



Loveland Fire Rescue Authority
410 East 5th Street
Loveland, Colorado 80537
(970) 962-2471 Fax (970) 962-2922 TDD (970) 663-5144
www.cityofloveland.org

GROUND LADDER OPERATIONS – SINGLE PERSON CARRY AND RAISE (1.2)

Revised by Engineer Jeremy Bell
January 2016

- NFPA 1001
- NFPA 1932

TASK SKILL DESCRIPTION AND DETAIL

The ground ladder is one of the most effective and versatile tools on the fire ground. The completion of the strategic fireground goals and tactical objectives are often dependent upon the timely placement of ground ladders to facilitate ventilation, rescue, emergency egress, access to upper levels/exposures, salvage, and hose line operations. Firefighters must be proficient in the basic skills of operating with ground ladders, as well as understand the general application of each ground ladder that LFRA utilizes. This training chapter is designed to identify the ground ladders within LFRA and how a single firefighter can utilize ground ladders on the fireground.

The ground ladders currently carried in LFRA's System are as follows:

Tower 6:

10' Attic Ladder
15' Roof Ladder
16' Roof Ladder x 2
18' Roof Ladder
28' Extension Ladder x 2
35' Extension Ladder (2 Section)
15' Little Giant
2' Step Ladder

Rescue 2:

10' Fresno Ladder
16' Roof Ladder
18' Roof Ladder
28' Extension Ladder x 2
35' Extension Ladder (2 Section)
15' Little Giant
12.5' Telescoping Ladder

Engine Companies:

10' Attic Ladder
14' Roof Ladder
24' Extension Ladder
12.5' Telescoping Ladder (Not all)
3' Step Ladder (Not all)

Ladder 6:

10' Attic Ladder
16' Roof Ladder x 2
18' Roof Ladder
28' Extension Ladder x 2
35' Extension Ladder (3 Section)

Water Tenders:

28' Extension Ladder (3 Section)
12' Roof Ladder

Task #1 – Single Person Carry & Raise of an extension ladder that is 28' or less in length.

#1 Locate the center of the ladder (balance point). It is common practice within LFRA to carry the ground ladder in a high-shoulder carry (see below) when conducting single person ladder operations. (Figures 1-3).



Figure 1: Locating the center when your are starting from the apparatus



Figure 2 and 3: Locating the center when you are starting from the ground

#2 Move the ladder into position in a high shoulder carry. The bottom beam will rest on the firefighter's shoulder as it is carried. Carry the ladder to the placement location. Note the hand position – one high and one low to stabilize the ladder. (Figure 4).



Figure 4: High shoulder carry

#3 Check for overhead obstructions before raising the ladder. Place the butt end of the ladder on the ground approximately $\frac{1}{4}$ of the height of the building from the building wall. The fly section may be away from the building or towards the building. (Figure 5).



Figure 5: High shoulder carry, and checking for overhead obstructions and hazards.

#4 Slightly bend the knees and push up with the legs while extending the arms so the ladder pivot's into a vertical position. Pushing up in a "popping" fashion with the legs assists to avoid skipping the ladder along the ground and also helps to avoid strain on the lower back. (Figures 6-9)



Figure 6 and Figure 7: Slightly bend the knees and push up with the legs during the raise.

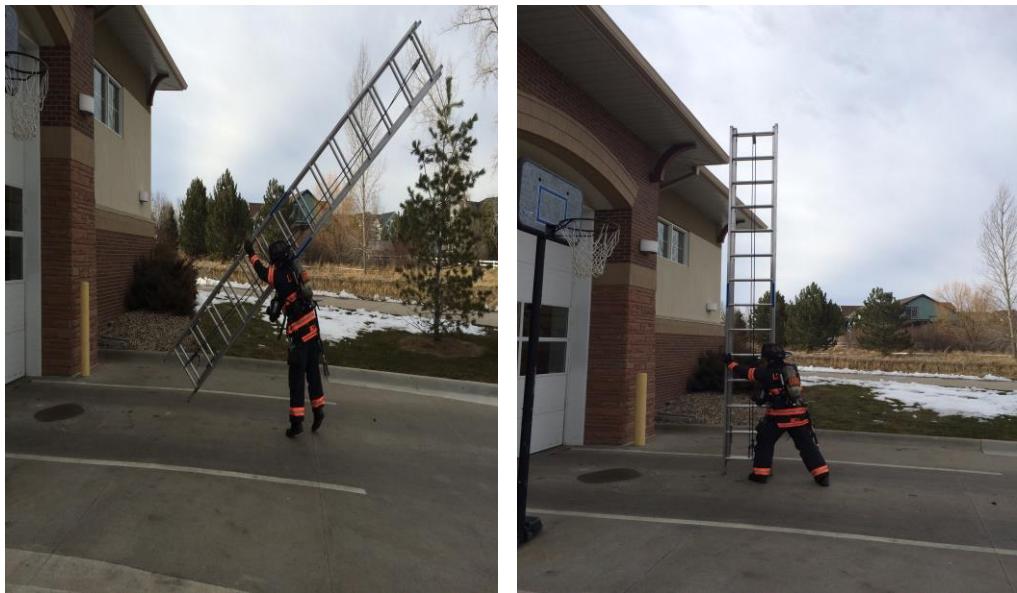


Figure 8 and Figure 9: Pushing up in a “popping” fashion with the legs assists in setting the ladder spurs.

