

# TRENCH RESCUE TECHNICIAN SKILLS

## LEVEL I



Reference Source: 2013 NFPA 1006, Technical Rescuer Professional Qualifications

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# CERTIFICATION REQUIREMENTS

## Trench Rescue Level I

### Requirements

In order to certify as a Technical Trench Rescue Level I (NFPA 1006, Chapter 8) program, a firefighter must fulfill the following requirements:

1. Complete fire department (AHJ) entrance requirements.
2. Maintain records of training.
3. Train on the required written and practical objectives.
4. Meet any other training requirements/prerequisites as defined by the Fargo Fire Department Certification Committee.
5. Pass both written and practical skills examinations administered by the Fargo Fire Department Certified Testers. Initial testing is to be completed with Pro Board Credentialed Testers.

The Fargo Fire Department acknowledges the importance of and the need for entrance requirements as listed in the NFPA 1001, *Standard on Fire Fighter Professional Qualifications*.

### Physical Fitness Requirements:

The requirements listed in NFPA 1001, Chapter 4 are:

1. Meet the minimum educational requirements established by the Fargo Fire Department or the AHJ.
2. Meet the medical requirements of NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments*.
3. Physical fitness requirements for entry-level personnel shall be developed and validated by the Fargo Fire Department or the AHJ. Physical fitness requirements shall be in compliance with applicable Equal Employment Opportunity regulations and other legal requirements.

## **Emergency Medical Care Requirements**

The following additional training requirements **must** be met before certification at the Tech Trench Rescue Level I will be issued by the Fargo Fire Department Certification Committee.

Emergency Medical Care – Candidates for certification at the Tech Trench Rescue Level I must hold a current CPR certification and have received medical training. Medical training should include infection control, bleeding control and shock management.

### **DEPARTMENT TRAINING**

Tech Trench Rescue Level I requires a high level of skill and knowledge. The training given to and received by firefighter candidates should be of the highest quality and degree. All training received must meet the requirements of NFPA 1006, Chapter 8, 2013 Edition and the skills as approved by the Fargo Fire Department Certification Committee contained within the Fargo Standard. All training received must be documented and recorded on the training record. All testing for will be conducted following the policies and procedures of the Fargo Fire Department Certification Committee.

Training for Trench Rescue is conducted at the department level or could be received through a joint training agreement between departments on a regional level. Regardless of where the training is received, it must prepare the candidate to be a competent and effective Trench Rescue Technician Level I.

The course material should be referenced to the following textbooks to prepare the candidate to successfully pass the Tech Trench Rescue Level I certification examination.

#### **Written Objectives**

The written objectives for Tech Trench Rescue Level I (Chapter 8) are covered in the following textbooks:

1. NFPA 1006, Rescue Technician Professional Qualifications, 2013 Edition Chapter 8
2. Jones and Bartlett, Trench Rescue Awareness, Operations, Technician 2<sup>nd</sup> Edition
3. OSHA 29 CFR 1926

#### **Manipulative Objectives**

Each candidate must be trained and evaluated in the performance of all manipulative skills as outlined by the Fargo Fire Department in the Tech Trench Rescue Level I objectives. Each of the manipulative skills shall be completed safely and with competence as defined below:

- **Safely** – Each manipulative skill objective must be completed safely. Actions that could injure an individual or damage equipment are unacceptable. Equipment should be checked prior to skill testing or training to see that it is safe and functional.
- **Competence** – Each manipulative skill objective is performed in accordance with the Fargo Fire Department Standard. This includes performing the proper steps in sequence. Competence will be measured in accordance with the Fargo Fire Department manipulative skill objectives.

### **Department Training Records**

Each candidate shall have a training record on file with the department which indicates whether he/she has trained on all manipulative skill objectives. This record shall be signed off or initialed by a department training officer. Training records must indicate the date, instructor, and total number of hours trained for each manipulative skill objective. The training record check-off for Tech Trench Rescue Level I is provided in Appendix A of this document.

### **CERTIFICATION EXAMINATIONS**

After completion of the training process the candidate may test for certification.

