

INSTRUCTOR GUIDE

COURSE: FIREFIGHTER PRE-BASIC

SESSION REFERENCE: 4

TOPIC: GROUND LADDERS

LEVEL OF INSTRUCTION:

TIME REQUIRED: THREE HOURS

MATERIALS: VARIOUS GROUND LADDERS

REFERENCES: ESSENTIALS OF FIRE FIGHTING, FOURTH EDITION,
IFSTA, CHAPTER 9
MINIMUM PRE-BASIC TRAINING PROGRAM FOR
FIREFIGHTER TRAINEES IN MARYLAND, MARYLAND
FIRE-RESCUE EDUCATION AND TRAINING COMMISSION

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PREPARATION:

MOTIVATION:

OBJECTIVE (SPO): The student will demonstrate a basic understanding of ground ladder operations, positioning fire streams with ladders, carrying ground ladders, raising ground ladders, and climbing ground ladders.

OVERVIEW:

Ground Ladders

- * Introduction to Ladders
- * Lifting, Raising and Carrying
- * Rescue Using Ground Ladders
- * Ground Ladder Practical

SESSION 4

GROUND LADDERS

SPO The student will demonstrate a basic understanding of ground ladder operations, positioning fire streams with ladders, carrying ground ladders, raising ground ladders, and climbing ground ladders.

EO 4-1 Explain the parts of a ground ladder, ladder construction, and ladder safety.

EO 4-2 Explain the methods to properly lift, carry, and raise selected ladders working alone and with others.

EO 4-3 Understand how to bring an unconscious victim down an extension ladder.

EO 4-4 Demonstrate lifting, carrying, raising, and climbing selected ladders.

This lesson should be delivered as a combination of demonstration and student practice with the minimum amount of time spent on lecture. This material is designed to give the student some basic information on ground ladders. It is not intended to replace a Firefighter I program nor make the individuals fully-functional firefighters. It includes some basic information that any new firefighter should know to assist in an exterior mode on the fireground. Instructor should have ladders available for display, demonstration, and handling.

I. INTRODUCTION TO LADDERS (4-1)

A. Kinds of Ladders

1. Aerial ladders - mounted on apparatus and operated mechanically
2. Ground ladders - carried and raised by hand

B. Ladder Construction

1. Solid - beam constructed of solid material
2. Truss - beam constructed with top rail and bottom rail and rung plates connecting the rails and supporting the rungs

C. Ladder Types

1. Roof - a single section ladder with hooks on the tip end that can be folded out for securing to a roof
2. Extension - a ladder consisting of at least two sections that can be extended to various lengths
3. Folding - a small ladder that folds for storage and is compact for use in tight areas such as accessing an attic

D. Ladder Parts

1. Single section ladder
 - a. Heel - bottom end of ladder
 - b. Tip - top end of ladder
 - c. Beam - side pieces that support rungs or steps
 - d. Rungs - part of ladder used for climbing

- e. Foot - bottom end of each beam
 - f. Roof hooks - hooks on tip end of roof ladders
2. Extension ladder (in addition to those on a single section ladder)
- a. Bed section - bottom section (part that rests on ground)
 - b. Fly section - part that extends; may be more than one fly section
 - c. Halyard - rope or cable used to extend fly sections
 - d. Dog - assembly to hold fly sections in place when extended
 - e. Pawl - part of dog that fits over rung
 - f. Pulley - part of ladder on which halyard rides
 - g. Stop - part of ladder that stops sections from coming apart when being extended

E. Safety

1. Be careful of overhead obstructions, especially electric wires
2. Once the ladder is raised, it should be tied in to building or braced/heelled by a firefighter
3. Ladder should not be overloaded - firefighters should be at least ten feet apart at normal climbing angle
4. If the climbing angle is decreased or hose is being carried up, the distance between those on ladder should be increased to twenty feet
5. Once a ladder is used to enter a building, it should be left in place as an exit
6. Climb with back straight and use legs for climbing rather than arms
7. When working on a ground ladder, secure to the ladder using a ladder belt or a leg lock (formed by passing one leg behind a rung and locking into a lower rung with the foot)

II. LIFTING, CARRYING, AND RAISING (4-2)

A. Methods of Lifting

1. Lift with legs rather than with back
2. Face direction opposite direction of travel
3. Bend knee closest to ladder
4. Place hand on rung
5. When more than one person is involved in the lift, the person on the right heel gives the commands
6. Lift in smooth, continuous manner, turning 180 degrees as the ladder is being lifted so that the ladder is being carried heel-first to the position of use

