switches

Equipment disconnect switches shall be Square-D, G.E., Siemens heavy duty of the type and rating on the plans. Fuses shall be provided of the appropriate type and rating for the equipment to be served.

12. Miscellaneous Equipment

Switches - All general use lighting (SPST toggle with or without pilot) switches to be rated 20A., 120-277V. as manufactured by Leviton, Lutron, P & S, or equivalent. Coordinate color with Owner/Architect.

Receptacles - All general use duplex receptacles to be rated 20A., 120V as manufactured by Leviton, Lutron, P & S, or equivalent. Coordinate color with Owner/Architect. Receptacles in patient care areas shall be hospital grade and red in color when on the critical branch. Label all cover plates with serving circuits.

Conductors - All conductors shall be rated 600V, copper, type THWN, XHHW/THHN. Where indicated aluminum conductors may be used and shall be type THHW/XHHW. Conductors of #8 AWG and larger shall be stranded. HCF listed cables are permitted in patient care areas per NEC 517.

Lighting fixtures - Lighting fixtures shall be as indicated on the fixture schedule or approved equals.

13. Conduit

Conduit shall be EMT, GRC, SCH. 40 PVC, SCH. 80 PVC, liquid tight metal flexible, or metal flexible.

GRC shall be used at exposed exterior locations and for panel feeders. Flex shall be used for connection to all fixed equipment, except in damp or wet locations, where liquid tight metal flexible shall be used. EMT shall be used at all exposed interior locations. All remaining locations may use PVC.

HCF listed cables are permitted in patient care areas per NEC 517.

Insulating bushings with double lock-nuts shall be used for entrance of 1-1/4" or larger into enclosures.

Sizes indicated are minimums, larger sizes may be used to facilitate wire pulls, etc.

14. Telephone System

Provide a 4' x 8' x 3/4" plywood backboard for telephone distribution. A driven ground rod shall be installed adjacent to the backboard. Install empty conduit(s) as indicated on the plans with pullwire installed for the telephone service entrance.

A 3/4" conduit shall be routed from all the telephone outlets to the ceiling space. Terminate conduit in ceiling space with a 90 degree bend and bushing at end of conduit. Extend conduit to nearest accessible ceiling space if no access to the ceiling space above the outlet is present. Provide a conduit path through all obstructions to the backboard.

15. Equipment Furnished By Others

Electrical Contractor shall provide conduit, wire and disconnect switches indicated on drawings, to connect electrical equipment supplied by others which shall include both new and relocation of existing equipment. All final electrical connections are to be by electrical contractor.

16. Record Drawings

The Contractor shall keep accurate records of actual construction including device locations and conduit runs if different from the plans.

The Contractor shall provide the owner with a reproducible set of plans of the complete electrical and special systems as installed. The scale on these drawings shall be no smaller than the scale used on the original plans.

17. Testing

Final tests shall be made only after the Engineer is satisfied that all work has been completed.

Acceptance testing of electrical gear shall be in accordance with NEC 517 and NETA STD ATS - Acceptance Testing Standards for Electrical Power Distribution Equipment and Systems.

18. Final Acceptance

After testing, a final inspection shall be made by the Engineer and other authorized persons with the Electrical Contractor.

Final acceptance of the project shall not prejudice the Owner's right to require replacement and/or repair any defective work or materials.

LEGEND

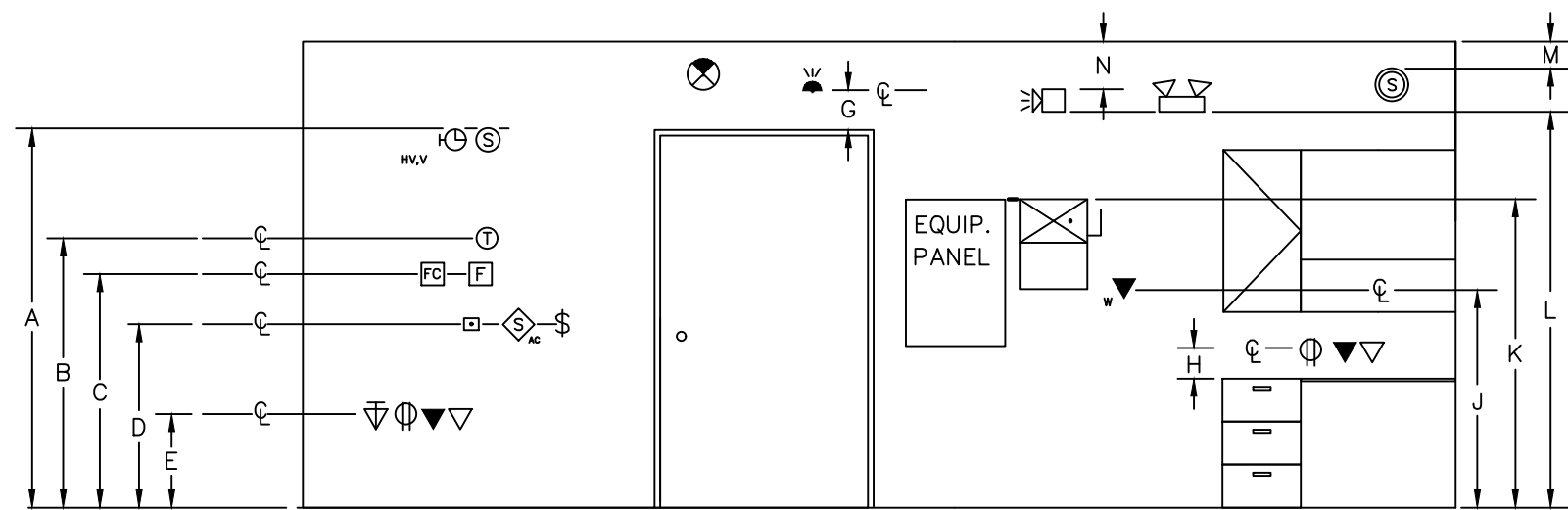
OUTLETS	SWITCHES	CONTROL
DUPLEX RECEPTACLE (120 V)	SINGLE-POLE SWITCH	Ⓢ THERMOSTAT (line voltage U.O.N. furnished by DIV. 15 U.O.N.)
DEDICATED DUPLEX RECEPTACLE (120V)	DOUBLE-POLE SWITCH	Ⓢ HUMIDISTAT (line voltage U.O.N. furnished by DIV. 15 U.O.N.)
WEATHERPROOF RECEPTACLE	THREE-WAY SWITCH	Ⓢ PHOTOCELL (voltage as required)
GROUND FAULT RECEPTACLE	FOUR-WAY SWITCH	Ⓢ TIME CLOCK (24 hour U.O.N.)
ISOLATED GROUND RECEPTACLE	SWITCH WITH PILOT LIGHT	Ⓢ PUSHBUTTON STATION (number of buttons indicated)
SWITCHED RECEPTACLE	KEY SWITCH	Ⓢ LIGHTING CONTACTOR
HALF SWITCHED RECEPTACLE	WEATHERPROOF SWITCH	Ⓢ IRRIGATION CONTROLLER
DOUBLE DUPLEX RECEPTACLE	TIME SWITCH	
FLUSH FLOOR RECEPTACLE, DUPLEX	DIMMER SWITCH (WATTAGE SHOWN)	
SPECIAL EQUIPMENT RECEPTACLE	LIGHT SENSOR	
LOCKING RECEPTACLE	WALL OCCUPANCY SENSOR	
FLUSH FLOOR TELEPHONE OUTLET	CEILING OCCUPANCY SENSOR	
DATA, TELEPHONE, OR FAX OUTLET		
TELEPOWER POLE		
(T=telephone, P=power, C=computer)		
JUNCTION BOX		
CIRCUITRY and RACEWAYS	SOUND and SIGNAL	DESIGNATIONS
CIRCUIT UP	Ⓢ SPEAKER	⚠ REVISION NOTE
CIRCUIT DOWN	Ⓢ VOLUME CONTROL	Ⓢ FLAG NOTE
HOME RUN (with circuit numbers)	Ⓢ BUZZER	Ⓢ KEY NOTE
END OF CONDUIT RUN	Ⓢ CHIME	Ⓢ FEEDER NUMBER
END OF RUN, CAP AND STAKE	Ⓢ TELEVISION ANTENNA OUTLET	UNLESS OTHERWISE NOTED
"RUN CONTINUES" INDICATION	Ⓢ MICROPHONE OUTLET	DEVICE DESIGNATED WEATHER PROOF
WIREMOLD (2-Channel)	Ⓢ INTERCOM OUTLET	AC DEVICE ABOVE COUNTER
PLUGMOLD	Ⓢ NURSE CALL	CLG DEVICE IN CEILING
		FLR DEVICE IN FLOOR
		AFF ABOVE FINISHED FLOOR
		(E) EXISTING TO REMAIN
		(R) EXISTING TO BE RELOCATED
		(D) EXISTING TO BE DEMOLISHED

MOUNTING HEIGHTS

KEY	HEIGHT	KEY	HEIGHT
A	80"	G	3"
B	48" MAX	H	8"A.C.
C	46" MAX	J	48" MAX
D	48" MAX	K	78" MAX
E	18" MIN	L	80"-96"
F	3" MIN	M	4" MIN
		N	6" MIN

NOTES:

- CENTERLINE DIMENSIONS ARE TO CENTER OF DEVICE WITH TRIM. ADJUST BACKBOX LOCATION AS REQUIRED.
- ALL MOUNTING HEIGHTS SHALL CONFORM TO THE LATEST EDITION OF THE AMERICANS WITH DISABILITIES ACT, (ADA).
- DIMENSIONS APPLY UNLESS OTHERWISE NOTED ON DRAWING.



DEVICE MOUNTING HEIGHT DETAIL

NO SCALE

KEY NOTES

(THIS SHEET ONLY)

- 1 PROVIDE ACUITY CONTROLS BLUE BOX LT SERIES 1GR1408, LT INT (5)NOL DTC DV 1VB 8 RELAY ENCLOSURE LIGHTING CONTROL PANEL, OR APPROVED EQUAL.

