



# Fresno Fire Department Ground Ladder Practices Guide





# Fresno Fire Department

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## INTRODUCTION

Ground ladders are one of the primary tools used by firefighters. They are versatile, durable, easy to use, and effective. There is no substitute for a ground ladder when it comes to fast, safe, vertical access for fire suppression and rescue operations.

Always use care in removing ladders from apparatus, placing those which may need to be removed to gain access to the desired ladder in a safe position, out of the way. If proper care is not taken, serious injury to members or damage to the ladder may occur.

Caution should be given regarding the proper method of lifting or lowering a ladder from or to the ground. Permanent back injury may be sustained by firefighters using their back muscles to lift a heavy ladder. The large muscles of the thigh and the muscles of the arms should be used in lifting and not the muscles of the back. The correct body position for lifting is to bend the knees, keeping the back straight, and lift by using the muscles of the legs and arms as the legs are straightened. Keep the ladder as close to the body as possible throughout the lift.

Unless otherwise stated, the shoulder carry is used to carry all one person ladders. A two- or three-person carry may be utilized for larger ladders.

To ensure a ground ladder is safe to climb, it should have four points of contact. Each spur needs to have secure contact with the ground and the top of the ladder should be placed to rest on parallel points of the beam. For optimal firefighter safety, an attempt should be made to foot the ladder and to place it at a 75-degree climbing angle.

Unless necessary, ladders should not be placed:

1. In front of entrance and exits where ingress and egress might be obstructed.
2. Into or against burning windows or other burning surfaces.
3. Against rounded overhanging roof surfaces, or against the slope of a pitched roof where the stability of the ladder might be endangered.
4. Over sidewalk elevator trap doors.
5. In such a manner that ladder beams straddle hose lines.
6. In sidewalk trap doors so the top of ladder protrudes over street or pedestrian traffic lanes where it may be struck by a vehicle or a person.

The top of a ladder should not be scraped or dragged along a wall or window



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ledge when it is being shifted to a new position because it can cause falling debris. Bring the ladder to an upright position and lift it, even if the fly must be lowered.

When lowering a ladder into a window, be alert for falling glass.

When a ladder is placed in an unusual or abnormal position, there should be sufficient firefighters on the scene to ensure stability before the ladder is climbed.

When adjusting for a proper climbing angle, additional stability may be obtained by moving ladder spurs a short distance into a crevice or crack.

When practicable, a firefighter should stabilize the base of the ladder.

Firefighters should be secured to the ladder when working from heights.



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## ANATOMY OF A LADDER

The below figures show two types of ladders. Figure 1 shows the parts of a straight ladder. Figure 2 shows the parts of an extension ladder.

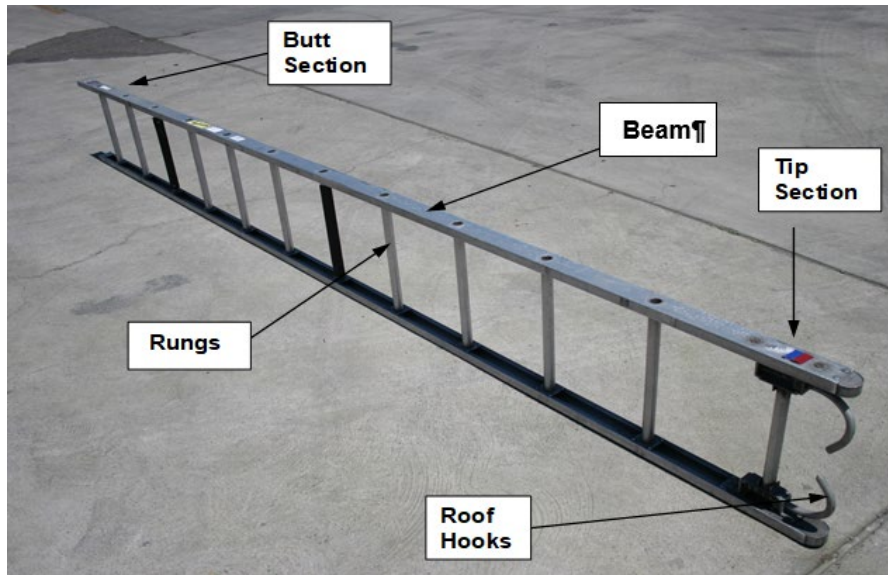


Figure 1

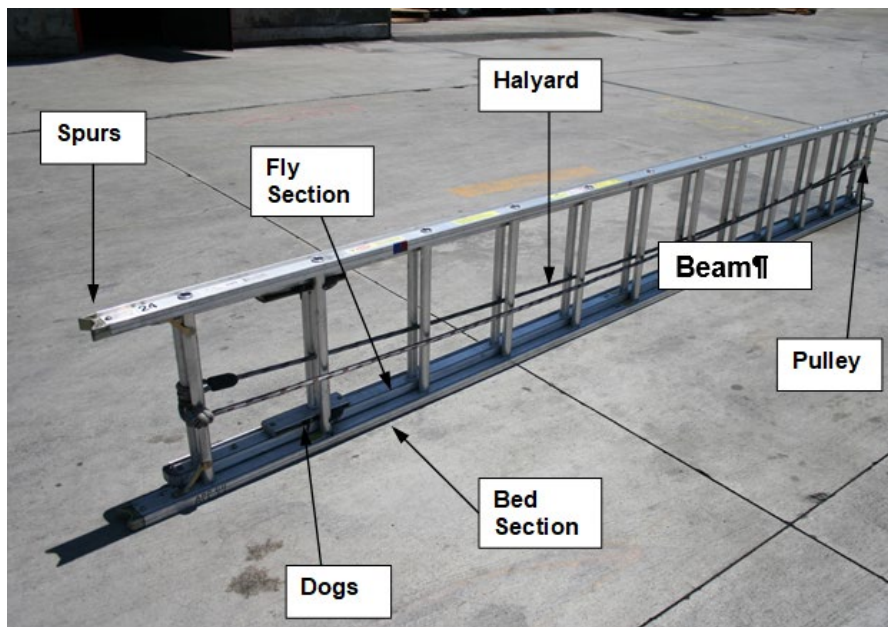


Figure 2

## Marking Ladders

All ground ladders have their length marked on the beam at the butt end of the ladder. (See Figure 3) This eliminates guesswork when removing or replacing ladders from apparatus. In addition, the Department utilizes a color-coded



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marking system to identify which apparatus ladders are assigned to.



Figure 3





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## CARE AND MAINTENANCE

Ground ladders will be regularly inspected, maintained, and service tested in accordance with NFPA Standards.

All Department ground ladders will be tested annually by a certified vendor during the months of September and October. Anytime a ground ladder is believed to have been damaged, the ladder will be taken out of service and service tested prior to being used again. This includes ladders which have been dropped, exposed to high heat, shock-loaded, or have received any other mechanical damage.

Ground ladders are to be cleaned and inspected weekly in the fire stations.

Clean ladders with mild soap and water, use of harsh soaps or chemicals can sometimes turn heat sensor labels dark. A scrub pad can be used to buff the surface to a smooth finish. Use paraffin wax or candle wax to lubricate any contacting parts. These waxes coat and work into the pores of the ladder material and does not easily wash away with frequent water baths.

