



# CHARLOTTESVILLE - ALBEMARLE RESCUE SQUAD



## STANDARD OPERATING GUIDELINE

<b>TOPIC: Trench Collapse Rescues</b>	<b>S.O.P. # 4.2c</b>
Approved by: Lair D. Haugh, Chief	Revised: 2/9/2003 Approved:

### I. PURPOSE

- a. To address operations which involve the location, disentanglement and removal of victims from underground collapses in trenches and excavations.
- b. This procedure is designed to provide guidelines to CARS units when presented with an incident involving the collapse of a trench or excavation where victim(s) are trapped or buried. This includes "protected" trenches where victim(s) are trapped or pinned by heavy equipment, pipe, bedding material or other items other than soil.

### II. DEFINITIONS

- a. As defined by OSHA regulation 29 CFR Part 1926:
  - i. Trench - a narrow excavation in relation to its length made below the surface of the ground. In general, the depth is greater than the width, but the width is not greater than 15 feet.
  - ii. Excavation - a man-made cut, cavity, trench or depression in a earth's surface, formed by earth removal. Usually wider than it is deep.

### III. GENERAL GUIDELINES

- a. Any incident in which a patient is trapped, buried or experiencing a medical emergency in a trench or excavation will require the response of the TRT.
- b. No EMS personnel shall enter an unprotected trench to render patient care or perform disentanglement operations. All trenches shall be "safe and protected" using approved methods prior to entry by any emergency personnel.
- c. All emergency vehicles shall park at least 100 feet from the collapse site. The only exception shall be the trench rescue trailer which may park no closer than 50 feet.
- d. All traffic shall be stopped or detoured within 300 feet of the collapse zone.
- e. A hazard zone shall be established to control at least 75 feet around the perimeter of the collapse zone. This should be done with fire line tape.

### IV. ACTIVATION

- a. Upon notification of a Trench or Excavation Collapse situation, ECC will immediately dispatch the following:
  - i. A trauma level ambulance.
  - ii. Squad 135.
  - iii. The Collapse Rescue Trailer.
  - iv. The Duty Officer.
  - v. The Technical Rescue Team.
  - vi. The Fire Department.
  - vii. The Police Department.

## V. INITIAL OPERATIONS PHASE

- a. Assessment
  - i. First-in units should attempt to gather the following information:
    1. What is the nature of the problem? Collapse, trap, medical, etc.
    2. How many victims are there?
    3. What is their location?
    4. Width, length and depth of the trench.
    5. Are there any on-scene hazards?
    6. Disrupted utilities.
    7. Flowing water.
    8. Secondary collapse.
    9. Mechanical hazards/heavy equipment.
    10. Exposed but non-disrupted utilities.
    11. Hazardous materials/explosives.
    12. Is there a on-going rescue attempt by untrained personnel or bystanders?
  - ii. Once these items are evaluated, the following shall be completed:
    1. Is this a rescue or recovery?
    2. Assure TRT team response and full assignment.
    3. Establish visible command and control access to the area.
    4. Stop any on-going rescue by untrained personnel.
- b. Making the Site Safe.
  - i. General area safety. This entails the protection of the general area around the collapse zone for at least 300 feet in all directions. It includes:
    1. Traffic control.
    2. Access control.
    3. General Hazard identification.
    4. Have all heavy equipment shut down.
- c. Rescue area safety.
  - i. This entails the initial steps needed to make the actual collapse zone around and in the trench as safe as possible using basic techniques.
  - ii. SHEETING AND SHORING OPERATIONS, ENTRY AND DISENTANGLEMENT OPERATIONS SHOULD BE CARRIED OUT UNDER THE DIRECTION OF THE TRT.
  - iii. Ground pad the trench around the collapse site.
  - iv. Ventilate the trench with positive pressure ventilation.
  - v. Support any unbroken utilities.
  - vi. Provide a helmet and goggles for victim if possible (preferably not a fire service helmet).
  - vii. DO NOT ALLOW ANY PERSONNEL INTO A UNPROTECTED TRENCH.
  - viii. DO NOT TOUCH OR LEAN ON ANY HEAVY EQUIPMENT UNTIL YOU HAVE ASSURED IT IS NOT IN CONTACT WITH ELECTRICAL UTILITIES.
  - ix. STOP: AWAIT ARRIVAL OF TECHNICAL RESCUE TEAM PERSONNEL AND EQUIPMENT.

