# HIGH and LOW ANGLE RESCUE (ROPE)



## SCOPE

This procedure establishes a standard structure and guideline for all fire department personnel operating at incidents involving high angle or low angle (rope) rescues. The procedure outlines responsibilities for first-responders, Technical Rescue/Special Operations units, Command Officers, and other fire department personnel responding to such incidents. All other Toledo Fire and Rescue procedures shall apply to technical rescue operations where applicable.

## PURPOSE

The purpose of this procedure is to establish guidelines for the response of fire department personnel and equipment to rope rescue incidents. Because rope rescue operations present a significant danger to fire department personnel, the safe and effective management of these operations require special considerations. This guideline identifies some of the critical issues which must be included in managing these incidents.

## TACTICAL CONSIDERATIONS

- Rope rescue incidents occur when a victim is unable to self extricate when trapped at heights or below grade that are outside of normal means of egress.
- Common rope rescue environments include: Industrial facilities, Construction sites, High Rise buildings, Agricultural facilities, Bridges and Natural depressions. ***Pre-incident planning is an important factor in preparing to handle these types of incidents.***
- Due to the inherent dangers associated with these operations, Toledo Fire and Rescue's Risk Management Profile shall be applied to all rope rescue operations and shall be continuously re-assessed throughout the incident. A phased approach to rope rescue operations which include; **Arrival**, **Pre-rescue** operations, **Rescue** operations, and **Termination**, can be utilized to safely and effectively mitigate these high-risk / low-frequency events.
- Rope rescue incidents will attract the attention of the media, call for PIO early

***UNDER NO CIRCUMSTANCE SHALL ANY PERSONNEL OTHER THAN THE ON-DUTY RESPONDING TECHNICAL RESCUE/SPECIAL OPERATIONS UNITS ATTEMPT TO CONDUCT A ROPE RESCUE.***

## DISPATCH

The following units shall be dispatched for all Rope Rescue incidents: USAR 1 (Station 6), USAR 2 (Station 18), (1) Battalion Chief, (1) Safety Officer, (1) Engine or Engine Co. (1) Heavy Rescue Squad

*Notify the Deputy Chief of Operations and the Deputy Chief Special Operations, Public Information Officer (PIO)

**PHASE I ARRIVAL**

**I. ESTABLISH COMMAND**

**A.** First arriving TFRD member shall assume Command and begin an immediate size-up of the situation **while isolating the immediate hazard area** and **denying entry to all non-rescue personnel**.

**B.** First arriving Technical Rescue/Special Operations unit that is staffed with a Technical Rescue Qualified Team Leader should be assigned Rescue Sector.

***Rescue Sector responsibilities include*:**

- Assuming technical rescue operations control.
- Identifying hazards and critical factors.
- Developing a rescue plan and back-up plan.
- Communicating with and directing resources assigned to Rescue Sector.
- Informing Command of conditions, actions, and needs during all phases of the rescue operation.

**C.** Designate a Safety Officer. Considerations for Safety Officer include:

- Special Operations qualified Battalion Chief or Officer
- Experienced Technical Rescue Company Officer assigned to the incident.
- Experienced Technical Rescue Member assigned to the incident.
- TFRD qualified Safety Officers.

***A Safety Officer shall be established prior to the implementation of any rescue plan proposed by Rescue Sector.***

**D.** Following the transfer of Command to a Command Officer, a Technical Rescue Advisor should be assigned as part of the Command Staff at their location, to assist in managing personnel and resources engaged in the technical rescue aspects of the incident. The Technical Rescue Advisor is responsible for ensuring that the rescue plan developed by Rescue Sector and communicated to Command is a sound plan in terms of the safety and welfare of both victim(s) and rescuers. Considerations for the Technical Advisor include:

- Special Operations qualified Battalion Chief or Officer
- Experienced Technical Rescue Company Officer assigned to the incident.
- Experienced Technical Rescue Member assigned to the incident.

## II. SIZE-UP

**A.** Secure a witness or responsible party to assist in gathering information to determine exactly what happened. If no witnesses are present, Command may have to look for clues on the scene to determine what happened.

**B.** Assess the immediate and potential hazards to the rescuers.

**C.** Isolate immediate hazard area, secure the scene, and deny entry for all non-rescue personnel.

**D.** Establish communications with victim(s).

**E.** Assess on-scene capabilities and determine the need for additional resources.

## III. SECONDARY ASSESSMENT

**A.** Confirm number of victims

**B.** Assess the need for other resources such as HAZMAT, etc.

**C.** Determine known hazards present in the rescue area; atmospheric, mechanical, electrical, etc.

**D.** Assess the structural stability of the rescue area.

***IF AT ANY TIME THE RESCUE AREA IS DETERMINED TO MEET ANY DEFINITION OF A CONFINED SPACE, IMMEDIATELY TERMINATE THE ROPE RESCUE OPERATION AND TRANSITION TO A CONFINED SPACE RESCUE OPERATION***

## PHASE II PRE-RESCUE OPERATIONS

It must be determined if this will be a **RESCUE** operation or a **RECOVERY** operation based on the survivability profile of the victim(s) which include factors such as the location and condition of the victim(s), and elapsed time since the accident occurred.