Inspect all parts of the ladder for damage. Aluminum is a malleable metal and is subject to dents and nicks, etc. Small dents and/or nicks on the beams and rungs are not uncommon and are not grounds to fail a ladder. Be sure the rungs are tight; if any rung is loose - remove the ladder from service, repair, and service test.

There are four heat sensors per ladder section. If any heat sensor has activated, the ladder must be load tested prior to replacing the heat sensor.



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## STANDARD GROUND LADDER COMPLEMENT

### Engine:

- 1 – 10-foot Attic ladder
- 1 – 14-foot Roof ladder
- 1 – 24-foot Extension ladder

### Truck:

- Minimum of 115' of ground ladders
- 1 – 10-foot Fresno attic ladder and or 1- 14' attic ladder
- 2- 14-foot to 16' Roof ladders
- 1- 24-foot extension ladder
- 1- 35-foot extension ladder

Straight ladders are single-section, fixed-length ladders which are lightweight and easy to deploy. Straight ladders have several uses in the fire service, including gaining access to single-story roofs of small buildings and bridging fences.

Roof ladders are straight ladders equipped with collapsible hooks at the tip. Roof ladders come in various lengths and are primarily used with roof hooks to secure the ladder to pitched roofs, to distribute weight, and to provide stable footing for firefighters performing roof operations.

The 24-foot extension ladder is the longest of the three ladders carried on engine companies. It is also carried on all truck companies. It is deployed by one firefighter and is used to gain access to first-story roofs and second-story windows.

The 35-foot extension ladder is carried on all truck companies. It is usually bedded in the apparatus on its beam with the butt end of the ladder to the rear of the apparatus. It is deployed by two or three firefighters. It may have either solid or truss-beam construction and comes in both two and three sections. The 35-foot extension ladder is primarily used to gain access to second-story roofs and third-story windows.



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## BASIC LADDER COMMANDS

It is important all members communicate effectively when on the fire ground. When operating ladders, there are several specific terms and commands with which all firefighters must be familiar. This will allow firefighters to work with ladders smoothly and efficiently during fire-ground operations. The following ladder commands are accepted practice for the Department.

When using multiple members to place a ladder into service (e.g., 35-foot extension ladder) preparatory commands may be used. These commands will likely be given by the base firefighter and will alert the other firefighters as to the action about to be performed.

- Ground Ladder
- Extend Ladder
- Forward Ladder
- Ladder High
- Lift Ladder
- Lower Ladder into Building
- On/Off Ladder
- Pivot Ladder
- Raise Ladder
- Remove Ladder
- Retract Ladder
- Shoulder ladder

### Additional Commands

<b>All Clear</b>	Used when raising ladder into vertical position and lowering back down.
<b>Dogs Locked</b>	Used when fly section of ladder is locked into place.
<b>Fingers and Toes</b>	Used when raising fly section of extension ladders.
<b>Ladder Coming Around</b>	Used when carrying and turning with a ladder.
<b>Ladder Coming Through</b>	Used when carrying a ladder through a crowd.
<b>Ladder Coming Down</b>	Used when lowering a ladder from a vertical position to the ground.
<b>Look Up to Live</b>	Used prior to placing a ladder into position to confirm there are no hazards.



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## REMOVAL OF LADDERS FROM APPARATUS

1. Face the rear of the apparatus and stand to the right side of the desired ladder.
2. Unlatch the locking mechanism that secures the ladders in the bed, if so equipped.
3. Grasp the first rung of the ladder with left hand, step backward, and pull the ladder a few feet out of the bed. (See Figure 4)



Figure 4

4. Turn away from the apparatus and grasp a convenient rung with right hand.
5. Walk away from the apparatus, sliding the ladder out of the apparatus bed. (See Figure 5)



Figure 5

6. Rest the butt of the ladder on the ground, ensuring the tip remains at the edge of the ladder bed. (See Figure 6)



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Figure 6

7. Turn back towards the apparatus. Place left hand on top beam and walk to the tip.

**Note:** In cases where the ladder is bedded flat, maintain contact with the near beam.

8. Firmly grasp the top beam with the left hand, bend at the knees, and grasp the bottom beam with the right hand.

**Note:** In cases where the ladder is bedded flat, the ladder will have to be pivoted onto its beam first.

9. Pivot to the left and at the same time raise the ladder to the right shoulder. (See Figure 7)



Figure 7



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10. Walk back to the approximate center point of the ladder and adjust for proper balance. (See Figure 8)



Figure 8

**Note:** If the roof ladder is to be used inside the building, it may be better to carry with the tip forward.

## Returning Ladders to Apparatus

1. Reverse the above operations.

## **Carrying Ladders**

### Shoulder Carry

1. Ladder is on beam on firefighter's right shoulder, generally butt of ladder is facing forward.
2. Firefighter positioned at the balance point of the ladder with right hand on bottom beam and left hand on top beam.
3. Fly section is facing away from firefighter with the 24-foot extension ladder and towards the firefighter with the "Fresno" attic ladder. (See Figures 9 and 10)



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**Figure 10**

4. Obstructions and hazards should be noted prior to moving the ladder.
5. When moving to desired location, front of the ladder is angled slightly toward the ground and the left arm is positioned so as not to interfere with the firefighter's vision.



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## LADDER PLACEMENT

### For Roof Access

1. Place the ladder to the base of the roof slope, whenever conditions allow (See Figure 11).
2. Tip of the ladder should be approximately five rungs above the roof line.
3. If it is not possible to place the ladder to the base of the roof slope, the following options may be considered:
  - a. Place the ladder to the valley of adjoining roof slopes.
  - b. Place the ladder to rest securely against an adjoining building or wall.
  - c. Place the ladder to the peak of the gable, provided that the ladder rungs are not permitted to rest against the peak of the roof, to avoid a pendulum action.

