

**Lisle-Woodridge Fire District
Trench Rescue
STANDARD OPERATING GUIDELINES**

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PURPOSE:

To provide guidelines during entry and rescue operations in a trench or excavation.

SCOPE:

These guidelines are designed to provide guidance for the Combined Agency Response Team (CART) and other Fire Department personnel during all phases of Trench/ Excavation Rescue Operations and Entry. These guidelines should not limit the initiative of the first arriving companies or Rescue Team members.

DEFINITION:

OSHA Regulation 29 CFR 1926 Subpart P defines *excavations, trenches and support systems* as follows:

1. Excavation means any man-made cut, cavity, trench, or depression in an earth surface, formed as by earth removal.
2. Trench means a narrow excavation (in relation to its length) made below the surface of the ground.
 - a) In general, the depth is greater than the width but;
 - b) width of trench (measured at the bottom) is not greater than 15 feet.
3. Protective System means a method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from collapse of adjacent structures.

STANDARD OPERATING PROCEDURES:

The following seven (7) aspects of a Trench Rescue Operation are standard operating procedures (SOPS) and are not to be deviated from.

A. The stricken agency shall assume command and control of any incident involving confined space entry, rescue or recovery within the Department's boundaries.

B. Any potential rope rescue incident in which a person is trapped, injured, experiencing a medical emergency, or is deceased shall require the response of the Department's Technical Rescue Team (TRT) or closest properly trained Team.

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C. Any civilian or Fire Department personnel, who is unauthorized, untrained, or lacks the proper specialized rescue equipment needed to perform the rescue, shall not be allowed to entry or remain in a trench or excavation (Rescue Sector).

D. Entry into a trench or excavation requires the installation of a proper protective system, according to OSHA's 29 CFR 1926 Subpart P.

E. The trench or excavation must be monitored prior to entry and continuously during all phases of the rescue. Rescuers are required to follow OSHA 29 CFR 1910.146 standard governing the monitoring of a confined space.

F. If the readings for an Oxygen enriched, flammable and / or toxic atmosphere exists, all entry teams shall be immediately removed from the space, until ventilation reverses the condition.

G. Water accumulation in the trench must be controlled following proper dewatering techniques. If rescuers are unable to control water accumulation, entry personnel are required to wear a Class III harness with lifeline.

H. A Trench Rescue or Recovery Requires Establishment of the following Five (7) Sectors: **(Appendix A)**:

1. Rescue Sector (Most qualified TEAM MEMBER) (1 TRT)

Responsible for coordination of the actual rescue operation and the sectors associated with all activity in the "rescue area". Reports directly to Operations (Ops)/Forward Command(FC). In the absence of Ops/FC, he/she reports directly to Incident Command (IC).

2. Site Control Sector (3 Fire Suppression)

Responsible for placement of apparatus, suppression control, isolation/lockout procedures, and lighting systems. Reports directly to Rescue Sector.

3. Equipment / Rigging Sector (1 Fire Suppression and/or 1 TRT)

Responsible for the establishment of an equipment sector site, and the assembly / placement of equipment necessary to perform the rescue. Reports directly to Rescue Sector.

4. Air Quality Sector (2 Fire Suppression / 1 TRT or HAZMAT)

Responsible for continuous atmospheric monitoring / ventilation of the trench / excavation. Reports directly to Rescue Sector.

5. Entry Sector (All TRT)

Responsible for being properly equipped to enter the trench to perform digging and prepare victim(s) for removal from trench. Reports directly to Rescue Sector.

6. Shoring Sector (All TRT)

Responsible for the shoring system design and installation. Reports directly to Rescue Sector.

7. Technical Safety (1 TRT)

Responsible for observing and checking all technical aspects of the rescue. Works directly with the Fire Department's Safety Officer. Reports to IC, Safety and Rescue Sectors.

Initially limited TRT manpower may require combining one or more sectors. The use of Fire Suppression Personnel is an integral part of successfully performing a rescue. Conversely, as the incident progresses and the protective system grows more complex, expansion of the above sectors is required to efficiently mitigate the incident.

INCIDENT COMMAND

Incident Command remains responsible for all aspects of the rescue scene. The following guidelines are designed to aid in the initial stages of a rescue/recovery (utilize tactical work sheet - **Appendix B**).

1. Ensure activation and appropriate dispatching of a Technical Rescue Team.
2. Ensure the response of appropriate apparatus. Call Mutual Aid if needed.
3. Establish a visible Incident Command Post (ICP).
4. Ensure FIRST-IN Unit is performing adequate size-up using TRT tactical worksheet.