## VI. TECHNICAL RESCUE OPERATIONS PHASE

- a. Operational Responsibility.
  - i. All personnel shall report to and work through the incident command post.
  - ii. Establishment of sector officers associated with the trench or excavation collapse may be necessary. These shall be in accordance with the Incident Command SOP.
- b. In some cases the following sector officers shall be established:

- i. OPERATIONS - responsible for coordination of actual collapse site and the sectors associated with all activity on the rescue ground.
- ii. EXTRICATION - responsible for directing the actual sheeting and shoring, disentanglement and removal operations associated with the trench or excavation. Will report to the Operations Officer.
- iii. SAFETY - responsible for the safety of rescue personnel. Reports directly to Command and has the authority to override anyone, including Command, to shut down any unsafe operation.

## VII. COLLAPSE ZONE OPERATIONS

- a. Different collapse scenarios will obviously require different sheeting and shoring techniques as the situation demands. Each scenario should be approached with the same evaluation mechanism and adaptations made to the operation as required by the configuration of the trench or excavation.
- b. The following are potential forms of collapses that will be encountered. They should be handled in accordance with accepted techniques taught.
  - i. Single Wall Sheer.
  - ii. Double Wall Sheer.
  - iii. Spoil Pile Slide.
  - iv. Intersecting Trench Collapse.
  - v. Collapses in "Protected Trenches".
  - vi. Rabbit Box slide or above level collapse.
  - vii. Industrial shoring collapse.
  - viii. Inadequate protection systems in place.
- c. The following are potential forms of victim entrapment scenarios, which may be encountered. They should be approached using accepted techniques taught.
  - i. Victim(s) buried to waist.
  - ii. Victim(s) buried to chest.
  - iii. Victim(s) not buried but injured or experiencing a medical problem in the trench environment.
  - iv. Victim(s) trapped or pinned by heavy equipment or pipe.
- d. Victim(s) trapped in running sand or material.
- e. Victim(s) completely buried.
- f. Victim(s) buried in the end of a large diameter pipe.

## VIII. OPERATIONAL GUIDELINES

- a. Rescue Area Considerations.
  - i. Assure ventilation continues, atmospheric monitor as necessary.
  - ii. Assure de-watering systems are operational.
  - iii. Assure utilities are controlled and identified.
  - iv. Limit personnel at lip and collapse zone.
  - v. Assure communications with logistics area via walkies on assigned TAC channel.
  - vi. Assure safety officer in control of access and personnel.
  - vii. Assure media staging area away from collapse zone.
- b. General Considerations.
  - i. Brief all personnel on plan of action and confer with appropriate sectors.
  - ii. Provide constant updates to Command.
  - iii. Plan at least two steps ahead of the operation, have a secondary plan ready in the event that the initial tactical plan proves un-workable.
  - iv. Rotate personnel regularly.

- v. Assure personnel involved in disentanglement and digging operations are rotated at least every 30 minutes.
- vi. The minimum number of TRT members will be three (3).
- c. Patient Considerations.
  - i. ABOVE ALL, TREAT PATIENTS FOR CRUSH SYNDROME IN ACCORDANCE WITH PROTOCOLS.
  - ii. Consider and treat for hypothermia.
  - iii. Never dig a patient out with heavy equipment.
  - iv. Once around the patient dig by hand.
  - v. Consider the use of helicopter transport to UVA Medical Center.
  - vi. Assure TRT EMTs coordinate and direct packaging operations at all times.
  - vii. Plan movement mechanism well ahead of time for removal of the patient once disentangled.
- d. Community Resources.
  - i. In the event that Public Utilities is needed, advise of the following:
    - 1. Exactly what is needed:
      - a. Manpower.
      - b. Heavy equipment (what kind).
      - c. Pumps (what type).
      - d. Vac Truck.
  - ii. Assure that all utilities that have been identified have a representative present. DO NOT ATTEMPT TO CONTROL ELECTRICAL UTILITIES.
  - iii. Assure a staging area for all incoming community resources requested.

## IX. SPECIAL SITUATIONS

- a. In certain cases it may be necessary to dig a parallel trench or excavation in order to create a parallel shaft. If this becomes necessary consider the following:
  - i. Any trench cut for a rescue operation should be properly protected by either conventional or industrial means.
  - ii. Assure all utilities are identified prior to cutting into the trench. This can be done by dialing Miss Utility or requesting the utility company on an emergency basis.
  - iii. Assure adequate shaft material for construction of the parallel shaft.
  - iv. If possible request and retain a certified engineer to assist in the planning and implementation.
  - v. This should be used only as a last option.

## X. TERMINATION OF INCIDENT

- a. Rehab all personnel prior to termination and removal operations.
- b. Brief all personnel on the operation and its intended outcome.
- c. Perform removal operations in the REVERSE ORDER.
- d. Beware of secondary collapse zones, no equipment is worth an injury.
- e. Stage, clean and inventory all equipment. Report any lost or damaged equipment.
- f. Any parallel shaft construction, tunnels or isolation tunnels should be left in place. Removing them may cause a collapse.