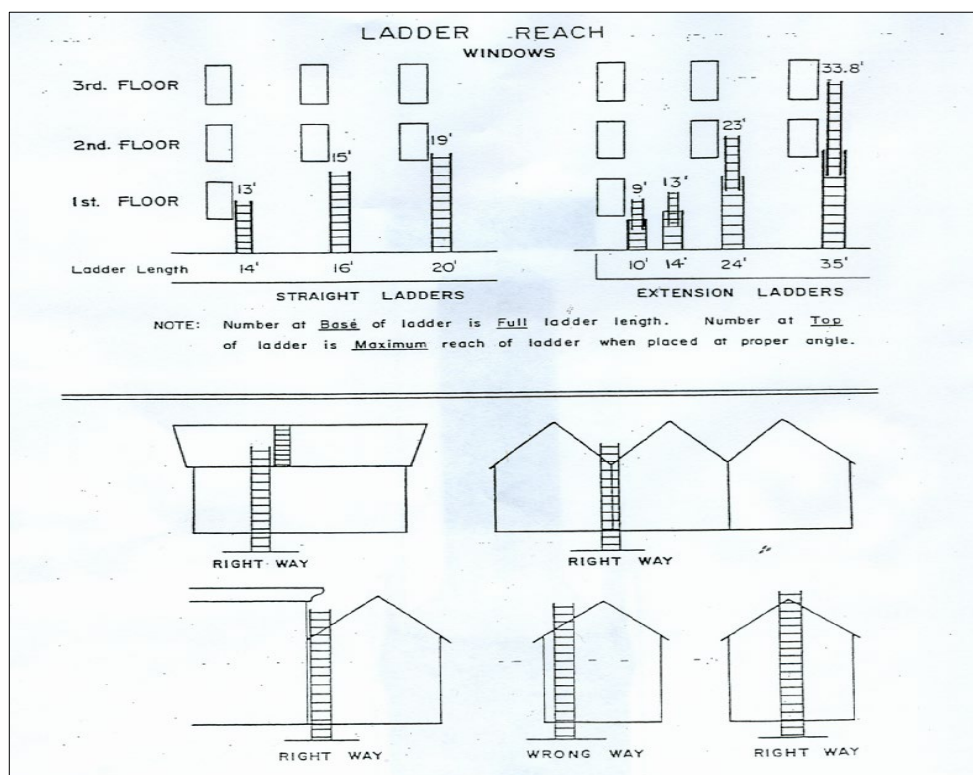


Figure 11





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## Entering a Window

1. Place the tip of the ladder one to two rungs in the window if space allows.
2. Move ladder to side of window to facilitate ingress and egress. (See Figure 12)

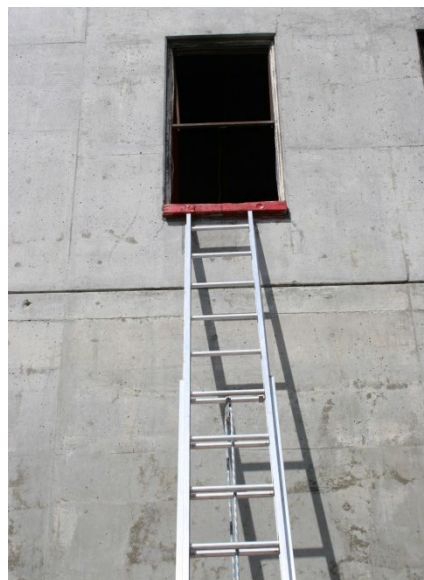
**Note:** If inadequate space, place the ladder in rescue position.

## For Rescue

1. Place the tip of the ladder under the windowsill. (See Figure 13)
2. Lessen the climbing angle, if needed.



Figure 12



## For Above-Ground Horizontal Ventilation

3. Position the ladder on the windward side of the opening.
4. Place the tip of the ladder even with, or slightly above, the top of the window. (See Figure 14)



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Figure 14

## Balconies and Fire Escapes

1. Place tip of ladder into fire escape railing, where appropriate, in line with fire escape stairs. (See Figure 15)

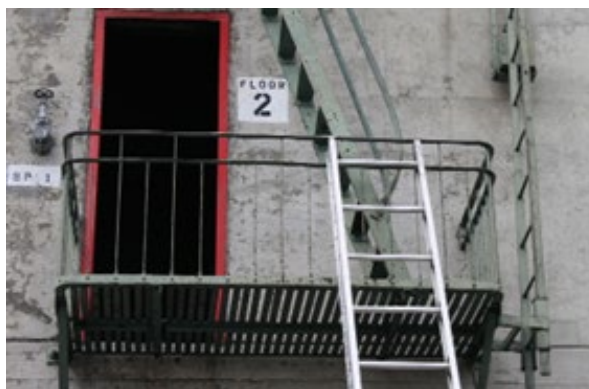


Figure 15

2. For fire escapes with only one top rail, rest the ladder on the top rail and secure ladder with hose strap.



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## OPERATING ON A LADDER

### Adjusting Ladders for a Proper Climbing Angle

For a ladder to be climbed and utilized safely, it must be placed at a proper climbing angle. While industry standards place this angle at approximately 75 degrees, a fire-ground friendly way of determining the proper climbing angle is to stand with the feet at the base of the ladder and fully extend the arms. The hands should comfortably reach the beams or the rungs of the ladder if the angle is correct. (See Figure 16)



Figure 16

Throughout this Guide references will be made to “adjusting the ladder” to provide for a proper climbing angle. (See Figure 17) The following steps will provide a safe means to do so:

1. Straddle the left beam.
2. Grasp the fifth rung with the left hand, palm down.
3. Grasp the second rung with the right hand, palm up.

Lift the base of the ladder and adjust to proper angle.



Figure 17



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**Note:** Firefighter must pay attention to both the tip of the ladder to ensure it stays in contact with the building and the base of the ladder for hazards. When adjusting a 35-foot extension ladder, two firefighters will be used, one at each beam. Firefighters face each other and use a coordinated effort to adjust ladder.

## Climbing Ladders

Climbing a ladder correctly and safely requires practice. To climb smoothly, it is necessary to step with the ball of the foot on each rung and to securely grasp each rung while climbing. The beam may be used when carrying tools aloft. The firefighter should always maintain three points of contact with the ladder when climbing. Climb near the center of the ladder so as not to make the ladder wobble and the base walk. The body should be kept nearly upright by keeping the arms and knees straight in front of the body and slightly bent. This position eliminates movement of the ladder caused by climbing stiff-legged or from stomping on the rungs and ensures a safe and smooth climb.

A proper ladder climber stays at arm's length from the ladder. Use the ball of the feet for climbing and do not run up or down the ladder. Should the ladder be covered with frost or if the firefighter's boots or the ladder rungs are wet or covered with mud, place the foot further into the rung.

While climbing, firefighters should not look down or watch their feet. Rather, they should look slightly upward in the direction their hands are traveling. Hands should be moved on the rungs or beams at the level between the waist and head. Climbers should always face the ladder while ascending or descending.

## Locking Into a Ladder

1. Climb to desired working height and then go one rung higher.
2. Extend the leg opposite the side that the firefighter will be working off through the rung.
3. Bend the knee around the rung and secure the foot around the rung and/or beam.
4. Move the other leg down one rung. (See Figure 18)



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**Figure 18**

Sometimes, in emergency situations, firefighters may need to pass each other on a ladder. This must be a well-coordinated effort for the operation to go safely.

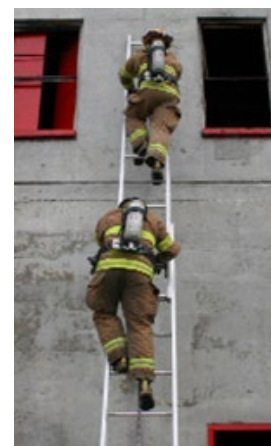
The firefighter proceeding up the ladder (Firefighter A) will notify the firefighter proceeding down (Firefighter B) of the need to pass and then move to the right side of the ladder. Firefighter B will stop and move to the left side of the ladder. Firefighter B will keep the right foot on the rung, next to the beam, and wrap the left foot around the beam for support. With the right hand, Firefighter B will hold onto the rung, next to the beam, and grasp the beam with the left hand. (See Figure 19) Firefighter A will then proceed up the ladder. As soon as the firefighters have passed each other, they will move back to the center of the ladder. (See Figures 20 and 21)



**Figure 19**



**Figure 20**





## Footing Ladders

Before a ladder can be climbed, it should be placed at a proper climbing angle and be secured.

