

SUSSEX COUNTY TECHNICAL RESCUE TEAM STANDARD OPERATING GUIDELINES



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1.0 Dispatching and Responding

- 1.1. When the equipment or the expertise of the SCTRT is needed or requested, the SCTRT shall be dispatched via the Sussex County EOC.
 - 1.1.1. EOC shall tone out the SCTRT via pagers and alpha text.
- 1.2. All responding members should utilize the “Chief 360” mobile application to designate their response.
 - 1.2.1. The closest officer is expected to respond to the scene POV or via their designated home fire department unit when available.
 - 1.2.2. The primary and desired choice is to respond to the closest apparatus if available and should be selected in “Chief 360”.
 - 1.2.3. The secondary choice should be responding to the scene and should be selected in “Chief 360”. Attempts to car pool either POV or via their designated home fire department unit to reduce congestion at the scene.
- 1.3. If responding out of state, all members must attempt to meet with a team vehicle.
- 1.4. A **COLD** response shall be used when there is no immediate life hazard, no likely victims, or for animal rescues.
- 1.5. A **HOT** response shall be used when there is any report of an immediate life hazard or victims.
 - 1.5.1. Any officer may upgrade/downgrade the response as necessary to meet the conditions of the incident.

2.0 Communications

- 2.1. SCTRT has a “company channel” assigned to the team for use by the team for coordination and communication between members.
- 2.2. SCTRT shall use the EOC assigned fire channel for initial assignments.
- 2.3. Once on scene the SCTRT Operations Officer shall request the corresponding OPS channel to be used by SCTRT rescue teams.
- 2.4. In the event of a large-scale incident, another channel may be requested by an incoming SCTRT officer to facilitate coordination of responding units and the request of additional units or special resources.
- 2.5. All responding Sussex County TRT apparatus shall mark up with the apparatus designation (Tech Rescue 1, 2, or 3), officer designation if any on board, and number of personnel on board to include the driver, officer, and team members.
 - 2.5.1. “Tech Rescue 1 with Tech Rescue 50, staffing of 4.”

3.0 Personal Protective Equipment (“PPE”)

- 3.1. It shall be the responsibility of every member to ensure that, at a minimum, the following gear is donned before starting work at any incident:
 - 3.1.1. Approved technical rescue helmet
 - 3.1.2. Appropriate gloves

- 3.1.3. Appropriate eye protection
- 3.1.4. Steel or composite toe and shank boots (NFPA 1951)
- 3.1.5. Approved coveralls, BDUs, or extrication PPE
- 3.2. It shall also be the responsibility of each member to carry enough clothing to perform a change of clothing should the need arise because of contamination or other situation.
- 3.3. It is also encouraged to carry enough clothing to stay comfortable in the prevailing conditions.
- 3.4. The SCTRT will only use safety equipment and hardware approved by ANSI, OSHA, UL, and/or NFPA as applicable.
- 3.5. All equipment issued by the SCTRT shall be used only for technical rescues or approved technical rescue training.
- 3.6. Members shall complete respirator fit testing annually to include SCBA or SABA masks provided by the team. This requirement can be met via the *Chief's Affidavit* if the member's home company uses the same manufacturer mask as the team and has completed a fit test within the last year.

4.0 Accountability

- 4.1. When arriving on scene, all members must report to command and turn in one accountability tag.
- 4.2. The 2nd ID tag must be worn by the member while on scene.

5.0 Incident Command Structure

- 5.1. The first arriving SCTRT officer or, if none responding, highest qualified senior team member, shall be assigned as Operations Officer within the incident command structure if the Officer in Charge of the incident so chooses along with the local company operations officer.
- 5.2. The SCTRT Operations Officer shall then assign safety officer(s) and team leader(s).

6.0 Driving

- 6.1. SCTRT apparatus drivers must be at least 21 years old and currently certified to drive a similar type of vehicle in the member's home fire company. This is verified annually with the *Chief's Affidavit* signed by the member's home department or company.
- 6.2. Any member shall report any moving violation they receive to the Chief. Failure to do so may lead to revocation of driving privileges and possibly removal from the team.
- 6.3. While responding to incidents, training, or other team events, drivers are responsible for their actions either in POV or in team apparatus. Due regard for the public's safety is of utmost importance.
- 6.4. While a team apparatus is in motion, seatbelts must be worn at all times by all persons in the vehicle.

- 6.5. Accident while responding to incidents or during other approved use.
 - 6.5.1. If minor and no injuries are reported:
 - 6.5.1.1. Move the vehicle to a safe location.
 - 6.5.1.2. Do not discuss or admit fault.
 - 6.5.1.3. Advise EOC that the unit has been involved in a property damage accident only and request PD to your location. This can be accomplished via radio or cell phone.
 - 6.5.1.4. Contact the Chief as soon as possible. If the Chief is unavailable, contact an available officer.
 - 6.5.1.5. Provide requested documents to police.
 - 6.5.2. If injuries are reported either in our vehicle or to others.
 - 6.5.2.1. Advise EOC that the unit has been involved in a MVC with injuries and request fire and EMS to your location.
 - 6.5.2.2. Do not discuss or admit fault.
 - 6.5.2.3. If capable of rendering care, provide care to others at the level of your training.
 - 6.5.2.4. Contact the Chief as soon as possible. If the Chief is unavailable, contact an available officer.
 - 6.5.2.5. Provide requested documents to police.

