Technical Rescue Awareness

How First Responding Personnel Can Survive the Technical Rescue
Why Technical Rescue Awareness?

- Program is designed to inform rescue personnel what a technical rescue situation is and the dangers involved.
- Also teaches you what to do until a technical rescue team arrives and what role the untrained EMS provider plays until victim is rescued.
What is a Rescue?

Rescue is defined as the act of delivering from danger or imprisonment.
Rescue Operations

- Phase One - arrival and size-up
- Phase Two - hazard control
- Phase Three - patient access
- Phase Four - medical treatment
- Phase Five - disentanglement
What is Technical Rescue?

Any operation involving extremely high risk for the rescuer with little probability for victim survivability.

Because of the high risk involved, special training, tools and techniques have been developed to accomplish the rescue while minimizing risk.
Types of Technical Rescue

- trench collapse
- confined space emergencies
- high-angle (rope) rescues
- building collapse rescues
- swift water rescues
TRA - History

- CARS TRT starts up 1993 w/ assessment of capabilities
- Technical Rescue Awareness taught to all local fire/rescue units
- Medical Aspects of Technical Rescue developed and taught
Trench Collapse Rescue

Definition:

Any situation where a victim is trapped, buried or experiencing a medical emergency in a trench or excavation whether the trench is protected or not.
Trench Collapse Rescue

Facts:

- sheer wall collapse speed = 45 mph
- 1 cu/ft soil = 100 lbs.
- 24” soil on chest = 1,000 lbs.
- victim dies from inability to breath from weight on chest, not because face is covered
Confined Space Rescue

Definition:

Rescue of a victim experiencing a medical emergency or is trapped in a confined space.
Confined Space

Definition:
Any space not intended for continual occupancy and has limited means of entry and exit.

60% of the people who die in confined spaces are rescuers!
Look for Warning Signs

DANGER
CONFINED SPACE
ENTER TANK BY PERMIT ONLY
High Angle Rescue

Definition:

Any situation where the victim is elevated above or below ground and must be moved and/or rescued by the use of rope and/or mechanical advantage systems and rigging.
Definition:

Any incident involving structural collapse or damage where the possibility exists of victims being trapped or buried. This includes vehicles into buildings.
Swift Water Rescue

- 2nd most powerful force on earth
- kills more people than any other natural phenomenon
- causes more rescues than anything else natural
- average 7 rescuer fatalities a year since ‘83
Swift Water Rescue

- Simply water moving downhill. Yet, when water begins to move, it makes its own rules.
- The learning curve in swift water is steep and abrupt, and often there is no chance to retake the test.
Low Dams are “Drowning Machines”
“What Can I Do?”

- recognize the technical rescue
- perform a situation assessment
- call for resources
- set-up an ICS
- establish incident perimeter
- stop on-going rescue attempts
Situation Assessment

- what has happened?
- assess the injury problem
- find and retain the foreman
- recognize & control hazards
- conduct a survival profile
- clues to locating victims
Incident that started the program
June 3rd, 1992
Control Hazards

Trench Collapse Rescue

- stop all vehicular traffic within 300’
- shut down all heavy equipment
- ventilate the trench using PPV
- shut down involved utilities
- DO NOT ENTER THE TRENCH!
Control Hazards

Confined Space Rescue

- ventilate the space using PPV
- open any additional openings
- shut down all equipment
- shut down all involved utilities
- **DO NOT ENTER THE SPACE!**
Control Hazards

Building Collapse Rescue

- shut down all utilities
- rescue victims that can walk out
- attempt to locate survivors
- identify hazards
- **DO NOT ENTER UNTIL SAFE!**
Control Hazards

Swift Water Rescue

- observe the 10’ rule - PFD
- locate victims, where are they going?
- reach, throw, row - Do Not Go!
- proper training and gear is the key
- **DO NOT TIE A ROPE TO YOURSELF AND ENTER THE WATER!**
Personal Flotation Device
Resource Assessment

- trained manpower
- specific rescue equipment
- location of each and response time
- community resources that you can obtain until rescue team arrives
Nearest Tech Rescue Teams

- CARS Technical Rescue Team (TRT)
- Harrisonburg Fire Department
- Greater Richmond Tech Rescue Team
- Fairfax County Fire & Rescue (FEMA)
- Virginia Beach Fire Department (FEMA)
CARS TRT

- has 22 members
- each person has over 1,000 hrs of specialized training
- team has over $350,000 of specialized rescue equipment
- state-wide response capability
- very few calls (rust-out)
CARS Apparatus

Support 143 and Collapse Trailer

Squad 133
Arrival of the TRT

- team members will be coming one at a time, number of personnel responding will be unknown
- good planning and incident command will result in smooth integration
- **ALL** personnel on the scene will be needed for support
How to Request the TRT

- contact ECC or Fire Alarm and request the TRT
- locally: call 911 and state the exact problem
- long distance: call (800) 332-0911
- do not call CARS directly
Incident Command

- set up a visible command post
- staging will be very important
- Safety Officer is a must
- document everything you do and when you do it
Safety Officer

- probably most important position
- can override any decision if safety is a concern
- must maintain constant vigilance and be very mobile
“What Can I Do?”

