



# Tower Rescue Technician (2021)

## Course Plan

### Course Details

- Description:** This course provides the knowledge and skills to prepare an emergency responder to conduct tower rescue operations in a safe and effective manner in accordance with AHJ policies and procedures. Topics include tower construction; standards and regulations; incident size up and planning; victim management; rescue operation from ladders, elevated platforms, ground-based control systems, tower-based control systems, and multiple control systems; and incident termination. This course incorporates awareness, operations, and technician training based on NFPA 1006 (2021).
- Designed For:** Fire fighters with three years' full-time or six years' part-time/volunteer experience and any emergency personnel who perform tower technical rescue.
- Prerequisites:** Rope Rescue Technician (SFT 2013 or 2017, or FEMA)  
IS-100, IS-200, IS-700, and IS-800 (FEMA)
- Standard:** Attend and participate in all course sections  
Successful completion of all skills identified on the Training Record
- Hours:** 24 hours  
(8 hours lecture / 16 hours application)
- Max Class Size:** 24
- Instructor Level:** SFT Registered Tower Rescue Technician Instructor
- Instructor/Student Ratio:** 1:24 (lecture)  
1:6 (application)
- Restrictions:** All instructors counted toward student ratios, including application components, must be SFT Registered Tower Rescue Technician Instructors.
- SFT Designation:** FSTEP

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## Required Resources

### Instructor Resources

To teach this course, instructors need:

- FIRESCOPE ICS 162
- National Institute of Occupational Safety and Health (NIOSH)
  - Evaluation of Radiofrequency Radiation Exposures at an Atomic Time Radio Station ([www.cdc.gov/niosh/hhe/reports/pdfs/2011-0097-3200.pdf](http://www.cdc.gov/niosh/hhe/reports/pdfs/2011-0097-3200.pdf))
- National Fire Protection Association (NFPA)
  - 1006: Standard for Technical Rescue Personnel Professional Qualifications (current edition)
  - 2500: Standard for Operations and Training for Technical Search and Rescue Incidents and Life Safety Rope and Equipment for Emergency Service (current edition)
- National Association of Tower Erectors (NATE)
  - Safety Resources
- American National Standards Institute (ANSI)
  - Z359 (fall protection)
  - Z490 (training)
  - 10.48 (safety practices)
- Occupational Safety and Health Administration (Fed/OSHA)
  - 1910.140 (fall protection systems)
- California Division of Occupational Safety and Health (Cal/OSHA)
  - 1670 (fall arrest, fall restraint, positioning devices)
  - 3270 (general access)
  - 3270.1 (use of rope access equipment)
  - 5085 (radiofrequency and microwave radiation)
- Full personal protective equipment per AHJ requirements (including helmet, eye protection, gloves, boots, long sleeve shirt, and pants)

### Online Instructor Resources

The following instructor resources are available online at

<https://osfm.fire.ca.gov/divisions/state-fire-training/fstep-curriculum/>

- None

### Student Resources

To participate in this course, students need:

- Full personal protective equipment per AHJ requirements (including helmet, eye protection, gloves, boots, long sleeve shirt, and pants)

## Facilities, Equipment, and Personnel

### Facilities

The following facilities are required to deliver this course:

- Standard learning environment or facility, which may include:
  - Writing board or paper easel chart
  - Markers, erasers
  - Amplification devices
  - Projector and screen
  - Laptop or tablet with presentation or other viewing software
  - Internet access with appropriate broadband capabilities
- A Tower Rescue Technician training site with the NFPA 1006 required facilities, structures, work areas, materials, props, tools, and equipment of adequate size, type, and quantity to fully and safely support the cognitive and psychomotor training required to deliver the curriculum

### Equipment

Student safety is of paramount importance when conducting the type of high-risk training associated with this Tower Rescue Technician (2021) course.

- The equipment listed below is the minimum for the delivery of this course.
- The student is responsible for providing all PPE and ensuring that all PPE meets AHJ and site requirements.
- For all tools and equipment, ensure that you have the power source, operating supplies (blades, fuel, etc.), cleaning supplies, and appropriate PPE.

The following equipment is required to deliver this course:

Quantity Per 12-person Squad	Required Equipment
Determined by scenario	Rope, static kernmantle, general use, w/rope bag
4	Descent control devices
Determined by scenario	Carabiners, locking
4	Cable/wire anchors with covers and manufacturer-approved connections
8	Pulleys, single
4	Pulleys, double
6	Prusik loops, short
6	Prusik loops, long
8	Webbing, orange, 1"x20'
8	Webbing, blue, 1"x15'
8	Webbing, yellow, 1"x12'
8	Webbing, green, 1"x6'

Determined by scenario	Anchor straps
Determined by scenario	Collection plates (AHJ)
2	Mobile rope grab (ASAP® or equivalent)
Determined by scenario	Edge protection (based on facility needs)
6	Harnesses, commercial class III
1	Harness, victim, pelvic
1	Harness, victim, chest
Determined by scenario	Rope rescue gear bags
1	SKED or litter basket with pre-rig or equivalent
4	Double bypass lanyards
4	Work position straps (Petzl Grillion or similar)
1	Ladder, fire service, length appropriate for site
2	Personal mechanical advantage (set of fours)
1	Lock-out Tag-out kit (LOTO)
<b>Quantity Per 12-Person Squad</b>	<b>Recommended Equipment</b>
Determined by scenario	Radiofrequency meter
Determined by scenario	Gaussmeter (hot stick)
Determined by scenario	Reach pole
Determined by scenario	Rescue mannequin
Determined by scenario	Short multi-loop straps
Determined by scenario	Long multi-loop straps
2	Etrier or equivalent foot loops
4	Ascenders (handheld preferred)
4	Cable/pile grab
Determined by scenario	Pickets, steel or equivalent
Determined by scenario	Artificial high directional
Determined by scenario	Mechanical winch or Capstan
Determined by scenario	Knot passing pulleys
Determined by scenario	Swivels
Determined by scenario	Dynamic rope, lead climbing (AHJ-specific lengths)
Determined by scenario	Lead climbing equipment (e.g., Azzard)
Determined by scenario	Radio communications equipment (for each member)
Determined by scenario	Binoculars
Determined by scenario	Elevated platform or aerial

### **Training Props**

The following training props are required to deliver this course:

- Any individual or combination of towers or structures that can accommodate the ability to:
  - Ascend a 20-foot minimum height
  - Climb using a ladder, climbing pegs, or lattice
  - Move laterally a minimum of 10 feet
  - Use multiple control systems in combination for victim rescue

The course provider or agency assumes all responsibility, liability, and maintenance for the engineering design, strength, stability, and adequacy of all props. The provider or agency further assumes all responsibility, liability, and maintenance for all tools, equipment, and supplies used at the site for the delivery of a Tower Rescue Technician class.

### **Personnel**

The following personnel are required to deliver this course:

- Any instructor counted toward student ratios must be an SFT Registered Tower Rescue Technician (2021) Instructor.

## Time Table

Segment	Lecture	Application	Unit Total
<b>Unit 1: Introduction</b>			
Topic 1-1: Orientation and Administration	0.5	0.0	
<b>Unit 1 Totals</b>	<b>0.5</b>	<b>0.0</b>	<b>0.50</b>
<b>Unit 2: Introduction to Tower Rescue</b>			
Topic 2-1: Introduction to Tower Rescue	0.25	0.0	
Topic 2-2: Standards and Regulations	0.25	0.0	
<b>Unit 2 Totals</b>	<b>0.50</b>	<b>0.0</b>	<b>0.50</b>
<b>Unit 3: Incident Size Up and Planning</b>			
Topic 3-1: Sizing Up a Tower Rescue Incident	0.25	0.25	
Topic 3-2: Recognizing the Need for Technical Rescue Resources	0.25	0.25	
Topic 3-3: Recognizing Incident Hazards and Initiating Isolation Procedures	0.25	0.25	
Topic 3-4: Isolating and Managing Exposure to Potentially Harmful Energy Sources	0.25	0.25	
Topic 3-5: Assessing the Integrity of a Tower Structure	0.25	0.25	
Topic 3-6: Supporting an Operations- or Technician-level Incident	0.25	0.25	
Topic 3-7: Selecting and Using PPE, Tools, and Equipment	0.25	0.25	
Topic 3-8: Utilizing Fall Protection and Positioning Equipment	0.25	0.25	
Topic 3-9: Developing an Incident Action Plan	0.25	0.25	
<b>Unit 3 Totals</b>	<b>2.25</b>	<b>2.25</b>	<b>4.50</b>
<b>Unit 4: Victim Management</b>			
Topic 4-1: Assessing a Victim	0.50	0.25	
Topic 4-2: Removing a Victim from a Tower Environment	0.50	0.25	
<b>Unit 4 Totals</b>	<b>1.0</b>	<b>0.50</b>	<b>1.50</b>
<b>Unit 5: Tower Operations</b>			
Topic 5-1: Performing a Rescue from a Ladder or Elevated Device	0.50	0.0	
Topic 5-2: Participating in an Initial-contact Evaluation	0.50	0.50	
Topic 5-3: Ascending a Tower to Conduct a Rescue	0.50	3.0	
Topic 5-4: Rescuing a Suspended Victim Using a Ground-Based Control System	0.50	3.0	
Topic 5-5: Rescuing a Suspended Victim Using a Tower-Based Control System	0.50	3.0	



Segment	Lecture	Application	Unit Total
Topic 5-6: Rescuing a Victim Using Multiple Control Systems	0.50	3.0	
Topic 5-7: Directing a Tower Rescue Team	0.50	0.50	
<b>Unit 5 Totals</b>	<b>3.50</b>	<b>13.0</b>	<b>16.50</b>
<b>Unit 6: Termination</b>			
Topic 6-1: Terminating an Incident	0.25	0.25	
<b>Unit 6 Totals</b>	<b>0.25</b>	<b>0.25</b>	<b>0.50</b>
<b>Formative Assessments</b>			
Determined by AHJ or educational institution	0.0	0.0	0.0
<b>Summative Assessment</b>			
Determined by AHJ or educational institution	0.0	0.0	0.0
<b>Course Totals</b>			
	<b>8.0</b>	<b>16.0</b>	<b>24.0</b>

### Time Table Key

1. The Time Table documents the amount of time required to deliver the content included in the course plan.
2. Time is documented using the quarter system: 15 min. = .25 / 30 min. = .50 / 45 min. = .75 / 60 min. = 1.0.
3. The Course Totals do not reflect time for lunch (1 hour) or breaks (10 minutes per each 50 minutes of instruction or assessment). It is the instructor’s responsibility to add this time based on the course delivery schedule.
4. Application (activities, skills exercises, and formative testing) time will vary depending on the number of students enrolled. The Application time documented is based on the maximum class size identified in the Course Details section.
5. Summative Assessments are determined and scheduled by the authority having jurisdiction. These are not the written or psychomotor State Fire Training certification exams. These are in-class assessments to evaluate student progress and calculate course grades.

## **Unit 1: Introduction**

### **Topic 1-1: Orientation and Administration**

#### **Terminal Learning Objective**

At the end of this topic a student will be able to identify facility and classroom requirements and identify course objectives, events, requirements, assignments, activities, skills exercises, resources, evaluation methods, and participation requirements in the course syllabus.

#### **Enabling Learning Objectives**

1. Identify facility requirements
  - Restroom locations
  - Food locations
  - Smoking locations
  - Emergency procedures
2. Identify classroom requirements
  - Start and end times
  - Breaks
  - Electronic device policies
  - Special needs and accommodations
  - Other requirements as applicable
3. Review course syllabus
  - Course objectives
  - Calendar of events
  - Course requirements
  - Student evaluation process
  - Assignments
  - Activities
  - Required student resources
  - Class participation requirements

#### **Discussion Questions**

1. Determined by instructor

#### **Application**

1. Have students complete all required registration forms.

## Unit 2: Introduction to Tower Rescue

### Topic 2-1: Introduction to Tower Rescue

#### Terminal Learning Objective

At the end of this topic a student, given towers common to the AHJ, will be able to identify tower rescue incidents common to the AHJ and factors that determine incident complexity so that rescuers are prepared to respond to tower rescue incidents.

#### Enabling Learning Objectives

1. Identify types of towers
  - Self-supporting
    - Pipe/tubular legs
    - Rod tower legs
    - Angle/lattice tower legs
  - Monopole
    - Slip joint
    - Flanged
    - Concealed antennas
  - Guyed
  - Other/Non-standard
    - Concealed structures (mono-pines, mono-palms, church steeples)
    - Water tanks
    - Roof tops
    - H-frame towers
    - Water/amusement park rides
    - Ski lift/gondolas
    - Cranes
    - Scaffolding
2. Define a “tower rescue” incident
  - Incidents involving victims who have become stranded, trapped, entangled, or pinned in or on various types of towers
3. Identify factors that determine incident complexity
  - Tower type
  - Tower height
  - Tower access
  - Energy sources
  - Number of victims
  - Victim position and condition
  - Risk to victim and rescuers
  - Tools or equipment required
  - Environmental hazards
4. Identify towers common to the AHJ
5. Describe tower components and construction

- Structural components (legs, ladders, pegs, guides, etc.)
- Control components (buttons, switches, sensors, etc.)
- Energy sources
  - Electromagnetic
    - Radiofrequency
    - Microwave
  - Electrical
  - Mechanical
  - Hydraulic
  - Pneumatic
- 6. Describe hazards associated with operating on and around towers
  - Radiofrequencies
  - Falls
  - Energy sources
  - Structural integrity

**Discussion Question**

1. What types of towers are common in your AHJ?
2. What factors determine incident complexity for a tower rescue?
3. What hazards are associated with tower rescue?

