

# LESSON ONE

# FIREFIGHTER I

## Ropes

**DOMAIN:** PSYCHOMOTOR

**LEVEL OF LEARNING:** APPLICATION

### **MATERIALS**

IFSTA Essentials 5th edition or Jones and Bartlett Fundamentals of Fire Fighter Skills 2<sup>nd</sup> Edition or Delmar Firefighter's Handbook 3<sup>rd</sup> Edition; NFPA 1983, Standard on Life Safety Ropes, Harnesses, and Hardware; NFPA 1500, Standard on Fire Department Occupational Safety and Health Program; samples of life safety and utility rope; sufficient length of laid type utility rope and kernmantle type life safety rope for demonstrating inspections and maintenance of ropes; overhead projector or laptop computer and multimedia projector; projection screen.

### **NFPA 1001 JPRs, 2008 edition**

5.1.1 General Knowledge Requirements.

5.5.1 Clean and check ladders, ventilation equipment, self-contained breathing apparatus (SCBA), ropes, salvage equipment, and hand tools

### **Junior Member Statement:**

Junior Member training activities should be supervised by qualified instructors to assure that the cognitive and psychomotor skills are completed in a safe and non-evasive manner. While it is critical that instructors be constantly aware of the capabilities of all students both mentally and physically to complete certain tasks safely and successfully, the instructor should take every opportunity to discuss with departmental leaders and students the maturity and job awareness each participant has for the hazards associated with fire and rescue training.

## **TERMINAL OBJECTIVE**

The Firefighter I candidate, when given assorted sections of rope, shall correctly distinguish between the different types of rope, their uses, and their appropriate care.

## **ENABLING OBJECTIVES**

1. The Firefighter I candidate shall correctly describe in writing the different materials and methods used to construct fire service rope.
2. The Firefighter I candidate shall correctly demonstrate the ability to distinguish between life safety rope and utility rope.
3. The Firefighter I candidate shall correctly describe in writing, and also demonstrate, the techniques of inspecting, maintaining, and storing rope.
4. The Firefighter I candidate shall describe in writing the reasons for placing a rope out of service.

# LESSON ONE

# FIREFIGHTER I

## Ropes

### MOTIVATION

One of the oldest, most important, and useful tools in the fire service today is the life safety rope used to support rescuers and/or victims, as well as the utility ropes employed during rescue and fire ground operations. To insure the highest degree of life safety, great caution must accompany any situation where rope is used. Because of the high degree of safety these operations demand, all fire service ropes must conform to the standards set forth by NFPA. It is critical that all Firefighter I candidates have a thorough knowledge of the different uses of, means of caring for, and characteristics of rope to maintain that safety edge.

### PRESENTATION

#### ENABLING OBJECTIVE #1

The Firefighter I candidate shall correctly describe in writing the different materials and methods used to construct fire service rope.

1. Display samples of different kinds of rope and discuss the materials in and construction methods of each.  
Pass the samples around.
2. Define Life Safety rope according to NFPA 1983 Standard on Life Safety Ropes, Harnesses, and Hardware and review criteria for Life safety rope.
3. Describe the two basic categories of ropes, natural and synthetic and discuss the positive and negative aspects of each.
4. Point out that natural fiber rope (e.g., manila) is no longer accepted for use in the fire service for life safety applications.

5. Discuss poly-plus rope and point out that it is a blend of three different materials:
  - a) Polypropylene (strength).
  - b) Polyethylene (durability).
  - c) Polyester (flexibility).
6. Explain that although the chart shows Kevlar Aramid fibers to be stronger than other fibers listed, it has the least amount of shock absorbing capability.
7. Define the terms that represent the two major categories of rope.
  - a) Static.
  - b) Low stretch.
8. Briefly discuss scenarios where a static line might be indicated (creating mechanical advantages, hauling systems, rescue loads) and where a low stretch line might be used (belay lines).
9. List how fall factors relate to deciding static or low stretch (6-10% elongation) rope should be used. This elongation factor is measured at 10% of the minimum breaking strength of the rope.
10. Point out that all natural fiber and some synthetic fiber ropes (e.g., poly-plus, Goldline, polypropylene) are of laid (twisted) construction. Show samples.
11. Explain the process of constructing a laid rope and point out the positive and negative aspects of this construction.
12. Explain the process of constructing a braided rope and point out the positive and negative aspects of this construction.
13. Explain the process of constructing a braid-on-braid rope and point out the positive and negative aspects of this construction.
14. Explain the process of constructing a kernmantle rope, and point out the positive and negative aspects of this construction.

Reference:

Delmar Handbook 3<sup>rd</sup> edition, pages 472-478  
J&B Fundamentals 2<sup>nd</sup> edition, pages 238-245  
IFSTA Essentials 5th edition, pages 264-269  
NFPA 1983, Standard on Life Safety Ropes, Harnesses, and Hardware.  
NFPA 1500, Standard on Fire Department Occupational Safety and Health Program.

**NOTE: The term static rope has been in use for over twenty-five years to describe kermantle construction ropes that are not dynamic climbing ropes. While some may argue that the term dynamic rope is not accurate in describing one type of rope, it has been used for decades to describe climbing and mountaineering ropes. But, due to the controversy in the rope industry over listing the characteristics of dynamic rope (a bungee cord could be defined as a dynamic rope), the term 'dynamic rope' will not be used when referring to rope used for fire and rescue applications. Recently the term low stretch has been added to describe rope that has an elongation greater than 6%, but less than 10%, measured at 10% of the minimum breaking strength. Static rope is defined as rope that has an elongation less than 6% measured at 10% of the minimum breaking strength.**

**NOTE: For more information on life safety rope, harnesses, and hardware refer to the following texts:  
IFSTA, Fire Service Rescue Practices.  
Rope Rescue System, California Mountain Corporation.  
On Rope, National Speological Society.  
High Angle Rescue, National Association for Search and Rescue.  
CI-1801-98-Cordage Institute, Low Stretch and Static Life Safety Rope Standard, Cordage Institute, 350 Lincoln St., Hingham, MA. 02043.**

## **PRESENTATION**

### **ENABLING OBJECTIVE #2**

The Firefighter I candidate shall correctly demonstrate the ability to distinguish between life safety rope and utility rope.

1. Discuss the uses and characteristics of life safety rope and utility rope.

2. Identify the characteristics of a one-rescuer load rope:
  - a) Should measure a minimum diameter of 7/16"
  - b) Should have a minimum breaking strength (tensile strength) of 4,500 pounds
  - c) Should have a safe working load of 300 pounds (the safety factor for all ropes is 15:1)
  
3. Identify the characteristics of a two-rescuer load rope:
  - a) Should measure a minimum diameter of 1/2"
  - b) Have a breaking strength of 9,000 pounds
  - c) Have a safe working load of 600 pounds
  
4. Pass out a sample of lifeline rated rope that has been dissected to illustrate the continuous, water resistant identification tape which shows the following information:
  - a) "Meets requirements of NFPA Standard 1983 for Life Safety Rope"
  - b) Name of manufacturer
  - c) Manufacturer's identification and lot numbers
  - d) Certification organization's label

Reference:

Delmar Handbook 3<sup>rd</sup> edition, pages 477-478

J&B Fundamentals 2<sup>nd</sup> edition, pages 238-240

IFSTA Essentials 5th edition, pages 264-265, 267

NFPA 1983, Standard on Life Safety Ropes, Harnesses, and Hardware.

**NOTE: Life Safety rope is defined by NFPA 1983 Standard on Life Safety Rope, Harnesses, and Hardware, current edition as "rope dedicated solely for the purpose of constructing lines for supporting people during rescue, firefighting, or other emergency operations, or during training evolutions." Only rope constructed of continuous filament fiber is suitable for life safety requirements. Rope made of any other materials should not be used in life safety applications.**

## PRESENTATION

### ENABLING OBJECTIVE #3

The Firefighter I candidate shall correctly describe in writing, and also demonstrate, the techniques of inspecting, maintaining, and storing rope.

1. Describe the methods by which ropes should be inspected, cleaned and dried.
2. Discuss the requirement for maintaining a rope log and the information that should be included.
3. Demonstrate to the Firefighter I candidates the correct procedures for inspecting ropes.
4. Describe the methods of storing rope.
5. Demonstrate two alternate methods of coiling rope. See NOTE for second method.
6. Discuss the precautions that should be taken when storing rope.
7. Point out that according to NFPA 1983, life safety rope used for rescue at fires or other emergency incidents or for training shall be permitted to be re-used if inspected before and after each use in accordance with the manufacturer's instructions

Reference:

Delmar Handbook 3<sup>rd</sup> edition, pages 494-505

J&B Fundamentals 2<sup>nd</sup> edition, pages 245-248

IFSTA Essentials 5th edition, pages 264-265, 269-273

NFPA 1983, Standard on Life Safety Ropes, Harnesses, and Hardware.