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5. If not already established -- Establish Site Control Sector (SECOND-IN unit)
6. Assign Rescue Sector as soon as possible (the stricken agency's most qualified TEAM MEMBER). If none available, it will be up to IC to determine the Rescue Sector.
7. Incoming apparatus equipped with only manpower should be at Level One (1) Staging. As manpower permits, assign personnel to Site Control Sector for Spoil Pile detail.
8. Ensure adequate site access for placement of the TRT equipment near TRENCH or rescue scene.
9. Ensure direct access, to the scene, for TRT personnel and two (2) ALS Ambulances. Anticipate increasing the number of ambulances based on the information gathered by the FIRST-IN Unit.
10. Ensure Medical Sector (one of the two ALS Ambulances) has established a rehab area near the hot zone.
11. Anticipate having to request special Mutual Aid to assist with the rescue. (**Appendix C**).

DUTIES AND RESPONSIBILITIES OF FIRST-IN UNIT

After giving an initial size-up report, via radio, to dispatch the FIRST-IN unit shall attempt to accomplish the following (utilizing tactical work sheet - **Appendix D**):

1. DO NOT ALLOW unauthorized and/or untrained personnel (including department personnel) into the HOT ZONE.
2. Locate and secure the job site foreman, co-worker, and/or reliable witness.
3. First-in Officer (only) approaches the trench from the narrowest end.
4. Determine the last seen point and number of victims.
5. Attempt to establish contact with the victim while remaining outside the trench. Contact established by FD Personnel must be maintained throughout call.
6. Determine the current depth of the trench.
7. Using job site foreman, co-worker or reliable witness, determine the initial depth of trench, prior to collapse.
8. Determine the number and location of access points into the trench (manholes, freshly laid pipe, etc.).

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9. Mark last seen point with a dry chemical fire extinguisher.
10. If victim is only partially buried throw him / her a lifeline and direct the victim to tie it around him / her.
11. If air monitoring was done, obtain the workers atmospheric test results.
12. Determine what atmospheric conditions might exist given the location of the trench.
13. Determine if any electrical, mechanical and chemical hazards exist.
14. Determine if the workers performed any hazard control precautions.
15. Determine the type of work being done in the trench.

Complete the FIRST-IN Unit Tactical Worksheet as soon as possible. Then report directly to IC and/or Rescue Sector (Team Leader) to give a face to face report.

SITE CONTROL SECTOR (SECOND-IN Unit or as Assigned by IC)

The unit assigned to this sector shall attempt to accomplish the following (utilize tactical worksheet - **Appendix E**).

1. Establish and secure a perimeter (hot zone) with safety tape a minimum of 50' x 50' around trench.
2. Ensure that all Fire Department personnel, co-workers, family members and bystanders do not enter or remain in the trench.
3. Request Police to assist with control of perimeter and the rerouting or stopping of traffic, including air traffic (vibrations).
4. Ensure site access for Technical Rescue vehicles.
5. Ensure that ambulances have direct access to the site.
6. Keep / relocate spectators, unnecessary personnel, and apparatus, *a minimum of 300 feet away from the hot zone.*
7. Determine wind direction and consider its effect on vehicle exhaust travel.

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8. Shut down all devices capable of causing vibrations.
9. Shut down all devices capable of causing adverse changes in the atmospheric conditions near the trench.
10. Ensure fire extinguisher and/or hose line protection when potentially flammable atmospheric conditions exist.
11. Ensure elimination of potential ignition sources.
12. Perform lock out / tag out procedures to ensure the zero-mechanical state of all systems (electrical, pneumatic, hydraulic, gravity, #9; stored, etc.) using on scene workers for technical support.
13. If positive lock out control is not possible, a guard shall be posted at the controls to ensure a zero mechanical state.
14. Begin moving the spoil pile a minimum of four (4) feet from lip of trench.
15. Ensure adequate exterior lighting.

Complete the Site Control Tactical Worksheet as soon as possible. Then report directly to IC and/or Rescue Sector (Team Leader) to give a face to face report.

END.

Trench Rescue
APPENDIX A
Rescue Sector
Sector Worksheet

Rescue Sector

Technical Safety

-

Site Control	Equipment	Shoring	Air Quality	Entry Team

NOTES / DIAGRAM

Complete the Site Control Tactical Worksheet as soon as possible. Then report directly to IC and/or Rescue Sector (Team Leader) to give a face to face report

Trench Rescue
APPENDIX B
INCIDENT COMMAND
Tactical Worksheet

Incident Command remains responsible for all aspects of the rescue scene. The following guidelines are designed to aid in the initial stages of a Trench Rescue / Recovery.