Pre-rescue operations shall be conducted under the direction of Rescue Sector by trained Rescue Technicians.

### I. Equipment

- Any rescuer that will be on rope, within 6 feet of an edge, is climbing any sort of structure, or entering a below grade area must be wearing a Class II or III harness, helmet, and gloves.
- Any rescuer that will be on rope should carry prusiks, carabiners, and other assorted equipment that may be necessary for self-rescue.
- Any rescuer that will be on rope should have the ability to communicate with the Technical Rescue Leader
- All rope rescue hardware used in TFRD rescue operations shall be **GENERAL USE rated**.

## PHASE III RESCUE

Rigging is the assembly of rope and hardware used to form anchoring and associated rope rescue systems. Determining the best way to rig a particular system depends on experience, training, judgement, and ingenuity. Oftentimes, there will be multiple safe ways to rig a system to the same anchor; however you should always attempt to use the simplest system possible.

The rope rescue system should be rigged with the worst case scenario in mind and should use the most substantial anchor whenever possible.

### I. GENERAL RIGGING EQUIPMENT

**A.** Equipment commonly used in rigging includes:

- 1” and 2” tubular webbing
- Anchor Straps
- ½” static kernmantle rope
- Screw-Link
- Rigging Plate

**B.** When rigging to an anchor the Technical Rescue Leader shall evaluate the anchor for its suitability, usefulness, and strength.

a. Examples of common anchors MAY include but are not limited to:

- Structural steel
- Machinery supports
- HVAC Units
- Elevator Penthouse/Bulkhead Door
- Vehicles
- Large trees
- Pre-fabricated anchors (e.g.- window washers)

b. When evaluating an anchor for its suitability in a rope rescue system the TRT should consider the following criteria:

- Weight of the anchor
- If using a tree, determine the condition, soil stability, size, etc.
- Is the anchor immovable?

c. When rigging to a vehicle, the following criteria should be considered:

- Weight of the vehicle
- Ground conditions (dry vs. wet asphalt/concrete/gravel, etc.)
- Parking brake must be applied and wheel chocks set
- Batteries should be off, keys should be placed in the TRT leader's pocket, and the siren should be turned to the ON position so that if someone attempts to turn the battery on, the siren will activate
- Rigging should never be placed on a non-structural member or tow hook
- Rigging is acceptable off closed tow eyes, axles, wheels, etc.
- Consider the need for protection from sharp edges, hot surfaces, chemicals, etc.

**C.** Use of a choker hitch should be avoided if at all possible as it de-rates the anchor strap/webbing and is NOT RATED for a 2 person rescue load

**D.** Back-tying of anchors should be considered for a marginal anchor that is in a good location with no substantial anchor present, however DO NOT use multiple poor anchors in an attempt to create one strong anchor

**E.** Consideration should be given to "backing-up" or "doubling" an anchor system so that the failure of any one piece of the rigging does not lead to a catastrophic event

**F.** The Technical Rescue Leader and a Rescue Technician shall safety check all rigging prior to placing a rescuer on rope

**G.** While separate anchors should be used for main and belay lines, Technical Rescue Leader can determine if one anchor will suffice for both systems

## II. PATIENT ACCESS/PACKAGING/REMOVAL

**A.** It shall be the choice of the Technical Rescue Leader to determine the type of system used

**B.** Whenever possible, a lower/haul system should be the primary method of gaining patient access.

- Rappelling may be appropriate ONLY if immediate access to the patient is required for treatment and packaging

**C.** When packaging the patient into a Stokes or SKED, the patient should be restrained using manufactured systems or webbing to prevent vertical movement inside the litter (up/down) and to prevent the victim from falling out of the litter (diamond lashing)

- The victim MUST be placed in a manufactured or webbing harness before being secured into the litter

**D.** When preparing for removal, the connection between the main line and the litter bridle will be considered the primary attachment to the victim. The belay line should also be tied into the bridle rigging ring, then extended and attached directly into the victim harness.

**E.** In determining whether a litter attendant is needed for the operation, the Technical Rescue Leader and Primary Rescuer should evaluate the benefit of having an attendant vs. the additional complications that come with rigging an additional load onto the system.

**PHASE IV TERMINATION**

A. Ensure personnel accountability

B. Remove all tools and equipment used in the rescue/recovery and return to proper apparatus. In cases of a fatality, consider leaving everything in place until the investigative process has been completed.

C. If entry personnel and/or equipment have been contaminated, proper decontamination procedures shall be followed prior to returning to service.

D. Conduct a Post Incident Critique

E. Release companies after turning the scene over to the responsible party and ensuring the scene is secure.

F. Prior to returning to service, the Technical Rescue Team shall **INSPECT** and **LOG** the use of all equipment used in the rescue.

G. Any equipment found to be damaged shall be removed from service and Special Operations shall be electronically notified.

H. Complete a 214 and forward an electronic copy to Special Operations.