DRAWING INDEX

NUMBER	DRAWING TITLE	60% REVIEW SET	BID SET	104/05/18	I
E-0.1	LEGEND, NOTES, INDEX & ONE-LINE	*	*		
E-0.2	SCHEDULES	*	*		
E-1.01	SITE ELECTRICAL PLAN WEST	*	*		
E-1.02	SITE ELECTRICAL PLAN EAST	*	*		
E-2.0	EXISTING MAINTENANCE BUILDING ELECTRICAL PLAN	*	*		
E-2.1	EXISTING MIXED USE BLS. 1&2, CORPORATE SHELTER ELECTRICAL PLAN	*	*		
E-2.2	NEW MIXED USE BUILDING 3 ELECTRICAL PLAN	*	*		
E-2.3	NEW PICNIC SHELTERS ELECTRICAL PLAN	*	*		
COORDINATION:		03/27/18 - ARCHITECTURAL DRAWING SET 04/05/18 - PLUMBING DRAWING SET 04/05/18 - MECHANICAL DRAWING SET			

MECHANICAL EQUIPMENT & MOTOR SCHEDULE

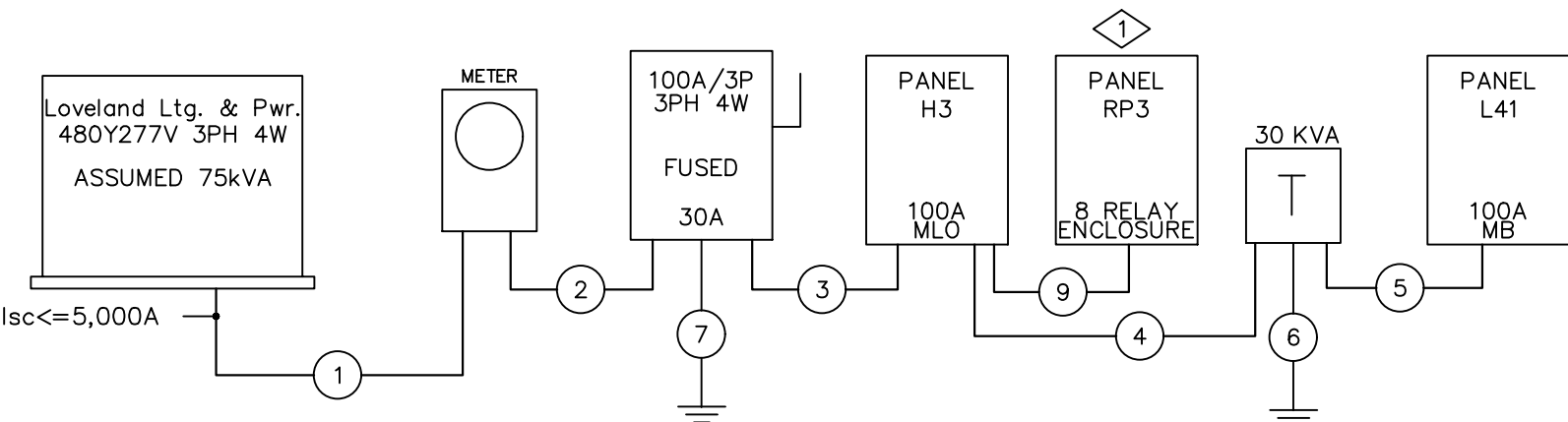
KEY	EQUIPMENT	CHARACTERISTICS			CIRCUIT			PROTECTION				NOTES
		HP	RLA/FLA	Watts	PH	Volts	MCA	MOCP	Breaker	Switch	Fuse	
AHU-1	Air Handling Unit (Mixed Use #2)											1
CU-1	Condensing Unit (Mixed Use #2)		8.0		1	208	10.0	20	20			30A
EF-1	Exhaust Fan (Mixed Use #3)		2.0		1	120	2.5	20	20			Snap Switch
EF-2	Exhaust Fan (Mixed Use #2)		1.5		1	120	1.9	20	20			Snap Switch
L-1	Louver Damper (Mixed Use #2)		0.5		1	120	0.6	20	20			Snap Switch
EUH-1	Electric Unit Heater (Mixed Use #3)		13.8	3320	1	240	17.3	20	20			Integral
EUH-2,3	Electric Unit Heater (Maint. Bldg.)		12.5	3000	1	208	15.6	20	20			Integral
EUH-4	Electric Unit Heater (Mixed Use #2)		13.8	3320	1	240	17.3	20	20			Integral
DWH-1	Water Heater (Mixed Use #3)		14.6	3500	1	240	18.2	20	20			30A
DWH-2	Water Heater (Mixed Use #2)		18.8	4500	1	208	23.4	30	30			30A
NOTES												
1	Air Handling Unit (AHU-1) is fed from Condensing Unit (CU-1).											
2	Louver Damper (L-1) to be interlocked with Exhaust Fan (EF-2). Coordinate with mechanical contractor.											

OWNER EQUIPMENT SCHEDULE - CONCESSIONS STAND

	EQUIPMENT	CHARACTERISTICS			CIRCUIT			PROTECTION				NOTES
		HP	RLA/FLA	Watts	PH	Volts	MCA	MOCP	Breaker	Switch	Fuse	
	2 Door Refrigerator		6.5		1	120	8.1	20	20			Receptacle
	2 Door Freezer		12.0		1	120	15.0	20	20			Receptacle
	Hot Dog Grill		2.8		1	120	3.5	20	20			Receptacle
	Microwave		14.0		1	120	17.5	20	20			Receptacle
	Ice Maker		13.3		1	120	16.6	20	20			Receptacle
NOTES												
1	Confirm final owner equipment selection requirements with owner and equipment vendor.											

FEEDER SCHEDULE

- (4-#10 CU.) 3/4" C.
- (4-#10 CU., #10 GND CU.) 3/4" C.
- (4-#10 CU., #10 GND CU.) 3/4" C.
- (4-#8 CU., #10 GND CU.) 3/4" C.
- (4-#3 CU., #8 GND CU.) 1-1/4" C.
- #8 CU. TO BLDG. STEEL OR C.W.P.
- #8 CU. TO C.W.P. & BLDG. STEEL
- #4 CU UFER GND.
- 20A EXTERIOR LIGHTING BRANCH CIRCUITS



MIXED USE BLDG. #3 ONE-LINE DIAGRAM

SCALE: NONE



DESIGN CONCEPTS

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www.pivotaleng.com

LOVELAND SPORTS PARK
PHASE TWO

950 North Boyd Lake Ave.
Loveland, CO 80537

NOT FOR
CONSTRUCTION

Project No.: 17-037

Issued For: 60% REVIEW Date: 02.28.18
BID 04.05.18

Drafted By: CW
Checked By: JA

All drawings and written material appearing herein constitute original and unpublished work of Design Concepts and may not be duplicated, used or disclosed.

LEGEND, NOTES, INDEX & ONE-LINE DIAGRAM

E-0.1



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SCHEDULES

E-0.2

PANEL			H3		Job # 17-037									
VOLTAGE			277/480		AIC AMPS			10,000		BUSSING		AL		
RATED AMPS			100		MAIN LUG ONLY			100		NEUTRAL BUS		100% YES		
PHASE / HERTZ			3/60		FEED			BOTTOM		GROUND BUS		YES		
# OF CIRCUITS			24		MOUNTING			SURFACE		FEED THROUGH LUGS		NO		
MANUFACTURER			SIEMENS		COVER TYPE			STANDARD		FED FROM		Main Disconnect		
PANEL TYPE			LC		ISOLATED GND			NO		NOTE: "L" BREAKERS TO BE "LOCK ON"				
CIR#	BKR	CIRCUIT DESCRIPTION			Cat.	WATTS	BKR TYPE	PH	BKR TYPE	WATTS	Cat.		BKR	CIR#
1	20A-1P	Lighting - Parking - East Lot N.			L	420		A		6,420		Panel L41 (30KVA Transformer)	45A-3P	2
3	20A-1P	Lighting - Parking - East Lot Center			L	1,280		B		6,420		"	"	4
5	20A-1P	Lighting - Parking - East Lot Center			L	640		C		6,420		"	"	6
7	20A-1P	Lighting - Parking - East Lot S.			L	560		A						8
9								B						10
11								C						12
13								A						14
15								B						16
17								C						18
19								A						20
21								B						22
23								C						24
Category		Connected		Demand Factor		Demand		Connected		Demand				
R- Recept.		1,500		N.E.C. 220.44		1,500		LINE L1		7,400		7,628		
L- Lighting		3,572		1.25		4,465		LINE L2		7,700		7,628		
H- Heating		3,320		1		3,320		LINE L3		7,060		7,628		
C- Cooling		0		1		0		LINE TOTAL		22,160		22,885		
E- Equip.		13,600		1		13,600		DEMAND AMPERAGE:		22,885		/ 1.732 / 480		28 Amps
M- Misc.		0		1		0								
Total:		21,992				22,885								

PANEL		L41		Job # 17-037										
VOLTAGE		120/208		AIC AMPS		10,000		BUSSING		AL				
RATED AMPS		100		MAIN BREAKER		100		NEUTRAL BUS		100% YES				
PHASE / HERTZ		3/60		FEED		BOTTOM		GROUND BUS		YES				
# OF CIRCUITS		24		MOUNTING		SURFACE		FEED THROUGH LUGS		NO				
MANUFACTURER		SIEMENS		COVER TYPE		STANDARD		FED FROM		PANEL H3				
PANEL TYPE		LC		ISOLATED GND		NO		NOTE: "L" BREAKERS TO BE "LOCK ON"						
CIR#	BKR	CIRCUIT DESCRIPTION			Cat.	WATTS	BKR TYPE	PH	BKR TYPE	WATTS	Cat.		BKR	CIR#
1	20A-1P	Lighting - Building Exterior			L	262		A		1,200	E	Vending Machine	20A-1P	2
3	20A-1P	Lighting - Interior			L	410		B		1,200	E	Vending Machine	20A-1P	4
5	20A-1P	Hand Dryer - Womens			E	1,500		C		1,200	E	Vending Machine	20A-1P	6
7	20A-1P	Hand Dryer - Mens			E	1,500		A		1,140	R	Recepts - Building Exterior, Storage, (EF-1)	20A-1P	8
9	20A-1P	Coil Door Opener			E	696		B		360	R	Recepts - Picnic Shelter	20A-1P	10
11	20A-1P	Spare						C		1,660	H	Electric Unit Heater (EUH-1)	20A-2P	12
13	20A-1P	Spare						A		1,660	H	"	"	14
15	20A-1P	Spare						B		3,500	E	Water Heater (DWH-1)	20A-2P	16
17								C		3,500	E	"	"	18
19								A						20
21								B						22
23								C						24
Category		Connected	Demand Factor		Demand		Connected Demand							
R- Recept.		1,500	N.E.C. 220.44		1,500		LINE L1		5,762	6,652				
L- Lighting		672	1.25		840		LINE L2		6,166	6,652				
H- Heating		3,320	1		3,320		LINE L3		7,860	6,652				
C- Cooling		0	1		0		LINE TOTAL		19,788	19,956				
E- Equip.		14,296	1		14,296		DEMAND AMPERAGE:							
M- Misc.		0	1		0		19,956 / 1.732 / 208 55 Amps							
Total:		19,788			19,956									

LUMINAIRE SCHEDULE						
Tag	Lamps	Description	Manufacturer	Part No.	Voltage	Notes
A	xW LED	Surface Mount		Need To Confirm	120	
B	50W LED	4' Vandal Resistant Surface Mount	NewStar	VIC 4 N L2 35 1C RW 12 WH TH	120	
C	27.58W LED	4' Strip w/ Lens	Lithonia	CLX L48 SEF FDL MVOLT G210 35K 80CRI WH	120	
CL	11.3W LED	3' Section LED Tape Light with Aluminum Mounting Channel	Volt Lighting	PQ35K-WR-24V (551 lm/ft) w/ CH-016 2 FRR SF EC Mounting Channel	24	
		Type CL 24V Power Supply	Volt Lighting	96HDL-24V	120	
D	xW LED	6" Recessed Down Light	Lithonia	LDN6 35 10 L06 AR LSS MVOLT WL	120	
AA	160W LED	Single Head Pole Mount Fixture	Phillips Lumec	RFM 160W48LED3K G2 R3S UNV BZ	120	
AAT	160W LED	Double head Pole Mount Fixture	Phillips Lumec	RFM 160W48LED3K G2 R3S UNV BZ	120	1
BB	xW LED	Decorative Single Head Pedestrian Fixture	Holophane	PUCL2 053HO 30K AS BZ L3 B	120	1
WW	xW LED	Exterior Wall Mount		Need To Confirm	120	
Notes:						
1	Poles to match existing. Field verify and coordiante with owner.					
2						