#4.1 An alternative method to the beam raise, if needed, is pivoting the ladder into the side of the building with a flat raise to assist with a single person raise. (Figure 8.1).



Figure 8.1: Using the building as a pivot point on a single person ladder raise.

#5 Place one foot against the butt of the beam to brace the ladder. Place both elbows approximately shoulder height to assist with forward/backward control of the ladder. (Figure 10).



Figure 10: Stabilizing the ladder.

#6 Use a controlled hand over hand method to extend the ladder to the proper height (3-5 rungs above the roof line). Ensure the dawgs are locked once the extension is completed. (Figure 11).



Figure 11: Use a controlled hand over hand motion to control the ladder extension.

#7 Place the ladder into the building in a controlled manner. (Figures 12 & 13).



Figure 12 and 13: Controlled placement of the ground ladder.

#8 Tie off the halyard in a clove hitch and a safety knot if length of rope allows. Place the halyard in the center of the ladder to reduce the chance of interfering with the firefighter's feet or legs. (Figure 14).



Figure 14: Tie off the halyard with a clove hitch and safety knot.

#9 Rotate the ladder so that the fly section is facing out. *Note, in a situation where time is of the essence, the ladder's load limit does not change if the fly is in and is perfectly safe to engage in this manner. According to the manufacturer a 3% safety factor is lost only because the firefighter would be stepping out vs in to the bed section. (Figures 15—18).*