- Ensure activation and appropriate dispatching of a Technical Rescue Team.
- Ensure the response of appropriate apparatus. Call Mutual Aid if Department lacks a technical rescue team trained in Trench Rescue.
- Establish a visible Incident Command Post (ICP).
- Ensure FIRST-IN Unit is performing adequate size-up using TRT tactical worksheet.
- If not already established -- Establish Site Control Sector (SECOND-IN unit)
- Assign Rescue Sector as soon as possible (the stricken agency's most qualified TEAM MEMBER). If none available, it will be up to IC to determine the Rescue Sector.
- Incoming apparatus equipped with only manpower should be at Level One (1) Staging. TRT members report directly to the IC.
- Ensure adequate site access for placement of the TRT equipment near TRENCH or Rescue Scene.
- Ensure direct access, to the scene, for TRT personnel and two (2) ALS Ambulances. Anticipate increasing the number of ambulances based on the information gathered by the FIRST-IN Unit.
- Ensure Medical Sector (one of the two ALS Ambulances) has established a rehab area near the hot zone.
- Anticipate having to request additional Mutual Aid to assist with the rescue. (**Appendix C**).

NOTES / DIAGRAM

Complete this Tactical Worksheet as soon as possible. Then report directly to IC and/or Rescue Sector (Team Leader) to give a face to face report.

**Insert
Your
Department's
Technical Rescue
Box Card
Here**

Complete this Tactical Worksheet as soon as possible. Then report directly to IC and/or Rescue Sector (Team Leader) to give a face to face report.

Trench Rescue
APPENDIX D
FIRST IN UNIT
Tactical Worksheet

- *Do Not Allow* unauthorized and / or untrained personnel (including Fire Department Personnel) into or remain in the trench.
- Locate and secure the job site foreman , attendant, or reliable witness.
- First-in Officer (only) approaches the trench from the narrowest end.
- Determine the last seen point and number of victims.
- Attempt to establish contact with the victim while remaining outside the trench. Contact established by FD Personnel must be maintained throughout call.
- Determine the current depth of the trench.
- Using job site foreman, co-worker or reliable witness, determine the initial depth of trench, prior to collapse.
- Determine the number and location of access points into the trench (manholes, freshly laid pipe, etc.).
- Mark the last seen point with a dry chemical fire extinguisher.
- If victim is only partially buried throw him / her a lifeline and direct the victim to tie it around him / her.
- If air monitoring was done, obtain the workers atmospheric test results.
- Determine what atmospheric conditions might exist given the location of the trench (i.e. landfill, septic field, etc.).
- Determine if any electrical, mechanical and chemical hazards exist.
- Determine if the workers performed any hazard control precautions.
- Determine the type of work being done in the trench.

Complete this Tactical Worksheet as soon as possible. Then report directly to IC and/or Rescue Sector (Team Leader) to give a face to face report.

NOTES / DIAGRAM

Complete this Tactical Worksheet as soon as possible. Then report directly to IC and/or Rescue Sector (Team Leader) to give a face to face report.

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APPENDIX E
SITE CONTROL
Tactical Worksheet

- Establish and secure a perimeter (hot zone) with safety tape a minimum of 50' x 50' around trench.
- Ensure that all Fire Department personnel, co-workers, family members and bystanders do not enter or remain in the trench.
- Request Police to assist with control of perimeter and the rerouting or stopping of traffic, including air traffic (vibrations).
- Ensure site access for Technical Rescue vehicles.
- Ensure that ambulances have direct access to the site.
- Keep / relocate spectators, unnecessary personnel, and apparatus, *a minimum of 300 feet away from the hot zone.*
- Determine wind direction and consider its effect on vehicle exhaust travel.
- Shut down all devices capable of causing vibrations.
- Shut down all devices capable of causing adverse changes in the atmospheric conditions near the trench.
- Ensure fire extinguisher and / or hose line protection when potentially flammable atmospheric conditions exist.
- Ensure elimination of potential ignition sources.
- Perform lock out / tag out procedures to ensure the zero mechanical state of all systems (electrical, pneumatic, hydraulic, gravity, stored, etc.) using on scene workers for technical support.
- If positive lock out control is not possible, a guard shall be posted at the controls to ensure a zero mechanical state.
- Begin moving the spoil pile a minimum of 4 feet from the lip of the trench.
- Ensure adequate exterior lighting.

Complete this Tactical Worksheet as soon as possible. Then report directly to IC and/or Rescue Sector (Team Leader) to give a face to face report.

NOTES / DIAGRAM

Complete this Tactical Worksheet as soon as possible. Then report directly to IC and/or Rescue Sector (Team Leader) to give a face to face report.