

Travis County Emergency Services District No. 9
Westlake Fire Department
Standard Operating Guideline

Subject: Rope Rescue Response

Effective Date: September 18, 2003

Authorized By: Chief Paul Barker

I. Purpose

To establish a guideline for TCESD#9 during Rope Rescue Operations. Rope rescue operations are the responsibility of the Westlake Fire Dept., however, the WFD will request the assistance of the Austin Fire Department and/or Austin Emergency Medical Service, as needed.

II. Definition

Rope rescue is defined as any rescue attempt that requires rope and related equipment to safely gain access to, and remove victims from, hazardous geographic areas with limited access such as canyons, cliffs, buildings, above or below grade structures, by means of rope system. Rope rescues are divided into two general categories; non-technical and technical.

Non-technical evacuations are those of less than 40-degree inclination.

Technical evacuations are considered those from 40 degrees to 90 degrees.

Technical evacuations require the dispatch of the Technical Rescue Team (TRT).

A TRT is defined as a group of personnel trained to the Technical Level by NFPA Standard 1670. The WFD has a TRT, however, the IC must evaluate if those trained personnel are available to assist or manage a technical evacuation without additional response.

III. Policy

All Westlake Fire Dept. personnel who are involved in Rope Rescue emergency calls will adhere to these policies and procedures in order to maintain a safe, consistent, and reliable operation.

- A. An Incident Command System (ICS) and Command Post (CP) shall be established and announced over the radio. The standard green rotating beacon light should be used to mark the CP for other agencies.
- B. The IC shall locate the responsible party or witness. This will help identifying the problem and locating the victim(s).
- C. Size-up the scene using the following information:

- Victim status and location (if known)
 - Best access for incoming units and the victim(s)
 - Location of the Command Post.
 - Weather and scene safety hazards (as needed)
- D. If unknown, locate the victim using a Recon Team. The Recon Team should have some basic EMS equipment to begin administering first aid to the victim(s). Determine the exact location of the victim(s) and the nature of any injuries. If the terrain is greater than 60 degrees inclination, the IC may decide to wait until a Technical Rescue Team (TRT) can be assembled. The IC may choose to use a helicopter for aerial recon.
- E. Using the information provided by the Recon Team, the IC must determine if additional resources are necessary. Useful information will include the number of victims, location and condition of victims, estimated angle of terrain, distance to the victim, and estimated time of extraction.
- F. The IC must assess the hazard. A Safety Officer that is knowledgeable in rope rescue operations will be appointed and will identify / mark the hazards at the incident. The Safety Officer shall make sure all safety procedures are followed and all members on the scene are aware of the hazard areas.
- G. The WFD Accountability System will be used for all personnel and victims on the scene. A Personnel Accountability Report (PAR) will be called for prior to termination of the incident.
- H. Using information provided by the Recon Team, the IC will decide if the mode of operation will be a rescue or a recovery. If the IC determines the incident is a rescue, the Recon Team should remain with the victim(s) and will be reassigned as the Medical Team. If the incident is determined to be a recovery, the IC will secure the scene, leave all equipment and the victim in place until an investigation is completed.
- I. The IC will make an Action Plan based on the recommendation of the Recon / Medical Team. All members at the scene shall be advised of the Action Plan.

III. Procedure

A. For all Rope Rescue Related Incidents:

1. Establishing Danger Zones with scene tape a minimum of 15 feet from the edge of the hazard and maintain scene safety for all personnel.
2. Relocate any civilians or non-essential rescue personnel away from the area.
3. The IC should assign a Technical Rescue Operations Officer if the rescue is determined to be a Technical Evacuation. The Rescue Officer should be able to assign personnel to organize anchors, setup haul and safety backup systems, and rig victim recovery systems.

B. Low to High Rescue

1. If the victim is not exposed to a life-threatening situation, it may be possible to talk the victim into self-extrication. If the victim is exposed to a life-threatening situation, it may be best to advise the victim to stay in place until a rope rescue system can be set up.