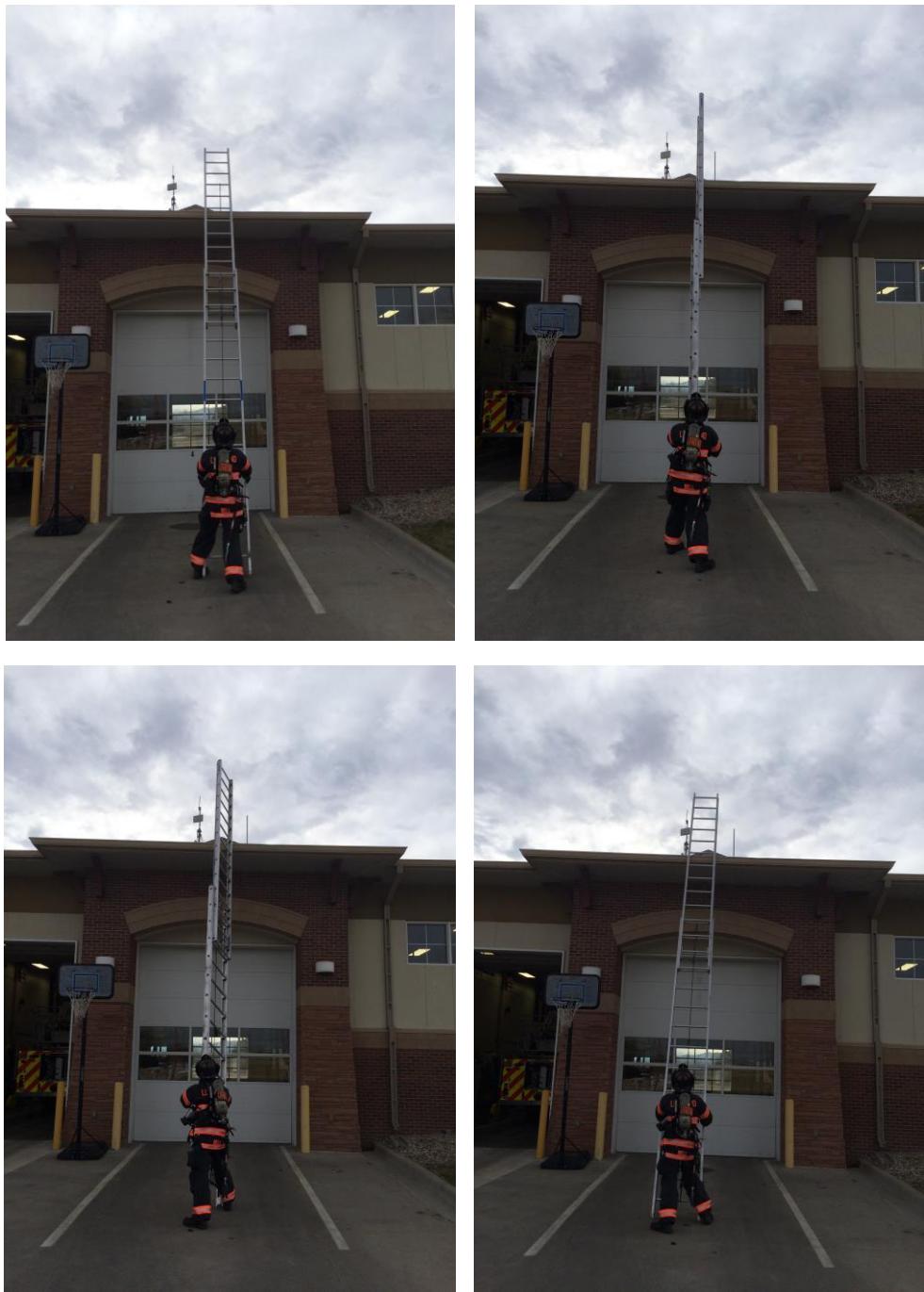


Figure 15, 16, 17 and 18: Rotating the ladder so the fly section is away from the building.

#10 Adjust the ladder to the proper climbing angle. The key is to lift with your legs when placing the ladder in position. Use one hand high on a rung or beam and one hand low on a rung when moving the ladder into position. (Figures 19 & 20).



Figure 19: Moving the ladder for the correct climbing angle. Figure 20: Checking the ladder angle.

#11 The Ladder is now ready to climb. *Note: Insure that another Firefighter is heeling the ladder as it is climbed to prevent the ladder from kicking out underneath the ascending firefighter. (Figure 21).*



Figure 21: Safely climbing the ladder with a firefighter heeling the ladder.

Task #2 – Single Person Carry & Raise of a Single/Roof ladder that is 18' or less in length.

#1 Locate the center of the ladder (balance point). It is common practice within LFRA to carry the ground ladder in a high-shoulder carry (see below) when conducting single person ladder operations. (Figure 22).



Figure 22: Locate the balance point of the ladder.

#2 Move the ladder into position in a high shoulder carry. The bottom beam will rest on the firefighter's shoulder as it is carried. Carry the ladder to the placement location. Note the hand position – one high and one low to stabilize the ladder. (Figure 23).



Figure 23: Figure 5: High shoulder carry.

#3 Check for overhead obstructions before raising the ladder. Place the butt end of the ladder on the ground approximately $\frac{1}{4}$ of the height of the building from the building wall if possible. (Figure 24).



Figure 24: Check for overhead obstructions and place the ladder the correct distance from the building.

#4 Slightly bend the knees and push up with the legs while extending the arms so the ladder pivots into a vertical position. Pushing up in a “popping” fashion with the legs assists to avoid skipping the ladder along the ground and also helps to avoid strain on the lower back. (Figure 25).



Figure 25: Slightly bend the knees and push up with the legs, while extending the arms, during the ladder raise.

#5 Continue through with the forward motion as you start to rotate the ladder onto one beam. (Figures 26-28).



Figure 26 and 27: Continue through with the created forward momentum during the ladder raise.



Figure 28: Stabilize the ladder once it is raised.

#6 Place the ladder into the building (3-5 rungs above the roof line) in a controlled manner and at the proper climbing angle. The ladder is now ready to climb. (Figures 29-30).



Figure 29 and 30: Place the ladder into the building in a controlled manner at the proper climbing angle.

Task #3 –The use of a Halligan Bar for Weight Distribution & Footing a Ground Ladder.

#1 A Halligan bar can be inserted near the butt-end of the ladder through a rung and rested on top of the beam and used for weight distribution in order to help pivot and raise the ladder. (Figure 31 and Figure 32).



Figure 31 and 32: A halligan bar placed on the ladder beam for weight distribution.

#2 A Halligan bar can also be inserted near the butt-end of the ladder once it is placed to help foot the ladder in the absence of another firefighter being able to assist with footing the ladder. (Figure 33).



Figure 33: A halligan bar can be used to foot the ladder.

Task #4 –The use of Ladder chocks for weight distribution & leveling a ground Ladder.

#1 Ladder chocks can be placed near the butt-end of the ladder on a beam for weight distribution in order to help pivot and raise the ladder during a ladder carry. It is important to place the ladder chocks at least near the third rung in order for the ladder to not be impeded during the raise by the ladder chocks.

(Figure 33).



Figure 33: Ladder chocks placed on the ladder beam for weight distribution during a ladder carry.

#2 Ladder chocks can also be placed near the butt-end of the ladder once the ladder is placed to help level the ladder on uneven terrain or if you are dealing with a slope. (Figure 34 & Figure 35).



Figure 34 & Figure 35: Ladder chocks can be used to help level the ladder on uneven terrain or on a slope.

REFERENCE INFORMATION

- IFSTA Essentials of Firefighting 6th Edition.
- LFRA Training Manual Single Person Operations 1.1