## APPLICATION

Divide the class into small groups. Allow each group to identify various rope samples that have been damaged. Record the types of damages and allow each group to discuss their findings with the class.

**NOTE: Start coiling the rope in amounts equal to one arm's length allowing the rope to drag along the ground to work the twists out of it. Form a bight approximately one foot in length at the bitter end of the rope. Select enough rope at the running end to make a tie around the**

**coil. Wrap the rope from the bitter and back towards the bight of the rope. Pass the running end through the bight at the bitter end of the rope and pull snug.**

## **PRESENTATION**

### **ENABLING OBJECTIVE #4**

The Firefighter I candidate shall describe in writing the reasons for placing a rope out of service.

1. Point out that NFPA 1983 Standard on Life Safety Ropes, Harnesses, and Hardware requires life safety rope to be inspected before and after each use and downgraded (for utility use) or retired (cut into small pieces) if damage is evident.
2. Discuss the indicators that determine rope damage.
  - a) The rope shows signs of excessive sheath wear (more than half of the outer sheath yards are broken).
  - b) The rope has been subjected to a severe shock load (any fall or drop with substantial amounts of weight).
  - c) The rope has been subjected to an overload for which it was not designed (using life safety rope to tow a vehicle or hoisting a heavy piece of equipment).
  - d) The rope has been chemically contaminated (has been in contact with any chemical not known to be harmless).
  - e) The rope lacks uniform diameter (contains narrow, swollen areas).
  - f) The rope lacks uniform texture (contains hard or soft spots). A kernmantle rope's core can be damaged without showing evidence of damage to the outer sheath.
  - g) Be aware of foul smells, indicating rot or mildew, discoloration, or fuzziness.
3. Point out that there are no standards set forth for utility rope. Common sense should prevail.
4. Discuss the methods for placing a rope out of service.

- a) The universal color code for denoting that a rope has been taken out of service is to paint the ends of the rope in black.

Reference:

Delmar Handbook 3<sup>rd</sup> edition, pages 494-496

J&B Fundamentals 2<sup>nd</sup> edition, pages 240, 246-247

IFSTA Essentials 5th edition, pages 264-265

**SUMMARY**

Emphasize to the class that it is essential for all firefighters to have a thorough knowledge in the care and use of various kinds of rope, as well as a comprehension of the different characteristics that ropes possess. Firefighters must be knowledgeable of the different types of rope so that the correct one will be chosen to do the required job.

# LESSON TWO

# FIREFIGHTER I

## Ropes

**DOMAIN:** PSYCHOMOTOR

**LEVEL OF LEARNING:** APPLICATION

### **MATERIALS**

IFSTA Essentials 5th edition or Jones and Bartlett Fundamentals of Fire Fighter Skills 2<sup>nd</sup> Edition or Delmar Firefighter's Handbook 3<sup>rd</sup> Edition; NFPA 1983, Standard on Life Safety Ropes, Harnesses, and Hardware; NFPA 1500, Standard on Fire Department Occupational Safety and Health Program; samples of life safety and utility rope; overhead projector or laptop computer and multimedia projector; projection screen; sufficient length of laid type utility rope and kernmantle type life safety rope for demonstrating inspections and maintenance of ropes.

### **NFPA 1001 JPR, 2008 edition**

5.1.2 General Skill Requirements

#### **Junior Member Statement:**

Junior Member training activities should be supervised by qualified instructors to assure that the cognitive and psychomotor skills are completed in a safe and non-evasive manner. While it is critical that instructors be constantly aware of the capabilities of all students both mentally and physically to complete certain tasks safely and successfully, the instructor should take every opportunity to discuss with departmental leaders and students the maturity and job awareness each participant has for the hazards associated with fire and rescue training.

## **TERMINAL OBJECTIVE**

The Firefighter I candidate, when given the proper size and amount of rope, shall correctly explain the uses of, and demonstrate the correct methods for tying a bowline knot, a clove hitch, figure-of-eight on a bight, figure eight follow through, a becket or sheet bend, overhand safety knot, and half hitch.

## **ENABLING OBJECTIVES**

1. The Firefighter I candidate shall correctly explain in writing the uses of the bowline knot and correctly demonstrate tying the bowline.
2. The Firefighter I candidate shall correctly explain in writing the uses of the clove hitch and correctly demonstrate tying the clove hitch.
3. The Firefighter I candidate shall correctly explain in writing the uses of the figure-of-eight and correctly demonstrate tying the simple figure-of-eight.
4. The Firefighter I candidate shall correctly explain in writing the uses of the figure-of-eight on a bight and correctly demonstrate tying the figure-of-eight on a bight.
5. The Firefighter I candidate shall correctly explain in writing the uses of figure-of-eight follow through and correctly demonstrate tying the figure-of-eight follow through.
6. The Firefighter I candidate shall correctly explain in writing the uses of becket or sheet bend and correctly demonstrate tying the becket or sheet bend.
7. The Firefighter I candidate shall correctly explain in writing the uses of the overhand safety knot and correctly demonstrate tying the overhand safety knot.
8. The Firefighter I candidate shall correctly explain in writing the uses of the half hitch and correctly demonstrate tying the half hitch.

# LESSON TWO

# FIREFIGHTER I

## Ropes

### MOTIVATION

The ability of the firefighter to choose and correctly tie the appropriate knot for the appropriate situation on the fire ground will provide for a more efficient and much safer operation, thus reducing injury on the fire ground and during training. Firefighters should practice tying knots in low visibility, while wearing gloves, and while the rope is wet. Knot efficiency, or the remaining relative strength of a rope after a knot has been placed in it, varies with the rope type, diameter, and source of your data. A particular knot should be selected based on several criteria such as the ability to easily learn or teach the knot, the particular task or load that the knot must be subjected to, what the fire fighter can accomplish while using it, its ability to tie and untie easily, the ability to inspect the knot easily to detect if is tied correctly, its ability to remain secure, and the relative strength or knot efficiency, which may have to be sacrificed for other priorities.

### PRESENTATION

#### ENABLING OBJECTIVE #1

The Firefighter I candidate shall correctly explain in writing the uses of the bowline knot and correctly demonstrate tying the bowline.

1. Point out the three elements of a rope.
  - a) Working end.
  - b) Standing part.
  - c) Running end.
  
2. Discuss and demonstrate the three elements of a knot.
  - a) Bight.
  - b) Loop.
  - c) Round Turn.

3. Discuss the applications of the bowline knot and the fact that it is used in situations where a loop that will not slip is needed.
4. Demonstrate tying an open bowline (one which may be slipped over an object).
5. Point out that the loop size is easily adjusted and has a high efficiency rating (percentage of retained strength).
6. Stress that, when supporting a life, the bowline (like all other knots) must be backed up with an overhand safety knot on the loop to prevent it from working loose during repeated loading.
7. Emphasize that some textbooks recommend orienting the end of the rope on the inside of the major loop, not on the outside where it might be vulnerable to snagging, causing the knot to invert and resulting in a slip knot. (Actual tests indicate there is no significant difference in knot strength when placing the rope end to the inside or outside of the loop).
8. Stress that it is critical that the bowline knot be dressed and set properly, otherwise, it turns into a slipknot.
9. Demonstrate tying a bowline around an object. This is sometimes referred to as a "closed bowline."
10. Explain that some situations will require the knot to be tied to the object, as opposed to tying an open bowline and dropping it over the open end of an object.

Reference:

Delmar Handbook 3<sup>rd</sup> edition, pages 486-487

J&B Fundamentals 2<sup>nd</sup> edition, pages 248-250, 260-261

IFSTA Essentials 5th edition, pages 274-276

## **APPLICATION**

Have the candidates practice tying the open bowline until all are proficient.

**NOTE: Even though the parts of a rope are defined in the Firefighting manuals, a widely accepted definition of**

**the running end of a section of rope is that end which is used to tie the knot. The bitter end is the opposite end of the running end. The term bitter end is used when discussing the proper technique for coiling a rope in Lesson I.**

**NOTE: Knot efficiency, or the remaining relative strength of a rope after a knot has been placed in it, varies with the rope type, diameter, and source of your data. A knot should be selected because of what the firefighter can accomplish while using it and its ability to be easily tied and untied. Consider all options, taking into account that knot efficiency may have to be sacrificed for other priorities.**

### **APPLICATION**

Stretch a rope between two stationary objects to be used as a tying line. Have the candidates practice tying the closed bowline around the stretched rope.