**Application**

1. Determined by instructor

**Instructor Notes**

1. For ELOs that references the AHJ, adjust the course content to reflect AHJ-specific policies, practices, equipment, operations, tactics, etc.

**CTS Guide Reference:** None

## Topic 2-2: Standards and Regulations

### Terminal Learning Objective

At the end of this topic a student, given standards, regulations, policies, and procedures, will be able to identify industry, AHJ, and owner/operator requirements, so that tower rescue operations are carried out in accordance with all applicable requirements.

### Enabling Learning Objectives

1. Identify industry standards applicable to tower rescue
  - FIRESCOPE ICS 162
  - National Institute of Occupational Safety and Health (NIOSH)
    - Evaluation of Radiofrequency Radiation Exposures at an Atomic Time Radio Station ([www.cdc.gov/niosh/hhe/reports/pdfs/2011-0097-3200.pdf](http://www.cdc.gov/niosh/hhe/reports/pdfs/2011-0097-3200.pdf))
  - National Fire Protection Association (NFPA)
    - 1006: Standard for Technical Rescue Personnel Professional Qualifications
    - 2500: Standard for Operations and Training for Technical Search and Rescue Incidents and Life Safety Rope and Equipment for Emergency Services
  - National Association of Tower Erectors (NATE)
    - Safety Resources
  - American National Standards Institute (ANSI)
    - Z359 (fall protection)
    - Z490 (training)
    - 10.48 (safety practices)
  - Other standards as defined by state and federal law
2. Identify industry regulations applicable to tower rescue
  - Occupational Safety and Health Administration (Fed/OSHA)
    - 1910.140 (fall protection systems)
  - California Division of Occupational Safety and Health (Cal/OSHA)
    - 1670 (fall arrest, fall restraint, positioning devices)
    - 3270 (general access)
    - 3270.1 (use of rope access equipment)
    - 5085 (radiofrequency and microwave radiation)
  - Other regulations as defined by state and federal law
3. Describe how Cal/OSHA 3270.1 applies
  - During training
  - During a rescue event
4. Identify AHJ policies and procedures
  - Determined by AHJ
5. Identify owner/operator policies and procedures
  - Determined by owner/operator

### Discussion Question

1. What tower rescue policies and procedures do you have in your AHJ?
2. What other stakeholders might have standards and regulations that impact tower rescue?
3. How do standards and regulations for tower rescue training differ from those used for

tower rescue operations?

**Application**

1. Determined by instructor

**Instructor Notes**

1. While training, all operations must adhere to Cal/OSHA rope access standard 3270.1.

**CTS Guide Reference:** None

## Unit 3: Incident Size Up and Planning

### Topic 3-1: Sizing Up a Tower Rescue Incident

#### Terminal Learning Objective

At the end of this topic a student, given background information and applicable reference materials, will be able to size up a tower rescue incident so that the scope of the rescue is determined, the number of victims is identified, the last reported location of all victims is established, witnesses and reporting parties are identified and interviewed, resource needs are assessed, primary search parameters are identified, and information required to develop an initial incident action plan is obtained.

#### Enabling Learning Objectives

1. Describe components of a tower rescue size up
  - Tower type
  - Tower size
  - Tower use
  - Anticipated hazards
  - Number of victims
  - Victim location
    - Interior vs. exterior
    - Supported vs. unsupported
    - Distance from the ground
  - Victim condition
    - Physical
    - Emotional/psychological
    - Ability to participate in rescue
  - Access and egress points
2. Describe a risk/benefit assessment
  - Rescue vs. recovery
  - Survivability profile
  - Current and forecasted weather
  - Tower condition/stability
3. Describe types of reference materials and their uses
  - Tower preplan
  - AHJ policies and procedures
  - Owner/operator resources
4. Describe availability and capability of resources
5. Describe elements of an incident action plan and related information
6. Describe how size up relates to the incident management system
7. Describe information gathering techniques and how that information is used in the size-up process
  - Pre-incident
  - En route

- On scene
  - Evolving
8. Describe basic search criteria for tower rescue incidents
  9. Describe how to develop and adhere to contingency plans
    - AHJ policies and procedures
    - Target hazard assessment
    - Primary, alternate, contingency, emergency (PACE) plans
  10. Read technical rescue reference materials
  11. Gather information
  12. Use interview techniques
  13. Relay information
  14. Use information-gathering sources

**Discussion Question**

1. What are some ways to gather information for your scene size up?
2. What policies and procedures does your AHJ use to analyze risk vs. benefit?
3. What specialty resources to support tower rescue are available in your AHJ?
4. What are your AHJ's PACE planning policies and procedures?

**Application**

1. Size up a tower rescue incident
2. Develop and adhere to contingency plans

**Instructor Notes**

1. None

**CTS Guide Reference:** CTS 1-2, CTS 2-10



## **Topic 3-2: Recognizing the Need for Technical Rescue Resources**

### **Terminal Learning Objective**

At the end of this topic a student, given AHJ guidelines, will be able to recognize the need for technical rescue resources at an operations- or technical-level incident so that the need for additional resources is identified, the response system is initiated, the scene is secured and rendered safe until additional resources arrive, and awareness-level personnel are incorporated into the operational plan.

### **Enabling Learning Objectives**

1. Describe operational protocols
  - Identify need for additional resources
  - Initiate response system
  - Secure scene and render safe until additional resources arrive
  - Incorporate awareness-level personnel into operational plan
2. Identify specific planning forms
  - Determined by AHJ
3. Describe types of incidents common to the AHJ
4. Describe hazards
5. Describe incident support operations and resources
6. Describe safety measures
7. Apply operational protocols
8. Select specific planning forms based on the types of incidents
9. Identify and evaluate various types of hazards within the AHJ
10. Request support and resources
11. Determine required safety measures

### **Discussion Question**

1. What factors determine when an incident requires additional or specialty resources?
2. What process does your AHJ use to request resources?

### **Application**

1. Recognize the need for technical rescue resources

### **Instructor Notes**

1. None

**CTS Guide Reference:** CTS 1-4

### **Topic 3-3: Recognizing Incident Hazards and Initiating Isolation Procedures**

#### **Terminal Learning Objective**

At the end of this topic a student, given scene control barriers, personal protective equipment (PPE), requisite equipment, and available specialized resources, will be able to recognize incident hazards and initiate isolation procedures so that all hazards are identified; resource application fits the operational requirements; hazard isolation is considered; risks to rescuers, bystanders, and victims are minimized; and rescue time constraints are considered.