Securing a ladder is typically accomplished by having a firefighter use his/her weight to keep the base of the ladder from slipping. This is referred to as “footing” the ladder. The firefighter, in full personal protective equipment (PPE), will place himself/herself between the ladder and the building. The firefighter will grasp the beams of the ladder at shoulder height, with feet in a boxer’s stance, and lean back. The firefighter footing the ladder must look straight forward and have appropriate eye protection in place. (See Figure 22)



Figure 22

In certain situations, the tip of the ladder may be secured to the building utilizing a hose strap or rope.

## Number of Firefighters Permitted on Ladders

The following tables provides a recommended safe allowance for loading ladders while climbing or working on them, when properly raised and placed.

### Straight Ladder

<u>Length</u>	<u>No. of Firefighters</u>
14-Foot	1
16-Foot	1
20-Foot	2



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## Extension Ladder

<u>Length</u>	<u>No. of Firefighters</u>
10-Foot	1
14-Foot	1
24-Foot	2
35-Foot	3

## Roof

<u>Length</u>	<u>No. of Firefighters</u>
Suspended Pendant	1
On Pitched Roof	3

## Aerial Ladder

<u>Length</u>	<u>No. of Firefighters</u>
75-Foot or Over	5

When passing on a ladder, the space between those passing and other firefighters above and below should be at least 15 feet.



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## STRAIGHT LADDERS

### Lifting a Straight Ladder from the Ground

1. With the ladder resting flat on the ground to your left, face the tip of the ladder and stand approximately two-thirds the distance toward the tip of the ladder. (See Figure 23)



Figure 23

2. With back straight, squat and grasp the nearest beam with left hand. (See Figure 24)



Figure 24

3. Lift left hand, rotating the ladder onto the bottom beam, and step close to the ladder. (See Figure 25)
4. With back straight, lift the ladder using legs and pivot right shoulder under the bottom beam. Place right hand on the bottom beam and keep left hand on the top beam. (See Figure 26)



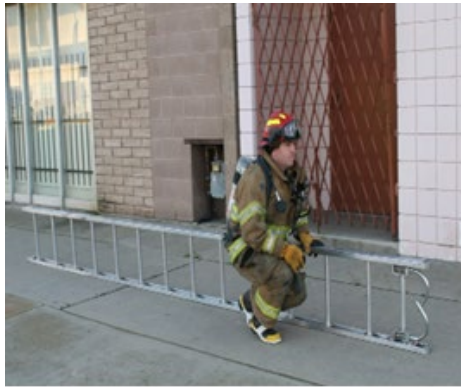


Figure 25

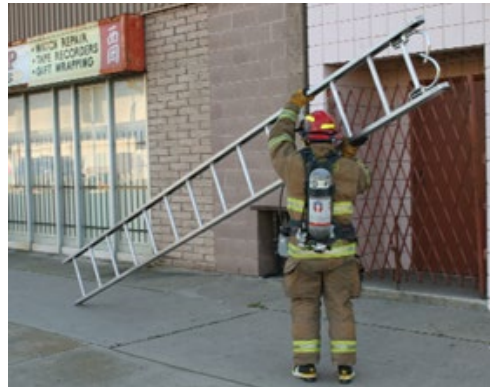


Figure 26

5. Walk down the ladder until right shoulder reaches ladder balance point. Lift base of ladder off the ground and proceed with carry. The butt of the ladder should be slightly lower than the tip as firefighter proceeds. (See Figure 27)



Figure 27

## Lowering a Straight Ladder to the Ground

1. Reverse the above operations.

## Raising a Straight Ladder

([Click here for IPE Video 316.011](#))

1. Remove the ladder from the apparatus and place on shoulder.
2. Note any hazards and proceed to the desired location.
3. When close to the desired location, tilt the base of the ladder toward the base of the building and lift the ladder overhead in a flat position. (See Figure 28)



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**Figure 28**

4. Place the base of ladder against the base of building. (See Figure 29)
5. Raise the ladder to a vertical position by moving hands along the beams. Watch the top of the ladder for clearance while raising the ladder. (See Figure 30)



**Figure 29**



**Figure 30**

6. When the ladder is in vertical position, adjust to the proper climbing angle using the second and fifth rungs. (See Figure 31)



**Figure 31**



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## Lowering a Straight Ladder

1. Reverse the above operations.

## Moving a Raised Ladder Horizontally

If it should become necessary to move a raised ladder a short distance, (i.e., as from one window to another) it may be moved without lowering the ladder. If the ladder is 20 feet or less, one firefighter may move it. When the ladder length is greater, the ladder should be lowered and raised in its new position.

1. Grasp the second and fifth rungs and move the base of the ladder about half the distance towards the building.
2. Place a foot on the center of the lower rung, grasp the beams with hands, and pull the ladder to an upright position. (See Figure 31)



**Figure 32**

3. When moving the ladder, face the direction of travel and grasp the second and fifth rungs with the appropriate hands. (See Figures 33 and 34)

**Note:** Place hands around rungs and against the beams of the ladder.



**Figure 33**



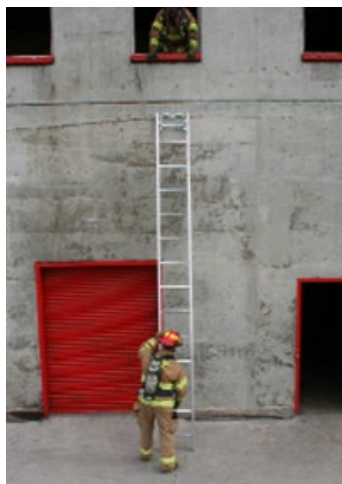
**Figure 34**

4. Lift and balance the ladder. Alternately watch the top of the ladder and the carrying path and proceed to the desired location.

## Passing a Ladder Up the Outside of a Building

There are times when it is necessary to pass a ladder on the outside of the building to upper floors or roof for ventilation and/or overhauling purposes. Passing the ladder to the roof requires a firefighter be positioned on each floor at windows in line and on the roof.