### **PRESENTATION**

#### **ENABLING OBJECTIVE #2**

The Firefighter I candidate shall correctly explain in writing the uses of the clove hitch and correctly demonstrate tying the clove hitch.

1. Identify the various applications of a clove hitch.
2. Demonstrate tying an open clove hitch in the palms of the hands.
  - a) Consists of two half hitches
  - b) May be formed anywhere on the rope
3. Demonstrate tying a closed clove hitch.

Reference:

Delmar Handbook 3<sup>rd</sup> edition, pages 481, 482  
J&B Fundamentals 2<sup>nd</sup> edition, pages 251-254  
IFSTA Essentials 5th edition, page 276

### **APPLICATION**

Have the Firefighter I candidates practice tying the open clove hitch in the palms of the hands until proficient.

Have the candidates practice tying the closed clove hitch on the stretched rope.

## **PRESENTATION**

### **ENABLING OBJECTIVE #3**

The Firefighter I candidate shall correctly explain in writing the uses of the figure-of-eight knot and correctly demonstrate tying the simple figure-of-eight.

1. Discuss with the students the applications for the figure-of-eight knot, which is the basis of a family of rescue knots. These are strong, simple, easily identifiable, and can be used in many rescue applications.
2. Explain that, the firefighter should tie a figure-of-eight knot two to three (2-3) feet from the bottom end of the rope to indicate that the end of the rope is approaching the control system such as a brake bar rack, or figure-8 -descender.
3. Demonstrate tying a simple figure-of-eight knot

Reference:

Delmar Handbook 3<sup>rd</sup> edition, pages 486-488

J&B Fundamentals 2<sup>nd</sup> edition, pages 251 & 256

IFSTA Essentials 5th edition, pages 276-277

## **PRESENTATION**

### **ENABLING OBJECTIVE #4**

The Firefighter I candidate shall correctly explain in writing the uses of the figure-of-eight on a bight and correctly demonstrate tying the figure-of-eight on a bight.

1. Point out that the figure-of-eight on a bight, for most rescue activities, has taken the place of the bowline knot as a strong non-slip anchor knot.

2. Discuss the various applications of the figure-of-eight on a bight
3. Demonstrate tying a figure-of-eight on a bight.

Reference:

Delmar Handbook 3<sup>rd</sup> edition, pages 490-491  
J&B Fundamentals 2<sup>nd</sup> edition, pages 251 & 257  
IFSTA Essentials 5th edition, page 277

## **PRESENTATION**

### **ENABLING OBJECTIVE #5**

The Firefighter I candidate shall correctly explain in writing the uses of the figure-of-eight follow through and correctly demonstrate tying the figure-of-eight follow through.

1. Identify the applications of this knot.
2. Discuss and demonstrate how to tie the figure-of-eight follow through.
3. Have the candidates practice tying the figure-of-eight follow through.

Reference:

Delmar Handbook 3<sup>rd</sup> edition, pages 486-487,489  
J&B Fundamentals 2<sup>nd</sup> edition, pages 251 & 258  
IFSTA Essentials 5th edition, page 277

## **PRESENTATION**

### **ENABLING OBJECTIVE #6**

The firefighter I candidate shall explain in writing the uses of the becket or sheet bend and correctly demonstrate tying the becket or sheet bend.

1. Discuss the applications of the becket or sheet bend.
2. Demonstrate tying the becket or sheet bend.

Reference:

Delmar Handbook 3<sup>rd</sup> edition, pages 481-486  
J&B Fundamentals 2<sup>nd</sup> edition, pages 260 & 262

## **APPLICATION**

Have the candidates practice tying the becket or sheet bend.

## **PRESENTATION**

### **ENABLING OBJECTIVE #7**

The Firefighter I candidate shall correctly explain in writing the uses of the overhand safety knot and correctly demonstrate tying the overhand safety knot.