#### **Written Examinations**

The written examination is a randomly generated **75-question** test covering the written objectives Chapter 8, Level I of the NFPA 1006 standard. A minimum score of 70% is required to pass the certification examination. Firefighters failing the first attempt of the written exam will be permitted to retest the next time test is administered. A candidate who passes the written test will have up to two years or a minimum of two offerings, to complete the manipulative skills portion of the testing.

#### **SAMPLE WRITTEN EXAMINATION QUESTIONS:**

*The transfer of heat by the movement of air or liquid would be considered?*

- |               |                         |
|---------------|-------------------------|
| a. Conduction | c. Convection           |
| b. Radiation  | d. Direct-flame contact |

*The technical rescuer's common goal is to?*

- |                                          |                                |
|------------------------------------------|--------------------------------|
| a. Problem solve                         | c. Cut corners                 |
| b. Research and buy the safest equipment | d. Perform rescue at all costs |

## **Manipulative Skills Examination**

This is a two-step examination. The first step is a department records check and the second step is a manipulative skills examination. Certification testers certified to Tester II or Tester III by the Fargo Fire Department conduct the examination. Initial testing will be conducted by outside Pro Board certified testers

Training records are checked. If records are inadequate, corrective action must be taken before proceeding to the next step. The records must meet minimum requirements and are checked for the following:

1. Candidate has completed all training requirements for Technical Rescuer Trench Rescue Level I (Chapter 8) from the NFPA 1006 standard, 2013 Edition.
2. The training officer has signed off each manipulative skill.
3. The total number of hours trained on each manipulative skill.

The manipulative skills examination is graded on a 100% pass/fail basis. The test is graded in the following areas:

- **Safely** – Each manipulative skill objective must be completed safely. Actions that could injure an individual or damage equipment are unacceptable. Equipment should be checked prior to skill testing or training to see that it is safe and functional.
- **Competence** – Each manipulative skill objective is performed in accordance with the Fargo Standard. This includes performing the proper steps in sequence when required. Competence will be measured in accordance with the Fargo Fire Department manipulative skill objectives.

Candidates are tested on **three (3) manipulative skills**. No prior notification of the skills being tested will be given.

**No training, teaching, or coaching is allowed during the test.**

This is a 100% pass/fail test. Candidates are allowed to fail a skill one time and have an opportunity to retest a second time to pass the skills test. If they fail a second time, this will be a failure for the entire skills testing portion of the examination.

Candidates who fail the manipulative examination will be required to complete further training on those areas that they were not successful in the testing. They would be eligible to test the next time it is offered at no extra charge. Candidates returning for testing will be tested on a new set of skills for the new testing period, that may or may not include the skill missed in the previous testing.

### **Prerequisites for Tech Trench Rescue Level I (Chapter 8)**

Prior to certification at the level, firefighters must be Pro Board certified at the Hazardous Materials First Responder- **Awareness** level and Hazardous Materials First Responder- **Operations** level.

Firefighters must be **Pro Board Certified -Technical Rescue Job Performance Requirements (JPR's)/Rope Rescue Level I** through the Fargo Fire Department Certification system. This is a single certification.

**CERTIFICATION CHECKLIST**

**TECH TRENCH RESCUE LEVEL I**

**ENTRANCE REQUIREMENTS:**

- Each candidate has met requirements listed in NFPA 1001, Chapter 4 or those established by the authority having jurisdiction.
- Each candidate has met the additional requirements of CPR and medical training.
- Each candidate provides an application/affidavit for testing signed by the candidate and Chief/Head of the Department verifying that all pre-requisites have been completed.
- Each candidate provides a record showing that they are certified through the Fargo Fire Department system that they are **Pro Board Certified as a Technical Rescuer in Job Performance Requirements/Rope Rescue Level I**. This is a single certification.

**DEPARTMENT TRAINING RECORDS:**

- Each participant has a training record for review that shows:
  1. A learning experience in each manipulative skill objective.
  2. Dates of training.
  3. Initials of instructors.
  4. Total number of hours trained in each manipulative skill objective.