#### **Enabling Learning Objectives**

1. Describe types and nature of incident risks and hazards
  - Structural integrity
  - Animal interference (snakes, birds, insects)
  - Physical hazards (falls, sharp objects, burns, exhaustion, dehydration, etc.)
  - Psychological hazards (fear, panic, etc.)
  - Falling objects
  - Environmental conditions (wind, heat, cold, etc.)
  - Victim behavior
  - Energy sources
  - Hazardous materials
2. Describe resource capabilities and limitations
3. Describe equipment types and their use
4. Describe isolation terminology, methods, equipment, and implementation
5. Describe operational requirement concerns
6. Describe methods for controlling access to the scene
7. Describe types of technical references
8. Identify resource capabilities and limitations
9. Identify incident hazards
10. Assess potential hazards to rescuers and bystanders
11. Place scene control barriers
12. Operate control and mitigation equipment

#### **Discussion Question**

1. What type of risks and hazards can be present at a tower rescue incident?
2. What tools and equipment does your AHJ use to control or mitigate these risks and hazards?

#### **Application**

1. Recognize incident hazards and initiate isolation procedures

#### **Instructor Notes**

1. None

**CTS Guide Reference:** CTS 1-3

## **Topic 3-4: Isolating and Managing Exposure to Potentially Harmful Energy Sources**

### **Terminal Learning Objective**

At the end of this topic a student, given lock-out tag-out (LOTO) equipment, construction materials, and PPE, will be able to isolate and manage exposure to potentially harmful energy sources found in erected structures, including power systems such as mechanical, radiofrequency (RF), and electrical hazards, so that all hazards are identified, systems are managed, beneficial system use is evaluated, and hazards to rescue personnel and victims are minimized.

### **Enabling Learning Objectives**

1. Describe types and uses of PPE
2. Describe hazardous energy monitoring and testing equipment
  - Dosimeter
  - Gaussmeter (AC voltage detector, hot stick)
  - Atmospheric monitor
3. Describe types of energy sources
  - Electromagnetic
    - Radiofrequency
    - Microwave
  - Electrical
  - Mechanical
  - Hydraulic
  - Pneumatic
4. Describe system isolation methods
  - Lock-out tag-out
  - Remote-operator/remote-system isolation or shutdown
  - Time
  - Distance
  - Shielding
5. Describe specialized system features
  - Beneficial
    - Elevator
    - Crane
    - Hoistway
6. Describe tools for disabling hazards
  - LOTO kit
7. Describe AHJ policies and procedures
8. Select and use hazard-specific PPE
9. Use energy monitoring and testing equipment
10. Identify hazardous energy sources
11. Operate beneficial systems in support of tactical objectives
  - Elevator

- Crane
  - Hoistway
12. Operate tools and devices for securing and disabling hazards
    - LOTO kit
  13. Engage in practices that minimize exposure to known or suspected hazards
    - Time
    - Distance
    - Shielding

**Discussion Question**

1. In your AHJ, are there any hazards that cannot be LOTO and if so, what mitigation factors does your AHJ use?
2. What standards and regulations apply for hazards that cannot be fully shut down?
3. What specialized system features are unique to the towers in your AHJ?

**Application**

1. Select and use hazard-specific PPE and equipment to isolate and manage exposure to potentially harmful energy sources
2. Minimize exposure to known or suspected hazards

**Instructor Notes**

1. None

**CTS Guide Reference:** CTS 2-2

## Topic 3-5: Assessing the Integrity of a Tower Structure

### Terminal Learning Objective

At the end of this topic a student, given an incident, a pre-climb checklist, and an unobstructed climb path, will be able to assess the integrity of the tower structure and related components so that safe access to the victim is assured, and ensure any integrated safety systems, such as vertical lifelines (e.g., cable or rail-type structure), are accessible.

### Enabling Learning Objectives

1. Describe types of structures within area of response
  - Self-supporting
    - Provides strength in compression
    - Provides strength in shear
    - Construction lends to horizontal movement
    - One or more legs may have a ladder
  - Monopole
    - Provides strength in compression
    - No shear strength
    - Limited anchor points
    - Construction lends to interior ladder or exterior climbing pegs
  - Guyed
    - Narrowest and tallest
    - Provides strength in compression
    - Provides shear strength only in locations opposite a guy line
    - Will not have a ladder, must climb on structure
    - Do not use torque arms as attachment points
2. Describe potential structural compromise that would create additional hazards to rescuers
  - Rust and corrosion
  - Warping
  - Cracks
  - Missing components
  - Mechanical malfunctions
3. Perform physical inspection of accessible tower components in accordance with a pre-climb checklist

### Discussion Question

1. What type of tower has the least amount of shear strength and how does that impact rescue options?
2. What are some indicators of structural compromise?

### Application

1. Perform physical inspection of accessible tower components

### Instructor Notes

1. None

**CTS Guide Reference:** CTS 2-3

## **Topic 3-6: Supporting an Operations- or Technician-level Incident**

### **Terminal Learning Objective**

At the end of this topic a student, given an incident, an assignment, an incident action plan, and resources from the tool cache, will be able to support an operations- or technician-level incident so that the assignment is carried out, progress is reported to command, environmental concerns are managed, personnel rehabilitation is facilitated, and the incident action plan is supported.

### **Enabling Learning Objectives**

1. Describe AHJ operational protocols
2. Describe hazard recognition
  - Radiofrequencies
  - Falls
  - Energy sources
  - Structural integrity
3. Describe incident management
4. Describe PPE selection
5. Describe how to select and use resources
  - Engine company
  - Truck company
  - Rescue company
  - EMS
  - Law enforcement
  - Responsible party
  - Other outside resources
6. Describe scene support requirements
  - Scene control and access
  - Operational zones
  - Liaison with victims, family, bystanders, agency, etc.
  - Logistical support
7. Apply operational protocols
8. Function within the incident management system
9. Follow and implement an incident action plan
10. Report task progress status to a supervisor or incident command

### **Discussion Question**

1. What resources do you have in your AHJ to support tower rescue incident operations?
2. What logistical support operations need to be addressed during a complex tower rescue incident?

### **Application**

1. Support an operations- or technician-level incident

### **Instructor Notes**

1. None

**CTS Guide Reference:** CTS 1-5

## Topic 3-7: Selecting and Using PPE, Tools, and Equipment

### Terminal Learning Objective

At the end of this topic a student, given a tower rescue incident and AHJ policies and procedures, will be able to select, operate, and use personal protective equipment (PPE), tools, and equipment so that PPE, tools, and equipment are appropriate to incident response needs, donned and worn correctly, and used in accordance with manufacturer specifications and all applicable policies and procedures.