B. Flat Carry

1. For two-person carry, firefighters are on opposite ends of ladder
2. For three-person carry, firefighters at tip and heel are on the same side; other firefighter is in middle on opposite side
3. For four-person carry, two firefighters are at the tip and two are at the heel

C. Beam Carry

1. Place the ladder on its edge
2. For a single person lift, the person is at approximate center of the ladder
3. For a beam lift with more than one person, all personnel should be on the same side of the ladder
4. For two-person carry, firefighters are at ends of ladder
5. For three-person carry, one firefighter is at the tip and one at the heel with the third in the middle

D. Flat Raise

1. Carry ladder to position approximately one-quarter of the working length of the ladder
2. Lower heel to ground
3. Firefighter(s) at heel foot ladder by placing one foot on bottom rung and hands on the third rung
4. Firefighter(s) at tip walk ladder up to a vertical position
5. Firefighter on outside of ladder places one toe against beam and steadies ladder beam with both hands taking care to avoid fly section
6. Firefighter on inside of ladder places side of foot against same beam as other firefighter, shoulder against same beam, and extends ladder using hand-over-hand motion
7. If there are other firefighters, they should steady the beams
8. Firefighter on outside of ladder determines when the ladder has been raised to the proper extension
9. Firefighter on outside checks to make sure dogs are engaged
10. Firefighters reposition to lower ladder into object
11. Firefighter(s) on outside of ladder place one foot on bottom rung and hands on the third rung
12. Firefighter(s) on inside stretch arms outward with hands on beam with back straight and one foot forward and the other foot backward
13. Ladder is lowered into object slowly
14. Angle of ladder is checked with toes against heels and hands outstretched; palms should rest on rungs with back straight - adjust as needed
15. Make sure heel and tip are stable
16. Tie off halyard before climbing
17. Ladder should be heeled when being used

E. Beam Raise

1. Carry ladder to position heel approximately one-quarter of the working length of the ladder
2. Lower heel to ground
3. Firefighter at heel foots ladder by placing one foot on bottom beam
4. Firefighter(s) at tip walk ladder up to a vertical position
5. One firefighter repositions to outside of ladder and places one toe against beam and steadies ladder beam with both hands taking care to avoid fly section
6. Other firefighter repositions on inside of ladder places side of one foot against same beam as other firefighter, shoulder against same beam, and extends ladder using hand-over-hand motion
7. If there is another firefighters, he/she should steady the beams
8. Firefighter on outside of ladder determines when the ladder has been raised to the proper extension
9. Firefighter on outside checks to make sure dogs are engaged
10. Firefighters reposition to lower ladder into object
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F. Ladder Placement

1. Important to select proper length ladder, especially when straight ladder is used
2. For rescue in a window, the ladder should be placed against or just under the windowsill
3. For firefighter operations in a window, the ladder should be placed with one rung inside the window if the window is wide enough; if not place the ladder at the windowsill or beside the window
4. If the ladder is being used for ventilation in a window, it should be placed on the windward side of the window with the tip at the top of the window
5. When placed at the front railing of a balcony or fire escape, or at a wall beside a railing or fire escape, extend the ladder two to four rungs above the railing for good handhold
6. Ladders raised to the roof should be five rungs above the roof wall

III. RESCUE USING GROUND LADDERS (4-3)

A. Introduction

1. As the ladder is raised for rescue, it must be kept out of reach of the people to be removed
2. Raise the ladder in a vertical position away from the building, extend if needed, and lower the tip to victims
3. When placed at the window for rescue, the tip should be at or just over level of sill

B. Conscious Victim

1. Assist victim down ladder by climbing below them if victim is able to climb
2. If victim is unable to climb, the firefighter may be required to carry the victim if the weight is not too great
3. May require second firefighter to assist

C. Unconscious Victim

1. Firefighter is positioned on ladder near opening where victim is being removed
2. Firefighter bends one knee
3. Victim is placed on ladder on firefighter's knee, facing the ladder with arms and legs outstretched over beams
4. Firefighter places arms under victim's arms with hands on rungs to protect victim's face
5. Firefighter proceeds slowly down ladder, alternating knees to supporting victim's weight

IV. GROUND LADDER PRACTICAL (4-4)

A. Demonstrate the following using ground ladders:

1. One, two, and three person beam carries
2. Two, three, and four person flat carries
3. One, two, three, and four person raises
4. Placement for fire fighting, rescue, and roof operations
5. Climbing

B. Provide an opportunity for students to practice

REVIEW:

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REMOTIVATION:

ASSIGNMENT:



EVALUATION: