DEPARTMENT OF FORESTRY AND FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
State Fire Training Division
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Date: January 3, 2022

To: Statewide Training and Education Advisory Committee
State Board of Fire Services

From: Chris Fowler, Deputy State Fire Marshal III, Supervisor, CAL FIRE
Joe Bunn, Fire Service Training Specialist III, (Retired), CAL FIRE

SUBJECT/AGENDA ACTION ITEM:
Structural Collapse Specialist (2021) Update

Recommended Actions:
Seeking approval of the new Structural Collapse Specialist curriculum

Background Information:
Update and correlate State Fire Training's Structural Collapse Specialist curriculum with National Fire Protection Association (NFPA) 1006: Standard for Technical Rescue Personnel Professional Qualifications, 2021 edition, and the FEMA Structural Collapse Specialist Instructor-Led Training (ILT), April 2017 edition.

Analysis/Summary of Issue Standard:
The following is a summary of the Course Requirements for the Structural Collapse Specialist FSTEP curriculum. The following table specifies the minimum requirements to qualify as an SCS1 or SCS 2.

Structural Collapse Specialist 1 Student Minimum Requirements	Structural Collapse Specialist 2 Student Minimum Requirements
Rope Rescue Operations (SFT) **or** LARRO (SFT) **and** Rescue Systems 1 (SFT)	Structural Collapse Specialist 1 (SFT)
and	**and**
IS-100, IS-200, IS-700, IS-800 (FEMA - online)	Powder Actuated Tool Licensing (RAMSET/online certification)

and	and
Confined Space Rescue Awareness (FEMA)	Structural Collapse Specialist (FEMA – computer-based training, 2017 or current edition, within 2 years prior to course registration)
and	
Structural Collapse Specialist (FEMA, computer-based training, 2017 or current edition, within 2 year of course registration)	

Instructor and Student Resources are updated to the following options:

- *Structural Collapse Specialist Instructor-Led Training (ILT)*
  - (FEMA, Instructor Guide, April 2017)
  - (FEMA, Participant Guide, April 2017)
- NFPA 1006: Standard for Technical Rescue Personnel (2021) (physical or digital access)
- FIRESCOPE ICS 420-1 Field Operations Guide (2017)
- USACE Field Operations Guide (current edition)
- USACE Shoring Operations Guide (current edition)
- Personal Protective Equipment (PPE)

Instructor Update Requirements

SFT will authorize current Rescue Systems II and Rescue Systems III Registered Instructors to teach the Structural Collapse Specialist 1 and Structural Collapse Specialist 2 courses after they complete the following courses and apply to SFT.

- FEMA Structural Collapse Specialist (computer-based training, 2017 or current edition, 8 hours)
- Structural Collapse Specialist - Virtual Roll Out Course (SFT, 2 hours)

Structural Collapse Specialist 1 Instructor Requirements	Structural Collapse Specialist 2 Instructor Requirements
Registered Rescue Systems 1 Instructor (Modules 2 **and** 4) **or** Registered Rescue Systems 2 Instructor (All Modules)	Registered Rescue Systems 2 Instructor (All Modules)
and	**and**
Structural Collapse Specialist 4.0 Instructor (FEMA)	Registered Rescue Systems 3 Instructor (All Modules) **or** Structural Collapse Specialist 4.0 Instructor (FEMA)
and	**and**
Be a Registered State Fire Training Instructor	Be a Registered State Fire Training Instructor
with	**and**
Structural Collapse Specialist (FEMA, computer-based training, 2017 or current edition)	Structural Collapse Specialist (FEMA, computer-based training, 2017 or current edition)
and	**and**
Structural Collapse Specialist - Virtual Roll Out Course (SFT)	Structural Collapse Specialist - Virtual Roll Out Course (SFT)

Instructors who do not complete the FEMA Structural Collapse Specialist computer-based training and the State Fire Training Structural Collapse Specialist - Virtual Roll Out Course prior to December 31, 2022, will be required to apply to SFT under the new requirements.

Potential Transition to Certification

SFT is exploring the possibility of creating a Technical Rescue certification over the next three years. If or when this occurs, this curriculum will transition to the CFSTES program with testing and certification requirements. SFT will communicate updates as appropriate.

STRUCTURAL COLLAPSE SPECIALIST (2021) Implementation Plan

Issued: XXXX 2022

OVERVIEW

This document is intended to provide information for all State Fire Training (SFT) stakeholders on the new Structural Collapse Specialist (2021) curriculum and certification requirements. Stakeholders are encouraged to study this information carefully and seek clarification from SFT if questions arise.

The Structural Collapse Specialist (2021) curriculum and certification requirements will be phased in for the California Fire Service Training and Education System. A new certification training standard (CTS) guide and two (2) course plans have been developed based on the current National Fire Protection Association (NFPA) Standard, NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021). The CTS guide and course plans are now available on the SFT website.

SFT is exploring the possibility of creating a Technical Rescue certification over the next three years. If or when this occurs, this curriculum will transition to the CFSTES program with testing and certification requirements. SFT will communicate updates as appropriate.

IMPLEMENTATION

SFT recognizes that many candidates are vested in the current Rescue Systems tracks and therefore, the existing Rescue Systems curriculum will be available for those candidates during the transition period. Candidates entering the SFT system should enroll in the new Structural Collapse Specialist (2021) courses and comply with the new Structural Collapse Specialist requirements.

