



Training Standard

North County Technical Rescue Team

TOPIC:

Trench Rescue

PURPOSE:

Trench Rescue Operations present a significant danger to fire department personnel and may involve complex requirements for shoring, hand tools, earth-moving equipment and other specialized resources. Cave-ins and collapses generally occur because of unstable soil conditions combined with improper or inadequate shoring. The potential for additional collapse must always be considered as a primary hazard and personnel must be aware that any action may disrupt the temporary stability and cause an additional collapse. The safe and effective management of these operations requires special considerations

DEFINITIONS:

- **Ground Pads:** The material used to distribute weight and forces over their surface area, usually plywood or 2x lumber, and thus minimizing the possibility of rescuers creating a secondary collapse.
- **Sheeting:** The members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system.
- **Spoil:** The heap of material excavated from a trench
- **Strut:** The horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or wales.
- **Surcharge:** Additional weight in the trench area
- **Uprights:** The vertical members of a trench shoring system placed in contact with the sheeting for added structural stability.



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TACTICAL CONSIDERATIONS:

I. Arrive on Scene

A. The Primary Assessment

1. Size up the incident
2. Broadcast report on conditions to dispatch
3. Establish Command
4. Request additional resources as necessary
5. Obtain reporting / responsible party for additional information

B. Documentation

1. Consider the use of a Trench Rescue Tactical Worksheet or Confined Space Permit to document actions at the incident

II. Pre-Entry Operations

A. Make the general area safe for operation

1. Assign Safety Officer
 - (a) Trained and qualified in Trench Rescue
 - (b) First in Company Officer until delegated
2. Ladder the trench
3. Clear spoil pile
 - (a) Minimum 2' back from lip
 - (b) Maximum 3' high
 - (c) Lay ground pads



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4. Establish perimeters

- (a) Exclusion zone 50'
- (b) Hazard reduction zone 150'
- (c) Support zone 300'

B. Make the rescue area safe for operation

1. Hazard Assessment

- (a) Utilities
- (b) Hazardous atmosphere
- (c) Mechanical
- (d) Standing water
- (e) Secondary collapse
 - (i) Vibrations
 - (ii) Surcharge loads



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2. Hazard Reduction

- (a) Secure utilities
- (b) Monitor and ventilate atmosphere
- (c) Lock out tag out
- (d) Dewater
- (e) Isolate sources of vibration
- (f) Remove additional surcharge loads

III. Rescue Operations

A. Assign Rescue Operations

B. Assign Shoring Group

1. Working for rescue operations

C. Ensure Access and Egress into trench

1. Maximum allowable travel distance to a ladder is 25'
2. Tip of ladder should extend at least 3' out of the trench
3. Minimum of one ladder in each trench segment
4. Ladder must be secured

D. Install Protective Systems

1. Place sheeting and uprights (trench panels) in the trench
2. Pressurize the panels with struts



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- (a) First strut should be placed 18” to 24” below the lip of the trench
- (b) Strut spacing shall be no greater than 4’ maximum both vertical and horizontal
- (c) Must have a strut within 2’ of the bottom of the trench

E. Assign Patient Extrication Group

- 1. Might be responsible for rigging
- 2. Might be responsible for patient packaging
 - (a) Determine chief complaint
 - (b) Treat immediate life threatening injuries
 - (c) Perform appropriate and necessary interventions
 - (d) Package in appropriate device for extrication
- 3. Remove patient from trench

Note: While in the trench the rescuer shall remain within the shoring panels. Once on the trench floor the rescuer may remove his or her “tag-line” and proceed without.



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IV. Incident Termination

A. Preparation for termination

1. Personnel accountability
2. In the event of a fatality or serious injury
 - (a) Leave all equipment in place
 - (b) Contact OSHA representative and have them respond to scene

B. Decontaminate all equipment and place back in service

C. Turn secured property back over to the responsible party

D. Terminate Command

1. Consider debriefing for rescue personnel

E. Complete all necessary documentation