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 – TWO PERSON CARRY AND RAISE (1.3)

Revised by
Engineer Jeremy Bell

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- NFPA 1001
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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 illustrate how ground ladders can be utilized with a crew of 2 firefighters.

Ladder Commands:

The Ladder commands utilized within LFRA are listed below. The firefighter at the butt end will direct the ladder operation. Use the following ladder commands when conducting a two person ladder operation:

Carrying the Ladder

Preparatory Command	Execution Command
Remove	Ladder
Type of Carry	Ladder
(High Shoulder, Low Shoulder, Suitcase)	Ladder
Forward	Ladder
Left	Ladder
Right	Ladder
Spot for type of raise, clear overhead (Flat or Beam)	Clear overhead, ladder

Raising/Lowering the Ladder

Preparatory Command	Execution Command
Pivot Ladder on this beam (identify),	Ladder
Direction of pivot	Ladder
Extend	Ladder, Call “ladder high” one rung prior to setting the dogs
Place, clear overhead	Ladder
Remove, clear overhead	Ladder
Retract	Ladder
Lower to type of carry	Ladder

Ladder Carries

High Shoulder Carry (Figure 1).

Figure 1.

Low Shoulder Carry (Figure 2).

Figure 2.

Ladder Carries Continued

Suitcase Carry (Figure 3).

Figure 3.

Flat Carry (Figure 4).

Figure 4.

Task #1 – Two Person Carry & Raise of a 24'-35' extension ladder.

#1 Move the ladder into position utilizing the chosen carry. (Figure 5).

Figure 5: Two firefighter suitcase carry.

#2 The firefighter in charge will announce “Spot for beam/flat raise”. Both of the firefighters will check for overhead obstructions before setting the ladder (both firefighters announce “clear overhead obstructions”). The firefighter in charge will announce “ladder” which directs the crew to place the butt end of the ladder on the ground approximately 1/4 of the height of the building from the building wall. The firefighter at the butt end uses their foot as a stop against the spur to pivot the ladder. (Figure 6).

Figure 6: Firefighters spotting for the ladder raise, and clearing overhead for obstructions and hazards.

#3 The firefighter at the tip will walk the ladder into position while the firefighter at the butt will assist by pulling on the beam. (Figure 7).

Figure 7: Firefighters beam raising the ladder.

#3.1 Another option for the ladder raise is the flat raise. (Figure 8).

Figure 8: Alternative flat ladder raise.

#4 The firefighters pivot the ladder into a position with the fly section facing away from the building. (Figure 9).

Figure 9: Firefighters pivoting the ladder into place.

#5 Both of the firefighters will brace the ladder by placing a beam on the side of their leg (each beam is braced). The firefighter facing the building will also secure the ladder by placing both hands on the beams. (Figure 10).

Figure 10: Firefighters safely heeling and controlling the ladder.

#6 The firefighter in charge will announce “extending ladder”. Use a controlled hand over hand method when extending the ladder. The firefighter facing the building will announce “ladder high” when the ladder is extended to the proper height. The firefighter extending the ladder will extend the ladder one more rung following the announcement of “ladder high”. Both firefighters will check to make sure the dawgs are locked once the extension is completed, and announce “dawgs locked”. (Figure 11).

Figure 11: Firefighter extending the ladder in a controlled hand over hand motion.

#7 The Firefighters will use a controlled method to place the ladder into the building. The firefighter in charge will say “place ladder”. (Figure 12).

Figure 12: Firefighters place the ladder into the building in a controlled manner.

#8 Tie off the halyard using a clove hitch and a safety knot if length of rope allows. Place the halyard in the center of the ladder so it reduces the chance of interfering with the feet. (Figure 13).

Figure 13: Tie off the halyard using a clove hitch and safety knot.

#9 If necessary, this is an example of two firefighters adjusting the ladder for proper placement and climbing angle. The key is to lift with your legs and not your arms or back when placing the ladder into the proper climbing angle (forward or back), and to look at the tip of the ladder to ensure ladder control. It is also very important to make sure that you are not twisting at all with your back in order to avoid back injury or strain.
(Figures 14 and 15).

Figures 14 and 15: Firefighters adjusting the ladder for proper placement and climbing angle.

#10 After checking the climbing angle, the ladder is now ready to climb. *Note: Ensure a Firefighter is heeling the ladder as it is climbed to prevent the ladder from kicking out underneath the ascending firefighter. (Figure 16).*

Figure 16: A Firefighter should be in position to heel the ladder when its ready to climb.

Task #2 – Putting together a Ladder/Roof Package.

