

No. 15: Ropes and Knots

Introduction

The fire service has come a long way over the past 40 years. The days of responding to a traditional fireground operation, where hose is being stretched and ladders are being raised, are becoming fewer. Many departments are formulating specialty teams as we branch out into other less than traditional type operations. One such team is a rope rescue team; however, not all departments have the personnel to be able to form these specialty teams.

Basically, ropes come in two types:

- **Life Safety Rope:** For use with humans and they are required to meet the 1983 NFPA standard.
- **Utility Rope:** Utility ropes don't have to conform to the NFPA 1983 and should never be used to support a human life.

Before we get started, I would like to mention some important features dealing with the ropes. First, the material used in ropes can be either natural materials (manila) or synthetic (Kevlar). Secondly, use caution when working with the equipment and ropes.

- Use caution so as not to step on any of the software (ropes & webbing)
- The hardware (carabiners, figure eights) should never be thrown or dropped
- All knots should be dressed (tightly fitted)
- Back-up all knots with a safety knot
- Lock all carabiners
- Think about what will happen should the system fail
- Use a belay line to backup the main line rope
- Gloves should be worn whenever working with ropes

Just like any other incident we operate at, a safety officer should be appointed to oversee the operations. The safety officer should check all knots for accuracy and make sure they are dressed properly, with a safety knot. Additionally, all hardware should be inspected and carabiners should have the locking mechanism locked.

Common Knots in the Fire Service

Even though there are a wide variety of knots used in the fire service, the more common ones in rope rescue



Photo by Glen E. Ellman/FortWorthFire.com

operations are those found in the "Figure Eight Family."

- Figure eight stopper
- Figure eight on a bight
- Figure eight follow through
- Figure eight bend (to join two ropes)
- Double loop figure eight

Other knots commonly used in the fire service are:

- Bowline
- Half hitch
- Clove hitch
- Overhand knot
- Square knot
- Butterfly knot
- Prusik hitch
- Fisherman knot
- Munter hitch
- Safety knot

Two knots commonly used with webbing:

- Water knot
- Mariner's knot

Tying knots can be intimidating for some firefighters who have little or no experience with ropes.

A great website to assist those looking for additional help is: www.animatedknots.com

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