New Curriculum	Hours
Structural Collapse Specialist 1	40 Hours
Structural Collapse Specialist 2	40 Hours

New Structural Collapse Specialist (2021) Curriculum.....June 1, 2022

Retirement of Rescue Systems Series (2012) Curriculum ..... December 31, 2022
Effective December 31, 2022, SFT will retire the FSTEP Rescue Systems 1, 2, 3 (2012) curricula from the SFT course catalog and it will no longer be available.

INSTRUCTOR REQUIREMENTS

Instructor Registration.....Available June 1, 2022
Instructors for the Structural Collapse Specialist courses must meet the SFT requirements for Registered Instructor. Instructors must have appropriate education and practical experience relating to the specific course content.

Currency Requirement (Existing Registered Instructors) .....**Completed by December 31, 2022**
Due to the new NFPA standards and curriculum, the following shall apply to existing Rescue Systems Registered Instructors:

SFT will authorize current Rescue Systems II and Rescue Systems III Registered Instructors to teach the Structural Collapse Specialist 1 and Structural Collapse Specialist 2 courses after they complete the following courses and apply to SFT.

- FEMA Structural Collapse Specialist (computer-based training, 2017 or current edition, 8 hours)
- Structural Collapse Specialist - Virtual Roll Out Course (SFT, 2 hours)

Structural Collapse Specialist 1 Instructor Requirements	Structural Collapse Specialist 2 Instructor Requirements
Registered Rescue Systems 1 Instructor (Modules 2 **and** 4) **or** Registered Rescue Systems 2 Instructor (All Modules)	Registered Rescue Systems 2 Instructor (All Modules)
and	**and**
Structural Collapse Specialist 4.0 Instructor (FEMA)	Registered Rescue Systems 3 Instructor (All Modules) **or** Structural Collapse Specialist 4.0 Instructor (FEMA)
and	**and**
Be a Registered State Fire Training Instructor	Be a Registered State Fire Training Instructor
with	**and**
Structural Collapse Specialist (FEMA, computer-based training, 2017 or current edition)	Structural Collapse Specialist (FEMA, computer-based training, 2017 or current edition)
and	**and**
Structural Collapse Specialist - Virtual Roll Out Course (SFT)	Structural Collapse Specialist - Virtual Roll Out Course (SFT)

Instructors who do not complete the FEMA Structural Collapse Specialist computer-based training and the State Fire Training Structural Collapse Specialist - Virtual Roll Out Course prior to December 31, 2022, will be required to apply to SFT under the new requirements.

New Registered Instructors Structural Collapse Specialist 1 shall:*

- Meet the minimum requirements to be an SFT Registered Instructor
- Successfully complete the Structural Collapse Specialist 1: Operations course
- Successfully complete the Structural Collapse Specialist 1 Instructor Task Book
- Provide a letter signed by their Fire Chief or authorized designee that verifies qualification to deliver Structural Collapse Specialist 1 training

New Registered Instructors Structural Collapse Specialist 2 shall:*

- Meet the minimum requirements to be an SFT Registered Instructor
- Successfully complete the Structural Collapse Specialist 2: Technician course
- Successfully complete the Structural Collapse Specialist 2 Instructor Task Book
- Provide a letter signed by their Fire Chief or authorized designee that verifies qualification to deliver Structural Collapse Specialist 2 training

*For existing FEMA/USAR Structural Collapse Instructors or IFSAC/ProBoard Structural Collapse Technicians, the Peer Assessment for Course Equivalency (PACE II) process does not waive the SFT instructor task book requirement as a component of new instructor registration.

Instructor Task Book and Application
Instructor candidates shall complete a comprehensive instrucror task book that. This task book covers all of the job performance requirements (JPRs) contained in the professional qualification standards and CTS guide. The Fire Chief or authorized designee on file will verify the candidate's occupational experience by signing the task book upon completion. The new Structural Collapse Specialist application form is required.

POTENTIAL AGENCY IMPACTS

Fire agencies desiring to use the Structural Collapse Specialist curriculum as a requirement for their recruitment/promotion activities need to review the Structural Collapse Specialist curriculum requirements to be sure that all agency training needs are being met. After review, fire agencies should update their job specifications and recruitment documentation to reflect these new courses and certification requirements.

Accredited Regional Training Programs (ARTP), Accredited Local Academies (ALA), community colleges, and all other local delivery venues need to review the curriculum and seek approval from their curriculum committee / program sponsor, as appropriate. ARTPs should review the new Structural Collapse Specialist curriculum and discuss potential impacts with their advisory committees.

Structural Collapse Specialist 1 and 2

(NFPA 1006: Structural Collapse Rescue Awareness/Operations/Technician)

Certification Training Standards Guide (2021)

California Department of Forestry and Fire Protection
Office of the State Fire Marshal
State Fire Training

Structural Collapse Specialist 1 and 2

Certification Training Standards Guide (2021)

Publication Date: Month Year

This CTS guide utilizes the following NFPA standards to provide the qualifications for State Fire Training's Structural Collapse Specialist 1 and 2 (2021) certifications:

- NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)

State Fire Training coordinated the development of this CTS guide. Before its publication, the Statewide Training and Education Advisory Committee (STEAC) and the State Board of Fire Services (SBFS) recommended this CTS guide for adoption by the Office of the State Fire Marshal (OSFM).

Cover photo courtesy of Daily Mirror, United Kingdom.

2001 - 2021
This curriculum is dedicated to all first responders.

Published by State Fire Training.