EXISTING PANEL L11				Job # 17-037											
VOLTAGE		120/208		AIC AMPS				BUSSING				AL			
RATED AMPS		250		MAIN BREAKER				100				NEUTRAL BUS		100% YES	
PHASE / HERTZ		3/60		FEED								GROUND BUS		YES	
# OF CIRCUITS		42		MOUNTING								FEED THROUGH LUGS		NO	
MANUFACTURER		SIEMENS		COVER TYPE								FED FROM		Panel H1	
PANEL TYPE				ISOLATED GND				NO				NOTE: "L" BREAKERS TO BE "LOCK ON"			
CIR#	BKR	CIRCUIT DESCRIPTION		Cat.	WATTS	BKR TYPE	PH	BKR TYPE	WATTS	Cat.		BKR	CIR#		
1	20A-1P	Recepts - Shelter GFI		R	180		A						2		
3	20A-1P	Ltg - Exterior		L	282		B		1,500	M	Water Feature	20A-1P	4		
5	20A-1P	Ltg - Interior		L	535		C		600	E	Exhaust Fan (EFMU-2)	20A-1P	6		
7	20A-1P	Recepts - Shelter GFI		R	180		A		3,250	E	Water Heater	50A-2P	8		
9	20A-1P	Coil Door		E	696		B		3,250	E	*	*	10		
11	20A-1P	Coil Door		E	696		C		1,250	H	UHMU-2	20A-2P	12		
13	20A-1P	Spare					A		1,250	H	*	*	14		
15	20A-1P	Spare					B				Spare	20A-1P	16		
17	20A-1P	Spare					C		200	M	Camera	20A-1P	18		
19	20A-1P	Spare					A		150	M	Zone 1 Contactor	20A-1P	20		
21	20A-1P	Recepts - South Bldg.		R	180		B				Spare	20A-1P	22		
23	20A-1P	Recepts - North Bldg.		R	180		C				Spare	20A-1P	24		
25	20A-1P	Hand Dryer - Womens		E	1,500		A		180	R	Recepts - Corporate Shelter	20A-1P	26		
27	20A-1P	Hand Dryer - Mens		E	1,500		B		181	L	Recepts - Corporate Shelter	20A-1P	28		
29	60A-2P	Panel L11A		E	5,400		C		180	R	Recepts - Corporate Shelter	20A-1P	30		
31	"	"			5,400		A				Spare	20A-1P	32		
33	20A-2P	Unit Heater		H	1,500		B		150	M	LP Broad Band	20A-1P	34		
35	"	"		H	1,500		C				Spare	20A-1P	36		
37	30A-2P	Restroom Baseboard Heaters		H	1,200		A		1,456	E	Compressor	20A-2P	38		
39	"	"					B		1,456	E	*	*	40		
41							C					*	42		
Category		Connected	Demand Factor	Demand				Connected	Demand						
R- Recept.		1,080	N.E.C. 220.44	1,080		LINE L1		14,746	10,877						
L- Lighting		998	1.25	1,248		LINE L2		10,695	10,877						
H- Heating		9,570	1	9,570		LINE L3		10,541	10,877						
C- Cooling		1,664	1	0		LINE TOTAL		35,982	32,630						
E- Equip.		24,976	0.75	18,732		DEMAND AMPERAGE:									
M- Misc.		2,000	1	2,000		32,630		/ 1.732		/ 208		91 Amps			
Total:		40,289		32,630											
NOTE: NEW OR AFFECTED CIRCUITS SHOWN ITALICIZED.															

PANEL L11A				Job # 17-037							
VOLTAGE		120/208	AIC AMPS		10,000			BUSSING		AL	
RATED AMPS		100	MAIN LUG ONLY		60			NEUTRAL BUS		YES	
PHASE * HERTZ		1 * 60	FEED		TOP			GROUND BUS		YES	
# OF CIRCUITS		24	MOUNTING		SURFACE			FEED THROUGH LUGS		NO	
MANUFACTURER		Siemens	COVER TYPE		STANDARD			FED FROM		Panel L11	
PANEL TYPE		LC	ISOLATED GND		NO			NOTE: "L" BREAKERS TO BE "LOCK ON"			
CIR#	BKR	CIRCUIT DESCRIPTION		Cat.	WATTS	L1	L2	WATTS	Cat.	BKR	CIR#
1	20A-1P	2 Door Refrigerator		E	780	L1		832	C	Condensing Unit (CU-1), Air Unit (AHU-1)	20A-2P 2
3	20A-1P	2 Door Freezer		E	1,440		L2	832	C	"	4
5	20A-1P	Hot Dog Grill		E	336	L1		1,435	H	Electric Unit Heater (EUH-4)	20A-2P 6
7	20A-1P	Microwave		E	1,680		L2	1,435	H	"	8
9	20A-1P	Ice Maker		E	1,596	L1		2,250	E	Water Heater (DWH-2)	30A-2P 10
11	20A-1P	Spare					L2	2,250	E	"	12
13	20A-1P	Spare				L1		240	E	Exhaust Fan (EF-2), Louver Damper (L-1)	20A-1P 14
15	20A-1P	Spare					L2				16
17						L1					18
19							L2				20
21						L1					22
23							L2				24
Category		Connected	Demand Factor		Demand		Connected		Demand		
R- Recept.		0	N.E.C. 220.44		0		LINE L1	7,469	5,400		
L- Lighting		0	1.25		0		LINE L2	7,637	5,400		
H- Heating		2,870	1		2,870						
C- Cooling		1,664	1		0						
E- Equip.		10,572	0.75		7,929						
M- Misc.		0	1		0						
Total:		15,106		10,799							
							TOTAL		15,106	10,799	
							DEMAND AMPERAGE:				
									10,799	/ 208	52 Amps

- GENERAL SITE NOTES:
1. ALL WIRING WILL BE COPPER & #12 UNLESS OTHERWISE NOTED.
 2. REFER TO ARCHITECTURAL PLANS FOR POLE BASE DIMENSIONS.
 3. REFER TO LANDSCAPE DRAWINGS FOR COORDINATION OF POWER AND LIGHTING.
 4. IRRIGATION CONTROLLER TO BE LOCATED BY THE ARCHITECT AND LANDSCAPE CONTRACTOR.
 5. THE ELECTRICAL CONTRACTOR JOB FOREMAN SHALL DOCUMENT ALL UNDERGROUND FEEDERS AS WELL AS ANY DEVIATIONS TO THE CONSTRUCTION DOCUMENTS ON THE RECORD DRAWINGS. SHOW DIMENSIONS ONLY WHEN ACCURACY CAN BE ASSURED.
 6. OWNER TO REPLACE EXISTING (E) POLE LIGHT FIXTURE HEADS WITH NEW LED HEADS AT TIME OF EXISTING FIXTURE RE-LAMPING NEEDS.

KEY NOTES

- 1

EXISTING POLE AND FIXTURE HEADS TO BE DEMOLISHED. MAINTAIN CIRCUIT INTEGRITY OF EXISTING DOWN STREAM POLE FIXTURES.
- 2

CONNECT TO EXISTING CIRCUIT H2-3 AND EXISTING CIRCUIT CONTROLS. TOTAL H2-3 CIRCUIT LOAD TO BE ~1910 WATTS.
- 3

CONNECT TO EXISTING CIRCUIT H2-7 AND EXISTING CIRCUIT CONTROLS. TOTAL H2-7 CIRCUIT LOAD TO BE ~1435 WATTS.
- 4

CONNECT TO EXISTING CIRCUIT H1-1 AND EXISTING CIRCUIT CONTROLS. TOTAL H1-1 CIRCUIT LOAD TO BE ~900 WATTS.
- 5

CONNECT TO EXISTING CIRCUIT H1-3 AND EXISTING CIRCUIT CONTROLS. TOTAL H1-3 CIRCUIT LOAD TO BE ~1245 WATTS.
- 6

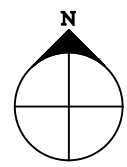
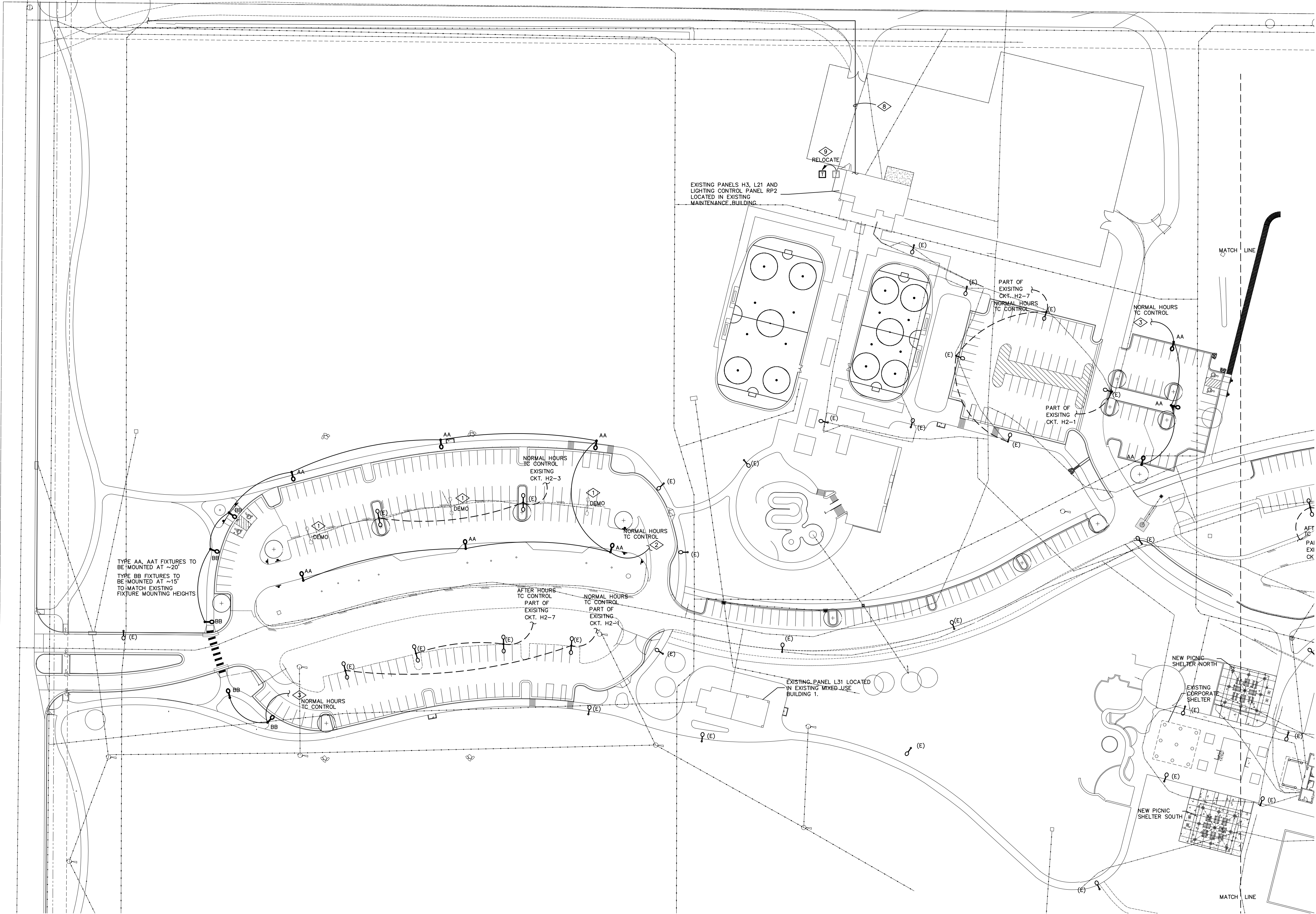
EXISTING FIXTURE HEAD ON NORTH SIDE OF EXISTING POLE TO BE REMOVED.
- 7