1. Firefighters take positions at the windows.
2. One firefighter carries, raises, and places top of the ladder into the window and moves the base against the building. (See Figure 35)



**Figure 35**



**Figure 36**



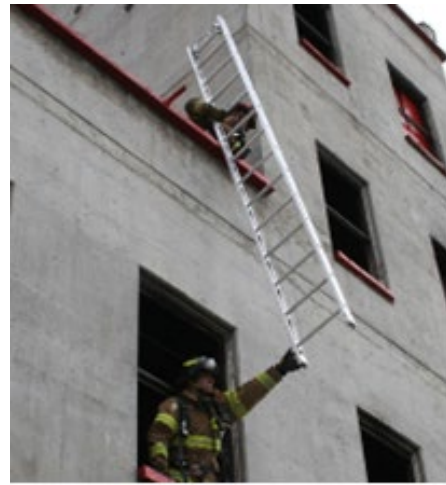
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3. Second-floor firefighter grasps the ladder rungs with the palms of hands up and moves the ladder up the side of the building. The firefighter on the ground assists. (See Figure 36)
4. The next-floor firefighter reaches down as far as possible and grasps the ladder and helps lift it up with hands, palms up, on the rungs, and continues lifting the ladder up the side of the building.
5. Move the ladder up the side of the building until the desired location is reached. (See Figure 37)



**Figure 37**



**Figure 38**

6. The firefighter at the top reaches as far down as possible and grasps the ladder and helps lift it up. When the base of the ladder clears the windowsill of the floor below, turn the ladder onto its beam. (See Figure 38)
7. When ready to move the ladder onto the roof or floor, the firefighter below pushes the ladder outward. (See Figure 39)



**Figure 39**

8. The firefighter at the top secures the ladder by placing the left hand on a rung toward the outside beam and the right hand on the inside beam. (See



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Figure 40)



**Figure 40**

9. Break the ladder over the cornice or windowsill and onto the building. (See Figure 41)



**Figure 41**

10. To bring the ladder down, reverse the above procedures.

## **Laddering Fire Escapes**

### Raising a Straight Ladder to Fire Escape

1. Place the base of the ladder directly under the desired location of the fire escape balcony to be laddered, normally in line with fire escape stairs.
2. Place the base of ladder against building. (See Figure 42)



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**Figure 42**

3. Push ladder toward the building so that beams of the ladder rest against the fire escape. (See Figure 43)



**Figure 43**

4. Move the base of ladder away from building using the second and fifth rungs. (See Figure 44)
5. On fire escapes with two top rails, lock the tip of the ladder into the railing. Move the base of the ladder out until the tip of the ladder drops under the top horizontal railing of the fire escape. Push the ladder base back in toward the building to ensure the ladder tip locks in on the fire escape. On fire escapes with only one top rail, rest the ladder on the top rail and secure the ladder to the rail using a hose strap. Place a lark's foot around the rung and a clove hitch on the top rail. (See Figure 45)



Figure 44



Figure 45

## Lowering a Straight Ladder from Fire Escape

1. If needed, untie hose strap, or use the second and fifth rungs to move the base of the ladder out slightly to unlock the tip of the ladder from the fire escape railing.
2. Lift top of ladder so it clears fire escape rail.
3. Move the base of ladder to the base of building. Beams will rest on the bottom rail of the fire escape.
4. Move hands along beams of ladder and lower to right shoulder at the balance point.

## Taking a Roof Ladder Aloft

([Click here for IPE video 316.016](#))

1. Remove the ladder from the apparatus and place on shoulder.
2. Note the hazards and proceed to the climbing ladder.
3. Tilt the base of the ladder toward the base of the climbing ladder and lift the ladder overhead in a flat position.
4. Place bottom rung of ladder against the right beam of the climbing ladder. (See Figure 46)





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**Figure 46**

5. Lower roof ladder to waist height and grasp top rung with one hand. Open the hooks by pushing inward and turn the hooks downward. (See Figure 47)



**Figure 47**

6. Raise the ladder to a vertical position by moving hands along the beams until the ladder is resting on the right beam of the climbing ladder with hooks facing outward.
7. Adjust the ladder using the second and fifth rungs until the roof ladder safely stands on its own with the top rung resting against the climbing ladder. (See Figure 48)



**Figure 48**



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8. Proceed up the climbing ladder to a position where the right arm can be placed between the fourth and fifth rungs from the top of the roof ladder.
9. Reach through the rungs of the roof ladder and grasp the beam of the climbing ladder. The roof ladder will be outside the climbing ladder hanging pendant from the right shoulder. (See Figure 49)



**Figure 49**

10. Balance the roof ladder on shoulder with forward beam against the right shoulder.
11. Climb the ladder to desired location.
12. Place the ladder, on its bottom beam, onto the roof. Keep hands on the beam and slide the ladder toward the ridge peak. Remain in complete control to prevent ladder from moving sideways off the roof. (See Figures 50 and 51)



**Figure 50**



**Figure 51**

13. When hooks have passed the ridge peak, the turn ladder over so the hooks are facing down onto the roof. Pull the ladder back until the hooks are securely engaged on the ridge peak. (See Figure 52)



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Figure 52

**Note:** Sliding the ladder on the roof with the hooks facing down is also an accepted method.

**Note:** When dealing with a parapet, consider inverting the ladder and taking the ladder up butt first. When the firefighter reaches the top, he / she must lock-in and then he / she can release the hooks and secure them on the parapet ledge.

## Returning Ladder to Ground

Reverse the above operations.



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## EXTENSION LADDERS

### 24-Foot Extension Ladder from Apparatus

#### Shoulder Carry

1. Remove the ladder from the apparatus.
2. Place the ladder onto right shoulder, butt forward, with fly away from the firefighter.
3. Place right hand on bottom beam and left hand on top beam.
4. Balance the ladder and adjust left hand so as not to obstruct vision.
5. Proceed to the desired location, checking for obstructions. (Chapter 6)

### Lifting a 24-Foot Extension Ladder from the Ground

1. With the ladder resting flat on the ground to the left and the fly section on top, face toward the tip of the ladder, standing approximately two-thirds the distance toward the tip of the ladder. (See Figure 53)
2. With back straight, squat and grasp the nearest beam with left hand. (See Figure 54)



**Figure 53**



**Figure 54**

3. Lift the ladder, rotating onto the bottom beam and step in close to the ladder. (See Figure 55)
4. With back straight, lift the ladder using legs and pivot right shoulder under the bottom beam. Place right hand on the bottom beam and keep left hand on the top beam. (See Figure 56)



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Figure 55



Figure 56

5. Walk down the ladder until right shoulder reaches the balance point. Lift the butt of the ladder off the ground and proceed to the location. The butt of the ladder should be slightly lower than the tip as the firefighter proceeds. (See Figure 57)



Figure 57

## Lowering a Ladder from Shoulder Carry to Ground

1. Tilt the lower beam forward and place the butt of the ladder on the ground. (See Figure 58)
2. Walk the ladder down until you approach the tip of the ladder. (See Figure 59)



**Figure 58**



**Figure 59**

3. Maintain grip on the top beam, pivot body to the right, and lower the ladder to ground.
4. Place the bottom beam on the ground using leg muscles while keeping back straight. (See Figure 60)



**Figure 60**

5. Step to the right and lower the top beam to the ground.

**Note:** When all steps are completed, the bed of ladder should be resting on the ground.

## Raising the 24-Foot Extension Ladder

([Click here for IPE Video 316.013](#))

1. At the proper location and distance from the building, place the spur of the lower beam on the ground and raise the ladder to an almost vertical position. (See Figure 60)



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**Figure 61**

2. Pivot the ladder counter-clockwise until the ladder is square with the building. Then set the spur of the left beam on ground. (See Figures 62 and 63)



**Figure 62**



**Figure 63**

3. When the ladder is balanced vertically, hook left foot around the rear of the left beam, placing left knee against front of the left beam to steady the ladder. Grasp the halyard with both hands, placing left forearm against the left beam. (See Figure 64)