### Enabling Learning Objectives

1. Identify PPE used during tower rescue incidents
  - Helmet
    - Conductivity and RF rated vs. backcountry
  - Head lamp
  - Eye protection
  - Gloves
  - Boots
  - Long sleeve shirt and pants
  - Harness (full body)
  - Radio/comms
2. Identify protections provided by PPE during tower rescue incidents
3. Identify limitations of PPE during tower rescue incidents
4. Identify when and how to don and doff PPE
  - Safety considerations
  - Manufacturer guidelines
  - AHJ policies and procedures
5. Don and doff PPE
6. Describe how to use tower rescue tools and equipment
  - Rope and rigging
    - Hardware
      - Carabiners
      - Pulleys
      - Descent control devices
    - Software
      - Rope
      - Webbing
      - Drop bags
  - Harnesses
    - Attachment points
      - Dorsal
      - Chest
      - Pelvic
      - Positioning
    - Size/fit
  - Climbing and positioning

- Ascenders
  - Bypass lanyards (Y or V)
  - Work positioning straps
    - Commercial
    - Improvised
  - Self-belaying device (e.g., ASAP<sup>®</sup>, quantum, etc.)
  - Shock absorbers (e.g., ASAP<sup>®</sup>Sorber, etc.)
  - Pipe and cable grabs
  - Lead climbing
    - Dynamic rope and appropriate belay device
    - Quick draws
  - Anchoring
    - Shepherd's hook
    - Anchor straps
    - Wire rope chokers or slings
  - Specialty equipment
    - Mini mechanical advantage (haul) system
    - Radiofrequency dosimeter
    - Reach pole (e.g., CMC Rescue SureClip, Yates Super Clip, etc.)
  - Victim Rescue
    - Disentanglement
    - Stabilization
    - Packaging
    - Removal
7. Identify guidelines for cleaning, inspecting, and maintaining tools and equipment
- Manufacturer guidelines
  - AHJ guidelines
  - NFPA 2500
  - Documentation and reporting requirements
8. Describe methods for cleaning tools and equipment
9. Identify when and how to remove tools and equipment from service
- Manufacturer guidelines
  - AHJ guidelines
  - Documentation and reporting requirements
10. Select, use, and maintain tools and equipment

**Discussion Question**

1. What types of PPE does your AHJ have available for tower rescue operations?
2. What equipment does your agency use for tower rescue?
3. What are the maintenance procedures for these tools and equipment?

**Application**

1. Don and doff PPE
2. Select, use, and maintain tools and equipment



**Instructor Notes**

1. ELO 6 – Use the course equipment list as the minimum requirements and then include any other tools and equipment common to your AHJ.

**CTS Guide Reference:** CTS 2-12

## **Topic 3-8: Utilizing Fall Protection and Positioning Equipment**

### **Terminal Learning Objective**

At the end of this topic a student, given a specific tower structure, will be able to recognize, identify, and utilize typical fall protection and work positioning equipment used by climbers so that the victim can be transferred to the rescue system.

### **Enabling Learning Objectives**

1. Describe how to review a tower rescue preplan to gain familiarity with tower climber safety and work positioning equipment
  - Rescue
  - Industry
2. Describe fall factor and its effects on anchors, equipment, and people
3. Define fall arrest
4. Define fall arrest attachments
5. Define fall restraint
6. Define fall restraint attachments
7. Define work positioning device systems
8. Define travel restraint
9. Describe fall protection devices and their applications
  - Y-lanyard vs. V-lanyard
  - Lanyard (adjustable and appropriate length)
  - Adjustable positioning lanyard
  - Self-retracting lanyard (SRL)
  - Energy absorber with lock (e.g., ASAP'SORBBER)
  - Pipe grab
  - Cable/rope grab
  - Others
10. Operate tower fall protection and work positioning equipment

### **Discussion Question**

1. What are the similarities and differences between fall arrest, fall restraint, and travel restriction equipment?
2. What equipment does your AHJ use for fall protection?
3. What are some methods to reduce impact force while using fall protection equipment?

### **Application**

1. Operate tower fall protection and work positioning equipment

### **Instructor Notes**

1. Use Cal/OSHA 1670 to define the terms in ELOs 3, 4, 5, 6, and 7.
2. Use Fed/OSHA 1910.140 to define the term in ELO 8.
3. All equipment must be used in accordance with manufacturer's recommendations and Cal/OSHA's regulations.
4. Ensure that students are clear on the attachment points for equipment used during fall arrest and fall restraint.

**CTS Guide Reference:** CTS 2-4

## Topic 3-9: Developing an Incident Action Plan

### Terminal Learning Objective

At the end of this topic a student, given a tower rescue scenario, will be able to develop an incident action plan (IAP) for a tower rescue incident so that hazardous energy sources are identified and managed, fall protection is maintained throughout the event, anchor points are identified and utilized to best advantage, and the IAP objectives are met.

### Enabling Learning Objectives

1. Describe the components of an IAP
  - Communications Plan
  - Safety Plan
  - Operations Plan
    - PACE (primary, alternate, contingency, emergency)
  - Medical Plan
2. Describe considerations that help develop an IAP
  - AHJ policies and procedures
  - Size up and assessment
  - Number of victims
  - Climbing plan elements
  - Data gathering and collection methods
  - Anchor point identification and construction methods
  - Hazardous energy source recognition, identification, and control methods
  - Ascent and descent techniques
  - Fall protection methods
3. Describe how to combine multiple actions and information sources into a cohesive plan
  - Formal vs. informal
  - AHJ tactical worksheet
4. Use a tactical worksheet

### Discussion Question

1. What does your AHJ include in a technical rescue IAP?
2. Who is responsible for developing the IAP?
3. When does an incident require a formal IAP?

### Application

1. Develop an IAP
  - For a tower rescue incident on a structure whose size, shape, or configuration would accommodate only one rescuer (required)
  - Other scenarios as determined by instructor applicable to the AHJ service area (optional)

### Instructor Notes

1. None

**CTS Guide Reference:** CTS 3-2

## Unit 4: Victim Management

### Topic 4-1: Assessing a Victim

#### Terminal Learning Objective

At the end of this topic a student, given an incident, will be able to assess a victim in a tower environment according to the rescue preplan so that the risks from a fall are minimized or eliminated, the patient is accessed, and the objective is achieved.

#### Enabling Learning Objectives

1. Describe how to establish victim rapport
2. Identify victim assessment considerations
  - Mental status
    - Compliant
    - Combative
    - Unresponsive
  - Time constraints
    - How long has the victim been there?
    - How much longer can the victim remain there?
    - Suspension syndrome
  - Falls
    - Mechanism
  - Equipment
    - What does the victim have?
    - Is it accessible and usable for rescue?
  - Injury status
3. Assess a victim (implement tactics and employ tools identified in preplan to achieve objective)

#### Discussion Question

1. How does fall factor impact the mechanism of injury?
2. What protocols does your local EMSA have for suspension trauma?
3. What type of victims present the most risk to rescuers?
4. Who has authority over an uncooperative victim in your AHJ?

#### Application

1. Assess a victim

#### Instructor Notes

1. None

**CTS Guide Reference:** CTS 2-7

## **Topic 4-2: Removing a Victim from a Tower Environment**

### **Terminal Learning Objective**

At the end of this topic a student, given an incident, will be able to remove a victim from a tower environment so that risks to victims and rescuers are minimized, all the elements of the preplan are complied with, and the objective is achieved.