There are times in a fireground operation where the structure may be some distance away from the apparatus. In this instance, in order to increase efficiency it may be advisable for the Ladder crew to create a ladder/roof package and carry all needed equipment for ventilation at the same time to save time on multiple trips to the apparatus.

#1 The first firefighter removes the extension ladder from the apparatus and places it on the ground fly down. (Figure 17).

Figure 17: Firefighter removing extension ladder for roof package.

#2 The second firefighter removes the roof ladder from the apparatus, opens the hooks and places it on top of the extension ladder. (Figure 18).

Figure 18: Firefighter placing the roof ladder on the extension ladder for the roof package.

#3 Next place both chainsaws and a 8' trash hook on top of the ladders. It is important to note that each firefighter is also carrying a personal tool to assist with ventilation if necessary. (Figure 19).

Figure 19: A completed roof package.

#4 Once the ladder package is assembled, the lead firefighter gets into position near the butt-end of the ladder. The tip firefighter assists in lifting the ladder package for the lead firefighter before the carry begins. (Figure 20).

Figure 20: The tip firefighter assists the lead firefighter with securing the butt-end of the ladder package.

#5 The tip firefighter now lifts the tip end of the ladder and awaits the lead firefighter to initiate the flat carry with the command forward ladder. (Figure 21).

Figure 21: The roof package is now ready for the carry to the objective.

Task #3 – Two firefighter placement of ladders for vertical ventilation.

If vertical ventilation is warranted, a firefighting crew will need to work together to properly place and setup ground ladders for use to accomplish vertical ventilation.

#1 The first firefighter locates the center of the extension 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: Firefighter removing extension ladder for vertical ventilation.

#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. Check for overhead obstructions before raising the ladder. (Figure 23).

Figure 23: High shoulder carry of the extension ladder, and checking for overhead obstructions and hazards.

#3 Place the butt end of the ladder on the ground approximately ¼ of the height of the building from the building wall. The fly section may be away from the building or towards the building. 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. (Figure 24).

Figure 24: Pushing up in a "popping" fashion with the legs assists in setting the ladder spurs.

#4 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 25).

Figure 25: Firefighters safely heeling and controlling the ladder.

#5 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 26).

Figure 26: Firefighter extending the ladder in a controlled hand over hand motion.

#6 Place the ladder into the building in a controlled manner. (Figure 27).

Figure 27: Firefighter places the ladder into the building in a controlled manner.

#7 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 28).

Figure 28: Tie off the halyard using a clove hitch and safety knot.

#8 Rotate the ladder so that the fly section is facing out. (Figure 29).

Figure 29: Firefighter safely controlling and rotating the ladder.

#9 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. (Figure 30).

Figure 30: Firefighter adjusting the ladder for proper placement and climbing angle.

#10 The second firefighter locates the center of the roof 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 31).

Figure 31: Firefighter removing the roof ladder from the apparatus.

#11 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. Check for overhead obstructions before raising the ladder. (Figure 32).

Figure 32: High shoulder carry, and checking for overhead obstructions and hazards.

#12 Place the lowest rung of the ladder into the extension ladder already placed on the building using it as a pivot point and raise the ladder in a flat raise. (Figure 33).

Figure 33: Firefighter raising roof ladder.

#12.1 An alternative to the pivot raise above would be to raise the roof ladder right next to the extension ladder using a beam raise. This prevents the likely hood of kicking out the extension ladder if another firefighter isn't available to foot the extension ladder. (Figure 34).

Figure 34: Firefighter using alternative method of beam raise next to extension ladder.

#13 Once the ladder is raised, hook it has high as you can on either the right or left of the extension ladder beam utilizing the open roof hooks. This will be determined by forecasting which side of the roof ladder you will complete vertical ventilation once the roof ladder is placed on the roof. (Figure 35).

Figure 35: Firefighter hooking roof ladder onto the extension ladder.

#14 Attach the trash hook to the highest point you can quickly reach in the middle of the extension ladder so that the climbing firefighter can easily control the roof hook and roof ladder as they ascend. The chainsaw is also placed at the base of the extension ladder idling while the firefighters prepare to ascend the ladder to the roof. (Figure 36).

Figure 36: Firefighter hooks trash hook onto extension ladder.

#16 The ground ladders are now setup and the firefighter's ascent for vertical ventilation can now commence. (Figure 37).

Figure 37: Completed ladder setup for vertical ventilation.

REFERENCE INFORMATION

- IFSTA Essentials of Firefighting 6th Edition.
- LFRA Training Manual Two Person Operations 1.2