7.0 Disciplines

- 7.1. The following areas of specialized training will be used for considering a member's eligibility for holding an officer position on the team.
 - 7.1.1. Rope/High Angle
 - 7.1.2. Confined Space
 - 7.1.3. Structural Collapse
 - 7.1.4. Trench Rescue
 - 7.1.5. Heavy Equipment Rescue
 - 7.1.6. Swift Water
 - 7.1.7. Large Animal

8.0 Confined Space Rescue

8.1. INTRODUCTION

- 8.1.1. **SCOPE:** Incidents, which require Sussex County TRT personnel to enter, confined spaces to rescue and remove persons in need of assistance present very serious potential dangers. In order to operate safely in these situations, special precautions must be taken and rigidly enforced.
- 8.1.2. **PURPOSE:** A confined space is any area or vessel, which meets all three of the following:

- 8.1.2.1. Is large enough and so configured that an employee can enter and perform work
- 8.1.2.2. Has a limited means of entry or exit
- 8.1.2.3. Is NOT designed for continuous occupancy. Confined spaces include storm drains, tunnels, pipes, tanks, and any other locations where ventilation and access are restricted by the configuration of the space. These factors may also apply to basements or attics. Confined space incidents may involve injured persons, persons asphyxiated or overcome by toxic substances, cave-ins, or fires occurring within the space. Pre-incident planning is an important factor in dealing with these situations.

8.1.3. **PERMIT REQUIRED CONFINED SPACES** are defined as confined spaces which have one or more of the following:

- 8.1.3.1. Contains or has a potential to contain a hazardous atmosphere;
- 8.1.3.2. Contains a material with potential for engulfment (i.e., water, grain, etc.);
- 8.1.3.3. Is so structured than an entrant could become trapped or asphyxiated; or
- 8.1.3.4. Contains any other recognized serious safety or health hazard, such as moving parts, radiation or noise.

8.1.4. **EXAMPLES** of permitted spaces may include, but are not limited to, pipelines and structures, boilers, storage tanks and sewers.

8.1.5. **SAFETY:** Operations within confined spaces shall be approached with extreme caution. Direct supervision is required and all safety precautions and procedures shall be rigidly enforced. Operations shall be conducted in a manner which avoids premature commitment to unknown risks.

8.1.6. **DEFINITIONS**

8.1.6.1. **ATMOSPHERIC HAZARDS**

8.1.6.1.1. Oxygen Content

8.1.6.1.1.1. Oxygen Deficiency - Atmospheres containing less than 19.5 percent oxygen by volume.

8.1.6.1.1.2. Oxygen Enriched - Atmospheres containing more than 23.5 percent oxygen by volume.

8.1.6.1.2. Flammable Atmosphere - Atmospheres which contain a flammable gas, vapor or mist in excess of 10% of its lower flammable or explosive limit.

8.1.6.1.3. Toxic Atmosphere - Atmospheres with contaminants which may cause serious illness or death. These contaminants may be generated by material(s) in the space, or generated by work performed in the space (examples are cutting, welding, spray painting, cleaning, etc.)

8.1.7. ATTENDANT: An employee who is stationed and remains outside the permit required confined space at all times and has received the appropriate training as outlined in this program. The attendant does not enter the permit required confined space to attempt rescue or for any other reason, unless replaced by another attendant and has received the appropriate rescue training.

8.1.8. ENTRANT: An employee who enters permit required confined spaces and has received the appropriate training.

8.1.9. ENTRY: Entry into a permit required confined space is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

8.1.10. ENTRY PERMIT: A written document used for entry into permit required confined spaces. It outlines the conditions under which the permitted space may be entered.

8.2. TACTICAL CONSIDERATIONS

8.2.1. PHASE I SIZE-UP

8.2.1.1. THE PRIMARY ASSESSMENT

8.2.1.1.1. Command should attempt to secure an RP or witness to the accident to determine exactly what happened.

8.2.1.1.2. Locate confined space permit and all other information about the space.

8.2.1.1.3. Identify immediate hazards and make an assessment of the hazards present to the rescuers. D. Determine the number, location and conditions of the victim(s).