### **Enabling Learning Objectives**

1. Describe how to secure a victim to prevent falling
  - Victim wearing their own harness
    - Secured
    - Unsecured
  - Victim not wearing a harness
2. Describe how to package a victim
  - Select packaging based on mechanism of injury and rescue priority
3. Describe when and how to use packaging equipment
  - Harness
  - Litters
4. Describe how to connect a packaged victim to control lines
5. Describe how to move victim to desired location
  - Ground-controlled system
  - Tower-controlled system
  - Other method
6. Employ tactics identified in rescue preplan for removal of a victim on a tower

### **Discussion Question**

1. What victim packaging equipment does your AHJ use for tower rescue?
2. What complications might you experience when packaging a victim?

### **Application**

1. Package a victim in a harness
2. Secure a harnessed victim to a tower
3. Package a victim in a litter
4. Package a victim in a tower at elevation
5. Connect a packaged victim to control lines
6. Move a victim vertically on a ground-controlled system
7. Move a victim horizontally on a ground-controlled system
8. Move a victim vertically on tower-controlled system
9. Move a victim horizontally on a tower-controlled system

### **Instructor Notes**

1. None

**CTS Guide Reference:** CTS 2-8

## Unit 5: Tower Operations

### Topic 5-1: Performing a Rescue from a Ladder or Elevated Device

#### Terminal Learning Objective

At the end of this topic a student, given an incident not requiring the rescuer to be solely supported by the tower, will be able to rescue a person from a tower while working from ground ladders, aerial ladders, or other elevated devices employed by the AHJ so that the patient is transferred from the tower to the elevated device, the agency's protocol for the use of the device is followed, and the risks to the victim and rescuer are minimized.

#### Enabling Learning Objectives

1. Describe how to use ladders or elevated devices for tower rescue
2. Describe specific procedures for using ladders or elevated devices in victim transfer from a tower
  - Ground ladder
  - Elevated devices
3. Work from or operate ladders or elevated devices capable of accessing and rescuing the tower victim and transferring from the tower to the elevated device while providing fall protection for the victim and rescue personnel

#### Discussion Question

1. What kind of elevated devices are available in your AHJ?
2. What policies and procedures do you have in your AHJ for rescuing off a ground ladder or elevated device?
3. What does your agency use for fall protection for a victim on a ladder?

#### Application

1. Work from or operate ladders capable of accessing and rescuing a tower victim (optional/recommended)
2. Work from or operate elevated devices capable of accessing and rescuing a tower victim (optional/recommended)
3. Transfer a victim from a tower to ladder (optional/recommended)
4. Transfer a victim from a tower to an elevated device while providing fall protection for the victim and rescue personnel (optional/recommended)

#### Instructor Notes

1. The application activities for this topic are optional based on student skill level.

**CTS Guide Reference:** CTS 1-1

## Topic 5-2: Participating in an Initial-contact Evaluation

### Terminal Learning Objective

At the end of this topic a student, given a tower rescue preplan, the specific tower targeted in the preplan, an operations-level tower rescue tool cache, and a tower rescue team, will be able to participate in an initial-contact evaluation so that the targeted elevation in the tower is attained using the tools and techniques designated for use during a rescue operation, all elements of the rescue plan are implemented, and the full scope of the plan is exercised.

### Enabling Learning Objectives

1. Describe the purpose of an initial-contact evaluation
  - Confirm or reevaluate the rescue plan after gaining access to victim
2. Describe the components of an initial-contact evaluation
  - Evaluate tower preplan
    - Is it safe?
    - Does it accomplish the task?
    - Is it the most efficient way?
  - Identify appropriate tools and equipment from the tool cache
  - Identify applicable AHJ policies and procedures for tower rescue operations
  - Climb tower to the designated height
  - Assess victim location and position
  - Secure or stabilize victim
  - Confirm or reevaluate rescue plan
3. Select and transport designated tools

### Discussion Question

1. What minimum equipment would you take with you to perform this initial-contact evaluation?
2. What issues could come up during your initial-contact evaluation (e.g., victim is not secure, animal hazards, etc.)?
3. What is the purpose of an initial-contact evaluation?

### Application

1. Conduct an initial-contact evaluation

### Instructor Notes

1. None

**CTS Guide Reference:** CTS 2-1

## Topic 5-3: Ascending a Tower to Conduct a Rescue

### Terminal Learning Objective

At the end of this topic a student, given an incident action plan and a pre-climb checklist, will be able to ascend a tower to conduct a rescue so that the pre-climb checklist and hazard control measures are implemented; fall protection systems are utilized; and the rescuer moves both horizontally and vertically between structural elements of the tower, with or without the benefit of climbing pegs, ladders, or vertical lifelines, to achieve the objectives of the incident action plan.

### Enabling Learning Objectives

1. Describe a pre-climb checklist
2. Describe system safety check protocols
3. Describe the application and limitations of climbing, positioning, and fall protection systems
4. Describe how to use fall protection equipment
  - 100% tie off equipment systems
    - Bypass lanyards
  - Vertical lifeline equipment systems
    - Belay
    - Cable/rope grabs
    - Pipe grabs
5. Describe how to ascend a tower vertically
  - Ladders
  - Pegs
  - Lattice
6. Describe how to descend a tower
  - Ladders
  - Pegs
  - Lattice
7. Describe how to transfer between integrated vertical lifeline systems
  - Engagement and disengagement procedures from vertical lifeline cable or rope grabs
  - Use bypass and work positioning lanyards
8. Describe how to traverse a tower horizontally
9. Describe how to place and use work positioning equipment
10. Determine proper PPE, tools, and equipment given the type of tower structure and integrated temporary or permanent safety systems
11. Don appropriate PPE, including but not limited to fall protection, helmet, and gloves as appropriate
12. Perform system safety checks
13. Use 100% tie off or vertical lifeline equipment systems to ascend the tower structure
14. Transfer between integrated vertical lifeline systems
15. Traverse a tower horizontally using a 100% tie off fall protection system



16. Use positioning equipment to support the weight of the rescuer permitting the rescuer to perform a task
17. Describe climbing plan
18. Perform climbing techniques and methods

**Discussion Question**

1. What climbing aids does your AHJ use?
2. What are some methods to reduce impact force during protected climbing?

**Application**

1. Ascend a tower to the level of the victim using a 100% tie off or vertical lifeline fall protection system
2. Ascend a tower using a ladder, pegs, or lattice
3. Transfer between integrated vertical lifeline systems (including a self-safety check)
4. Traverse a tower horizontally using a 100% tie off fall protection system
5. Place and use work positioning equipment permitting the rescuer to perform a task
6. Descend a tower

**Instructor Notes**

1. Application 1: The instructors must demonstrate both systems (100% tie off or vertical lifeline) to ascend the tower structure. The student must demonstrate one system, determined by instructor.
2. Application 2: The instructor must demonstrate how to ascend using all three methods (ladders, pegs, lattice). The student must demonstrate one method, determined by instructor based on available training tower/structure.