CIRCUIT TO BE ROUTED THROUGH LIGHTING CONTROL RELAY PANEL RP3. COORDINATE TIME CLOCK SETTING WITH OWNER AND EXISTING SITE LIGHTING SCHEDULE.
- 8

PROVIDE 2' CONDUIT FOR OWNER PROVIDED FIBER CABLEING. CONDUIT TO RUN FROM N.E. CORNER OF EXISTING OFFICE SPACE TO SERVICE PROVIDER PEDESTAL. COORDINATE PEDESTAL LOCATION WITH SERVICE PROVIDER.
- 9

(TRANSFORMER RELOCATION NOTE)

(MAY BE USED ON MULTIPLE SHEETS)



SITE ELECTRICAL PLAN

SCALE: 1" = 60'



DESIGN
CONCEPTS

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LOVELAND SPORTS PARK
PHASE TWO

950 North Boyd Lake Ave.
Loveland, CO 80537

NOT FOR
CONSTRUCTION

Project No.: 17-037

Issued For: 60% REVIEW
Date: 02.28.18
BID 04.05.18

Drafted By: CW
Checked By: JA

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SITE ELECTRICAL
PLAN WEST

E-1.01

- GENERAL SITE NOTES:**
1. ALL WIRING WILL BE COPPER & #12 UNLESS OTHERWISE NOTED.
 2. REFER TO ARCHITECTURAL PLANS FOR POLE BASE DIMENSIONS.
 3. REFER TO LANDSCAPE DRAWINGS FOR COORDINATION OF POWER AND LIGHTING.
 4. IRRIGATION CONTROLLER TO BE LOCATED BY THE ARCHITECT AND LANDSCAPE CONTRACTOR.
 5. THE ELECTRICAL CONTRACTOR JOB FOREMAN SHALL DOCUMENT ALL UNDERGROUND FEEDERS AS WELL AS ANY DEVIATIONS TO THE CONSTRUCTION DOCUMENTS ON THE RECORD DRAWINGS. SHOW DIMENSIONS ONLY WHEN ACCURACY CAN BE ASSURED.

KEY NOTES

- 1

EXISTING POLE AND FIXTURE HEADS TO BE DEMOLISHED. MAINTAIN CIRCUIT INTEGRITY OF EXISTING DOWN STREAM POLE FIXTURES.
- 2

CONNECT TO EXISTING CIRCUIT H2-3 AND EXISTING CIRCUIT CONTROLS. TOTAL H2-3 CIRCUIT LOAD TO BE ~1910 WATTS.
- 3

CONNECT TO EXISTING CIRCUIT H2-7 AND EXISTING CIRCUIT CONTROLS. TOTAL H2-7 CIRCUIT LOAD TO BE ~1435 WATTS.
- 4

CONNECT TO EXISTING CIRCUIT H1-1 AND EXISTING CIRCUIT CONTROLS. TOTAL H1-1 CIRCUIT LOAD TO BE ~900 WATTS.
- 5

CONNECT TO EXISTING CIRCUIT H1-3 AND EXISTING CIRCUIT CONTROLS. TOTAL H1-3 CIRCUIT LOAD TO BE ~1245 WATTS.
- 6

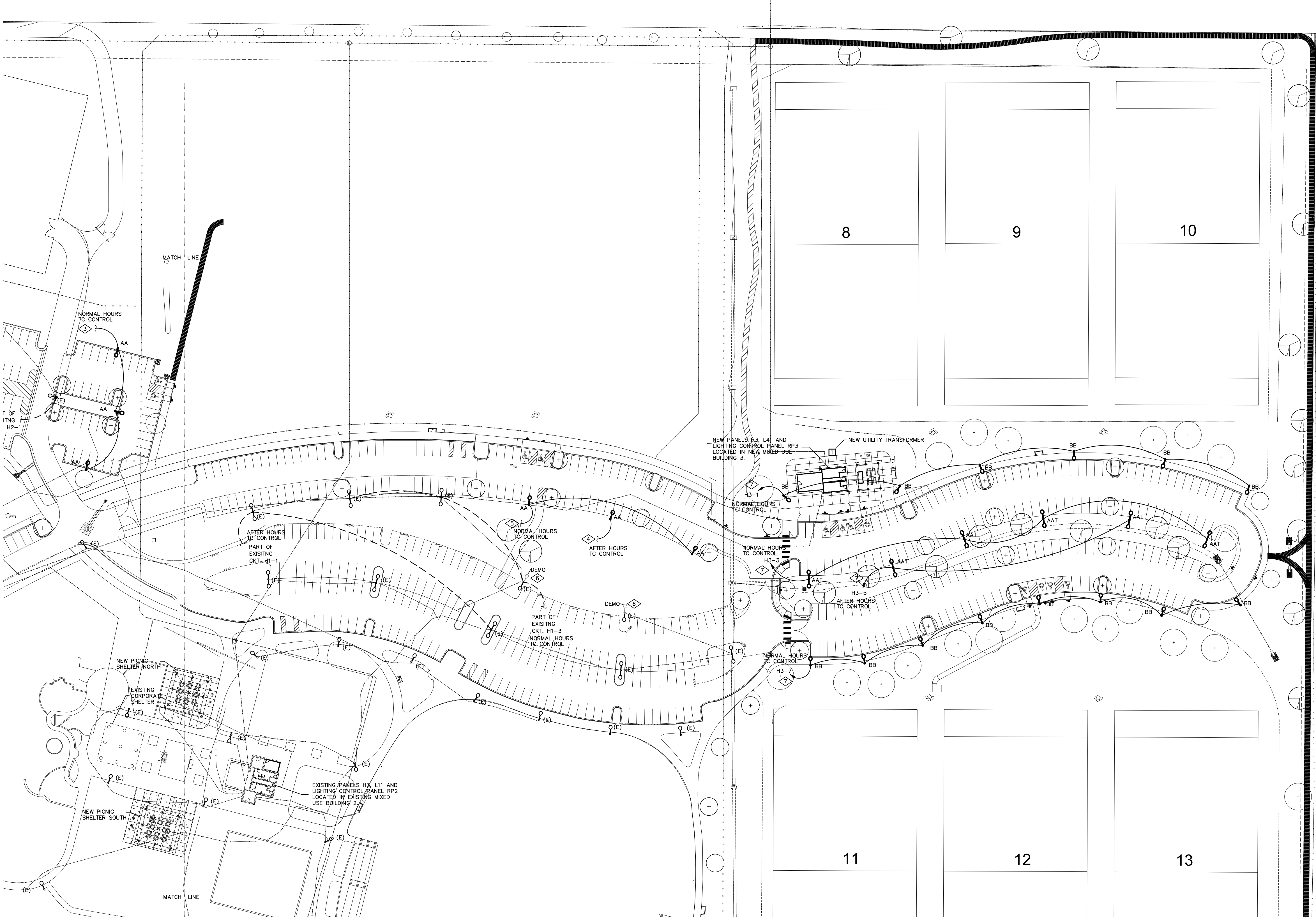
EXISTING FIXTURE HEAD ON NORTH SIDE OF EXISTING POLE TO BE REMOVED.
- 7

CIRCUIT TO BE ROUTED THROUGH LIGHTING CONTROL RELAY PANEL RP3. COORDINATE TIME CLOCK SETTING WITH OWNER AND EXISTING SITE LIGHTING SCHEDULE.
- 8

PROVIDE 2' CONDUIT FOR OWNER PROVIDED FIBER CABLING. CONDUIT TO RUN FROM N.E. CORNER OF EXISTING OFFICE SPACE TO SERVICE PROVIDER PEDESTAL. COORDINATE PEDESTAL LOCATION WITH SERVICE PROVIDER.
- 9

(TRANSFORMER RELOCATION NOTE)

(MAY BE USED ON MULTIPLE SHEETS)



SITE ELECTRICAL PLAN
SCALE: 1" = 60'



DESIGN CONCEPTS
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SITE ELECTRICAL
PLAN EAST

E-1.02

- GENERAL NOTES:**
1. CONNECT ALL EXIT AND EM LIGHTS TO CIRCUITS SHOWN AHEAD OF LOCAL SWITCHING.
 2. LUMINAIRES DENOTED "NL" SHALL BE CONNECTED AHEAD OF LOCAL SWITCHING.
 3. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LIGHTING FIXTURE LOCATIONS.
 4. REFER TO MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT.
 5. ALL CONDUCTORS SHALL BE COPPER AND #12 UNLESS OTHERWISE NOTED.
 6. ALL SWITCHES, CONVENIENCE RECEPTACLES, AND PLATES SHALL BE WHITE NONMETALLIC UNLESS NOTED. CONFIRM COLOR WITH ARCHITECT PRIOR TO ORDERING DEVICES.
 7. INSTALL, WHERE REQUIRED BY JURISDICTION, MANUFACTURE APPROVED SEALING KITS ON ALL RECESSED CANS INSTALLED IN INSULATED CAVITIES.
 8. LABEL ALL JUNCTION BOXES WITH CIRCUIT NUMBERING DURING ROUGH-IN OF CONDUIT SYSTEM.
 9. PROVIDE POWER FOR VVT'S AS REQUIRED BY M.C.. (REFER TO MECHANICAL PLANS)
 10. COPIES OF ALL INSTALLATION, OPERATIONAL AND MAINTENANCE MATERIALS ARE TO BE SAVED PROVIDED TO THE PROJECT MANAGER FOR ASSEMBLY AND DELIVERY TO THE CONTRACTOR AND OWNER.
 11. THE ELECTRICAL CONTRACTOR JOB FORMAN SHALL DOCUMENT ALL UNDERGROUND FEEDERS AS WELL AS ANY DEVIATIONS TO THE CONSTRUCTION DOCUMENTS ON THE RECORD DRAWINGS. SHOW DIMENSIONS ONLY WHEN ACCURACY CAN BE ASSURED.
 12. COORDINATE EXACT RECEPTACLE LOCATIONS WITH ARCHITECTURAL DRAWINGS.