8.2.1.1.4. Decide if the operation will be rescue or recovery. F. Seek additional appropriate resources.

8.2.1.2. THE SECONDARY ASSESSMENT

8.2.1.2.1. The Confined Space Considerations

8.2.1.2.1.1. Determine the type of confined space.

- 8.2.1.2.1.2. Determine type of products stored in space.
- 8.2.1.2.1.3. Determine what hazards are present; mechanical, electrical, etc.
- 8.2.1.2.1.4. Obtain/draw a diagram of confined space, including entry and egress locations.
- 8.2.1.2.1.5. Assess the structural stability of the confined space.
- 8.2.1.2.1.6. Complete a hazardous material size-up.
- 8.2.1.2.2. On-Scene Personnel
 - 8.2.1.2.2.1. Determine if there is an adequate number of trained personnel, on scene, to do the rescue/recovery.
 - 8.2.1.2.2.2. Consider the effect of temperature extremes on personnel, and consider early rotation of personnel operating on scene.
- 8.2.1.3. EQUIPMENT: Determine if the proper equipment is on scene to complete the operation. This may include:
 - 8.2.1.3.1. Hazardous Materials Team (Hazard Sector) support in providing atmospheric monitoring;
 - 8.2.1.3.2. Technical Rescue Team support (Extrication Sector) in providing:
 - 8.2.1.3.2.1. Supplied air breathing apparatus or remote air;
 - 8.2.1.3.2.2. Victim removal systems/equipment; and
 - 8.2.1.3.2.3. Ventilation equipment with a CFM of 2500 with necessary duct work.
 - 8.2.1.3.2.4. Explosion proof lighting.
- 8.2.2. **PHASE 2 PRE-ENTRY OPERATIONS**
 - 8.2.2.1. MAKE THE GENERAL AREA SAFE
 - 8.2.2.1.1. Establish a perimeter. The size of the perimeter should be dictated by the atmospheric conditions, wind direction, structural stability, etc.
 - 8.2.2.1.2. Evacuate, if necessary.
 - 8.2.2.1.3. Stop all unnecessary traffic in the area.
 - 8.2.2.1.4. Assure emergency vehicles park downwind from incident if vehicles are running.
 - 8.2.2.2. MAKE RESCUE AREA SAFE

8.2.2.3. **Lobby sector/attendant:** Lobby Sector/Attendant shall be established at the entrance/exit to control access to the confined space.

8.2.2.3.1. Lobby sector responsibilities include:

8.2.2.3.1.1. Maintain safety by controlling the number of personnel entering the confined space;

8.2.2.3.1.2. Maintain safety by preventing crowding at the entrance to the confined space;

8.2.2.3.1.3. Collect passports of all personnel entering confined space;

8.2.2.3.1.4. Note entry times and SCBA cylinder pressures of all personnel entering the confined space;

8.2.2.3.1.5. Maintain a time awareness of the expected exit time for each individual based on air supply at the time of entry and provide a warning at the predetermined time to begin exit procedures;

8.2.2.3.1.6. Provide a communication and warning system by radio or other audible system; and

8.2.2.3.1.7. Provide progress reports to Command.

8.2.2.4. **Hazard Sector:** All confined spaces that Sussex County TRT personnel will enter MUST be tested to determine atmospheric conditions. Responsibilities of the hazard sector include:

8.2.2.4.1. Monitor the oxygen concentration;

8.2.2.4.2. Monitor for flammable or explosive gas or vapor concentrations;

8.2.2.4.3. Monitor for the presence of hydrogen sulfide;

8.2.2.4.4. Monitor for airborne combustible dust (This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet or less);

8.2.2.4.5. Ensure readings are taken prior to anyone entering and continuously while entrants/rescuers are in the space;

8.2.2.4.6. Coordinate readings with ventilation sector; and

8.2.2.4.7. Provide progress reports to Command.

8.2.2.5. **Ventilation Sector**

8.2.2.5.1. When feasible, Command should establish a ventilation sector to begin operations directed at providing fresh air and/or exhausting contaminated air from the confined space. Ventilation Sector responsibilities include:

- 8.2.2.5.2. Determine the most effective method to ventilate space;
- 8.2.2.5.3. Ensure all electrical and mechanical equipment are of an explosion-proof type, when any flammable hazard is suspected;
- 8.2.2.5.4. Consider where flammable vapor concentrations will be moved while pressurizing the confined space;
- 8.2.2.5.5. Coordinate ventilation with Hazard Sector; and
- 8.2.2.5.6.** Provide progress reports to Command.

8.2.2.6. Lockout/Tagout: Lockout/tagout procedures for controlling hazardous energy will be utilized before allowing entry into the confined space. Energy sources may be in the form of water, steam, electrical, mechanical, hydraulic, pneumatic, etc., and must be eliminated prior to entry. Any manufacturing or processing equipment must be shut down prior to entry. If possible, all equipment should be locked/tagged out and brought to a zero energy state.

8.2.2.7. The structural stability of the confined space should be evaluated. If there is a potential for collapse, appropriate measures must be taken to assure the structural stability of the space.

8.2.3. PHASE 3 ENTRY OPERATIONS VICTIM REMOVAL

8.2.3.1. EXTRICATION SECTOR RESPONSIBILITIES

- 8.2.3.1.1. Ensure that properly trained personnel shall be designated to make entry into the confined space. A minimum of two persons should be assigned and all personnel on the entry team should have vital signs taken and recorded prior to entry, if time permits.
- 8.2.3.1.2. Assure that for every person making entry into the confined space, there is at least one rescuer appropriately dressed and ready as a back up. EXAMPLE: Two rescuers; two back- ups.
- 8.2.3.1.3. Ensure all entry and back-up personnel are properly trained in confined space rescue procedures and capable of carrying out the rescue/recovery.
- 8.2.3.1.4. Consider the size of the opening and assign the correct size of entry and back-up personnel to make the entry, as well as conduct/coordinate the actual entry into the confined space.