During The On-Going Rescue

- establish a rehab sector
- provide hydration & nourishment
- provide rest
- perform medical evaluation
Establish a Rehab Sector

- set up in a safe area away from the action
- should provide suitable protection from the environment
- should be easily accessible by EMS units
- should allow for prompt reentry back into the emergency operation
Provide Hydration & Food

- 50/50 water and activity beverage
- caffeine & carbonated beverages will stop operation
- provide food if operation is longer than 3 hours
- soup is digested faster than sandwiches
- fruits provide energy replacement
- NO PIZZA or BURGERS!
Provide Rest

- For every 45 minutes of work time, the rescuer should be sent to the Rehab Area for rest. Rest shall not be less than ten minutes and may exceed an hour as determined by the Rehab Officer.

- Fresh crews shall be available in Staging to ensure that fatigued members are adequately rested.
Medical Evaluation

- Evaluate vital signs, examine rescuers, make proper disposition if they can return to the rescue, continue rehab, or Rx and Tx to medical facility.

- If HR exceeds 110, take oral temp. If temp exceeds 100.6 F, no protective equipment is to be worn. If < 100.6 F and HR > 110, continue rehab time.
Medical Treatment

“Just what kind of medical problems can I expect?”

- hypothermia / hyperthermia
- toxic gas inhalation
- inhalation injuries & complications
- crush syndrome / crush injury
- electrical injury
- compartment syndrome
Medical Considerations

- perform a risk / benefit analysis
- compassion kills, it starts in the back of the ambulance
- priority is rapid removal, little regard for Rx while in danger
- immobilization may not be practical
Case Study #1

April 6th, 1995

child is unconscious inside a confined space
Case Study #2

June 13th, 1989

two victims trapped inside a trench collapse on Riverdale Drive
June 7th, 1995

victim is struck by construction equipment and is incapacitated inside an excavation
November 8th, 2002

200 lb. cow falls into a 55’ well, attempted rescue by untrained bystanders
Case Study #4

- The plan was to send a member down the well (with a line and safety), have him secure two large belts around the cow, attach a hook to the wrecker, pull the member up and out, and finally lift the cow up.
- IC - “Well, I guess you'll have to go down there since you are the only one certified in confined space.”
Case Study #4

• IC - "The cow is still breathing and alive....it should be fine." At no time was the quality of the air tested.

• They sent a firefighter down the well....about 10' from reaching the cow he had to be yanked back up because he couldn't breathe. "The methane was too strong."
What Can I Do?

The Key:

Be Proactive!

Avoid The Problem
Being Proactive

- if you see a potential problem in the city, contact the on-duty fire battalion chief
- if you see a problem in the county, contact the CARS duty officer
- do not approach the work crew!
Regional News

Rescue Squad Urges Trench Safety

By Jeff Seager of The Progress Staff

Concern about hazardous construction methods led rescue workers to question safety practices at a local development Tuesday, but a state inspector Wednesday confirmed that the work meets federal safety guidelines.

A photograph of workers laying pipe in an unbraced trench on the front page of Tuesday's Daily Progress drew the attention of local rescue workers to possible violations of Occupational Safety and Health Administration regulations.

"We saw it (the photo) as illustrating some very serious risks," said Larry Adams, president and chairman of the board of directors of the Charlottesville-Albemarle Rescue Squad.

"The picture shows several potential problems," squad officials pointed out in a letter to the newspaper. "There is an unshored, unbraced and unsloped trench apparently more than five feet in depth in which the workers are standing."

OSHA requires sloped sides on excavations deeper than five feet in normal soils, but allows steeper trenching in "solid rock, shale or cemented sand and gravels," according to published OSHA construction standards in effect since 1972.

"Heavy machinery appears to be operating in the immediate vicinity of the trench. the vibrations from dirt piled nearby "could place additional stress on the unsecured trench walls," the squad cautioned, also pointing out the apparent lack of adequate escape routes.

Joseph Haddad, a partner in Excavations, Inc., said a remotely controlled robot has been used at the Dunlora project on Rio Road to prepare the trench beds for laying pipe.

Even so, he said, "when we hit the soft ground, we have to slope the ditches."

Michael Mag, occupational safety inspector for the Virginia Department of Labor and Industry, said after preliminary tests at the site that he believed the work was done "properly," in compliance with OSHA standards.

The trench had been filled in when Mag visited the site late Wednesday morning, and he described the soil there as "extremely hard-packed clay, in the process of becoming shale."

Rescue squad members are concerned because they believe actual violations of the OSHA trenching regulations are common, Adams said. "People have told us about situations like this all over the place," he said.

"We would like to see these situations rectified," Adams emphasized, while noting that the squad's purpose was not to single out one offender.

"We feel an obligation to try to keep an eye on potential problems."
Technical Rescue Awareness

The difference between a hero and a fool is training.
Tech Rescue Training

- NFPA 1670 - Operations and Training for Technical Rescue Incidents
  - Awareness level recognizes that type of incident and activating appropriate resources.
  - Operations level represents a rescue capability in that discipline
  - Technician level team is expected to effectively supervise a technical rescue incident
Questions…?