LIGHTING KEY NOTES

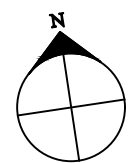
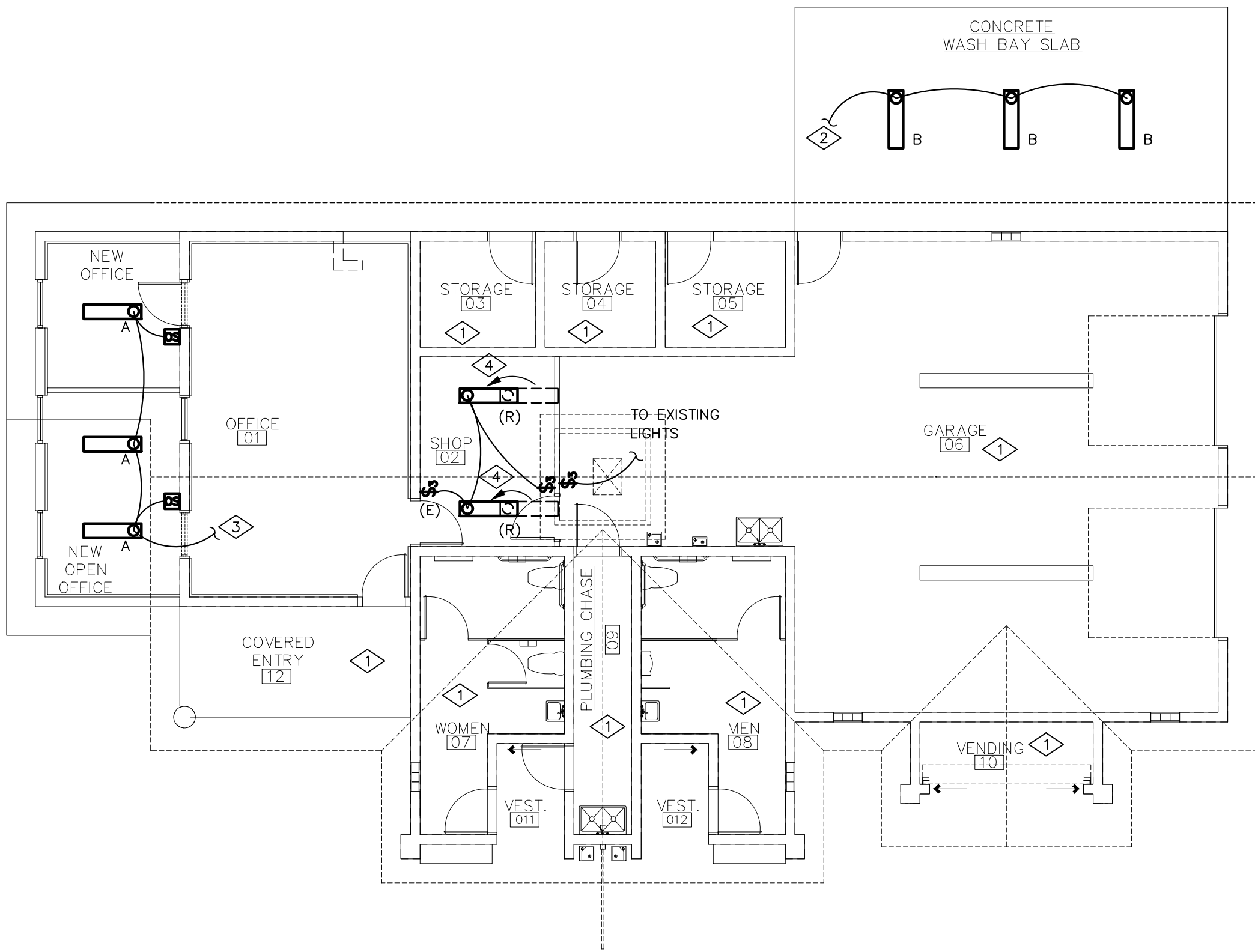
(THIS SHEET ONLY)

- 1 NO NEW WORK THIS AREA.
- 2 CONNECT TO EXISTING EXTERIOR LIGHTING CIRCUIT L21-5 AND EXISTING CIRCUIT CONTROLS.
- 3 CONNECT TO EXISTING INTERIOR LIGHTING CIRCUIT L21-3.
- 4 RELOCATE EXISTING LIGHTING FIXTURES FOR NEW WALL LAYOUT. ADD NEW 3-WAY SWITCHING AS SHOWN.

POWER KEY NOTES

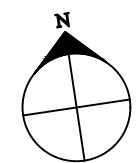
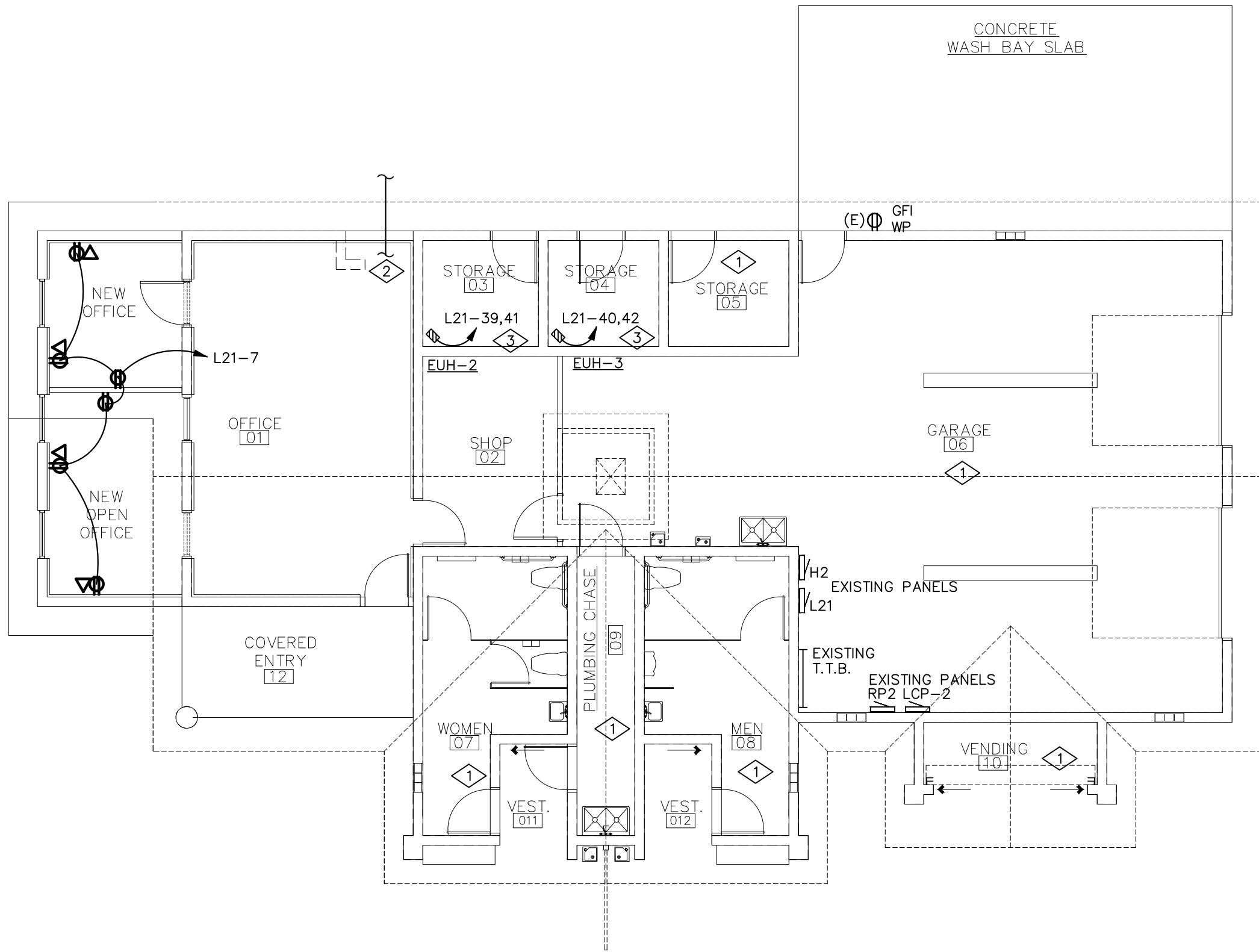
(THIS SHEET ONLY)

- 1 NO NEW WORK THIS AREA.
- 2 COORDINATE EXACT LOCATION OF 2" FIBER CONDUIT WITH OWNER. SEE SHEET E-1.01 FOR ADDITIONAL INFORMATION.
- 3 WIRING TO ELECTRIC UNIT HEATERS TO BE EXPLOSION PROOF.



EXISTING MAINTENANCE BLDG. LIGHTING PLAN

SCALE = 1/8" = 1'-0"



EXISTING MAINTENANCE BLDG. POWER PLAN

SCALE = 1/8" = 1'-0"



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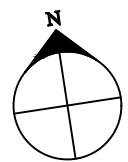
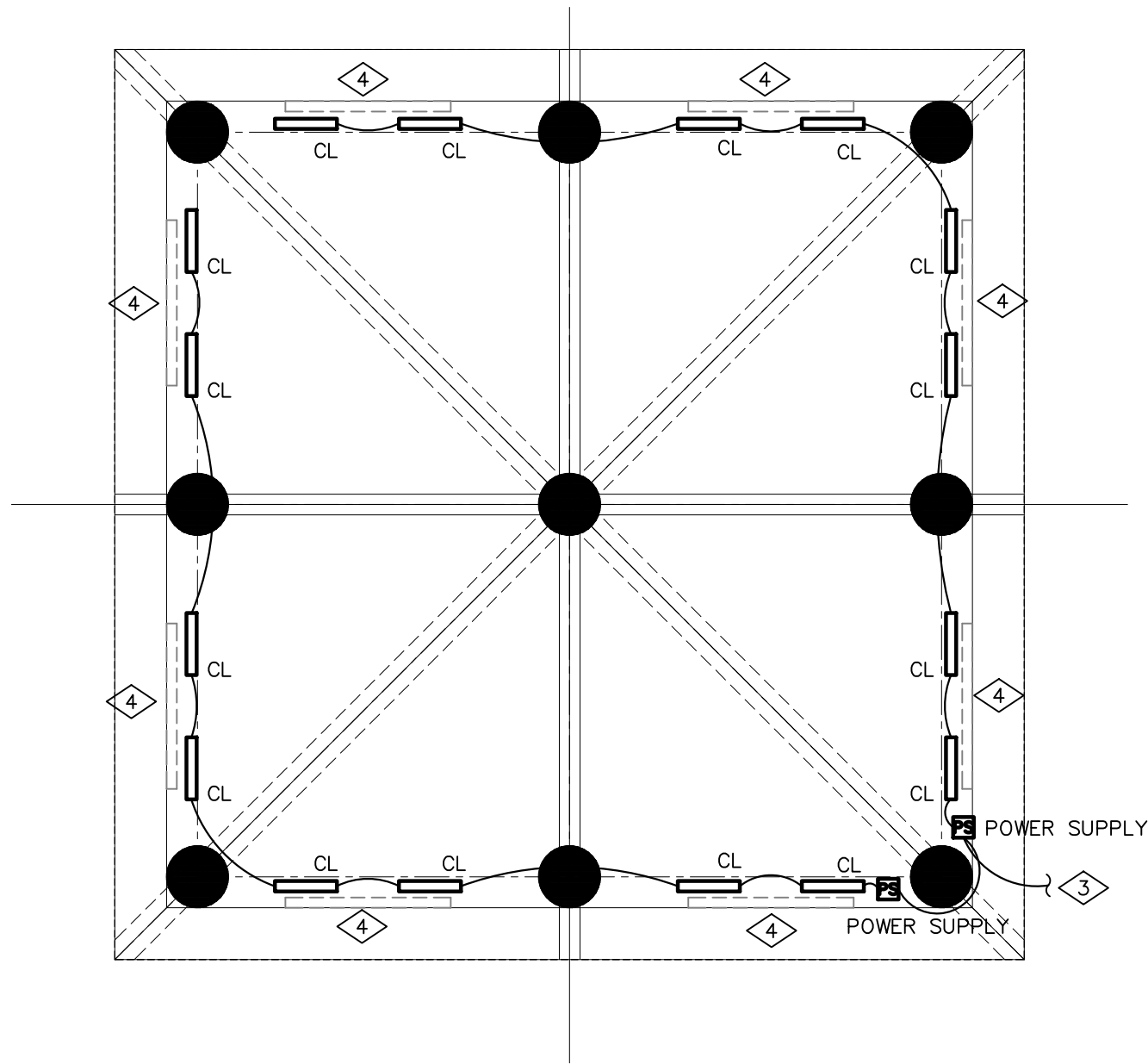
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MAINTENANCE BLDG.
ELECTRICAL PLAN