- 8.2.3.1.5. Coordinate with Hazard and Ventilation Sector.
- 8.2.3.1.6. Assure permit is completed prior to entry.
- 8.2.3.1.7. Provide progress reports to command.
- 8.2.3.2. SELECTION OF PERSONAL PROTECTIVE EQUIPMENT
 - 8.2.3.2.1. The proper level of personal protective equipment should be worn by all entry and back-up personnel. This includes helmet, gloves, turnouts or jumpsuits, and a harness system.
 - 8.2.3.2.2. All entry and back-up personnel shall wear an SCBA or SABA when making entry into the confined space. Personnel must ensure that they have more than ample air to return out of the confined space.
- 8.2.3.3. ORIENTATION OF CONFINED SPACE
 - 8.2.3.3.1. Prior to entry into the confined space, the Extrication Sector, with the help of the RP, should obtain a blue print or diagram of the space. All entry and back-up personnel should be made aware of the layout of the space to be entered.
 - 8.2.3.3.2. The attendant, all entry and back-up personnel, Command and Safety shall be made aware of the action plan and the back-up plan prior to entry.
 - 8.2.3.3.3. Rescuer tag lines may or may not be appropriate in the confined space, depending on the specific layout. It could be an entanglement hazard.
- 8.2.3.4. VICTIM REMOVAL EQUIPMENT
 - 8.2.3.4.1. If possible, the entry team should bring a supply of breathable air for the victim.
 - 8.2.3.4.2. Pure oxygen shall not be used in a confined space that has a potentially flammable atmosphere.
 - 8.2.3.4.3. Entry team should consider the necessary victim retrieval equipment prior to entry. This includes respiratory protection for the victim.
- 8.2.3.5. ASSESSING CONDITION OF VICTIM
 - 8.2.3.5.1. Upon reaching the victim, entry personnel must have decided if the atmosphere is Immediately Dangerous to the Life and Health (I.D.L.H.) of the victim. If this is the case, immediate victim removal is indicated. If the atmosphere is safe they should do an immediate primary survey of the

victim. If appropriate, treatment should be started immediately.

8.2.3.5.2. A quick but thorough secondary assessment of the victim should be done. If time permits, entry personnel should attempt to treat serious injuries prior to removal.

8.2.3.5.3. If indicated, complete C-spine precautions should be administered.

8.2.3.5.4. If the victim is conscious, he/she should be encouraged to wear the appropriate breathing apparatus.

8.2.3.6. PATIENT PACKAGING

8.2.3.6.1. After treatment of immediate life threatening injuries, the victim(s) should be packaged up for removal from the space. This may include using a backboard, stokes basket, KEDS board, or some other similar device designed for extrication.

8.2.3.6.2. Prior to removal from the space, the entry team should secure any loose webbing, buckles, straps, or any other device that may hinder the extrication process.

8.2.3.7. VICTIM REMOVAL SYSTEM

8.2.3.7.1. Prior to removal of victim, the entry team should have determined the appropriate method of extrication. This may include a vertical or horizontal haul system constructed of ropes, pulleys, and other hardware, with a minimum of a 2:1 mechanical advantage.

8.2.3.7.2. As a general rule, entry personnel should never allow the victim between the rescuer and the point of egress.

8.2.3.7.3. At times, the situation may preclude the use of that procedure due to the fact that one rescuer may have to pull the victim while the other rescuer pushes the victim.

8.2.3.7.4. NOTE: If the victim is a DOA, Extrication Sector may want to leave the body and related equipment in place for investigative purpose.

8.2.3.8. TRANSFER TO TREATMENT SECTOR

8.2.3.8.1. If the victim is contaminated from product inside the space, a Decontamination Sector and corridor shall be set up and used prior to treatment of victim.

8.2.3.8.2. Immediately after decontamination, or reaching the point of egress, entry personnel shall transfer the victim to treatment personnel.

8.2.3.8.3. ALS level treatment will be conducted on the victim.

8.2.4. PHASE IV DECOMMITMENT

8.2.4.1. PREPARATION FOR DECOMMITMENT

8.2.4.1.1. Personnel accountability.

8.2.4.1.2. Remove tools and equipment used for rescue/recovery. If there has been a fatality, Extrication Sector may consider leaving tools and equipment in place for investigative purposes.

8.2.4.1.3. If entry personnel and/or equipment have been contaminated during the rescue/recovery, proper decontamination procedures shall be followed prior to putting the equipment back in service.

8.2.4.1.4. Secure the scene. Prior to turning the property back over to the RP, one final reading of atmospheres is recommended and should be recorded. Command may consider activating the CISD if the situation dictates it.

8.2.4.1.5. Consider debriefing.

8.2.4.1.6. Return to service.

8.2.5. ADDITIONAL CONSIDERATIONS

8.2.5.1. ESTABLISH COMMAND EARLY

8.2.5.1.1. Sectorize critical functions. Common sectors for this type of rescue include:

8.2.5.1.1.1. Safety Sector

8.2.5.1.1.2. Lobby Sector

8.2.5.1.1.3. Ventilation Sector

8.2.5.1.1.4. Extrication Sector

8.2.5.1.1.5. Hazard Sector when H.M.T. units arrive

8.2.5.1.1.6. Treatment Sector Staging Sector Resource Sector

8.2.5.1.2. The Sussex County TRT safety officer will be assigned to all confined space incidents to consult with Command on the safety measures and precautions to be taken in each case. Command will assign safety sector responsibilities to a company officer, chief officer, or a staff

officer during the initial stages of the incident until the safety officer arrives on the scene.

8.2.5.1.3. The safety sector officer shall evaluate the risks and enforce all safety requirements associated with the particular situation. If the safety sector officer judges that an operation is unsafe, the operation shall be suspended and Command notified immediately.