2. For terrain less than 40 degree inclination, (non-technical) most first responders have the equipment and training to assist the victim down. If the victim is ambulatory, he/she can walk down with the assistance of rescuers.
3. If the victim is injured or unable to assist in their own rescue, he/she should be packaged properly in a litter basket and carried to safety.
4. The litter extrication should be conducted with a minimum of 4 litter bearers. Bearers should face the direction of travel during the extrication. If appropriate, a tag line should be attached to the litter for assistance through unstable areas.
5. For terrain of greater than 40-degree inclination, a TRT shall be used to assist with the extrication. If the IC has enough qualified personnel and equipment on scene he / she should continue with the rescue. However, if the IC is not sure if the personnel on scene can complete the rescue, additional resources should be notified (AFD or A/TC EMS).
6. If the victim is ambulatory, he/she may be assisted down by rescuers with the use of a belay/tag line. If appropriate, rescuers should set up an anchor system for the belay.
7. If the victim is not ambulatory, rescuers shall build an anchor system and prepare for a steep angle evacuation. The patient shall be packaged properly in a litter and prepared for the extrication. **The litter will be attended at all times during the extrication.** Attendants should face the anchor during the evacuation and be clipped into the litter. A separate raising/lowering line and belay line shall be set up for raising or lowering during steep angle evacuations.
8. For evacuations greater than 60 degrees, the TRT shall conduct the evacuation. Evacuations greater than 60 degrees are considered high angle operations. The Rescue Operations Officer, in conjunction with the Safety Officer, should decide the most appropriate method to extricate the victim.
9. In any case, a 15:1 safety factor shall be maintained and a double rope technique shall be used if at all possible. If possible, a separate anchor should be used for the working line and the belay line. Proper care shall be taken to assure that the victim will not come out of the harness or litter used to extricate him/her. Whichever method of extrication is used, the Rescue Operations Officer shall ensure the overall safety of the raising/lowering system. Rescue Operations Officer shall designate the tasks of individual rescuers during the operation.
10. Helicopter operations are considered high-risk operations. Several factors must be considered before deciding on the use of a helicopter for extrications. Some of these factors are: time of day, weather conditions, condition of victim, difficult access to the victim, and the qualifications of pilot and rescuers. If the IC, in conjunction with the Rescue Operations and Safety Officers, decides to use a helicopter for extrication, a landing zone (L.Z.) shall be set up and an L.Z. Officer shall be established. The L.Z. Officer should have communication directly with the pilot as well as the IC.

11. Prior to conducting the operation, Command should ensure that the pilot completely understands the task about to be performed. The IC will have the final say if the helicopter will be used and the pilot will have the final say on how the helicopter will be used.

C. Terminating the Operation

1. A PAR shall be called prior to clearing the scene.
2. All equipment that belongs to the victim shall remain in place on any incident that involves a fatality until the proper authorities (law enforcement or OSHA) can investigate. The IC and the Rescue Operations Officer shall decide what Department equipment should remain after the rescue.
3. Inspect all equipment for damage or wear after the incident. Replace suspect equipment until proper analysis is completed. Clean and place undamaged equipment back in service.
4. If an investigation is underway turn the scene over to the appropriate agency. Make sure any safety hazards are clearly marked before leaving.
5. The IC and the Safety Officer may hold a debriefing after the incident. A post-incident analysis is most helpful within a few hours of the incident.

D. Additional Considerations

1. In hot weather consider rotating crews and rehab needs.
2. Consider the effects of hypothermia on the patient and rescuers in cold weather.
3. In rainy or icy conditions, consider the effects of rain or sleet on the terrain and equipment.
4. Is there enough daylight or will additional lighting be needed.
5. Is there a need for a PIO? TR incidents are usually of high interest to the media and having a PIO may be necessary.

E. Rope Rescue Equipment Guidelines

The purpose of this procedure is to establish a guideline for the use, care, maintenance, and storage of rope and related rope rescue equipment.