**Figure 64**



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4. While watching the top of the ladder, pull down on the halyard (hand-over-hand) until the desired height of the fly section is reached. Vertical stability of the ladder is maintained by pushing the ladder away with left forearm and pulling in with the halyard.
5. Lock the dogs on the desired rung of bed section by raising the fly section until the pawls are slightly above the desired rung, then lowering the fly section until both pawls engage the rung.
6. Place the top of ladder against the building by grasping beams with both hands at shoulder height and placing left foot on the center of the bottom rung while leaning the top of ladder in toward building.
7. While still grasping the beams, remove left foot from the bottom rung and rotate the ladder 180 degrees. The halyard will be against the building. (See Figure 65)



**Figure 65**

8. Adjust the ladder to the proper climbing angle.

## **Lowering the Ladder**

1. Check for any obstructions, and then move the base of the ladder halfway toward the building using the second and fifth rungs.
2. Reverse the above operations, ensuring the dogs are locked on the second rung of the bed section and that the area is clear of hazards prior to moving the ladder. (See Figure 66)





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**Figure 66**

In the event sufficient room is not be available to raise the extension ladder as directed, the ladder may be raised parallel to the building and then rotated 90 degrees.

Under optimum conditions, the 35-foot extension ladder is carried and raised by three firefighters. A two-person method of deployment can also be utilized when necessary

## **35-Foot Extension Ladder**

[\(Click here for IPE Video 316.015\)](#)

The ladder is carried to the desired location in a flat position, at arm's length. The firefighter at the base (command firefighter) directs and vocalizes all operations with the ladder.

### **Three-Person Method: Carrying the 35-Foot Extension Ladder**

1. The command firefighter takes a position at the first rung at the base of the ladder, on either the right or left side.
2. The firefighter at the middle takes a position midway between the base and the top end of the ladder, on the opposite side from the base firefighter.
3. The remaining firefighter takes a position at the last rung at the tip of the ladder and on the same side of the ladder as the base firefighter.
4. At the command of the base firefighter, all firefighters lift the ladder simultaneously by grasping the rungs with the palms of the hands facing forward. (See Figure 67)
5. Carry to the desired location. (See Figure 68)



Figure 67



Figure 68

6. The base firefighter directs, properly locates, and spots the base of ladder. The ladder is then placed flat on the ground.
7. If needed, rotate ladder 180 degrees toward the middle firefighter so the halyard is on top. (See Figure 69)



Figure 69

**Note:** The base firefighter may use free hand to prevent injury to bystanders.

### Three-Person Method: Raising Ladder Perpendicular to Building

1. The base firefighter directs the team in properly spotting the ladder. The base firefighter must ensure the ladder will be in the correct raising position with the halyard on top.
2. The base firefighter heels the ladder by standing on the bottom rung, crouching down, and grasping a convenient rung with both hands. (See Figure 70)
3. The beam firefighters are positioned approximately two-thirds of the way up from the base, facing toward the tip of the ladder. Kneeling, the beam



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firefighters will grasp the closest beam with inside hands (See Figure 71)



**Figure 70**



**Figure 71**

4. At the command of the base firefighter, the beam firefighters raise the ladder overhead, simultaneously pivoting under the ladder toward the butt end. (See Figure 72)
5. The beam firefighters walk the ladder up with both hands on the beams. At the same time, the base firefighter helps by leaning back and walking his/her hands up the rungs as the ladder comes to a vertical position. (See Figure 73)



**Figure 72**



**Figure 73**

6. As the ladder reaches a vertical position, the base firefighter dismounts and grasps the beams. The two beam firefighters grasp the beams on the opposite side, crossing each other's arms for better control of the ladder. Each beam firefighter places outside foot against the outer portion of the beam for support. (See Figure 74)



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Figure 74

7. The base firefighter grasps the halyard with both hands and raises the fly section.
8. The beam firefighters, looking up, will check for proper height as the base firefighter pulls the halyard. When the fly section is high enough, the beam firefighters give the command "ladder high," and the base firefighter will then lock the fly. (See Figure 75)



Figure 75

**Note:** The base firefighter is obligated to give a warning as the fly section is raised so no fingers are injured during this evolution.

9. The beam firefighters remain in position after the fly is raised. The base firefighter grasps the beams with both hands, at shoulder height, and takes a boxer's stance with one foot forward for balance. The beam firefighters place their inside feet on the bottom rung.
10. The beam firefighters, using the weight of their bodies to prevent the base of the ladder from sliding out, lower the top of the ladder against the building with the base firefighter maintaining ladder balance at all times. (See Figure 76)



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Figure 76

**Note:** The beam firefighters watch for falling debris and glass. The base firefighter never looks up during this phase because of the possibility of falling debris.

11. The beam firefighters adjust the ladder for the proper climbing angle using the second and fifth rungs. (See Figure 77)

**Note:** The base firefighter must maintain control of the halyard. The halyard is then wrapped around two convenient rungs and secured with a clove hitch and overhand safety, ensuring that both sections of the halyard are captured. (See Figure 78)



Figure 77



Figure 78

## Two-Person Method: Carrying the 35-Foot Extension Ladder

1. The base firefighter takes a position at the first rung at the base of the ladder, on either the right or left side.
2. The tip firefighter (second firefighter) takes a position at the last rung at the tip end of the ladder and on the opposite side of the ladder as the base



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firefighter.

3. At the command of the base firefighter, both firefighters lift the ladder simultaneously by grasping the rungs with the palms of the hands facing forward. (See Figure 79)



**Figure 79**

4. Carry the ladder to the desired location. The base firefighter directs, properly locates, and spots the base of ladder. Place the ladder flat on the ground.

**Note:** If needed, rotate ladder 180 degrees on the command of the base firefighter so the halyard is on top.

## **Two-Person Method: Raising Ladder Perpendicular to the Building**

Raising a 35-foot extension ladder with two firefighters utilizes the same basic steps as the three-person method. The two-person method still requires one firefighter to be positioned at the base of the ladder, but only one firefighter will be at the beams to raise the ladder.

1. The base firefighter directs the proper spotting of the ladder. The base firefighter must ensure the ladder will be in the correct raising position with the halyard on top.
2. The base firefighter heels the ladder by standing on the bottom rung, crouching down, and grasping a convenient rung with both hands.
3. The tip firefighter kneels and grasps the beams.
4. At the command of the base firefighter, the tip firefighter stands and raises the ladder overhead. (See Figure 80)



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5. The tip firefighter walks the ladder up with both hands on the beams. At the same time, the base firefighter is assisting by leaning back and walking his/her hands up the rungs as the ladder comes to a vertical position. (See Figure 81)



Figure 80



Figure 81

6. As ladder reaches a vertical position, the base firefighter dismounts and grasps the beams. The tip firefighter grasps the beams on the opposite side.
7. Both firefighters place their left foot along the outside of the beam. The base firefighter grasps the halyard with both hands and raises the fly section. (See Figure 82)



Figure 82

8. The tip firefighter, looking up, will check for proper height as the base firefighter pulls the halyard. When the fly section is high enough, the tip firefighter gives the command "high," and the base firefighter will then lock the fly.