8.2.5.2. Rapid Intervention Team (RIT).

8.2.5.2.1. A Resource sector may be required to provide equipment and supplies, and a reserve pool of personnel.

8.2.5.2.2. A staging sector may be established to stage equipment, and apparatus, particularly ambulances.

8.2.5.3. CONSIDER AMBIENT CONDITIONS

8.2.5.3.1. Heat: Consider rotation of crews.

8.2.5.3.2. Cold: Consider effects of hypothermia on victim and rescuers.

8.2.5.3.3. Rain: Consider the effects of rain on the hazard profile.

8.2.5.3.4. Time of Day: Consider lighting for operations extending into the night.

8.2.5.4. External Considerations

8.2.5.4.1. Consider the effect on family and friends; keep family informed.

8.2.5.4.2. Consider the news media; assign a P.I.O.

8.2.5.4.3. Command should call for an OSHA representative if there has been a serious injury or death.

9.0 Structural Collapse Operations

9.1. INTRODUCTION

9.1.1. SCOPE: This procedure applies to all Sussex County Technical Rescue Team members responsible for emergency response.

9.1.2. PURPOSE: The purpose of this procedure is to establish guidelines for conducting building/structural collapse operations.

9.2. TACTICAL CONSIDERATIONS

9.2.1. Phase I: Arrive On Scene. Take Operations. Size-Up

9.2.1.1. ARRIVE ON SCENE

9.2.1.1.1. First arriving company officer should take Operations and begin an immediate size-up of the situation. Immediately establish accountability system.

9.2.1.1.2. Spotting Apparatus. The first-in company should spot the apparatus in a position that will not be affected by a secondary collapse of the structure. Consideration should also be given to traffic conditions and if they will be affected.

9.2.1.1.3. Staging. Command should immediately institute Level 1 and Level 2 staging procedures. The management of emergency and civilian traffic is critical from the onset of structural collapse operations.

9.2.1.1.4. Assess the need for additional resources. Command should immediately begin to assess the need for additional resources. If additional resources are necessary, Command should put in an early call for them. At that time, Command should identify a Level 2 staging area. If it is later determined that the additional resources are not needed, Command can return those units to service. Command should assess the need for outside heavy equipment early, and request mobile cranes, front-end loaders, etc., with large capacity. (Example: 110-ton crane).

9.2.1.1.5. Assess the Hazards. Command should do an immediate hazard assessment or should delegate that responsibility to a Safety Sector officer. Some hazards associated with structural collapse are: potential for secondary collapse, explosion with fire due to broken gas and electrical lines, falling debris, toxic atmosphere, etc.

9.2.1.1.6. Secure the Hazards. Safety Sector should secure all hazards as soon as possible. This will include shutting off the utilities (i.e., gas, electrical, water). If it is not possible to secure all hazards, Command should notify all rescue personnel operating on scene of the hazards present.

9.2.1.1.7. During Phase I of structural collapse operations, Command must consider the fact that if strong control of the

incident is not gained quickly, it could easily escalate into an out-of-control situation. A typical structural collapse operation will have a lot of unorganized, well-intentioned efforts by civilian personnel. This situation may make the entire operation unsafe. Command must focus attention early on building a good strong Command structure that will support a campaign operation.

9.2.2. Phase II Pre-Rescue Operations

- 9.2.2.1. REMOVAL OF SURFACE VICTIMS:** Initial on scene companies should be directed in rescuing victims that can be seen on the surface. Rescuers must be aware of all the physical hazards present at the scene of a structural collapse.
- 9.2.2.2. ESTABLISH A PERIMETER:** While initial rescue of surface victims is going on, Command should establish a perimeter around the whole collapse site and keep all incoming civilian personnel out of the immediate area.
- 9.2.2.3. ESTABLISH TRANSPORTATION CORRIDOR:** During initial stages of a campaign operation, Command should attempt to ensure that there will be roadways into and out of the collapse site. This may include establishing liaison with the Police Department and having P.D. re-route all traffic well around the collapse site.
- 9.2.2.4. ESTABLISH VICTIM STAGING AREA:** Command should designate Treatment and Transportation Sectors. An area should be established away from the hazards of the collapse to account for, treat, and transport victims.
- 9.2.2.5. REMOVE ALL CIVILIAN & NON-ESSENTIAL RESCUE PERSONNEL:** After initial surface victim removal has been completed, Command should ensure that all personnel are removed from the collapse site. This will allow for the removal of all civilians and the re-grouping of rescue personnel so that a specific action plan can be instituted for the search and rescue of the remaining trapped victims. At this time, Command should order a PAR from sector officers. Members previously operating in the collapsed structure should be quickly debriefed as to building layout and possible location of victims.
- 9.2.2.6. ESTABLISH BUILDING TRIAGE TEAM:** After all personnel have been removed from the collapse site, Command should establish building triage teams. This may include structural engineers and/or technical rescue team personnel that are specifically trained in the recognition of structural collapse. Prior to these teams engaging in triage activity, Command shall notify them as to the specific action plan and building marking system. If there is a possibility of hazardous

materials involvement, Command should assign a Haz Mat Technician to each building triage team.

9.2.3. **Phase III Rescue Operations**

9.2.3.1. ESTABLISH ACTION PLAN FOR SEARCH TEAMS: After all personnel have been removed from the collapse site and all personnel accounted for, Command shall establish a specific action plan for the search and rescue of the remaining victims. This action plan shall be distributed to all rescue personnel that will be operating at the collapse site.

