



Virginia Department of Fire Programs  
Technical Rescue Division  
**TRENCH RESCUER – LEVEL I**  
Chapter 8 (8.1) NFPA 1006, 2013 edition  
**TRENCH RESCUE OPERATIONS**  
Chapter 11 (11.3) NFPA 1670, 2009 edition

## **Section 1 - ADMINISTRATIVE GUIDELINES**

### **1.1 Course Description:**

This program meets or exceeds the requirements for NFPA 1006 *Standard for Technical Rescuer Professional Qualifications*, Chapter 8, Level I. The student will learn to perform at the Operations Level as specified in NFPA 1670, *Standard on Operations and Training for Technical Search and Rescue Incidents*, Chapter 11.

This 16 hour program includes classroom and practical training to prepare the student to function at the Trench Rescue Level I (Operations). Topics include: conducting a size-up of a trench incident, implementing a trench incident action plan, implementing support operations, installing protective systems for straight wall trenches with no collapse, trenches with a single wall slough failure, and trenches with a victim trapped in soil, disentangling a victim from soil, removing a victim from a trench, disassembling protective systems, and operating as a member of a rescue team.

### **1.2 Course Information:**

This course meets or exceeds:

*NFPA 1006 Standard on Technical Rescuer Professional Qualifications*, 2013 edition Chapter 8.1, Trench Rescuer – Level I

*NFPA 1670 Standard on Operations and Training for Technical Search and Rescue Incidents* 2009 edition; Trench and Excavation Search and Rescue Operations, Chapter 11.

*OSHA 29 CFR 1926.650-652, (Subpart P) Excavations*

<u>1006 Standard</u>	<u>Course Correlation</u>
8.1.1 Conduct a size-up of a collapsed trench	Session 3, 4, 5, and 6
8.1.2 Implement a trench emergency action plan	Session 3, 4, 5, and 6
8.1.3 Implement support operations at trench emergencies	Session 3, 4, 5, and 6
8.1.4 Support a non-intersecting straight wall trench of eight (8) feet or less in depth	Session 3, 4, 5, and 6
8.1.5 Release a victim from soil entrapment from a non-intersecting straight wall trench of eight (8) feet or less in depth	Session 3, 5, and 6
8.1.6 Remove a victim from a trench	Session 3, 5, and 6
8.1.7 Disassemble support systems at a trench emergency incident	Session 3, 4, 5, and 6



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1670 Standard

<u>1670 Standard</u>	<u>Course Correlation</u>
11.3.3(1) Size up existing and potential conditions	Session 3, 4, 5 and 6
11.3.3(2) Initiate entries into a trench or excavation	Session 4, 5 and 6
11.3.3(3) Recognize unstable areas of a trench	Session 4, 5, and 6
11.3.3(4) Identify probable victim locations and survivability	Session 5 and 6
11.3.3(5) Make the rescue area safe using approved practices	Session 4, 5, and 6
11.3.3(6) Initiating a 1 call utility identification service	Session 4, 5, and 6
11.3.3(7) Identify soil types using visual or manual tests	Session 4, 5, and 6
11.3.3(8) Ventilation of the trench or excavation	Session 4, 5, and 6
11.3.3(9) Identifying a bell pier hole excavation	Session 3
11.3.3(10) Place ground pads to protect trench lip	Session 4, 5, and 6
11.3.3(11) Provide entry and egress paths for entry personnel	Session 4, 5, and 6
11.3.3(12) Coordinate a pre entry briefing	Session 4, 5, and 6
11.3.3(13) Initiate record keeping and documentation	Session 4, 5, and 6
11.3.3(14) Select, utilize, and apply shield systems	Session 4, 5, and 6
11.3.3(15) Select, utilize, and apply sloping and benching systems	Session 4, 5, and 6
11.3.3(16) Identify roles and responsibilities of different teams	Session 3, 4, 5, and 6
11.3.3(17) Assess mechanism of entrapment and victim removal methods	Session 4, 5, and 6
11.3.3(18) Perform extrication	Session 4, 5, and 6