Table of Contents

Acknowledgements

State Fire Training appreciates the hard work and accomplishments of those who built the solid foundation on which this program continues to grow.

State Fire Training gratefully acknowledges the following individuals and organizations for their diligent efforts and contributions that made the development and publication of this document possible.

CAL FIRE

- Thom Porter, Director
- Mike Richwine, State Fire Marshal
- Andrew Henning, Assistant Deputy Director: Fire and Life Safety, State Fire Training, Code Development and Analysis
- (Vacant), Chief of State Fire Training
- John Binaski, Chair, Statewide Training and Education Advisory Committee (STEAC); Chief, Clovis Fire Department

Cadre – 2021 Curriculum Development

Leadership

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- Darius Luttropp, Battalion Chief, San Francisco Fire Department
- Billy Milligan, Training Manager, Riverside City Fire Department
- Robert Stine, Training Manager, San Bernardino County Fire Department

How to Read a CTS Guide

Overview

A certification training standard (CTS) guide lists the requisite knowledge, skills, and job performance requirements an individual must complete to become certified in a specific job function.

It also documents and justifies the OSFM-approved revisions to the certification's NFPA standard and identifies where each certification training standard is taught (course plan), tested (skill sheets), and validated (task book).

Individuals aspiring to meet State Fire Training's certification training standards must do so in accordance with the codes, standards, regulations, policies, and standard operating procedures applicable within their own agency or jurisdiction.

Format

Each certification training standard is comprised of eight sections.

Section Heading
Training standards are grouped by section headings that describe a general category. For example, the Fire Fighter 1 CTS guide includes the following section headings: NFPA Requirements, Fire Department Communications, Fireground Operations, and Preparedness and Maintenance.

Training Standard Title
The training standard title provides a general description of the performance requirement contained within the individual standard.

Authority
The CTS guide references each individual standard with one or more paragraphs of the corresponding National Fire Protection Association (NFPA) Professional Qualifications. This ensures that each fire service function within California's certification system meets or exceeds NFPA standards.

When California requirements exceed the NFPA standard, the CTS guide cites the Office of the State Fire Marshal as the authority and prints the corresponding information in *italics*.

Job Performance Requirements
This segment includes a written statement that describes a specific job-related task, the items an individual needs to complete the task, and measurable or observable outcomes.

Requisite Knowledge
This segment lists the knowledge that an individual must acquire to accomplish the job performance requirement.

Requisite Skills
This segment lists the skills that an individual must acquire to accomplish the job performance requirement.

Content Modification
This table documents and justifies any revisions to the NFPA standard that the development or validation cadres make during the development of a CTS guide.

Cross Reference
This table documents where each training standard is taught (course plan), tested (skill sheets), and validated (task book).

Structural Collapse Specialist 1

Section 1: Awareness

1-1: Identifying Incident Hazards

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.1.1

Job Performance Requirement

Identify incident hazards, given a specific type of collapse incident, so that construction type is determined, all associated hazards are identified, and rescue time constraints are taken into account.

Requisite Knowledge

1. *Describe* resource capabilities and limitations
2. *Describe* types and nature of incident hazards
3. *Define* isolation terminology
4. *Describe* methods and equipment
5. *Describe* implementation techniques
6. *Describe* operational requirement concerns
7. *Describe* common risks in collapse incidents
8. *Describe* risk/benefit analysis methods and practices
9. *Identify* construction types and collapse characteristics
10. *Identify* 13 building collapse types
11. *Describe* subsequent collapse potential and causes
12. *Identify* associated types of technical references

Requisite Skills

1. Identify resource capabilities and limitations
2. Identify incident hazards based on construction type
3. Identify collapse zones
4. Assess victim viability based on collapse type and access (risk/benefit)
5. Utilize technical references
6. Operate control and mitigation equipment

Content Modification

Block	Modification	Justification

Cross Reference

Course Plan	Training Record	Task Book
SCS1: Operations (2021) • Topic 1-2 • Topic 4-2	SCS1 Training Record (2021) • 2	SCS1 Instructor (2021) • JPR 2

1-2: Initiating a Search

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
    - Paragraph 6.1.2

Job Performance Requirement

Initiate a search, given PPE, an incident location, and victim investigative information, so that search parameters are established and include surface and nonentry void search, the information found is updated and relayed to command, the personnel assignments match their expertise, all victims are located as quickly as possible, risks to searchers are minimized, and accountability is achieved.

Requisite Knowledge

1. *Identify AHJ* policies and procedures
2. *Describe* basic sight and hailing search techniques
3. *Describe* operational techniques necessary to operate in the search environment

Requisite Skills

1. Use hailing techniques, PPE, and triangulation methods
2. Provide for and perform self-escape/self-rescue

Content Modification

Block	Modification	Justification
RK1	Changed “local” to “AHJ”.	AHJ makes more sense when students will come from a variety of locations. NFPA has transitioned to AHJ in other updates. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 1-6 • Topic 4-6	SCS1 Training Record (2021) • 6	SCS1 Instructor (2021) • JPR 6

1-3: Applying a Building Marking System

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.1.3

Job Performance Requirement

Apply the building marking system, given a structural collapse incident, so that the search phase of the floor or structure is marked, victim locations and condition are applied to the area, hazards are noted on the structure, and the access and egress points are marked.