9.2.3.2. ESTABLISH ACTION PLAN FOR SEARCH & RESCUE: Prior to beginning search and rescue operations, Command shall design specific search teams. This may include personnel with technical search equipment (i.e., acoustic, fiber optic, etc.), dog teams, or firefighter using the hailing (call-out) method of searching for victims. After the building triage teams have completed evaluations of buildings, the search teams will conduct searches of those buildings. Search teams should use standard building marking system after building has been searched. If building triage has determine that the building is structurally unstable, search and rescue teams shall not enter until appropriate shoring and stabilization has been accomplished. After the removal of all personnel from the collapse site and before resuming building triage and search, a lobby control shall be established and no personnel will return to the collapse site without going through lobby control.

9.2.3.3. ESTABLISH RESCUE TEAMS: Rescue teams will follow search teams that have searched previously triaged buildings. Each rescue team shall consist of at least two (2) trained members of the Technical Rescue Team. If there is a possibility of hazardous materials involvement, each rescue team shall have at least one (1) Haz-Mat Technician with air monitoring equipment. Rescue teams are not to attempt rescue in a building that has been determined to be unsafe by the building triage teams. Command should assign each rescue team a specific radio designation.

9.2.3.4. LOCATING VICTIMS: After the search teams have searched a building and received a "positive" find (i.e., acoustic or fiber optic positive reading), the building should be verified again by another means if possible (i.e., search dogs or hailing system). If the building is known to have live victims trapped, rescue teams shall attempt to locate the victims. If the rescue team must support structural components of the building prior to entry, they shall do so and make the area as safe as possible.

9.2.3.5. BREACHING WALLS, FLOORS, AND ROOFS: If at all possible, rescue teams should attempt to gain access vertically. The

horizontal breaching of walls should be done only if there is no other means to reach the void space that victims may be trapped in. Horizontal breaching of load bearing walls may precipitate a secondary collapse of the structure. The potential for secondary collapse is less if rescue teams breach structural members from above or below. Prior to breaching a structural load bearing member, a specially trained structural collapse specialist (structural engineer, architect, technical rescue specialist) should approve and oversee the breaching operation. If the atmospheric conditions are not known in the room of desired entry, a "pilot" hole shall be punched to monitor the atmosphere prior to breaching operations.

9.2.3.6. **CONFINED SPACE ENTRY & RESCUE:** After the victim has been located, the rescue team should treat that space the victim is located in as a confined space. Rescue team members should proceed with the rescue, following confined space rescue operation guidelines. The rescue team leader shall designate the proper method of entry into the space and shall ensure the safety of the entry rescuers. All spaces shall be monitored for flammable, toxic, and oxygen deficient atmospheres before entry is made. All members making entry shall be on SCBA with appropriate tender to rescuer ratio of 1:1

9.2.3.7. **RESCUE AND EXTRICATION OF VICTIMS:** Once the rescue team has located the victim(s) an immediate assessment of the victim shall be done. Rescue teams should consider the effect lifting objects off the victim will have on that victim (i.e., crush syndrome). The rescuer shall determine the safest and most effective method of victim extrication. The rescue team leader shall ensure the safety of the extrication of the victim.

9.2.3.8. **TRANSFER TO TREATMENT SECTOR:** Once the victim has been removed to a safe location, he/she shall be transferred to the Treatment Sector for ALS assessment.

9.2.3.9. **REMOVAL OF RESCUE TEAMS FROM THE BUILDING:** After all located victims have been removed from the building; the rescue teams should "pull out" of the building and update the marking system. Rescue teams should keep in mind that any cribbing and shoring in place should be left in place. The removal of those systems could precipitate a secondary collapse.

9.2.4. **Phase IV Selected Debris Removal**

9.2.4.1. **LOCATING VICTIMS**

9.2.4.1.1. If rescue teams have not been able to locate victims through other methods, then they should be located by removing debris. If there is a potential for live victims, rescue teams must be very careful when removing debris so as

not to cause a secondary collapse or further injury to the victim(s).

9.2.4.1.2. If a victim location is known, either by family members or previously rescued victims, an attempt should be made to remove debris to reach that victim. In light-weight frame construction buildings, this could be accomplished by cutting and hand removing structural members. If the building is of reinforced concrete, it may require breaking large pieces into smaller and more manageable size pieces. This may also require the use of a crane to pick and move the structural components to reach potential victims.

9.2.4.1.3. Rescue team members should assist in the break-up and removal of structural components. A safety officer shall oversee all of these operations to ensure site safety for all operating personnel. If structural components are removed from the site, they should be marked in some way so as to I.D. them with the particular building for future investigative purposes.

9.2.4.1.4. As debris is removed, all operations should be stopped periodically to search (acoustic, dog team, hailing) for victims. Once enough debris has been removed to reasonably ascertain that there are not any victims; then search and rescue operations can be suspended in that building.

9.2.5. **Phase V General Debris Removal/Termination**

9.2.5.1. Prior to beginning Phase V, Command shall call for a PAR.

9.2.5.2. After it has been determined that no victims could be found alive in the building, a general debris removal can begin. If there is a potential for deceased victims to be trapped in the rubble, removal crews should be alert for signs of those deceased victims.