**CTS Guide Reference:** CTS 2-5, CTS 2-6, CTS 3-3

## **Topic 5-4: Rescuing a Suspended Victim Using a Ground-Based Control System**

### **Terminal Learning Objective**

At the end of this topic a student, given an incident action plan, climbing plan, hazard-specific PPE, and resources from the tower rescue tool cache, will be able to perform a ground-based tower rescue of a suspended victim from an elevated position so that the victim is released/transferred from an existing fall arrest system to one created by the rescuer, and the victim is moved both horizontally and vertically a distance representative of the rescue environment.

### **Enabling Learning Objectives**

1. Identify when to use a ground-based system that can accommodate vertical and horizontal movement
  - Benefits
  - Limitations
2. Describe the tools and equipment used for a ground-based tower rescue
  - To build the system
  - Carried by the rescuer
3. Describe how to establish anchors
  - On the ground
  - On the tower
4. Describe how to construct a control line system that accounts for vertical and horizontal movement
  - On the ground
  - On the tower
5. Describe how to transfer a victim from an existing fall arrest system to a control line system
6. Describe how to move a victim vertically and horizontally
7. Describe safety considerations associated with ground-based control systems
8. Construct a control line system that accounts for vertical and horizontal movement
9. Transfer a victim from an existing fall arrest system to a control line system
10. Move a victim vertically and horizontally

### **Discussion Question**

1. When would you use a ground-based control system to rescue a victim?
2. What tools and equipment does the rescuer need to take up with them to construct and use a ground-based control system?
3. Who performs the safety check for a ground-based rescue system?

### **Application**

1. Construct a ground-based control system that can accommodate vertical and horizontal movement
2. Transfer a victim from an existing fall arrest system to a ground-based control system
3. Operate a ground-based control system to move a victim vertically and horizontally

### **Instructor Notes**

1. None

**CTS Guide Reference:** CTS 3-4

## **Topic 5-5: Rescuing a Suspended Victim Using a Tower-Based Control System**

### **Terminal Learning Objective**

At the end of this topic a student, given an incident action plan, climbing plan, hazard-specific PPE, and resources from the tower rescue tool cache, will be able to rescue a victim suspended from a tower at a height beyond the scope of a ground-based rope rescue system so that the victim is transferred to the rescue system and is moved both horizontally and vertically a distance representative of the rescue environment.

### **Enabling Learning Objectives**

1. Identify when to use a tower-based system that can accommodate vertical and horizontal movement
  - Benefits
  - Limitations
2. Describe the tools and equipment used for a tower-based tower rescue
  - To build the system
  - Carried by the rescuer
3. Describe how to establish anchors
  - On the tower
  - On the ground (as needed)
4. Describe how to construct a control line system that accounts for vertical and horizontal movement
  - On the tower
  - On the ground (as needed)
5. Describe how to transfer a victim from an existing fall arrest system to a control line system
6. Describe how to move a victim vertically and horizontally
7. Describe safety considerations associated with tower-based control systems
8. Construct a control line system that accounts for vertical and horizontal movement
9. Transfer a victim from an existing fall arrest system to a control line system
10. Move a victim vertically and horizontally

### **Discussion Question**

1. When would you use a tower-based control system to rescue a victim?
2. What tools and equipment does the rescuer need to take up with them to construct and use a tower-based control system?
3. Who performs the safety check for a tower-based rescue system?
4. How is transferring a victim from an existing fall arrest system to a control line system different on a tower-based system than on a ground-based system?

### **Application**

1. Construct a tower-based control system that can accommodate vertical and horizontal movement
2. Transfer a victim from an existing fall arrest system to a tower-based control system
3. Operate a tower-based control system to move a victim vertically and horizontally

### **Instructor Notes**

1. None

**CTS Guide Reference:** CTS 3-5

## **Topic 5-6: Rescuing a Victim Using Multiple Control Systems**

### **Terminal Learning Objective**

At the end of this topic a student, given a tower rescue scenario and a tower rescue tool cache, will be able to rescue a victim from a tower or elevated structure where the travel path or height of the objective requires multiple sets of sequential rope systems so that the victim is protected from a fall, rope movement is managed without entanglement, and the objective is achieved.

### **Enabling Learning Objectives**

1. Identify when and where to use multiple control systems
  - Benefits
  - Limitations
2. Describe the tools and equipment used for multiple control systems
  - To build the system
  - Carried by the rescuer
3. Describe how to establish anchors
  - On the tower
  - On the ground (as needed)
4. Describe how to construct multiple control systems that account for vertical and/or horizontal movement
  - On the tower
  - On the ground (as needed)
5. Describe how to transfer a victim from one control system to another control system
6. Describe how to move a victim vertically and/or horizontally
7. Describe safety considerations associated with multiple control systems
8. Construct multiple control systems that account for vertical and/or horizontal movement
9. Transfer a victim from one control system to another control system
10. Move a victim vertically and/or horizontally

### **Discussion Question**

1. What are the advantages to building the control systems concurrently?
2. What circumstances might prevent you from building concurrent control systems?
3. What tower configurations might require multiple control systems?
4. What other circumstances might require multiple control systems?
5. How does the added complexity of a multiple control system impact safety needs?

### **Application**

1. Construct multiple control line systems that can accommodate vertical and/or horizontal movement
2. Transfer a victim from one control system to another control system
3. Operate multiple control systems to move a victim vertically and/or horizontally

### **Instructor Notes**

1. None

**CTS Guide Reference:** CTS 3-6

## **Topic 5-7: Directing a Tower Rescue Team**

### **Terminal Learning Objective**

At the end of this topic a student, given an incident, a rescue preplan, resources from the tower rescue tool cache, and a prescribed means of removal of the victim to the objective, will be able to direct a team in removal of a victim from a preplanned tower environment so that resources are deployed to best advantage, risks to victims and rescuers are minimized, all the elements of the preplan are complied with, and the objective is achieved.

### **Enabling Learning Objectives**

1. Describe how to direct a tower rescue team
  - Interpret and apply AHJ policies and protocols
  - Initiate and operate within the IMS (if applicable)
  - Interpret and apply pre-incident planning data
  - Maintain continuous situational awareness and risk management practices
  - Implement site safety and hazard control techniques
  - Implement tactics identified in the rescue preplan for the removal of a victim on a tower
2. Direct the employment of tactics identified in the rescue preplan to remove a victim on a tower

### **Discussion Question**

1. Who directs the tower rescue team in your AHJ?
2. What determines the risk management practices in your AHJ?
3. What qualifications or training does your AHJ require to participate in a tower rescue?

### **Application**

1. Direct a tower rescue team to remove a victim from a tower

### **Instructor Notes**

1. None

**CTS Guide Reference:** CTS 2-9, CTS 3-1

## Unit 6: Termination

### Topic 6-1: Terminating an Incident

#### Terminal Learning Objective

At the end of this topic a student, given PPE specific to the incident, isolation barriers, and a tool cache, will be able to terminate an incident so that rescuers and bystanders are protected and accounted for during termination operations, the party responsible is notified of any modification or damage created during the operational period, documentation of loss or materials use is accounted for, scene documentation is performed, scene control is transferred to a responsible party, potential or existing hazards are communicated to that responsible party, debriefing and post-incident analysis and critique are considered, and command is terminated.

