

Orchard Farm Fire Protection District Standard Operating Procedure

Division: 200 Emergency Operations
Section: 202 Fire & Rescue
Subject: 202.24 Technical Rescues



Supersedes: N/A

Approved By: 

Date: 05/22/2013

Date Last Reviewed: N/A

Page: 1 of 6

PURPOSE:

To define the District's response to calls requiring technical rescue

RESPONSIBILITY:

All District Personnel

PROCEDURES:

Only members who have completed all competencies specific to the type of rescue being performed will be allowed to take direct action in effecting the rescue. If it is determined that the rescue will be complex, last an extended period of time, or might exceed the training level of the crew on duty, immediately request a USAR team for assistance.

The ICS/IMS (Incident Command/Management System) will be utilized at all incidents. A liaison from the USAR team shall assist the incident commander and the accountability system will be utilized. A safety officer should be appointed from USAR team.

The "zone system" should be implemented as much as possible:

- **Hot Zone:** or Exclusion Zone, in this area only USAR and FD personnel directly assisting in the rescue will operate. The Safety Officer will also use this area to observe.
- **Warm Zone:** or Equipment Staging area, in this area the equipment necessary for the rescue will be placed.
- **Cold Zone:** or Support Zone, in this area staging and rehab for personnel involved in the rescue will be placed.

These zones should be marked as best as practical (barrier tape and/or ground marking) to denote these areas.

Subject 202.24 Technical Rescues

Date: 05/22/2013

Page: 2 of 6

CONFINED SPACE PROCEDURE

An attendant will be utilized for all entries into a confined space (permit and non-permit) that shall:

- Maintain a list of all entrants,
- Monitor the space using gas detection instruments,
- Visually observe the space until all entrants and rescuers have left the space.
- Attendants who are trained to initiate a rescue do not enter the confined space unless replaced by another attendant.

The Incident Commander shall appoint a safety officer from the USAR team who will be responsible for evaluating all hazards of entry into the space and is responsible for reporting these hazards to the Incident Commander. Only after proper precautions have been made will trained confined space rescuers make entry and attempt a rescue.

At no time will entries be made into suspected flammable or combustible atmospheres without analyzing the actual atmospheric conditions. Test the atmosphere, at all levels, with approved gas detection equipment. Atmospheric monitors will be utilized during all entries and at all times the space is occupied. Preferably a monitor will be used in the space with an additional monitor outside the space. Test the atmosphere of the space prior to any ventilation.

- Test for Oxygen first. Normal is 20.9%, however, a range from 19.5-23% is deemed acceptable
- Test for combustible gases next, which must be less than 10% LEF/LFL of each gas found
- Test for suspected toxins last

Ventilation must occur during all entries, whether it is natural, installed or external ventilation. Do not use gasoline powered PPV to ventilate a space without ducting the exhaust away from the fan inlet. Entry into a space without atmospheric testing is considered to be an IDLH (immediately dangerous to life and health) atmosphere.

Entries made for rescue or retrieval should have an EMS unit standing by. All entrants for rescue or retrieval will wear full body harnesses with lifelines attached unless the risk posed by utilizing this equipment is higher than the benefit. Examples of spaces where the hazard may be greater than the benefits include confined horizontal openings where the use of retrieval equipment will not enhance the retrieval effort.

All power sources (hydraulic, electrical, pneumatic, water, steam, or other stored energy) which may pose a hazard to entrants in the space, shall be in a locked out/tagged out condition or have a firefighter posted to prevent operation or energizing of any equipment in the space.

Subject 202.24 Technical Rescues

Date: 05/22/2013

Page: 3 of 6

MSDS should be reviewed if there are any chemical in use that have known or unknown hazards to entrants. Appropriate PPE will be worn; hard hats, safety glasses or goggles, gloves, long sleeves, long pants and sturdy footwear.

All entrants will have a means of communication; either radio, lifeline or similar.

Where loss of lighting poses a hazard all entrants will use a flashlight or other auxiliary lighting.

The space will be monitored at all times by an attendant with an operating gas detector. The attendant will be equipped with a radio tuned to the same frequency as the entry team.

SCBA (self-contained breathing apparatus) will be utilized in all hazardous atmospheres, and should be considered in non-hazardous atmospheres, unless the conditions are such that their use is not warranted. This will be at the sole discretion of the Incident Commander.

Body recovery operations will be assigned a low priority based upon the risk of the situation. Body recovery will take place only when all hazards have been mitigated to relieve any potential hazard to rescuers.

Entry teams will normally consist of two members. Two backup personnel, in the required PPE will be at the ready to affect a rescue if needed. All vertical operations in a confined space will utilize the procedures of the high-angle rescue procedure, but at a minimum a two-rope system will be used, with the exception of a potential engulfment, where a single rope system is allowed.

Confined Space – Engulfment Risk

For entries into areas where engulfment is a possibility, a harness and lifeline will be worn at all times. The lifeline will be rigged overhead and kept as taut as possible. It will then be attached to a human powered lifting device, and be attended to by sufficient personnel to affect a lift.