**Note:** The base firefighter is obligated to give a warning as the fly section is raised so no fingers are injured during this evolution.



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9. The tip firefighter remains in position after the fly is raised. The base firefighter grasps the beams with both hands, about shoulder height, and takes a boxer's stance with one foot forward for balance. The tip firefighter places left foot on the center of the bottom rung. (See Figure 83)
10. With the tip firefighter using the weight of their body to prevent the base of ladder from sliding out, the top of ladder is lowered against the building. The base firefighter maintains ladder balance at all times.

**Note:** The tip firefighter watches for falling debris and glass. The base firefighter never looks up during this phase because of the possibility of falling debris.

11. Both the tip and base firefighters adjust the ladder for the proper climbing angle using the second and fifth rungs. (See Figure 84)



Figure 83



Figure 84

**Note:** Wrap the halyard around two convenient rungs and secure with a clove hitch and overhand safety.

## Lowering the Ladder Perpendicular to the Building

1. Two firefighters move the base of ladder halfway toward the building using the second and fifth rungs.
2. Check for any obstructions.
3. Reverse the above operations, ensuring the pawls are locked on the second rung of the bed section prior to moving the ladder.

Two- or Three-Person Method: Raising Ladder Parallel to the Building





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At times there will not be sufficient room to raise the ladder perpendicular to the building. In such situations, the 35-foot extension ladder may be raised parallel to the building. The process is the same as the perpendicular raising method, except for the following steps.

1. With the 35-foot extension ladder in a vertical position, parallel to the building, both the base and tip or beam firefighters will have to rotate the ladder. All firefighters will be holding onto the beams.
2. The base firefighter will give the direction to tilt the ladder on the inside beam towards the building. (See Figure 85)
3. At the direction of the base firefighter, the ladder will then be rotated 90 degrees toward the base firefighter. This will result with the base firefighter having their back to the building and the halyard in front of them. (See Figure 86)



Figure 85



Figure 86

4. The remainder of the evolution is identical to the perpendicular raise.

## **Two- or Three-Person Method: Lowering 35-Foot Ladder from Building**

1. Using two firefighters and utilizing the second and fifth rungs, move the base of ladder halfway towards the building.
2. The base firefighter unties the halyard.
3. The base firefighter then places both hands on the beams, at shoulder height, standing in a boxer's stance. The tip or beam firefighters place inside foot on the bottom rung and grasp the beams as previously described.
4. The base firefighter helps push the top of ladder away from the building while the tip or beam firefighters pull the ladder to a vertical position.
5. All firefighters remove feet from the bottom rung.



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6. The fly section is lowered making sure the halyard does not slide through base firefighter's hands.

**Note:** The base firefighter is obligated to give a warning "fingers and toes" as the fly section is lowered so no one is injured during the evolution.

7. The ladder may be rotated if needed, to facilitate lowering.
8. The base firefighter stands on the bottom rung and grasps a convenient rung with both hands.
9. The beam or tip firefighters lower the ladder by moving hands along the beams hand-over-hand towards the tip of the ladder.

**Note:** While the ladder is being lowered, the base firefighter leans back and moves hands down the rungs hand-over-hand toward the butt of ladder.

10. With three firefighters, the base firefighter gives the command "shoulder ladder" when the beam firefighters reach approximately two-thirds of the way towards the tip. With the two-person method, the tip firefighter proceeds back towards the tip, with the base firefighter giving the "shoulder ladder" command just prior to the firefighter reaching the tip.
11. The beam firefighters lower the ladder beams onto the inside of shoulders, pivot toward the tip of ladder, grasp the upper beam, and lower the ladder in flat position to ground. With the two-person method, the tip firefighter squats and lowers the ladder to ground.

## Laddering Fire Escapes

### Raising the Extension Ladder to the Fire Escape

1. Align the ladder vertically with the outside edge of the fire escape balcony and horizontally with the fire escape stairs. Ensure the base of the ladder is about 18 inches out from the railing, with the ladder beams in line with the fire escape stairs. (See Figure 87)
2. Raise the ladder until the tip of the fly section is about one-and-one-half rungs above the top fire escape railing. (See Figure 88)
3. Lock the fly section and lay the tip of the ladder into the fire escape railing,



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(rotate ladder if needed) in line with the fire escape stairs. (See Figure 89)



**Figure 87**

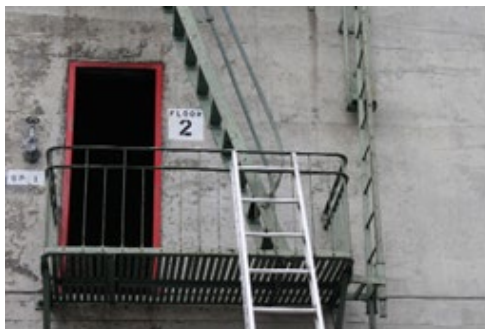


**Figure 88**



**Figure 89**

4. On fire escapes with two top rails, lock the tip of the ladder into the railing between the rails. Move the base of the ladder out until the tip of the ladder drops under the top horizontal railing of the fire escape. Push the ladder base back in toward the building to ensure the ladder tip locks in on the fire escape. (See Figure 90) On fire escapes with only one top rail, rest the ladder on the top rail and secure the ladder to the top rail using a hose strap. Place a lark's foot around the rung and a clove hitch on the top rail. (Figures 91 and 92)



**Figure 90**



**Figure 91**



**Figure 92**



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## Lowering the Ladder from the Fire Escape

1. To lower the ladder from the fire escape, untie the hose strap if utilized, move the base of the ladder out slightly to unlock the tip end of the ladder from the fire escape railing. Bring the ladder to a vertical position, lower the fly section, and then lower the ladder.

## Moving a Raised Ladder Horizontally

If it becomes necessary to move a raised ladder a short distance, as from one window to another, it may be moved without lowering the ladder. If the ladder is 20 feet or less and does not have a raised fly section, one firefighter may move it. When the ladder length is greater than 20 feet, the ladder should be lowered and raised in its new position.

1. Raise the ladder to a vertical position as previously described.
2. Grasp the second and fifth rungs, lift the base of ladder, balance, and move to the desired location. Use two firefighters if needed, (See Figure 93)



Figure 93



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## SPECIALTY LADDERS

The Department utilizes 10- and 14-foot “Fresno” attic ladders as well as 10-foot collapsible attic ladders.

Specifically designed for use where space is limited, the “Fresno” attic ladder is particularly ideal for entering attics through ceiling scuttle holes and similar close-quarter situations.

The Department also utilizes a 10-foot collapsible attic ladder.

The shoulder carry method is used with the 10 and 14-foot “Fresno” attic ladder when there is sufficient room to maneuver.

If the “Fresno” attic ladder must be carried through a crowd, the vertical position is most suitable. This carry has no protrusions to bump or injure people as it goes through a crowd and leaves the left hand free to help clear a path.

The under-arm method is best for entering buildings. This method puts the ladder in a position where it can be placed under a low door and then pushed upward toward the ceiling in a confined space.