Requisite Knowledge

1. *Identify* FEMA and United Nations International Search and Rescue Advisory Group (INSARAG) search marking systems
2. *Describe* victim marking systems
3. *Describe* structural marking systems
4. *Identify* location criteria for application of each system

Requisite Skills

1. Use marking materials
2. Recognize hazards

Content Modification

Block	Modification	Justification

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 1-4 • Topic 4-4	SCS1 Training Record (2021) • 4	SCS1 Instructor (2021) • JPR 4

1-4: Moving a Victim

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.1.4

Job Performance Requirement

Move a victim, given victim transport equipment, litters, other specialized equipment, and victim removal systems specific to the rescue environment, so that the victim is moved without further injuries, risks to rescuers are minimized, the victim is secured to the transfer device, and the victim is removed from the hazard.

Requisite Knowledge

1. *Identify* types of transport equipment and removal systems
2. *Describe* selection factors with regard to specific rescue environments
3. *Describe* methods to reduce and prevent further injuries
4. *Describe* types of risks to rescuers
5. *Describe* ways to secure the victim to transport devices
6. *Describe* transport techniques

Requisite Skills

1. Secure a victim to transport equipment
2. Assemble and operate environment-specific victim removal systems
3. Choose an incident-specific transport device

Content Modification

Block	Modification	Justification

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 1-7 • Topic 4-7	SCS1 Training Record (2021) • 7	SCS1 Instructor (2021) • JPR 7

1-5: Performing Collapse Support Operations

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.1.5

Job Performance Requirement

Perform collapse support operations at a rescue incident, given an assignment and available resources, so that scene lighting is provided for the tasks to be undertaken, environmental concerns are addressed, personnel rehabilitation is facilitated, and the support operations facilitate rescue operational objectives.

Requisite Knowledge

1. *Identify* resource management protocols
2. *Describe* principles for establishing lighting
3. *Describe* environmental control methods
4. *Describe* rescuer rehabilitation protocols

Requisite Skills

1. Access resources
2. Set up lights
3. Initiate environmental controls
4. Set up rehabilitation for rescuers

Content Modification

Block	Modification	Justification

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 1-5 • Topic 4-5	SCS1 Training Record (2021) • 5	SCS1 Instructor (2021) • JPR 5

1-6: Sizing Up a Structural Collapse Incident

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.1.6

Job Performance Requirement

Size up a structural collapse rescue incident, given background information and applicable reference materials, so that the scope of the rescue is determined, the number of victims is identified, the last reported location of all the victims is established, witnesses and reporting parties are identified and interviewed, resource needs are assessed, primary search parameters are identified, and the information required to develop an initial incident action plan is obtained.

Requisite Knowledge

1. *Identify* types of reference materials and their uses
2. *Identify* availability and capability of the resources
3. *Describe* elements of an incident action plan and related information
4. *Describe* relationship of the size-up to the incident management system
5. *Describe* information gathering techniques and how that information is used in the size-up process
6. *Describe* basic search criteria for structural collapse rescue incidents

Requisite Skills

1. Read technical rescue reference materials
2. Gather information
3. Use interview techniques
4. Relay information
5. Use information-gathering sources

Content Modification

Block	Modification	Justification

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 1-1 • Topic 4-1	SCS1 Training Record (2021) • 1	SCS1 Instructor (2021) • JPR 1

1-7: Recognizing the Need for Technical Resources

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.1.7

Job Performance Requirement

Recognize the need for technical rescue resources at an operations- or technician-level incident, given AHJ guidelines, 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.

Requisite Knowledge

1. *Identify* operational protocols
2. *Identify* specific planning forms
3. *Describe* types of incidents common to the AHJ
4. Recognize hazards
5. *Describe* incident support operations and resources
6. *Describe* safety measures

Requisite Skills

1. Read technical rescue reference materials
2. Gather information
3. Use interview techniques
4. Relay information
5. Use information-gathering sources

Content Modification

Block	Modification	Justification

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 1-3 • Topic 4-3	SCS1 Training Record (2021) • 3	SCS1 Instructor (2021) • JPR 3

Section 2: Operations

2-1: Conducting a Size-up of a Light Frame or URM Collapsed Structure

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.2.1

Job Performance Requirement

Conduct a size-up of a light frame or unreinforced masonry (URM) collapsed structure, given an incident and specific incident information, so that existing and potential conditions within the structure and the immediate periphery are evaluated, needed resources are defined, hazards are identified, construction and occupancy types are determined, collapse type is identified if possible, the need for rescue is assessed, a scene security perimeter is established, and the size-up is conducted within the scope of the incident management system.

Requisite Knowledge

1. *Identify* light frame and URM construction types
2. *Identify* characteristics and probable occupant locations
3. *Describe* methods to assess rescue needs
4. *Describe* expected behavior of light frame and URM construction in a structural collapse incident
5. *Describe* causes and associated effects of structural collapses
6. *Describe* types and capabilities of resources
7. *Identify* general hazards associated with structural collapse and size-up
8. *Describe* procedures for implementing site control and scene management

Requisite Skills

1. Categorize light frame and URM construction types
2. Evaluate structural stability and hazards
3. Implement resource and security (scene management) protocols

Content Modification

Block	Modification	Justification
RK1	Changed “Identification of” to “Identify”.	Adjusted to improve grammar and readability. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 2-3 • Topic 5-3	SCS1 Training Record (2021) • 10	SCS1 Instructor (2021) • JPR 10

2-2: Determining Potential Victim Locations

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.2.2

Job Performance Requirement

Determine potential victim locations in light frame and URM construction collapse incidents, given size-up information, a structural collapse tool *cache*, the type of construction and occupancy, time of day, and collapse pattern, so that search areas are established and victims can be located.