9.2.5.3. During general debris removal, if heavy equipment operators spot a sign of a deceased victim(s), a selected debris removal shall be conducted to remove the victim(s) respectfully. Coroner and/or other investigative personnel should be notified to handle the removal of the body(ies).

9.2.5.4. As debris is removed, each dump truck load shall be marked as to the general area found and final location of the debris. This will help investigators to complete their investigations and reports.

9.2.5.5. Command may elect to turn general debris removal over to the Responsible Party for final disposition of the building. If this is done, the R.P. should be notified of the proper handling of debris for investigative purposes.

9.2.5.6. Prior to termination of the incident, Command shall account for all personnel that have been operating at the collapse site. Each company officer should ensure crew and equipment accountability before returning to service. If Command has not previously addressed the issue of C.I.S.D., he/she may consider doing so during the termination phase.

9.2.6. Additional Considerations

9.2.6.1. Heat. Consider rotation of crews.

9.2.6.2. Cold. Consider the effect of hypothermia on victims and rescuers.

9.2.6.3. Ambient Conditions. Consider the effects of rain or snow on the hazard profile.

9.2.6.4. Time of Day. Consider having proper lighting on scene for night time operations.

9.2.6.5. Consider the effect on family and friends; keep family informed.

9.2.6.6. Consider news media; assign a P.I.O.

10.0 Trench Rescue Operations

10.1. INTRODUCTION

10.1.1. SCOPE: This procedure applies to all Sussex County Technical Rescue Team members responsible for emergency response.

10.1.2. PURPOSE

10.1.2.1. Trench Rescue Operations present a significant danger to rescue personnel and may involve complex requirements for shoring, hand tools, earth-moving equipment and other specialized resources. The safe and effective management of these operations requires special considerations. Therefore, it shall be the policy of the Sussex County Technical Rescue Team to prohibit the entry of any unauthorized personnel into an unsafe trench or excavation. This procedure identifies some of the critical issues which must be included in managing these incidents.

10.1.2.2. For the purpose of emergency response, a trench shall be defined by any depression, hole, trench or earth wall, man-made or natural, of four feet or greater in depth, and deeper than it is wide. An excavation is wider than it is deep.

10.1.2.3. 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 temporary stability, at any point in an operation, may be disturbed by removing soil or debris, by adding weight near the edge of an open cut, by vibration (such as vehicle movement), rain, or simply by the passage of time.

10.2. TACTICAL CONSIDERATIONS

10.2.1. Phase I Arrive on Scene. Take Command. Scene Size-Up.

10.2.1.1. ARRIVAL ON SCENE

10.2.1.1.1. First arriving company officer should take Command and begin an immediate size-up of the situation.

10.2.1.1.2. Spotting Apparatus. The first-in company should spot the apparatus at least 50 feet from the location of the trench failure. Command should dictate Level 1 staging at least 150 feet from the scene.

10.2.1.2. THE PRIMARY ASSESSMENT

10.2.1.2.1. Command should determine exactly what has happened.

10.2.1.2.2. Assess the potential hazards to the rescuers.

10.2.1.2.3. Secure an RP (responsible party), job foreman, or witness to the accident.

10.2.1.2.4. Identify any language barriers that may be present between witness(es) and rescuers. If there are barriers, Command should call for bilingual individual to assist with communication with the witness(es).

10.2.1.2.5. An immediate assessment of the victim's injuries should be determined.

10.2.1.2.5.1. Determine how many victims are affected by the accident.

10.2.1.2.5.2. If not witness is present, Command may have to look for clues on the scene to determine what happened.

10.2.1.2.5.3. If there are victims, Command should determine how long the victim has been buried.

10.2.1.2.5.4. An early decision must be made as to whether this operation will be run in the rescue or recovery mode.

10.2.1.3. **THE SECONDARY ASSESSMENT**

10.2.1.3.1. Assess on-scene capabilities.

10.2.1.3.2. Assess the need for additional resources.

10.2.1.3.3. Assign a safety officer (**Safety Sector**)

10.2.1.3.4. Provide for accountability and staging for all personnel on scene.

10.2.1.3.5. Assign personnel: Trench Sector, Extrication Sector, Treatment Sector

10.2.2. Phase II Pre-Entry Operations

10.2.2.1. **MAKE THE GENERAL AREA SAFE**

10.2.2.1.1. Create a hot, warm, and cold zone

10.2.2.1.2. Hot zone extends 0-50 feet

10.2.2.1.3. Warm zone extends from 50-150 feet

10.2.2.1.4. Cold zone extends from 150-300 feet

10.2.2.2. Control traffic movement

10.2.2.2.1. Shut down roadway

10.2.2.2.2. Re-route all non-essential traffic at least 300 feet around the scene

10.2.2.3. Control the crowd

10.2.2.3.1. Remove all non-essential civilian personnel to at least 150 feet from the incident

10.2.2.3.2. Remove all non-essential rescue personnel at least 50 feet from the incident

10.2.2.4. Shut down and secure all heavy equipment operating within 300 feet of the collapse

10.2.2.5. **MAKE THE RESCUE AREA SAFE**

- 10.2.2.5.1. Control all hazards in the area, i.e., utilities, electric, gas, water.
- 10.2.2.5.2. De-water the trench if necessary.
- 10.2.2.5.3. Monitor the atmosphere in the trench.
- 10.2.2.5.4. Ventilate the trench if necessary.
- 10.2.2.5.5.** Identify soil type and condition.