Confined Space - Converging Cross Section

For entries into areas where converging cross sections are a possibility, a harness and lifeline will be worn at all times. The lifeline will be rigged overhead and kept as taut as possible. It will then be attached to a human powered lifting device, and be attended to by sufficient personnel to affect a lift.

Subject 202.24 Technical Rescues

Date: 05/22/2013

Page: 4 of 6

Confined Space – Welding and Cutting

For entries into areas where welding and cutting is needed; all welding and cutting equipment will have the power disconnected and valves shut off prior to entry.

HI-ANGLE OR OTHER ELEVATED WORK OPERATIONS

On all elevated work positions, fall protection will be utilized wherever practical. On all rope operations, a 2-rope system will be utilized (main line and belay line). Operations to provide belay protection; belay lines will be kept reasonably taut. Edge protection will be utilized on all vertical operations. All anchor points utilized shall be as best as can be determined and be suitable for a 5000 lbs (2400kg) load. Rescue helmets will be worn in all vertical environments and a safety person will double-check all rigging prior to loading.

Bare hands are not allowed on working lines, only leather-gloved hands. Do not wrap a line around a body. Do not walk on any rope. Do not drop equipment down shaft or pit; always lower equipment with a utility line. Only one person will direct rope operations, all other will follow directives.

AUDIBLE SIGNALS

STOP:	SINGLE whistle blast or verbal command, all operations stop. DO NOT let go of rope! The command STOP indicates just that, stop, do not release the rope, and do not move. The command HOLD IT will not be used.
UP:	DOUBLE whistle blast or verbal, Raise system
DOWN:	TRIPLE whistles blast or verbal, Lower system
BELAY ON:	Belay line attached
MAIN LINE READY:	Main Line locked on brake rack and ready

Avoid triple loading of carabineers. The Angle of webbing or anchor straps should never exceed 120°. A load-releasing hitch will be used where two blocking might be a consideration or were a system may be needed to be converted from a raising system to a lowering system. Tag lines will be utilized on patient un-attended raises. All equipment will be inspected on a regular basis at least annually and at a minimum after each use. Any rope/equipment shock loaded will be removed from service. Equipment will be kept clean and dry.

Subject 202.24 Technical Rescues

Date: 05/22/2013

Page: 5 of 6

All rope operations will be performed on a dedicated frequency to avoid confusion.

EXCAVATION PROCEDURE

All excavations entered by the USAR team shall be either sloped or utilize shoring or trench shields. All spoil should be placed at least two (2) feet from the edge of the excavation. The air quality shall be monitored at all times using a CGI (combustible gas indicator).

A “competent person” shall be assigned on each excavation incident. This person is in charge of all activities associated with the protection of the trench and personnel working in the trench.

A ladder or other means of egress (benching of trench for example) shall be in place prior to entry for every twenty-five (25) lineal feet of trench. Utilize edge protection using sheets of plywood adjacent to the sides of the trench to minimize disturbance of the trench. All trenching protection systems shall be installed from the top down and removed from the bottom up. The trench protection system (shoring or trench shield) should not be more than two (2) feet below the grade. You can excavate up to two (2) feet below the protected area without adding additional protection. Void spaces behind trench protection system should be backfilled.

USAR members should only enter a protected area of the trench. Protect the excavation from water (rain and/or ground water). Only 1” marine grade exterior plywood should be used for sidewall protection, this should be backed up by 2” x 12” braces whenever possible. Use cross braces that are a minimum dimension of 4” x 4” at a minimum of 4’ vertical and 6’ horizontal spacing. A low priority will be assigned to removal of trench protection systems.

DEFINITIONS:

Attendant:

A person used to visually watch a space, operate atmospheric monitoring equipment, and maintain communications with all entrants and rescuers. Authorized only to initiate non-entry rescue or if relieved by a trained attendant to enter as a rescuer.

Hazardous atmosphere:

Any atmosphere with less than 19.5% or more than 23% oxygen, containing in excess of 10% or more LEL/LFL, or any other toxin which exceeds the PEL (permissible exposure limit, OSHA) or TLV (threshold limit value, ACGIH).

Subject 202.24 Technical Rescues

Date: 05/22/2013

Page: 6 of 6

LEL/LFL:

Any atmosphere, which has the lower explosive limit or lower flammable limit, exceeded for any gas, vapor or combustible dust. For purposes of entry any level which exceeds 10% of the LEL/LFL.

Rescuer:

A person trained and equipped to perform entry rescues and must have completed training and rescue competencies.

Confined space:

A location large enough to physically enter that is not designed for continuous occupancy and has restricted means of entry/exit.

Permit required confined space:

A confined space that has one or more of the following risks

- A hazardous or potentially hazardous atmosphere
- A tapering cross-section
- An engulfment hazard
- Any other serious safety and health hazard (falls, slips, electrical, chemical, work generated hazards, moving equipment or similar)

Incident Commander:

The person ultimately in charge of all rescue operations that is responsible for overall management and safety while mitigating incident.