**1.3 Logistical Requirements of Host Jurisdiction**

- 1) Classroom facilities
  - a. Suitable size, comfortable and meeting the needs to deliver course lecture.
  - b. Adequate and appropriate restroom facilities (to include training grounds).
  - c. Lighting able to be controlled for projector operation.
  - d. Tables and chairs for 24 students.
  - e. LCD Projector and screen, computer with remote mouse
  - f. Chalkboard, whiteboard, or easel pad with markers or chalks.
- 2) Two (2), straight wall trenches dug
  - a. Each trench five (5) feet wide, eight (8) feet deep and twenty (20) feet long
  - b. Minimum thirty (30) feet clearance between each trench
  - c. Backhoe or excavator with operator on site for both days of the class.
- 3) Spoil pile to be placed a minimum of two (2) feet away from trench lip.
- 4) Mud Hog with hoses for dewatering of trench
- 5) Lumber requirements for local jurisdiction:
  - a. 4" x 6" x 12' timbers, eight (8) each
  - b. 2" x 4" x 12', ten (10) each
  - c. 4" x 4" x 12', four (4) each
- 6) 16 penny duplex nails, twenty (20) pounds
- 7) One (1) 10-1/4" Circular saw



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- 8) One (1) Chain saw, with chaps
- 9) Generator, minimum 5 kw
- 10) Three (3) 100 ft electrical cords
- 11) Two (2) ventilation fans, electric powered
- 12) One (1) - Four function, calibrated atmospheric monitor capable of monitoring Oxygen%, Hydrogen Sulfide PPM, Flammability%, Carbon Monoxide.
- 13) Two (2) rescue manikins to be placed in trenches (i.e. hose dummy, Rescue Randy)
- 14) Two (2) fire service rated ladders, minimum twelve (12) feet long
- 15) Local point of contact with knowledge and authorized access of training sites to be used.
- 16) Hoses, water supply, and clean up supplies and adequate area for equipment cleaning.
- 17) VDFP Trench Rescue Trailer. Trailer must be requested by host jurisdiction for non-funded or reimbursable schools. Funded classes will be provided trailers without an additional request being needed

#### **1.4 Required Student Materials/Equipment/Uniforms**

- 1) PPE
  - a. NFPA rated fire helmet or technical rescue helmet
  - b. Steel toed boots
  - c. Gloves – tight fitting gloves which allow manual dexterity. Firefighting gloves are not acceptable.
  - d. Eye protection.
  - e. Hearing protection.
  - f. Minimum long pants/long sleeve shirt or coveralls.

#### **1.5 Course Pre-requisites**

(Based on VDFP operational regulations, NFPA 1500 *Standard on Fire Department Occupational Safety and Health Program*, NFPA 1006 *Standard on Technical Rescuer Professional Qualifications*, 2013 edition, and NFPA 1670 *Standard on Operations and Training for Technical Search and Rescue Incidents* 2009 edition)

- 1) Students MUST be 18 years of age.
- 2) Successful completion of Virginia Department of Fire Programs *Introduction to Technical Rescue (Awareness Level Module I & II)* program.
- 3) Successful completion of Virginia Department of Fire Programs *Rope Rescue Level I (Operations Level)* program.
- 4) Successful completion of Virginia Department of Fire Programs *Confined Space Rescue Level I (Operations Level)* program.
- 5) Students must be a member in good standing with a recognized fire, EMS, or emergency services agency/department to apply to attend.



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- 6) Students shall be psychologically, physically, and medically capable to perform assigned duties and functions at technical search and rescue incidents and to perform training exercises in accordance with of NFPA 1500 *Standard on Fire Department Occupational Safety and Health Program*, Chapter 10-Medical and Physical Requirements.

**Technical rescue is psychologically and physically demanding work. Students must be capable of lifting heavy loads, working at various elevations and operating in potentially hazardous environments.**

### **1.6 Course Registrations**

- 1) All students must be pre-registered in VDFP's Fire Service Training Records System (FSTRS) before being allowed to participate in the class.
- 2) Students will be required to sign a Virginia Department of Fire Programs *Notice of Acknowledgement* form verifying the students meets the course pre-requisites.
- 3) No unregistered students (walk-ins) will be allowed.
- 4) Class size is limited to 24 students.