ROPE

Uses: Rappel line, lowering line, safety belay, litter tag line, or in mechanical advantage pulley systems. It is not intended to be used as a towrope, utility line, etc. This is to be considered a life safety line only. The rescuer's life as well as the victim's may depend on it.

Construction--Nylon, low-stretch (static) Kernmantle

1. Has an inner core and an outer sheath
2. Outer sheath protects core
3. 75%-85% of the ropes strength comes from the core, depending on manufacturer

Specifications

1. Diameter: 1/2" (12.7mm)
2. Strength: 9,000 pounds (loses approximately 15% when wet)

Maintenance

1. Inspect, visually after each use, for damage to sheath, dirt or mildew, and feel for soft spots in rope core, by "running" or pulling the rope between thumb and index finger. Wash when dirty.

Core

1. Wash with mild non-chlorine-based detergent and water. Hang loosely and allow to air dry out of direct sunlight.
2. Once rope is dry, it is stuffed, not coiled, in rope bag and stored in a dry, dust-free place, where not exposed to chemical (petroleum, alkalis) and direct sunlight.

Cautions

1. NEVER walk or stand on the rope.
2. Don't drop rope from great heights when it can be carried down.
3. Don't drag rope across ground or apparatus bays.
4. Pad all edges.
5. Avoid nylon passing on nylon; i.e., rope passing over itself, another rope or webbing.
6. Keep all rope and webbing material out of petroleum and alkaline products, and if forced to use in applications where contamination will occur (around wheels, axles, etc.), retire after use.

WEBBING

Uses. Gear slings, harnesses, and lashing.

Construction. Nylon, spiral weave, tubular.

Specifications. One inch wide; Strength of 4,000 pounds.

Maintenance. Same as rope.

Care. Same as rope.

Cautions. Same as rope.

ACCESSORY CORD

Uses. Loops of 8 mm accessory cord (AC) can be attached to a host rope by a Prusik hitch to form attachment points for pulleys and load capturing. Long loops of 6 mm AC can be tied to allow their use as "soft" ascenders to climb a host rope.

Construction. Nylon, low stretch (static), kernmantle.

Specifications. Rope diameter may vary from 6 mm to 9 mm, depending on application.

Maintenance. Same as rope.

Care. Same as rope.

Cautions. Same as rope.

CARABINERS

Uses. To link various pieces of gear together, or to add friction to a system.

Construction. Locking, steel, pin type, not lock sleeve dependent. Locking, aluminum, pin type, not lock sleeve dependent (NFPA compliant).

Specifications. Steel: 9,000 pounds breaking strength. Aluminum: 5,500 pounds breaking strength.

Cautions.

1. Keep clean.
2. Don't drop or throw.
3. Load only in the long axis, no side loading.
4. Don't forget to lock the gate.
5. Inspect for cracks, worn spots, and smooth operation.
6. Remove any carabiner from service if dropped more than 3 feet until inspection and / or X-ray can be completed.

PULLEYS

Uses

1. Reduce friction.
2. Change direction.
3. To gain mechanical advantage.

Construction—NFPA compliant.

Specifications—2" and 4" size. 6,000-8,000 pound breaking strength.

Cautions

1. Keep clean.
2. Don't drop or throw.
3. Inspect for smooth operation, elongated holes.

4. Remove any pulley from service if dropped more than 3 feet until inspection and / or X-ray can be completed.

GENERAL CAUTIONS

1. Make sure all knots are tied and dressed correctly.
2. Maintain at least 15:1 safety margin when not belayed.
3. Belay loads when safety margin is less than 15:1
4. Rescuers shall not operate with less than a 10:1 safety margin.
5. Rescuers shall not approach an edge without being tied in and communicating with rescuers below.
6. Rescuers shall place victims in webbing harnesses during rope rescues.
7. Rescuers shall wear appropriate clothing for high angle rescues:
 1. Seat harness (NFPA compliant).
 2. Helmet (NFPA compliant).
 3. Appropriate hiking shoes or boots.
 4. Self-rescue gear.
 5. Eye protection.
 6. Gloves.