**ADDITIONAL TRAINING/PREREQUISITE REQUIREMENTS:**

- Each participant is certified at the Hazardous Materials Awareness and Operations level.
- Complete IS-700: Introduction to ICS.
- Complete IS-100: Introduction to ICS.
- Complete IS 200; Basic ICS

**CERTIFICATION EXAMINATIONS:**

- Each participant has passed the Fargo Fire Department Pro Board written examination.
- Each participant has passed the Fargo Fire Department manipulative skills testing administered by an approved Certification Tester.

**CERTIFICATION:**

- Certification Coordinator has reviewed records for completeness.

**NFPA 1006, 8.1.1 b**

**Skill 1: Conduct a Size-Up of a Collapsed Trench**

**Instructions to Tester- Safety is Paramount!**

1. The candidate shall conduct a size-up of a collapsed trench, given an incident and background information and applicable reference material
2. The candidate will not be allowed to review the performance steps at the time of testing.
3. Prevent or prohibit any unsafe acts.
4. Remember that you are an evaluator, not an instructor.

**Instructions to Candidate**

1. The candidate shall demonstrate the ability to conduct a size-up of a collapsed trench, given an incident and background information and applicable reference material so that the listed performance steps are completed.
2. The skill will end when you state or indicate to the tester that you have completed all the identified steps.
3. Contact the tester at any time with any questions you may have.

**Preparation and Equipment**

1. Proper PPE
2. On site information
3. Reference material

**NFPA 1006, 8.1.1 b**

**Skill 1: Conduct a Size-Up of a Collapsed Trench**

Skill	1 <sup>st</sup> Att	2 <sup>nd</sup> Att
1. Measures dimensions of trench		
2. Categorizes the soil		
3. Identifies type and degree of collapse		
4. Determines severe environmental conditions with implications for secondary collapse and victim survivability		
5. Demonstrates interview techniques		
6. Implements protocols and resource acquisition agreements		
7. Implements public works utility notification, response and location procedures		
8. Performs a risk-benefit analysis for determining self rescue, rescue or recovery mode		
9. Implements an incident management system for span of control		
10. Applies governing regulations, laws and standards		

**PERFORMANCE RATING ON THIS SKILL** PASS      FAIL

First Attempt    \_\_\_\_\_    \_\_\_\_\_

Second Attempt    \_\_\_\_\_    \_\_\_\_\_

Candidate Signature \_\_\_\_\_

Tester Signature 1<sup>st</sup> Attempt \_\_\_\_\_

Tester Signature 2<sup>nd</sup> Attempt \_\_\_\_\_ Date \_\_\_\_\_

**NFPA 1006, 8.1.2 b**

**Skill 2: Implement a Trench Emergency Action Plan**

**Instructions to Tester- Safety is Paramount!**

1. The candidate shall implement a trench emergency action plan, given size-up information and a trench incident.
2. The candidate will not be allowed to review the performance steps at the time of testing.
3. Prevent or prohibit any unsafe acts.
4. Remember that you are an evaluator, not an instructor.

**Instructions to Candidate**

1. The candidate shall implement a trench emergency action plan. You will be given size-up information and a trench incident so that the listed performance steps are completed.
2. The skill will end when you state or indicate to the tester that you have completed all the identified steps.
3. Contact the tester at any time with any questions you may have.

**Preparation and Equipment**

1. Proper PPE

**NFPA 1006, 8.1.2 b**

**Skill 2: Implement a Trench Emergency Action Plan**

Skill	1 <sup>st</sup> Att	2 <sup>nd</sup> Att
1. Demonstrates the ability to use and document tactical worksheets		
2. Disseminates information		
3. Understands mechanics and extent of collapse effects		
4. Performs risk-benefit analysis		
5. Executes rapid, non-entry rescues		
6. Mitigates hazards by isolation, removal or control		
7. Chooses strategy and tactics that will enhance successful outcome		
8. Uses incident management system and resource staging		
9. Applies choice of isolation and/or protective system promptly to surround victim		