#### Enabling Learning Objectives

1. Describe PPE characteristics
  - PPE requirements change in IDLH vs non-IDLH
  - Decontamination, maintenance, and repair requirements
2. Identify hazard and risk identification
  - Reevaluate mitigated and ongoing hazards
  - Resources in transition
  - Complacency
  - Normalized deviance
  - Fatigue
3. Describe equipment removal procedures
  - When to leave in place
  - Systematic breakdown and removal
4. Describe isolation techniques
5. Identify statutory requirements
  - Determined by AHJ
6. Identify responsible parties
7. Describe accountability system use
  - PAR – personnel accountability report
8. Describe documentation and reporting requirements
  - Determined by AHJ
9. Describe post-incident analysis techniques
  - Determined by AHJ
  - Critical incident stress debriefing
10. Select and use hazard-specific PPE
11. Decontaminate PPE
12. Use barrier protection techniques
13. Implement data collection and record-keeping/reporting protocols
14. Conduct post-incident analysis activities



**Discussion Question**

1. What hazards and risks can arise during incident termination?
2. Who are some examples of responsible parties that may assume responsibility for the scene when the incident terminates?
3. What critical incident stress management resources are available to you?

**Application**

1. Terminate an incident

**Instructor Notes**

1. None

**CTS Guide Reference:** CTS 2-11

## Drill Ground Activities and Evolutions

The following components must be covered in the drill ground activities and/or evolutions but can be combined and completed in the order that best suits the props available and AHJ policies and procedures.

Students will conduct skills with an asterisk (\*) individually. All other skills may be carried out as part of a rescue team.

### Drill ground activities must incorporate the following learning objectives:

- Size up a tower rescue incident
- Develop and adhere to contingency plans
- Recognize the need for technical rescue resources
- Recognize incident hazards and initiate isolation procedures
- Select and use hazard-specific PPE and equipment to isolate and manage exposure to potentially harmful energy sources
- Minimize exposure to known or suspected hazards
- Perform physical inspection of accessible tower components
- Support an operations- or technician-level incident
- Don and doff PPE\*
- Select, use, and maintain tools and equipment\*
- Operate tower fall protection and work positioning equipment\*
- Develop an incident action plan
  - For a tower rescue incident on a structure whose size, shape, or configuration would accommodate only one rescuer (required)
  - Other scenarios as determined by instructor applicable to the AHJ service area (optional)
- Terminate an incident

### Drill ground activities must address the following operations:

- Ascension and descension
  - Ascend a tower to the level of the victim using a 100% tie off or vertical lifeline fall protection system\*
  - Ascend a tower using a ladder, pegs, or lattice\*
  - Conduct an initial-contact evaluation
  - Descend a tower\*
- Transfer and Traverse
  - Transfer between integrated vertical lifeline systems (including a self-safety check)\*
  - Traverse a tower horizontally using a 100% tie off fall protection system\*
- Work positioning equipment
  - Place and use work positioning equipment permitting the rescuer to perform a task\*

- Victim Management
  - Assess a victim
  - Package a victim
    - In a harness\*
    - In a litter\*
    - In a tower at elevation
  - Secure a harnessed victim to a tower\*
  - Connect a packaged victim to control lines
  - Move a victim vertically
    - On a ground-controlled system
    - On tower-controlled system
  - Move a victim horizontally
    - On a ground-controlled system
    - On a tower-controlled system
  - Transfer a victim
    - From a tower to ladder (optional/recommended)
    - From a tower to an elevated device while providing fall protection for the victim and rescue personnel (optional/recommended)
    - From one control system to another control system
  - Transfer a suspended victim
    - From an existing fall arrest system to a ground-based control system
    - From an existing fall arrest system to a tower-based control system
- Direction
  - Direct a tower rescue team to remove a victim from a tower

**Drill ground activities must incorporate the following rescue scenarios:**

- Ladder or elevated device
  - Work from or operate ladders capable of accessing and rescuing a tower victim (optional/recommended)
  - Work from or operate elevated devices capable of accessing and rescuing a tower victim (optional/recommended)
- Ground-based control system
  - Construct a ground-based control system that can accommodate vertical and horizontal movement
  - Operate a ground-based control system to move a victim vertically and horizontally
- Tower-based control system
  - Construct a tower-based control system that can accommodate vertical and horizontal movement
  - Operate a tower-based control system to move a victim vertically and horizontally

- Multiple control systems
  - Construct multiple control line systems that can accommodate vertical and/or horizontal movement
  - Operate multiple control systems to move a victim vertically and/or horizontally

## How to Read a Course Plan

A course plan identifies the details, logistics, resources, and training and education content for an individual course. Whenever possible, course content is directly tied to a national or state standard. SFT uses the course plan as the training and education standard for an individual course. Individuals at fire agencies, academies, and community colleges use course plans to obtain their institution's consent to offer course and provide credit for their completion. Instructors use course plans to develop syllabi and lesson plans for course delivery.

### Course Details

The Course Details segment identifies the logistical information required for planning, scheduling, and delivering a course.

### Required Resources

The Required Resources segment identifies the resources, equipment, facilities, and personnel required to deliver the course.

### Unit

Each Unit represents a collection of aligned topics. Unit 1 is the same for all SFT courses. An instructor is not required to repeat Unit 1 when teaching multiple courses within a single instructional period or academy.

### Topics

Each Topic documents a single Terminal Learning Objective and the instructional activities that support it.

### Terminal Learning Objective

A Terminal Learning Objective (TLO) states the instructor's expectations of student performance at the end of a specific lesson or unit. Each TLO includes a task (what the student must be able to do), a condition (the setting and supplies needed), and a standard (how well or to whose specifications the task must be performed). TLOs target the performance required when students are evaluated, not what they will do as part of the course.

### Enabling Learning Objectives

The Enabling Learning Objectives (ELO) specify a detailed sequence of student activities that make up the instructional content of a lesson plan. ELOs cover the cognitive, affective, and psychomotor skills students must master to complete the TLO.

### Discussion Questions

The Discussion Questions are designed to guide students into a topic or to enhance their understanding of a topic. Instructors may add to or adjust the questions to suit their students.

**Application**

The Application segment documents experiences that enable students to apply lecture content through cognitive and psychomotor activities, skills exercises, and formative testing. Application experiences included in the course plan are required. Instructors may add additional application experiences to suit their student population if time permits.

**Instructor Notes**

The Instructor Notes segment documents suggestions and resources to enhance an instructor's ability to teach a specific topic.

**CTS Guide Reference**

The CTS Guide Reference segment documents the standard(s) from the corresponding Certification Training Standard Guide upon which each topic within the course is based. This segment is eliminated if the course is not based on a standard.

**Skill Sheet**

The Skill Sheet segment documents the skill sheet that tests the content contained within the topic. This segment is eliminated if the course does not have skill sheets.