Requisite Knowledge

1. *Describe* capabilities and limitations of search instruments and resources
2. *Identify* types of building construction
3. *Describe* occupancy classifications
4. *Identify* collapse patterns
5. *Describe* victim behavior
6. *Recognize* potential areas of survivability

Requisite Skills

1. Use size-up information
2. Use occupancy classification information
3. Use search devices
4. Assess and categorize type of collapse

Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	A kit is a subset of a larger cache, which is more appropriate for this JPR. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 2-6 • Topic 5-6	SCS1 Training Record (2021) • 13	SCS1 Instructor (2021) • JPR 13

2-3: Developing a Collapse Rescue Incident Action Plan

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.2.3

Job Performance Requirement

Develop a collapse rescue incident action plan, given size-up information and a light frame and URM construction collapsed structure, so that initial size-up information is utilized, an incident management system is incorporated, existing and potential conditions within the structure and the immediate periphery are included, specialized resource needs are identified, work perimeters are determined, collapse type/category and associated hazards are identified, construction and occupancy types are determined, incident objectives are established, and scene security measures are addressed.

Requisite Knowledge

1. *Describe* incident-specific size-up information
2. *Describe* incident management system components
3. *Describe* dynamics of incident conditions and peripheral areas
4. *Identify* incident-specific resources in a given geographical area
5. *Describe* construction and occupancy types
6. *Describe* scene security requirements
7. *Identify* personnel needs and limitations
8. *Identify* rescue scene operational priorities

Requisite Skills

1. Utilize size-up information
2. Implement an incident management system
3. Monitor changing conditions specific to the incident
4. Identify potential specialized resources
5. Determine construction and occupancy types
6. Identify specific incident security requirements
7. Create written documentation

Content Modification

Block	Modification	Justification

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 2-4 • Topic 5-4	SCS1 Training Record (2021) • 11	SCS1 Instructor (2021) • JPR 11

2-4: Implementing a Collapse Rescue Incident Action Plan

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.2.4

Job Performance Requirement

Implement a collapse rescue incident action plan, given an action plan and a light frame and URM construction collapsed structure, so that pertinent information is used, an incident management system is established and implemented, monitoring of dynamic conditions internally and externally is established, specialized resources are requested, hazards are mitigated, victim rescue and extraction techniques are consistent with collapse and construction type, and perimeter security measures are established.

Requisite Knowledge

1. *Describe* components of an action plan specific to collapse incidents
2. *Describe* incident management systems
3. *Identify* dynamics of incident conditions and peripheral areas
4. *Identify* specialized resource lists
5. Recognize hazards
6. *Describe* rescue and extrication techniques consistent with each collapse and construction type
7. *Describe* perimeter security measures
8. *Identify* personnel needs and limitations

Requisite Skills

1. Implement the components of an action plan in a collapse incident
2. Implement an incident management system
3. Initiate hazard mitigation objectives
4. Request specialized resources
5. Initiate rescue objectives
6. Demonstrate perimeter security measures

Content Modification

Block	Modification	Justification
RK4	Changed “identification of” to “identify”.	Adjusted for grammar and readability. (2021)
RK5	Changed “hazard identification” to “Recognize hazards”.	Adjusted for grammar and readability. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 2-5 • Topic 5-5	SCS1 Training Record (2021) • 12	SCS1 Instructor (2021) • JPR 12

2-5: Searching a Collapsed Structure

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.2.5

Job Performance Requirement

Search a light frame and URM construction collapsed structure, given PPE, the structural collapse tool *cache*, an assignment, operational protocols, and size-up information, so that all victim locations and potential hazards are identified, marked, and reported; protocols are followed; the mode of operation can be determined; and rescuer safety is maintained.

Requisite Knowledge

1. *Describe* concepts and operation of the incident management system as applied to the search function
2. *Describe how to apply* specialty tools and locating devices
3. *Describe how to apply* recognized marking systems
4. *Describe* voice sounding techniques
5. *Identify* potential victim locations as related to the type of structure and occupancy
6. *Identify* building construction *type*
7. *Describe* collapse types and their influence on the search function
8. *Describe* operational *search* protocols
9. *Recognize* various hazards

Requisite Skills

1. Implement an incident management system
2. Apply search techniques
3. Use marking systems
4. Identify and mitigate hazards
5. Select and use victim locating devices

Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	A kit is a subset of a larger cache, which is more appropriate for this JPR. (2021)
RK2	Changed “application of” to “how to apply”.	Adjusted for grammar and readability. (2021)
RK3	Changed “application of” to “how to apply”.	Adjusted for grammar and readability. (2021)
RK6	Added “type”.	You need to know the construction type because you approach different types in different ways. (2021)
RK8	Added “search”.	Added to narrow scope of “protocols.” (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 2-7 • Topic 5-7	SCS1 Training Record (2021) • 14	SCS1 Instructor (2021) • JPR 14

2-6: Stabilizing a Collapsed Structure as a Member of a Team

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.2.6

Job Performance Requirement

Stabilize a collapsed light frame and URM construction structure as a member of a team, given size-up information, a specific pattern of collapse, a basic structural collapse tool *cache*, and an assignment, so that strategies to effectively minimize the movement of structural components are identified and implemented; hazard warning systems are established and understood by participating personnel; hazard-specific PPE is identified, provided, and utilized; physical hazards are identified; confinement, containment, and avoidance measures are discussed; and a rapid intervention team is established and staged.