### **1.7 Course Curriculum/Outline**

Trench Rescuer Level I (Operations Level)	16 hour program
1) Welcome/Introduction/Paperwork	1 hour lecture
2) Review Trench Awareness	0.5 hour lecture
A. OSHA standard	
B. Trench – definition and terminology	
C. Types of trench incidents	
D. Hazard recognition	
3) Trench Operations for Non-Intersecting Trenches lecture	2.5 hour lecture
A. Trench incident size-up (8.1.1)	
i. Hazard assessment	
B. Trench incident action plan (8.1.2)	
i. Hazard control	
ii. Pre-entry briefing	
iii. Tactical worksheet	
C. Support operations (8.1.3)	
i. Equipment and resources	



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- D. Protective systems for non-intersecting trenches (8.1.4)
    - i. Types of systems
    - ii. System components
    - iii. Installation of systems
  - E. Victim Management (8.1.5, 8.1.6)
    - i. Access
    - ii. Disentanglement
    - iii. Packaging
    - iv. Removal
  - F. Operation termination procedures (8.1.7)
- 4) Non-Intersecting, Straight Wall, Non-Collapsed Trenches
- A. Traditional Sheeting and Shoring – Timber Shores 2 hours skill
    - i. Trench incident size-up (8.1.1)
    - ii. Trench incident action plan (8.1.2)
    - iii. Support operations (8.1.3)
      - 1. Equipment and resources
    - iv. Installation of sheeting and timber shore protective system (8.1.4)
    - v. Operation termination procedures (8.1.7)
  - B. Traditional Sheeting and Shoring – Pneumatic Shores 2 hours skill
    - i. Trench incident size-up (8.1.1)
    - ii. Trench incident action plan (8.1.2)
    - iii. Support operations (8.1.3)
      - 1. Equipment and resources
    - iv. Installation of sheeting and timber shore protective system (8.1.4)
    - v. Operation termination procedures (8.1.7)
- 5) Non-Intersecting, Straight Wall, Single Wall Slough
- A. Traditional Sheeting and Shoring 4 hours skill
    - i. Trench incident size-up (8.1.1)
    - ii. Trench incident action plan (8.1.2)
    - iii. Support operations (8.1.3)
      - 1. Equipment and resources
    - iv. Installation of protective system for single wall slough (8.1.4)
      - 1. Outside wales



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- v. Victim Management (8.1.5, 8.1.6)
    - 1. Access
    - 2. Disentanglement
    - 3. Packaging
    - 4. Removal
  - vi. Operation termination procedures (8.1.7)
- 6) Non-Intersecting, Straight Wall, Non-Collapsed, Soil Entrapment
- A. Traditional Sheeting and Shoring 4 hours skill
    - i. Trench incident size-up (8.1.1)
    - ii. Trench incident action plan (8.1.2)
    - iii. Support operations (8.1.3)
      - 1. Equipment and resources
    - iv. Installation of protective system for soil entrapment (8.1.4)
      - 1. Inside wales
    - v. Victim Management (8.1.5, 8.1.6)
      - 1. Access
      - 2. Disentanglement
      - 3. Packaging
      - 4. Removal
    - vi. Operation termination procedures (8.1.7)

### **1.8 Reference Material and Supplemental Information**

*Trench Levels I and II*, Richardson, Delmar, 2010

*Trench Rescue Awareness, Operations, Technician*, Second Edition, Martinette, Jones and Bartlett, 2008

### **1.9 Course Completion Requirements for Students:**

- 1) Students are required to attend 100% of the classroom and practical sessions.
- 2) Successful completion of all required skills as indicated in the course outline.
- 3) Students are required to successfully complete a “Skills Check-Off” sheet. Each skill is pass/fail, with two opportunities to complete each skill.