**PERFORMANCE RATING ON THIS SKILL** **PASS** **FAIL**

First Attempt    \_\_\_\_\_    \_\_\_\_\_

Second Attempt    \_\_\_\_\_    \_\_\_\_\_

Candidate Signature \_\_\_\_\_

Tester Signature 1<sup>st</sup> Attempt \_\_\_\_\_

Tester Signature 2<sup>nd</sup> Attempt \_\_\_\_\_

Date \_\_\_\_\_

**NFPA 1006, 8.1.3 b**

**Skill 3: Implement Support Operations at Trench Emergency**

**Instructions to Tester- Safety is Paramount!**

1. The candidate shall implement support operations at trench emergencies, given an assignment, equipment and other resources so that a resource cache is managed, scene lighting is provided for the tasks to be undertaken, environmental concerns are managed, a cut station is established as needed, supplemental power is supplied for all equipment, atmospheric monitoring and ventilation are implemented, personnel rehab is established, operations proceed without interruption, extrication methods are in place and the support operations facilitate rescue operational objectives.
2. The candidate will not be allowed to review the performance steps at the time of testing.
3. Prevent or prohibit any unsafe acts.
4. Remember that you are an evaluator, not an instructor.

**Instructions to Candidate**

1. The candidate shall implement support operations at a trench emergency, given an assignment, equipment and other resources so that the listed performance steps are completed.
2. The skill will end when you state or indicate to the tester that you have completed all the identified steps.
3. Contact the tester at any time with any questions you may have.

**Preparation and Equipment**

1. Proper PPE
2. Trench tool kit
3. Resource list (Utilities, RR etc.)

**NFPA 1006, 8.1.3 b**

**Skill 3: Implement Support Operations at Trench Emergency**

Skill	1 <sup>st</sup> Att	2 <sup>nd</sup> Att
1. Displays ability to track equipment inventory		
2. Displays ability to provide power		
3. Displays ability to use lighting		
4. Displays ability to choose and deploy dewatering techniques		
5. Displays ability to acquire or construct structures for shelter and thermal protection		
6. Displays ability to select a rehab area and rotate personnel		
7. Displays the ability to operate atmospheric monitoring and ventilation equipment		
8. Displays the ability to perform patient packaging and removal		

**PERFORMANCE RATING ON THIS SKILL**

**PASS      FAIL**

First Attempt    \_\_\_\_\_

Second Attempt    \_\_\_\_\_

Candidate Signature \_\_\_\_\_

Tester Signature 1<sup>st</sup> Attempt \_\_\_\_\_

Tester Signature 2<sup>nd</sup> Attempt \_\_\_\_\_

Date \_\_\_\_\_

**NFPA 1006, 8.1.4 b**

**Skill 4: Support a Nonintersecting Trench**

**Instructions to Tester- Safety is Paramount!**

1. The candidate shall support a nonintersecting trench as a member of a team, given size-up information, an action plan, a trench tool kit and an assignment, so that strategies to minimize further downward movement of soil are implemented effectively, trench walls, lip and soil pile are monitored continuously, rescue entry team(s) remain in a safe zone, any slough-in wall shears are mitigated, emergency procedures and warning systems are established and understood by participating personnel, incident-specific personal protective equipment is utilized, physical hazards are identified and managed, victim and rescuer protection is maximized, victim extrication methods are considered and a rapid intervention team is staged.
2. The candidate will not be allowed to review the performance steps at the time of testing.
3. Prevent or prohibit any unsafe acts.
4. Remember that you are an evaluator, not an instructor.

**Instructions to Candidate**

1. The candidate shall support a nonintersecting trench as a member of a team, given size up information, an action plan, a trench tool kit, and an assignment, so that the listed performance steps are completed.
3. Contact the tester at any time with any questions you may have.

**Preparation and Equipment**

1. Proper PPE
2. Trench tool kit
3. Timber shores
4. Strong backs
5. Air shores

**NFPA 1006, 8.1.4 b**

**Skill 4: Support a Nonintersecting Trench**

Skill	1 <sup>st</sup> Att	2 <sup>nd</sup> Att
1. Demonstrates the ability to interpret tabulated data information and tables		
2. Places shoring and shielding systems		
3. Uses protocols		
4. Chooses method to stabilize		
5. Uses personal protective equipment		
6. Anticipates extrication logistics		
7. Creates system in the trench		