1. Discuss the applications of the safety knot and stress that it must be snug against the main knot.
  - a) Single over hand knot.
  - b) Double over hand knot (requires one additional turn before passing the working end back through the loop. It's the same as forming one half of the double fisherman knot.
2. Demonstrate the correct procedures for tying an overhand safety knot.

Reference:

Delmar Handbook 3<sup>rd</sup> edition, pages 481

J&B Fundamentals 2<sup>nd</sup> edition, page 250

IFSTA Essentials 5th edition, page 275

## **APPLICATION**

Have the candidates practice tying an overhand safety knot. List various applications.

## **PRESENTATION**

### **ENABLING OBJECTIVE #8**

The Firefighter I candidate shall correctly explain in writing the uses of half hitch and demonstrate tying the half hitch.

1. Discuss the applications of using half hitches.
2. Demonstrate the correct procedures for tying half hitches.

3. Demonstrate that two half hitches can be applied in succession to form a clove hitch.
4. Point out that half hitches are used in conjunction with knots.

Reference:

Delmar Handbook 3<sup>rd</sup> edition, pages 480

J&B Fundamentals 2<sup>nd</sup> edition, pages 251-253

IFSTA Essentials 5th edition, page 276

### **APPLICATION**

Have the candidates practice tying the half hitch.

### **SUMMARY**

Reiterate the characteristics of a good knot. A good knot must hold without slipping. It should also be easy to tie and untie once it has been used. The choice of the best knot, bend, or hitch depends on the job. The Firefighter should have a sound knowledge of knots. Emphasize that there are many knots that will hold safely, but those listed in this Lesson Plan are adequate to complete a safe rescue operation.

# LESSON THREE

# FIREFIGHTER I

## Ropes

**DOMAIN:** PSYCHOMOTOR

**LEVEL OF LEARNING:** APPLICATION

### **MATERIALS**

IFSTA Essentials 5th edition or Jones and Bartlett Fundamentals of Fire Fighter Skills 2<sup>nd</sup> Edition or Delmar Firefighter's Handbook 3<sup>rd</sup> Edition Overhead projector or laptop computer and multimedia projector; projection screen; an adequate number of 20' sections of ½" diameter rope; selected forcible entry tools; pike pole / hook; ground ladder; axe; hose line (both charged and uncharged); fire extinguisher and selected appliances.

### **NFPA 1001 JPR, 2008 edition**

#### 5.1.2 General Skill Requirements

#### **Junior Member Statement:**

Junior Member training activities should be supervised by qualified instructors to assure that the cognitive and psychomotor skills are completed in a safe and non-evasive manner. While it is critical that instructors be constantly aware of the capabilities of all students both mentally and physically to complete certain tasks safely and successfully, the instructor should take every opportunity to discuss with departmental leaders and students the maturity and job awareness each participant has for the hazards associated with fire and rescue training.

## **TERMINAL OBJECTIVE**

The Firefighter I candidate, when given the proper size and amount of rope, shall correctly tie an approved knot, and hoist any selected forcible entry tool, axe, pike pole / hook, ground ladder, hose line, extinguisher, and appliance to a height of at least 12 feet (3.7M), and use a rope to tie ladders, hose and other objects to secure them.

## **ENABLING OBJECTIVES**

1. The Firefighter I candidate shall correctly demonstrate the techniques for hoisting selected forcible entry tools, axe, pike poles / hooks, ground ladders, hose lines, fire extinguishers or appliances on a fire scene.
2. The Firefighter I candidate shall correctly demonstrate the techniques for using a rope to tie ladders, hose, and other objects to secure them on the fire scene.

# LESSON THREE

# FIREFIGHTER I

## Ropes

### MOTIVATION

One of the most common practices at a large-scale fire or rescue incident is the use of rope to move equipment from one location to another. Although almost any piece of equipment can be hauled by rope, knowledge of proper knots is critical in securing these objects. Using the proper knots and securing procedures will prevent the equipment from being dropped, thus preventing damage to the equipment and injury to anyone standing near the incident.

### PRESENTATION

#### ENABLING OBJECTIVE #1

The Firefighter I candidate shall correctly demonstrate the techniques for hoisting selected forcible entry tools, axe, pike poles / hooks, ground ladders, hose lines, fire extinguishers or appliances.

1. Describe the necessity for hoisting tools and appliances on the fire ground.
2. Demonstrate hoisting an axe using a clove hitch.
3. Demonstrate using a safety knot.
4. Demonstrate using at least one half hitch on the handle.