Requisite Knowledge

1. Identify appropriate PPE
2. Describe PPE care and maintenance requirements
3. Describe confinement, containment, and avoidance measures
4. *Describe* structural load calculations for shoring system requirements
5. *Describe* shoring systems for stabilization
6. *Identify* specific hazards associated with light frame and URM construction structural collapse
7. *Describe* strategic planning for collapse incidents
8. *Describe* communications and safety protocols
9. *Identify* atmospheric monitoring equipment needs
10. *Identify* characteristics, expected behavior, type, causes, and associated effects of light frame and URM construction structural collapses
11. *Recognize* potential for, and signs of, impending secondary collapse

Requisite Skills

1. Select and construct shoring systems for collapses in light frame and URM construction structures
2. Use PPE
3. Perform structural load calculations
4. Determine resource needs
5. Select and operate basic and specialized tools and equipment
6. Implement communications and safety protocols
7. Mitigate specific hazards associated with shoring tasks

Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	A kit is a subset of a larger cache, which is more appropriate for this JPR. (2021)
RK1	Split “identification and care of required PPE” into two separate knowledge items.	Needed to separate appropriate PPE selection and PPE care and maintenance. (2021)
RK2	Split “identification and care of required PPE” into two separate knowledge items.	Needed to separate appropriate PPE selection and PPE care and maintenance. (2021)
RK3	Added new RK item.	This is a standard for the JPR but not addressed in the requisite knowledge. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 2-11 • Topic 5-11	SCS1 Training Record (2021) • 18	SCS1 Instructor (2021) • JPR 18

2-7: Releasing a Victim from Entrapment

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.2.7

Job Performance Requirement

Release a victim from entrapment by components of a light frame and URM construction collapsed structure, given PPE and resources for breaching, breaking, lifting, prying, shoring, and/or otherwise moving or penetrating the offending structural component, so that hazards to rescue personnel and victims are minimized, considerations are given to compartment syndrome due to crush injuries, techniques enhance patient survivability, tasks are accomplished within projected time frames, and techniques do not compromise the integrity of the existing structure or structural support systems.

Requisite Knowledge

1. Identify appropriate PPE
2. Describe PPE care and maintenance requirements
3. *Identify* general hazards associated with each type of structural collapse
4. *Describe* methods of evaluating structural integrity
5. *Describe* compartment syndrome protocols
6. *Identify* construction types and collapse characteristics of light frame and URM construction structures
7. *Describe* causes and associated effects of structural collapses
8. *Identify* potential signs of impending secondary collapse
9. *Describe how to* select and apply rescue tools and resources
10. *Describe* risk/benefit assessment techniques for extrication methods and time constraints

Requisite Skills

1. Select, use, and care for PPE
2. Operate rescue tools and stabilization systems
3. Recognize compartment syndrome indicators
4. Complete risk/benefit assessments for selected methods of rescue and time constraints

Content Modification

Block	Modification	Justification
RK1	Split “identification, utilization, and required care of PPE” into two separate knowledge items.	Needed to separate appropriate PPE selection and PPE care and maintenance. (2021)
RK2	Split “identification, utilization, and required care of PPE” into two separate knowledge items.	Needed to separate appropriate PPE selection and PPE care and maintenance. (2021)

RK6	Changed “identification of” to “Identify” and “light-frame” to “light frame”.	Adjusted for grammar, readability, and consistency. (2021)
RK8	Changed “selection and application of” to “how to select and apply”.	Adjusted for grammar and readability. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 2-13 • Topic 5-13	SCS1 Training Record (2021) • 20	SCS1 Instructor (2021) • JPR 20

2-8: Removing a Victim from a Collapse Incident

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.2.8

Job Performance Requirement

Remove a victim from a light frame and URM construction collapse incident, given a disentangled victim, a basic first aid kit, and victim packaging resources, so that basic life functions are supported as required, victim is evaluated for signs of compartment syndrome due to crush injuries, advanced life support is called if needed, methods and packaging devices selected are compatible with intended routes of transfer, universal precautions are employed to protect personnel from bloodborne pathogens, and extraction times meet time constraints for medical management.

Requisite Knowledge

1. Identify appropriate PPE
2. Describe PPE care and maintenance requirements
3. *Identify* general hazards associated with structural collapse
4. *Identify* light frame and URM construction types
5. *Describe* characteristics and expected behavior of each type in a structural collapse incident
6. *Describe* causes and associated effects of structural collapses
7. *Recognize* potential for and signs of impending secondary collapse
8. *Describe* characteristic mechanisms of compartment syndrome due to crush injuries and basic life support
9. *Describe* patient packaging principles

Requisite Skills

1. Select, use, and care for PPE
2. *Perform* basic prehospital care *and treatment* of soft-tissue injuries
3. *Stabilize* fractures
4. *Perform* airway maintenance techniques and cardiopulmonary resuscitation
5. Identify signs and symptoms of compartment syndrome
6. Select and use patient packaging equipment

Content Modification

Block	Modification	Justification
JPR	Changed “light-frame” to “light frame”.	Adjusted for consistency. (2021)
RK1	Split “identification, utilization, and required care of PPE resources for structural collapse incidents” into two separate knowledge items.	Needed to separate appropriate PPE selection and PPE care and maintenance. (2021)