E-2.0

GENERAL NOTES:

1. CONNECT ALL EXIT AND EM LIGHTS TO CIRCUITS SHOWN AHEAD OF LOCAL SWITCHING.
2. LUMINAIRES DENOTED "NL" SHALL BE CONNECTED AHEAD OF LOCAL SWITCHING.
3. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LIGHTING FIXTURE LOCATIONS.
4. REFER TO MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT.
5. ALL CONDUCTORS SHALL BE COPPER AND #12 UNLESS OTHERWISE NOTED.
6. ALL SWITCHES, CONVENIENCE RECEPTACLES, AND PLATES SHALL BE WHITE NONMETALLIC UNLESS NOTED. CONFIRM COLOR WITH ARCHITECT PRIOR TO ORDERING DEVICES.
7. INSTALL, WHERE REQUIRED BY JURISDICTION, MANUFACTURE APPROVED SEALING KITS ON ALL RECESSED CANS INSTALLED IN INSULATED CAVITIES.
8. LABEL ALL JUNCTION BOXES WITH CIRCUIT NUMBERING DURING ROUGH-IN OF CONDUIT SYSTEM.
9. PROVIDE POWER FOR VVT'S AS REQUIRED BY M.C.. (REFER TO MECHANICAL PLANS)
10. COPIES OF ALL INSTALLATION, OPERATIONAL AND MAINTENANCE MATERIALS ARE TO BE SAVED PROVIDED TO THE PROJECT MANAGER FOR ASSEMBLY AND DELIVERY TO THE CONTRACTOR AND OWNER.
11. THE ELECTRICAL CONTRACTOR JOB FORMAN SHALL DOCUMENT ALL UNDERGROUND FEEDERS AS WELL AS ANY DEVIATIONS TO THE CONSTRUCTION DOCUMENTS ON THE RECORD DRAWINGS. SHOW DIMENSIONS ONLY WHEN ACCURACY CAN BE ASSURED.
12. COORDINATE EXACT RECEPTACLE LOCATIONS WITH ARCHITECTURAL DRAWINGS.



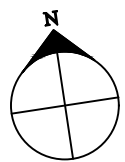
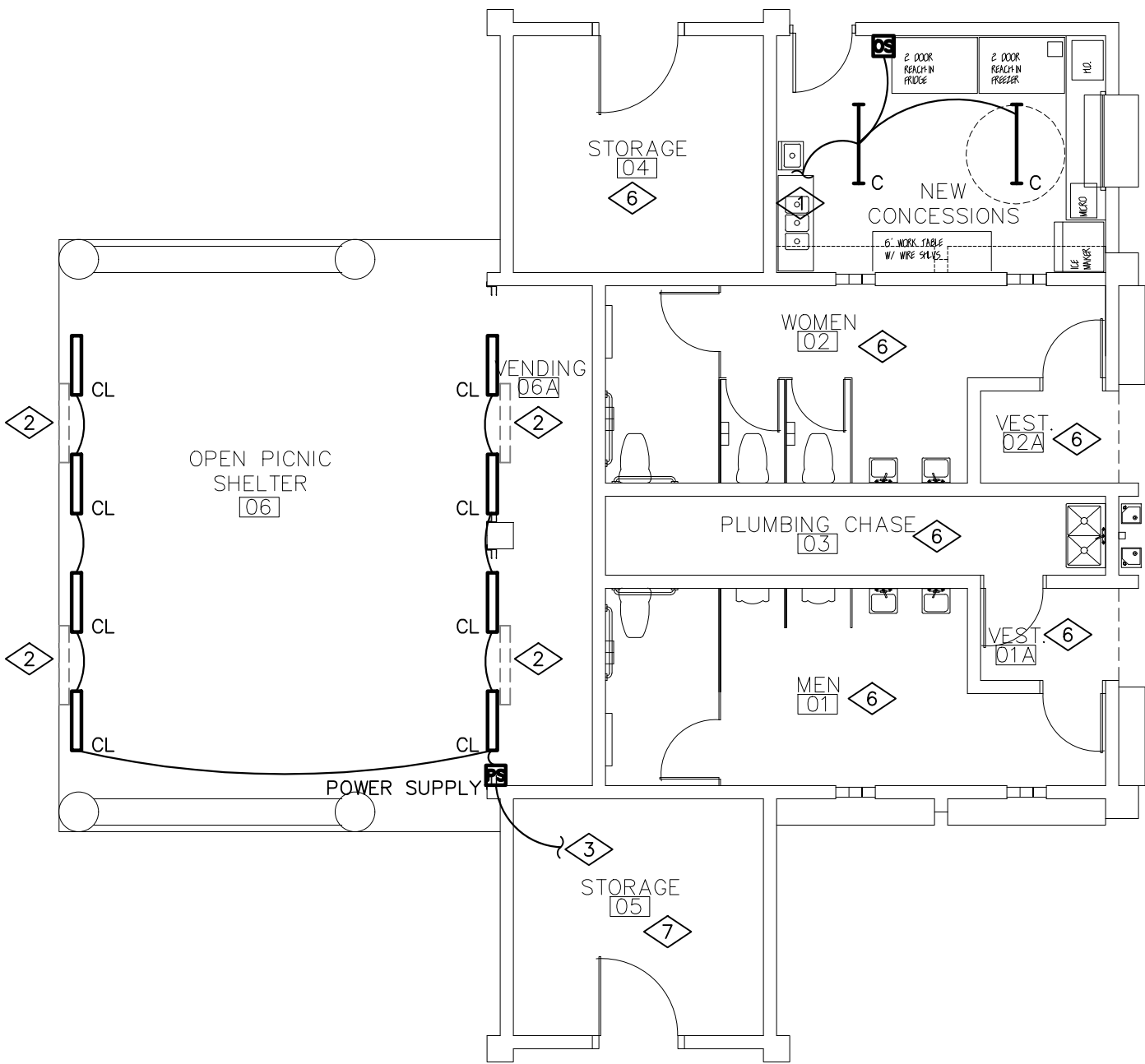
EXISTING CORPORATE SHELTER LIGHTING PLAN

SCALE = 1/8" = 1'-0"

LIGHTING KEY NOTES

(THIS SHEET ONLY)

1. CONNECT TO EXISTING LIGHTING CIRCUIT L11-5 SERVING INTERIOR LIGHTING.
2. DEMO EXISTING 4' FIXTURE INSTALLED ON TOP OF BEAM. INSTALL NEW TYPE CL FIXTURES ON TOP OF BEAM.
3. CONNECT TO EXISTING EXTERIOR LIGHTING CIRCUIT L11-3 AND EXISTING CONTROLS.
4. DEMO EXISTING 8' FIXTURE INSTALLED ON TOP OF BEAM. INSTALL NEW TYPE CL FIXTURES ON TOP OF BEAM.
5. CONNECT TO EXISTING EXTERIOR LIGHTING CIRCUIT L31-1 AND EXISTING CONTROLS.
6. NO NEW WORK IN THIS AREA.



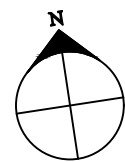
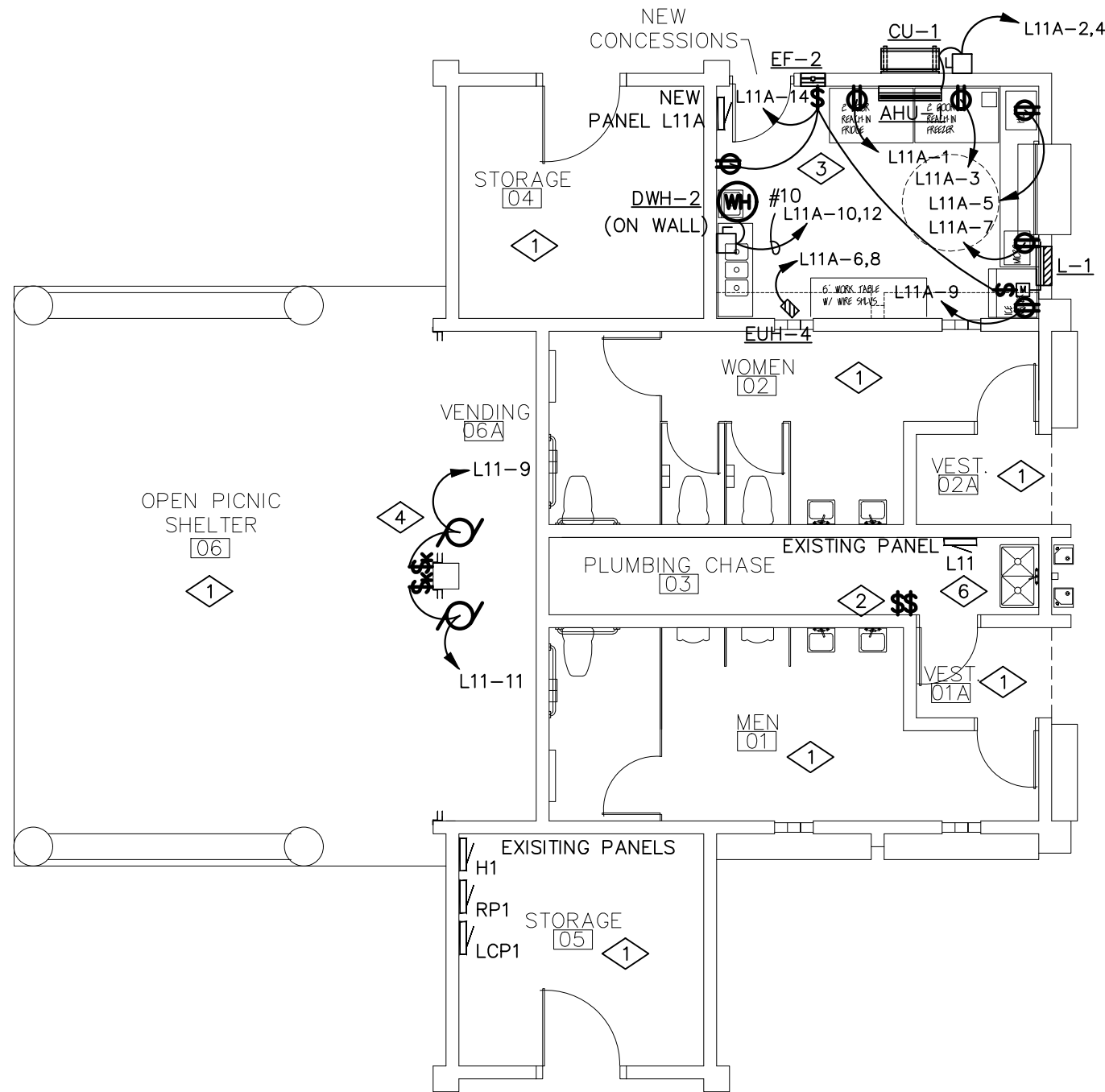
EXISTING MIXED USE BLDG. 2 LIGHTING PLAN