**PERFORMANCE RATING ON THIS SKILL**

**PASS**

**FAIL**

First Attempt

\_\_\_\_\_

\_\_\_\_\_

Second Attempt

\_\_\_\_\_

\_\_\_\_\_

Candidate Signature \_\_\_\_\_

Tester Signature 1<sup>st</sup> Attempt \_\_\_\_\_

Tester Signature 2<sup>nd</sup> Attempt \_\_\_\_\_

Date \_\_\_\_\_

**NFPA 1006, 8.1.5 b**

**Skill 5: Release a Victim from Soil Entrapment Non-intersecting Trench**

**Instructions to Tester- Safety is Paramount!**

1. The candidate shall release a victim from entrapment by components of a non-intersecting (8' or less in depth) collapsed trench, given personal protective equipment, a trench rescue tool kit and specialized equipment, so that hazards to rescue personnel and victims are minimized, considerations are given to crush syndrome and other injuries, techniques are used to enhance patient viability, tasks are accomplished within projected time frames and techniques do not compromise the integrity of the existing shoring system.
2. The candidate will not be allowed to review the performance steps at the time of testing.
3. Prevent or prohibit any unsafe acts.
4. Remember that you are an evaluator, not an instructor.

**Instructions to Candidate**

1. The candidate shall release a victim from entrapment by components of a non-intersecting (8' or less in depth) collapsed trench, given personal protective equipment, a trench rescue tool kit and specialized equipment so that the listed performance steps are completed
3. Contact the tester at any time with any questions you may have.

**Preparation and Equipment**

- |                    |                |
|--------------------|----------------|
| 1. Proper PPE      | 5. Air shores  |
| 2. Trench tool kit | 6. Air bag kit |
| 3. Timber shores   | 7. Cribbing    |
| 4. Strong backs    |                |

**NFPA 1006, 8.1.5 b**

**Skill 5: Release a Victim from Soil Entrapment Non-intersecting Trench**

Skill	1 <sup>st</sup> Att	2 <sup>nd</sup> Att
1. Demonstrate ability to select, use and care for personal protective equipment		
2. Properly operates rescue tools and stabilization systems		
3. Identifies crush syndrome and other injury possibilities		
4. Completes risk benefit assessments for selected methods for rescue and time constraints		

<b>PERFORMANCE RATING ON THIS SKILL</b>	<b><u>PASS</u></b>	<b><u>FAIL</u></b>
First Attempt	_____	_____
Second Attempt	_____	_____

Candidate Signature \_\_\_\_\_

Tester Signature 1<sup>st</sup> Attempt \_\_\_\_\_

Tester Signature 2<sup>nd</sup> Attempt \_\_\_\_\_

Date \_\_\_\_\_

**NFPA 1006, 8.1.6 b**

**Skill 6: Remove a Victim from a Trench**

**Instructions to Tester- Safety is Paramount!**

1. The candidate shall remove a victim from a trench, given a disentangled victim, a basic first aid kit and victim packaging resources so that basic life functions are supported as required, the victim is evaluated for signs of crush syndrome, methods and packaging devices selected are compatible with intended routes of transfer, universal precautions are employed to protect personnel from blood borne pathogens and extraction times meet time constraints for medical management.
2. The candidate will not be allowed to review the performance steps at the time of testing.
3. Prevent or prohibit any unsafe acts.
4. Remember that you are an evaluator, not an instructor.

**Instructions to Candidate**

1. The candidate shall remove a victim from a trench, given a disentangled victim, a basic first aid kit and victim packaging resources so that the listed performance steps are completed.
2. The skill will end when you state or indicate to the tester that you have completed all the identified steps.
3. Contact the tester at any time with any questions you may have.