RK2	Split “identification, utilization, and required care of PPE resources for structural collapse incidents” into two separate knowledge items.	Needed to separate appropriate PPE selection and PPE care and maintenance. (2021)
RK4	Changed “identification of” to “Identify” and “light-frame” to “light frame”.	Adjusted for grammar, consistency, and readability. (2021)
RK7	Changed “recognition of” to “recognize”.	Adjusted for grammar and readability. (2021)
RS2	Added “perform” and “and treatment”.	NFPA did not provide a verb. (2021)
RS3	Changed “Fracture stabilization” to “Stabilize fractures”.	Adjusted for grammar and readability. (2021)
RS4	Added “Perform” and made “technique” plural.	NFPA did not provide a verb. There is more than one technique. (2021)
RS5	Added new RK item.	This can occur in light frame and URM construction collapses as well as in heavy construction collapses. Should be addressed at this level too. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 2-14 • Topic 5-14	SCS1 Training Record (2021) • 21	SCS1 Instructor (2021) • JPR 21

2-9: Lifting a Heavy Load as a Team Member

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.2.9

Job Performance Requirement

Lift a heavy load as a team member, given a structural collapse tool *cache* and a load to be lifted, so that the load is lifted; control and stabilization are maintained before, during, and after the lift; and access can be gained.

Requisite Knowledge

1. Describe how to apply levers
2. *Describe* classes of levers
3. *Describe* principles of leverage, gravity, and load balance
4. *Describe* resistance force
5. *Describe* mechanics of load stabilization
6. *Describe* mechanics of load lifting
7. *Describe how to* apply pneumatic, hydraulic, mechanical, and manual lifting tools
8. *Describe* how to calculate the weight of the load
9. *Describe* safety protocols
10. *Describe* stabilization systems

Requisite Skills

1. Evaluate and estimate the weight of the load
2. Operate lifting tools
3. Apply a lever
4. Application load stabilization systems

Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	A kit is a subset of a larger cache, which is more appropriate for this JPR. (2021)
RK1	Changed “application of” to “how to apply”.	Adjusted for grammar and readability. (2021)
RK7	Changed “application of” to “how to apply”.	Adjusted for grammar and readability. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 2-9 • Topic 5-9	SCS1 Training Record (2021) • 16	SCS1 Instructor (2021) • JPR 16

2-10: Moving a Heavy Load as a Team Member

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.2.10

Job Performance Requirement

Move a heavy load as a team member, given a structural collapse tool *cache*, so that the load is moved the required distance to gain access and so that control is constantly maintained.

Requisite Knowledge

1. *Describe how to* apply rigging systems
2. Describe how to apply levers
3. *Describe* classes of levers
4. Describe how to apply rollers
5. *Describe* inclined planes
6. *Describe* gravity, *center of gravity*, and load balance
7. *Describe* friction
8. *Describe* mechanics of load stabilization and load lifting
9. *Describe* capabilities and limitations of lifting tools
10. *Describe* how to calculate the weight of the load
11. *Describe* safety protocols

Requisite Skills

1. Evaluate and estimate the weight of the load
2. Operate required tools
3. Construct and use levers*, rollers,* and *inclined* planes
4. Utilize rigging systems
5. Stabilize the load

Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	A kit is a subset of a larger cache, which is more appropriate for this JPR. (2021)
RK1	Changed “application of” to “how to apply”.	Adjusted for grammar and readability. (2021)
RK2	Changed “application of” to “how to apply”.	Adjusted for grammar and readability. (2021)
RK4	Added new RK item.	This tool was missed in the list but is noted in the Annex materials. (2021)
RK6	Added “center of gravity”.	This term is more common in the fire service than “gravity and load balance”. (2021)

RS3	Added “rollers” and changed “incline” to “inclined”.	Added “rollers” to correspond to RK 4. “Incline” is incorrect term. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 2-10 • Topic 5-10	SCS1 Training Record (2021) • 17	SCS1 Instructor (2021) • JPR 17

2-11: Breaching Structural Components

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.2.11

Job Performance Requirement

Breach light frame and URM construction structural components, given an assignment, PPE, various types of construction materials, and a structural collapse tool *cache*, so that the opening supports the rescue objectives, the necessary tools are selected, structural stability is maintained, and the methods utilized are safe and efficient.

Requisite Knowledge

1. *Describe* effective breaching techniques
2. *Describe* types of building construction and characteristics of materials used in each
3. *Describe* the selection, capabilities, and limitations of tools
4. *Describe* safety protocols for breaching operations
5. *Describe how to* calculate weight
6. *Describe how to* anticipate material movement during breaching and stabilization techniques

Requisite Skills

1. Select and use breaching tools
2. Implement breaching techniques based on *light* frame and URM construction types
3. Use PPE
4. Apply stabilization where required

Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	A kit is a subset of a larger cache, which is more appropriate for this JPR. (2021)
RK5	Changed “calculation of” to “how to calculate”.	Adjusted for grammar and readability. (2021)
RK6	Changed “anticipation of” to “how to anticipate”.	Adjusted for grammar and readability. (2021)
RS2	Changed “building” to “light”.	Adjusted to match other uses of the term. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 2-12 • Topic 5-12	SCS1 Training Record (2021) • 19	SCS1 Instructor (2021) • JPR 19

2-12: Constructing Cribbing Systems

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.2.12

Job Performance Requirement

Construct cribbing systems, given an assignment, PPE, a structural collapse tool *cache*, various lengths and dimensions of lumber, wedges, and shims, so that the cribbing system will safely support the load, the system is stable, and the assignment is completed.