5. Demonstrate the head up method of tying a pike pole to be hoisted.
6. Demonstrate hoisting a ground ladder.
  - a) Using a bowline or figure-of-eight, pass it through the rungs of the ladder about one-third of the way from the top. Pull the loop through and slip it over the top of the ladder.
  - b) If done correctly, the butt end will drag against the structure and the tip will lean out from the structure. This helps in clearing overhangs, etc. The use of a tag line is optional.
7. Discuss instances where it might be necessary to hoist hose lines (both charged and uncharged).
8. Demonstrate hoisting a dry line:
  - a) Fold the nozzle and approximately 3-5 feet of hose back on itself.
  - b) Tie a clove hitch with a safety knot around tip of nozzle and the hose it is folded against.
  - c) Place a half hitch on the doubled hose approximately 12 inches below the folded end.
9. Demonstrate hoisting a charged line.
  - a) Tie a clove hitch with safety about 1-2 feet below the nozzle.
  - b) Apply a half hitch through the bale on the nozzle so that the bale is held closed during hoisting
10. Demonstrate hoisting a smoke ejector.
  - a) Tie a bowline or figure-of-eight on a bight around two of the rods used as handles; this is the hauling line.
  - b) Tie a bowline or figure-of-eight on a bight around the bottom of the ejector as a tag line.
11. Demonstrate hoisting miscellaneous equipment such as a blanket, sections of coiled rope, and scuff pads by taking the piece of equipment and placing it into an open clove hitch approximately in the middle of a piece of rope that is twice as long as the distance the object is to be raised.
12. Explain that by placing the equipment in the middle of the line, the same rope may be used as a hauling line

as well as a tag line. Be sure the clove hitch is pulled snug to prevent the object from slipping and loosening.

Reference:

Delmar Handbook 3<sup>rd</sup> edition, pages 505-511

J&B Fundamentals 2<sup>nd</sup> edition, pages 260-269

IFSTA Essentials 5th edition, pages 279-282

**NOTE: Have the equipment hoisted up a distance of at least 12 feet for all evolutions. Use a training tower, multi-story structure, or roof for these evolutions.**

**NOTE: Depending on local S.O.P.s, a tag line may also be tied to any object and guided by firefighters on the ground to will prevent the object from coming in contact with the structure or other objects as it is being raised.**

## **APPLICATION**

Have the Firefighter I candidate practice hoisting an axe using a clove hitch or girth hitch, each with a safety.

Have Firefighter I candidates practice hoisting a pike pole using the two methods described.

Have the Firefighter I candidate practice hoisting a ladder using the steps outlined.

Have the Firefighter I candidates practice hoisting hose lines (both charged and uncharged) using the steps described above.

Have the Firefighter I candidates practice hoisting a smoke ejector using the steps described above.

Have the Firefighter I candidates practice hoisting miscellaneous equipment using the steps described above

## **PRESENTATION**

### **ENABLING OBJECTIVE #2**

The Firefighter I candidate shall correctly demonstrate the techniques of using a rope to tie ladders, hose and other objects to secure them.

1. Demonstrate how ladders may be secured for an operation by tying a bowline between the second and third rung from the bottom and then securing the other end of the rope to a stationary object such as a fire escape or standpipe connection.
2. Demonstrate tying the top of the ladder to a stationary object using a bowline or figure-of-eight.
3. Demonstrate using a short piece of rope to tie a hose to a ladder. A clove hitch tied to the hose and then to the adjacent rung is sufficient.

Reference:

Delmar Handbook 3<sup>rd</sup> edition, pages 508-513

### **APPLICATION**

Allow the Firefighter I candidate to practice tying a ladder in the manner described above.

Allow the Firefighter I candidates to practice securing a hose line to a ladder using a rope hose tool, hose strap, or rope.

**NOTE: An alternative method of conducting this class is to demonstrate all of the techniques at the same time and then have various stations set up for practice. Have the Firefighter I candidates rotate through the stations which will result in less idle time.**

### **SUMMARY**

In this unit a strong emphasis has been placed on the Firefighter I candidate becoming familiar with the techniques of hoisting tools and appliances on the fire ground. These skills must be mastered in order to operate safely on the fire ground.