SCALE = 1/8" = 1'-0"

POWER KEY NOTES

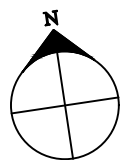
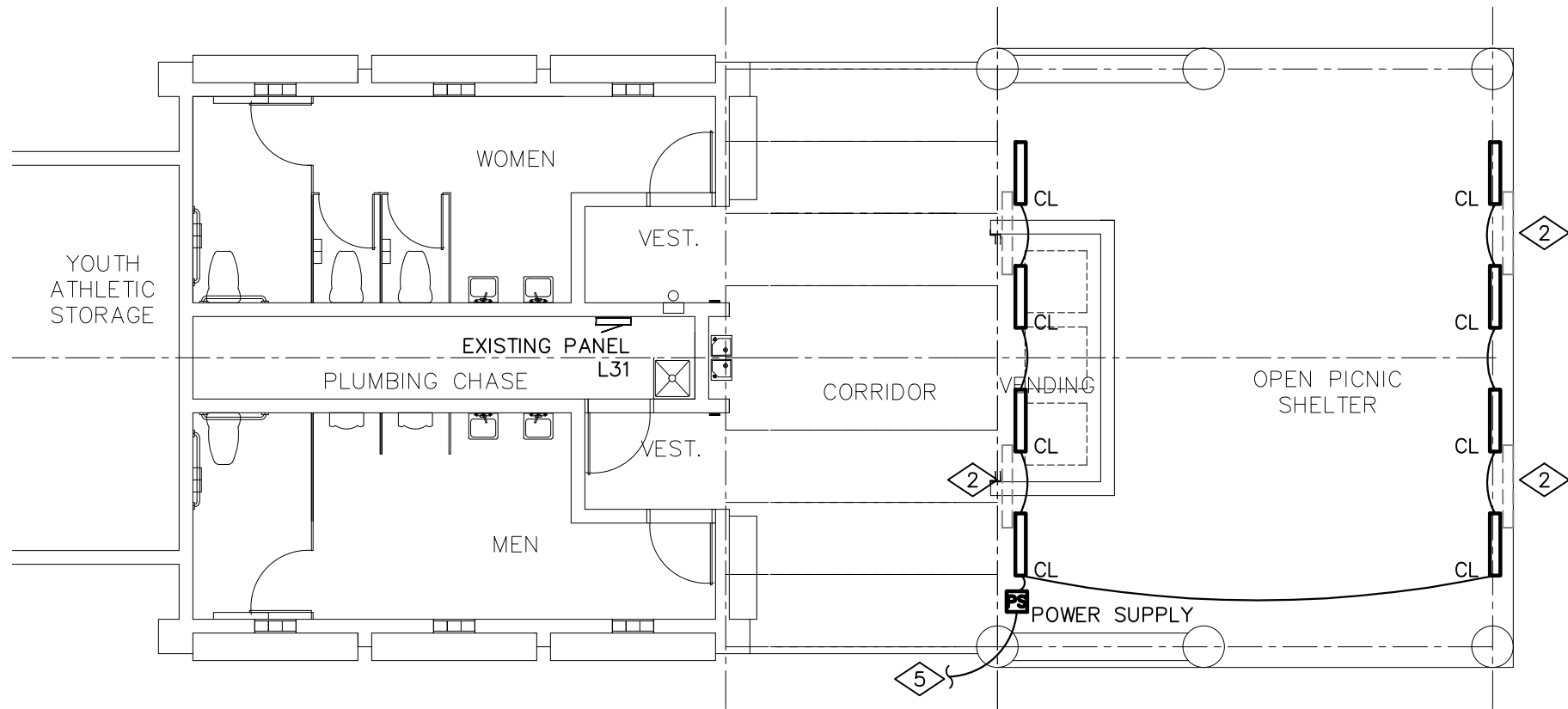
(THIS SHEET ONLY)

1. NO NEW WORK THIS AREA.
2. PROVIDE (2) SINGLE POLE SWITCHES TO CONTROL NEW PICNIC SHELTER GFCI RECEPTACLES. (1) SWITCH FOR NORTH SHELTER AND (1) SWITCH FOR SOUTH SHELTER.
3. ALL 15A 7 20A RECEPTACLES IN CONCESSIONS AREA TO BE GFCI PROTECTED.
4. COORDINATE COIL DOOR POWER REQUIREMENTS WITH OWNER AND EQUIPMENT VENDOR.
5. DEMOLISH EXISTING EXTERIOR CONCESSIONS TRAILER RECEPTACLE AND CIRCUIT.
6. REPLACE EXISTING 50A-2P BREAKER FEEDING EXTERIOR CONCESSIONS TRAILER RECEPTACLE IN EXISTING PANEL L11 WITH NEW 60A-2P BREAKER TO FEED NEW SUB-PANEL L11A. PANEL FEEDER TO BE (3-#6 CU., #10 GND. CU.) 3" C.



EXISTING MIXED USE BLDG. 2 POWER PLAN

SCALE = 1/8" = 1'-0"



EXISTING MIXED USE BLDG. 1 LIGHTING PLAN

SCALE = 1/8" = 1'-0"



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EXISTING MIXED USE
BUILDING
ELECTRICAL PLAN

E-2.1

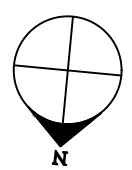
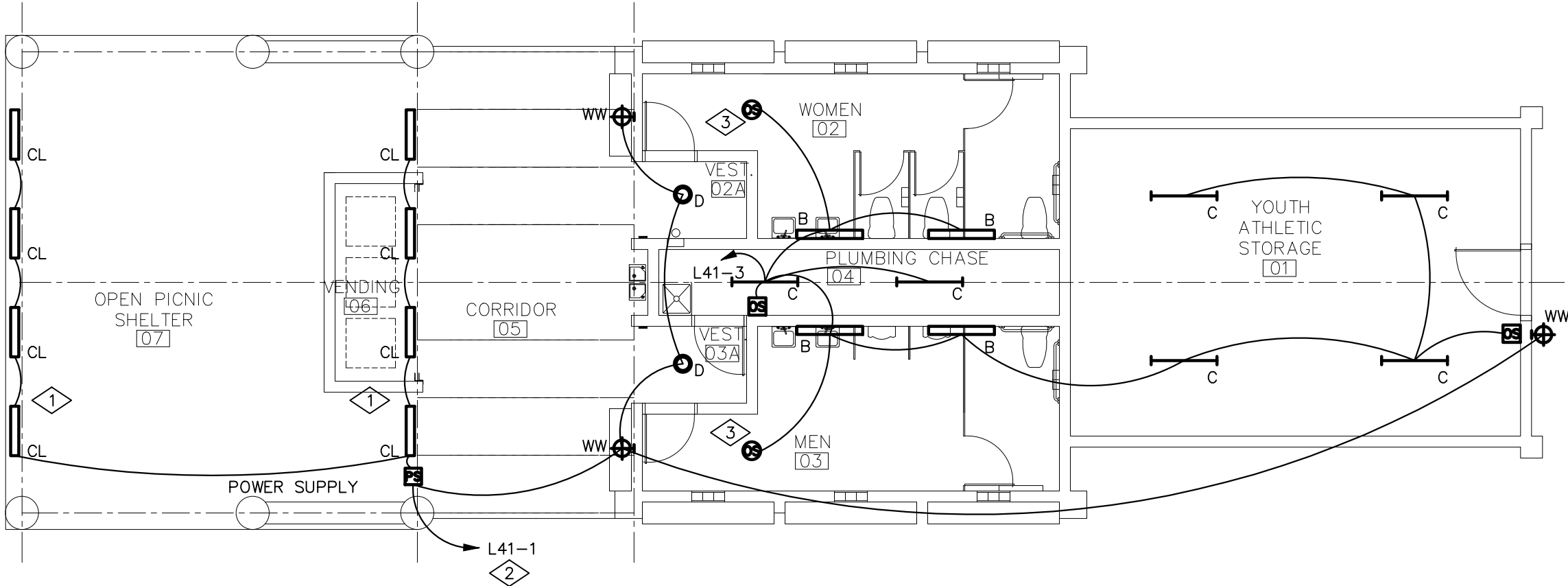
- GENERAL NOTES:**
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 2. LUMINAIRES DENOTED "NL" SHALL BE CONNECTED AHEAD OF LOCAL SWITCHING.
 3. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LIGHTING FIXTURE LOCATIONS.
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 9. PROVIDE POWER FOR VVT'S AS REQUIRED BY M.C.. (REFER TO MECHANICAL PLANS)
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 12. COORDINATE EXACT RECEPTACLE LOCATIONS WITH ARCHITECTURAL DRAWINGS.

LIGHTING KEY NOTES (THIS SHEET ONLY)

- 1 TYPE CL FIXTURES TO BE MOUNTED ON TOP OF BEAM.
- 2 LIGHTING CIRCUIT TO BE ROUTED THROUGH LIGHTING CONTROL RELAY PANEL RP3.
- 3 CEILING MOUNTED OCCUPANCY SENSOR TO BE SUPPLIED WITH WIRE GUARD.