10.2.3. Phase III Entry Operations

10.2.3.1. MAKE THE TRENCH LIP SAFE

- 10.2.3.1.1. Approach the trench from the ends if possible.
- 10.2.3.1.2. Look for unidentified hazards (i.e., fissures, unstable spoil pile).
- 10.2.3.1.3. Assess spoil pile for improper angle of repose and general ravelling.
- 10.2.3.1.4. Remove any tripping hazards (i.e., shovels, shores, tree roots).
- 10.2.3.1.5. Provide level area for ground pads. Check ground for stress cracks..
- 10.2.3.1.6.** Place ground pads around lip of trench.

10.2.3.2. MAKE TRENCH SAFE

- 10.2.3.2.1. **Extrication Sector** will be responsible for entry operations. **Extrication Sector** shall ensure that all personnel operating in the hot zone are wearing steel-toed boots, helmet, eye protection, and gloves.
 - 10.2.3.2.1.1. Place ingress and egress ladders in trench. There should be at least 2 ladders placed in the trench no more than 50 feet apart.
 - 10.2.3.2.1.2. Decide on shoring system to be used (i.e., hydraulic shore, pneumatic shore, timber shore).
 - 10.2.3.2.1.3. Create a safe zone in the uncollapsed portion of the trench (possibly from both ends). This shall be accomplished using an approved shoring system, i.e., pneumatic, hydraulic, timber, walers, and trench panels. Use this area to extend the safe zone to the collapsed area of the trench where the rescue(s) will be initiated.
 - 10.2.3.2.1.4. Remove the dirt from the collapsed zone. Rescuer(s) shall remain in the safe zone while performing his or her duties.
 - 10.2.3.2.1.5.** Secure all unsecured utilities, pipe, or any other obstruction in the trench.

10.2.3.3. VICTIM REMOVAL/ACCIDENTS WITHOUT CAVE-IN

- 10.2.3.3.1. Create a safe zone around the victim.

- 10.2.3.3.2. Remove objects trapping the victim (i.e., pipes, lumber, machinery).
- 10.2.3.3.3. Assess victim's condition.
- 10.2.3.3.4. Proper patient packaging.
- 10.2.3.3.5.** Remove victim from the trench (vertical haul, horizontal haul).
- 10.2.3.4. VICTIM REMOVAL/ACCIDENTS WITH CAVE-IN**
 - 10.2.3.4.1. Create a safe zone.
 - 10.2.3.4.2. Begin dirt removal, operating from. a safe zone (buckets, small shovels, by hand).
 - 10.2.3.4.3. Continue extending safe zone into collapse zone.
 - 10.2.3.4.4. Continue dirt removal.
 - 10.2.3.4.5. Uncover victim to below the diaphragm.
 - 10.2.3.4.6. Begin patient assessment if possible (ABC's).
 - 10.2.3.4.7. Begin ventilation if possible.
 - 10.2.3.4.8. Completely uncover the victim.
 - 10.2.3.4.9. Proper patient packaging.
 - 10.2.3.4.10.** Remove the victim from the trench (vertical haul, horizontal haul).
- 10.2.3.5. TREATMENT**
 - 10.2.3.5.1. ABC's primary survey.
 - 10.2.3.5.2. C-Spine precautions.
 - 10.2.3.5.3. Secondary survey.
 - 10.2.3.5.4. Consider removing the victim from danger prior to providing definitive care.
 - 10.2.3.5.5.** Follow local protocol.
- 10.2.4. Phase IV Termination**
 - 10.2.4.1. PREPARE FOR TERMINATION**
 - 10.2.4.1.1. Personnel accountability.
 - 10.2.4.1.2. Remove tools and equipment from trench. If there has been a fatality, **Extrication Sector** may consider leaving tools and equipment in place for investigative purposes.
 - 10.2.4.1.3. Remove trench shoring system (last-in/first-out).
 - 10.2.4.1.4. Re-stock vehicles.
 - 10.2.4.1.5. Consider debriefing.
 - 10.2.4.1.6. Secure the scene. This may include leaving the shoring system in place or covering the trench.
 - 10.2.4.1.7. Return to service.
 - 10.2.4.1.8.** Complete appropriate reports.
- 10.2.5. Additional Considerations**
 - 10.2.5.1. SECTORS ESTABLISHED**
 - 10.2.5.1.1. Safety Sector
 - 10.2.5.1.2. Trench Sector

- 10.2.5.1.3. Extrication Sector
- 10.2.5.1.4. Treatment Sector
- 10.2.5.1.5. Staging Sector
- 10.2.5.1.6. Resource Sector**

10.2.5.2. AMBIENT CONDITIONS

- 10.2.5.2.1. Heat. Consider rotation of crews.
- 10.2.5.2.2. Cold. Consider effects of hypothermia on victim and rescuers.
- 10.2.5.2.3. Rain/Snow. Consider the effects of rain or snow on the hazard profile.
- 10.2.5.2.4. Time of day. Is there sufficient lighting for operations extending into the night.

10.2.5.3. EXTERNAL CONSIDERATIONS

- 10.2.5.3.1. Consider the effect on family and friends; keep family informed.
- 10.2.5.3.2. Consider news media; assign a P.I.O.
- 10.2.5.3.3. Call for OSHA. Command should consider calling on OSHA representative to the scene if there has been a serious injury or death.