**Preparation and Equipment**

1. Proper PPE
2. Trench tool kit
3. Timber shores
4. Strong backs
5. Air shores
6. Air bag kit
7. Cribbing

**NFPA 1006, 8.1.6 b**

**Skill 6: Remove a Victim from a Trench**

Skill	1 <sup>st</sup> Att	2 <sup>nd</sup> Att
1. Demonstrate the ability to select and use personal protective equipment		
2. Provides basic medical care and immobilization techniques		
3. Identifies the need for advanced life support and crush syndrome management		
4. Uses a removal system that matches logistical and medical management time frame concerns		

**PERFORMANCE RATING ON THIS SKILL**

**PASS**

**FAIL**

First Attempt

\_\_\_\_\_

\_\_\_\_\_

Second Attempt

\_\_\_\_\_

\_\_\_\_\_

Candidate Signature \_\_\_\_\_

Tester Signature 1<sup>st</sup> Attempt \_\_\_\_\_

Tester Signature 2<sup>nd</sup> Attempt \_\_\_\_\_

Date \_\_\_\_\_

**NFPA 1006, 8.1.7 b**

**Skill 7: Disassemble Support Systems**

**Instructions to Tester- Safety is Paramount!**

1. The candidate shall terminate a trench emergency incident, given personal protective equipment, victim is already removed, so that all rescue equipment is removed, sheeting and shoring are removed in the reverse order of their placement, emergency protocols and safe zones in the trench are adhered to, rescue personnel are removed from the trench, the last supporting shores are pulled free with ropes, equipment is cleaned and serviced, reports are completed and post briefing is performed.
2. The candidate will not be allowed to review the performance steps at the time of testing.
3. Prevent or prohibit any unsafe acts.
4. Remember that you are an evaluator, not an instructor.

**Instructions to Candidate**

1. The candidate shall terminate a trench emergency incident with victims already removed, given personal protective equipment, so that all rescue equipment is removed from the trench, sheeting and shoring are removed so that the listed performance steps are completed.
2. The skill will end when you state or indicate to the tester that you have completed all the identified steps.
3. Contact the tester at any time with any questions you may have.

**Preparation and Equipment**

- |                    |                |
|--------------------|----------------|
| 1. Proper PPE      | 5. Air shores  |
| 2. Trench tool kit | 6. Air bag kit |
| 3. Timber shores   | 7. Cribbing    |
| 4. Strong backs    |                |

**NFPA 1006, 8.1.7 b**

**Skill 7: Disassemble Support Systems**

Skill	1 <sup>st</sup> Att	2 <sup>nd</sup> Att
1. Demonstrate the ability to use personal protective equipment		
2. Removes equipment and protective systems		
3. Uses trench safety protocols		
4. Cleans and services equipment		
5. Performs an incident debriefing		

**PERFORMANCE RATING ON THIS SKILL**

**PASS**

**FAIL**

First Attempt    \_\_\_\_\_

Second Attempt    \_\_\_\_\_

Candidate Signature \_\_\_\_\_

Tester Signature 1<sup>st</sup> Attempt \_\_\_\_\_

Tester Signature 2<sup>nd</sup> Attempt \_\_\_\_\_

Date \_\_\_\_\_

## Appendix A

<b>Trench Rescue Technician Training Record</b>						
<b>Level I</b>						
<b>Training Record</b>			<b>In House Exam</b>			<b>Manipulative Skill Demonstrated</b>
Date	Inst	Hours	Date	Inst	P/F	
						1. Conduct a size-up of a collapsed trench
						2. Implement a trench emergency action plan
						3. Implement support operations at a trench emergency
						4. Support a non-intersecting trench
						5. Release a victim from soil entrapment of a non-intersecting trench
						6. Remove victim from a trench
						7. Terminate a trench emergency incident

## Trench Rescue Tool Kit

4' x 8' sheets of plywood, ground pads
2" x 12" x 12' lumber walk boards
14' or longer ground ladders
Trench panels / strong backs
2" x 4" x 6" scabs / cleats
Long handle flat shovels
Short D handle shovels
Wheelbarrow
3# short sledge hammer
2" x 4" Wedges / shims
4" x 4" wedges
5 gallon buckets
Electric circular saws
Carpenter aprons
Tape measures, pencils, levels
Speed square
Tubular webbing or utility rope
Portable generator
Claw hammers
Duplex nails
Extension cords with ground faults
Chainsaws
Four gas monitor
Ventilation fan with extension tube
Reciprocating saw with metal or wood blades
Gas shut of wrenches
Patient immobilization devices (Stokes, Sked etc)
4" x 4" x8' timber shoring
6" x 6" x 12' timber whalers