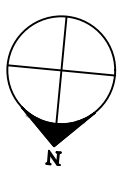
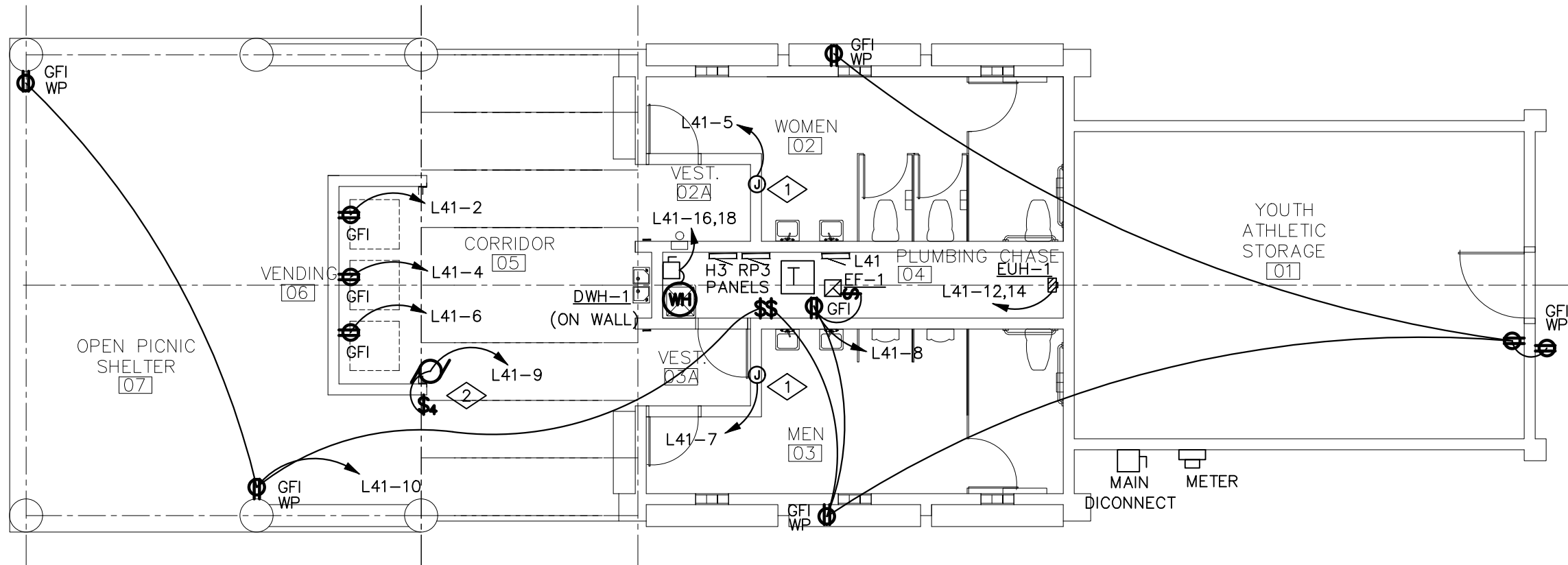
POWER KEY NOTES (THIS SHEET ONLY)

- 1 COORDINATE HAND DRYER ROUGH-IN REQUIREMENTS WITH EQUIPMENT VENDOR.
- 2 COORDINATE COIL DOOR OPENER REQUIREMENTS WITH OWNER AND EQUIPMENT VENDOR.



NEW MIXED USE BUILDING 3 LIGHTING PLAN

SCALE = 1/8" = 1'-0"



NEW MIXED USE BUILDING 3 POWER PLAN

SCALE = 1/8" = 1'-0"



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NEW MIXED USE
BUILDING
ELECTRICAL PLAN

E-2.2

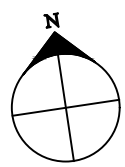
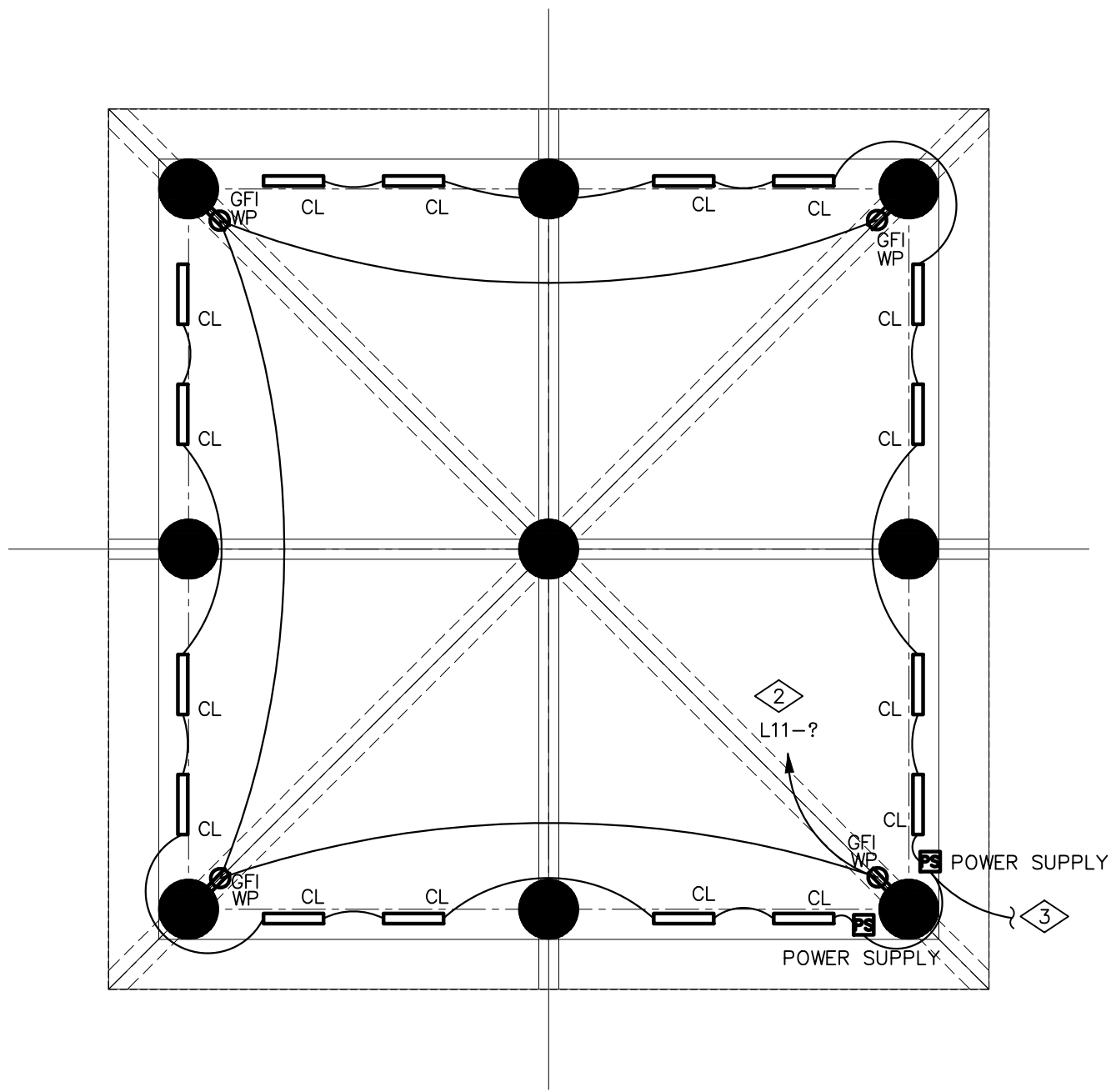
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12. COORDINATE EXACT RECEPTACLE LOCATIONS WITH ARCHITECTURAL DRAWINGS.

KEY NOTES

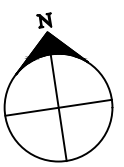
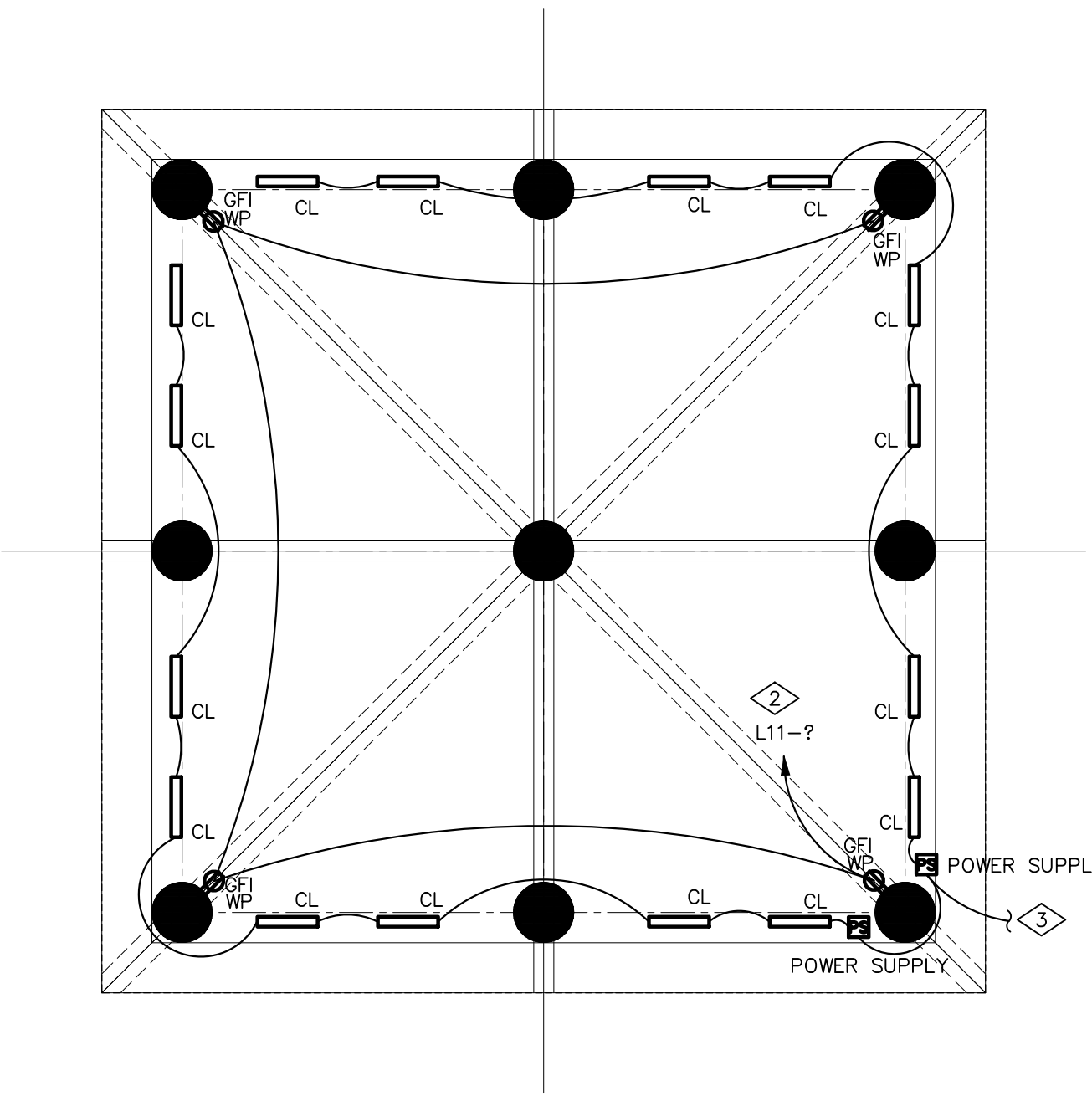
(THIS SHEET ONLY)

- 1 CONNECT TO EXISTING EXTERIOR LIGHTING CIRCUIT L11-1 AND EXISTING CONTROLS.
- 2 CIRCUIT TO BE CONTROLLED VIA SWITCH LOCATED IN EXISTING MIXED USE BUILDING 2.
- 3 CONNECT TO EXISTING EXTERIOR LIGHTING CIRCUIT L11-1 AND EXISTING CONTROLS.



PICNIC SHELTER NORTH ELECTRICAL PLAN

SCALE = 1/8" = 1'-0"



PICNIC SHELTER SOUTH ELECTRICAL PLAN

SCALE = 1/8" = 1'-0"



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PICNIC SHELTER
ELECTRICAL PLAN

E-2.3