Use caution when collapsing the ladder so as not to pinch fingers.

### Shoulder Carry

1. Remove the ladder from the apparatus.
2. Lift the ladder onto the shoulder, butt forward, with fly towards the firefighter.
3. Place right hand on the bottom beam and left hand onto the top beam.
4. Balance the ladder and adjust left hand so as not to obstruct vision.
5. Proceed to the desired location, checking for obstructions. (See Figure 94)



Figure 94



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## Vertical Carry

1. Remove the ladder from the apparatus.
2. Stand the ladder in an upright position with fly section towards the body.
3. Place right arm between the most convenient rungs.
4. Grasp the most convenient rung with the right hand, leaving the left hand free to guide your way through a crowd.
5. Proceed to the desired location, checking for obstructions. (See Figure 95)



**Figure 95**

## Under-Arm Carry

1. Remove the ladder from the apparatus.
2. Position ladder so the fly section is away from the firefighter and the tip of the ladder is facing forward.
3. Grasp the lower beam of the ladder with the right hand and balance the ladder.
4. Steady the ladder by holding the upper beam with the left hand.
5. Proceed to the desired location, checking for obstructions. (See Figure 96)



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Figure 96

**Note:** The 14-foot “Fresno” attic ladder has a bedded length of over 9 feet long and is not as easy to maneuver as the 10-foot ladder. It may be best to utilize two firefighters when moving the 14-foot ladder inside a building to ensure no damage occurs.

## Raise “Fresno” Attic Ladder

([Click here for IPE Video 316.012](#))

There will be times when using the “Fresno” attic ladder where it will be impossible to raise it step by step. However, when there is room, the following steps are to be used:

1. Remove the ladder from the apparatus and stand it in an upright position at the desired location, with the fly section towards the firefighter.
2. Steady the ladder by grasping the left beam of the bed section firmly with the left hand at about shoulder height.
3. Raise the fly section of the ladder by lifting it upwards with the fingertips or with the heel of the right hand, palm toward the ladder. (Figures 97 and 98)

**Note:** The thumb of the left hand may act as a brake for the fly section as the ladder is being raised.

4. Lock pawls on the desired rung of the bed section by raising the fly section until the pawls are slightly above the desired rung, then lowering section until both pawls engage the rung.



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5. Lower the top of the ladder onto structure by grasping the beams of the ladder with both hands at shoulder height and adjust the ladder to the proper climbing angle. (See Figure 99)



Figure 97



Figure 98



Figure 99

## Raise in a Confined Area

At times, the “Fresno” attic ladder will have to be raised in a crowded closet or in a congested area. The following is a recommended method of raising the ladder in a confined area.

1. Bring the ladder into the closet by utilizing the under-arm method and stand the ladder in a vertical position, rotating the ladder so the fly section is towards the firefighter.
2. Steady the ladder by grasping the left beam of the ladder with the left hand at approximately shoulder height.
3. Select the lowest rung on the fly section of the ladder within reach, without stooping, and raise the ladder. (See Figure 100)





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Figure 100

**Note:** The fly section of the ladder may be raised with the fingertips or the heel of the hand.

4. Hold the fly section of the ladder in place by applying pressure against the beam with the left thumb.

**Note:** Repeat the above two steps until the desired height is reached.

5. Position the ladder for climbing by grasping both beams of the ladder at shoulder height and maneuver it into place.

## Remove Scuttle-Hole Cover Using “Fresno” Attic Ladder

The primary use of the “Fresno” attic ladder is to gain access to attics. Many times, the openings are hidden in the ceiling of closets or in narrow hallways. Many wardrobe closets containing scuttle holes are small and to the point of overflowing with clothing. In such cases, clothing should be removed and placed somewhere out of the way before the scuttle cover is removed.

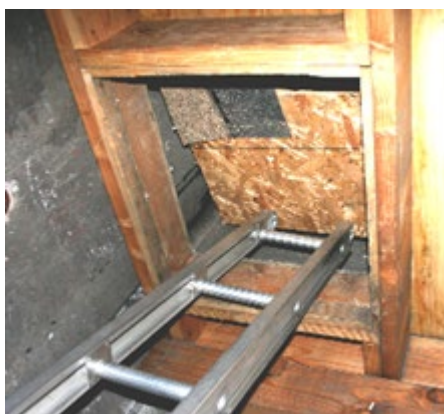
1. Carry the “Fresno” attic ladder using the under-arm method to the desired location.
2. Place the ladder in a vertical position under the scuttle hole with the fly section towards body. Steady the ladder by grasping the left beam of the main ladder firmly with the left hand at approximately shoulder height.



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3. Raise the fly section of ladder to just below the scuttle cover and lock fly section.
4. Position the ladder by grasping the beams firmly with both hands at chest height and lift the ladder upward so the top of the fly section is against one side of the scuttle-hole cover.
5. Open the scuttle by pushing upward and sliding the scuttle cover over to one side. (See Figure 101)



**Figure 101**

6. Lower the ladder to the floor in a vertical position and adjust the ladder by raising the fly section to extend through the scuttle opening with the proper climbing angle.

## **Lower “Fresno” Attic Ladder**

1. Reverse the above operations, ensuring the pawls are locked on the second rung of the bed section of the ladder prior to moving the adder.

## **Placing Collapsible Attic Ladder into Operation**

1. Remove the ladder from the apparatus.
2. Grasping both beams, place the ladder in a vertical position.
3. Pull the beams away from each other.
4. Move the beams in the opposite direction until the rungs are perpendicular to the beams and the ladder locks into position.
5. Place the ladder into position and adjust it for the proper climbing angle. (See Figures 102, 103, and 104)



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Figure 102



Figure 103



Figure 104

## Removing Collapsible Attic Ladder from Operation

1. Release the locking mechanism beneath the bottom rung. (See Figure 105)



Figure 105

2. Reverse the above operations.



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## REFERENCES

### *Training and Equipment Manual*

Section 310.006, Standard Engine Inventory

Section 310.007a, Standard Truck Inventory

### *Individual Performance Evolutions*

Section 316.011, Carry and Raise Straight Ladder

Section 316.013, Carry and Raise 24' Extension Ladder

Section 316.015, Carry and Raise 35' Extension Ladder

Section 316.016, Carry Roof Ladder Aloft

Section 316.033, Lower a Victim Down a Ladder

### *Individual Performance Evolutions Videos*

Section 316.011, Carry and Raise Straight Ladder

Section 316.013, Carry and Raise 24' Extension Ladder

Section 316.015, Carry and Raise 35' Extension Ladder

Section 316.016, Carry Roof Ladder Aloft

### *Company Performance Evolutions*

Section 315.102, Truck Company Operations 35' Ladder

Section 315.106, Truck Company Operations Vertical Ventilation

### *Probationary Taskbooks*

Section 325.001, Probationary Taskbook

Section 501.009, Trainee Taskbook

For more information, access the manufacturer specifications at <https://www.duosafety.com/products/aluminum-ladders/> and/or the Manufacturer Care and Maintenance Guidelines at <https://www.duosafety.com/information/>.