Requisite Knowledge

1. *Describe* different types of cribbing systems and their construction methods
2. *Describe* limitations of construction lumber
3. *Describe* load calculations
4. *Describe* principles of and applications for cribbing
5. *Describe* safety protocols

Requisite Skills

1. Select and construct cribbing systems
2. Evaluate the structural integrity of the system
3. Determine stability
4. Calculate loads

Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	A kit is a subset of a larger cache, which is more appropriate for this JPR. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 2-8 • Topic 5-8	SCS1 Training Record (2021) • 15	SCS1 Instructor (2021) • JPR 15

2-13: Maintaining Hazard-specific PPE

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.2.13

Job Performance Requirement

Maintain hazard-specific PPE, given clothing or equipment for the protection of the rescuers, including respiratory protection, cleaning and sanitation supplies, maintenance logs or records, inspection procedures, and such tools and resources as are indicated by the manufacturer's guidelines for assembly or disassembly of components during repair or maintenance, so that damage, defects, and wear are identified and reported or repaired; equipment functions as designed; and preventive maintenance has been performed and documented consistent with the manufacturer's recommendations.

Requisite Knowledge

1. *Describe* functions, construction, and operation of PPE
2. *Describe how to* use record-keeping systems of the AHJ
3. *Describe* requirements and procedures for cleaning, sanitizing, and infectious disease control
4. *Describe how to* use provided assembly and disassembly tools
5. *Identify* manufacturer and department recommendations
6. *Describe* pre-use inspection procedures
7. *Describe how* to determine operational readiness

Requisite Skills

1. Identify wear and damage indicators for PPE
2. Evaluate operational readiness of PPE
3. Complete logs and records
4. Use cleaning equipment, supplies, and reference materials
5. Select and use tools specific to the task

Content Modification

Block	Modification	Justification
RK2	Changed "use of" to "how to use".	Adjusted for grammar and readability. (2021)
RK4	Changed "use of" to "how to use".	Adjusted for grammar and readability. (2021)
RK6	Changed "preuse" to "pre-use".	Adjusted for grammar and readability. (2021)
RK7	Changed "ways" to "how".	Adjusted for grammar and readability. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 2-1 • Topic 5-1 SCS2: Technician (2021) • Topic 1-1 • Topic 3-1	SCS1 Training Record (2021) • 8 SCS2 Training Record (2021) • 1	SCS1 Instructor (2021) • JPR 8 SCS2 Instructor (2021) • JRP 1

2-14: Maintaining Rescue Equipment

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.2.14

Job Performance Requirement

Maintain rescue equipment, given maintenance logs and records, tools, and resources as indicated by the manufacturer's guidelines, inspection procedures, equipment replacement protocol, and organizational standard operating procedure, so that the operational status of equipment is verified and documented, all components are checked for operation, deficiencies are repaired or reported as indicated by standard operating procedure, and items subject to replacement are correctly disposed of and changed out.

Requisite Knowledge

1. *Describe* functions and operations of rescue equipment
2. *Describe how to* use record-keeping systems
3. *Describe* manufacturer and organizational care and maintenance requirements
4. *Describe how to* select and use maintenance tools
5. *Describe* replacement protocol and procedures
6. *Describe* disposal methods
7. *Describe AHJ* standard operating procedures

Requisite Skills

1. Identify wear and damage indicators for rescue equipment
2. Evaluate *operational* readiness of equipment
3. Complete logs and records
4. Select and use maintenance tools

Content Modification

Block	Modification	Justification
RK2	Changed "use of" to "how to use".	Adjusted for grammar and readability. (2021)
RK4	Changed "selection and use of" to "how to select and use".	Adjusted for grammar and readability. (2021)
RK7	Changed "organizational" to "AHJ".	Adjusted for consistency. (2021)
RS2	Changed "operation" to "operational".	Incorrect word used. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 2-2 • Topic 5-2 SCS2: Technician (2021) • Topic 1-2 • Topic 3-2	SCS1 Training Record (2021) • 9 SCS2 Training Record (2021) • 2	SCS1 Instructor (2021) • JPR 9 SCS2 Instructor (2021) • JPR 2

2-15: Terminating an Incident

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
    - Paragraph 6.2.15

Job Performance Requirement

Terminate an incident, given PPE specific to the incident, isolation barriers, and tool *cache*, 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 material 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.

Requisite Knowledge

1. *Identify* PPE characteristics
2. *Identify* hazards and risks
3. *Describe* isolation techniques
4. *Recognize* statutory requirements identifying responsible parties
5. *Describe how to use an* accountability system
6. *Describe* reporting methods
7. *Describe* post-incident analysis techniques

Requisite Skills

1. Select and use hazard-specific PPE
2. Identify and perform decontamination
3. Use barrier protection techniques
4. Collect data
5. *Follow* record-keeping/reporting protocol
6. *Complete* post-incident analysis activities

Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	A kit is a subset of a larger cache, which is more appropriate for this JPR. (2021)
RK2	Changed “identification” to “Identify”.	Adjusted for grammar and readability. (2021)
RK5	Changed “use” to “how to use an”.	Adjusted for grammar and readability. (2021)
RS2	Added “Identify and perform.”	NFPA did not provide a verb. (2021)

RS5	Added “Follow”.	NFPA did not provide a verb. (2021)
RS6	Added “Complete”.	NFPA did not provide a verb. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS1: Operations (2021) • Topic 2-15 • Topic 5-15	SCS1 Training Record (2021) • 22	SCS1 Instructor (2021) • JPR 22

Structural Collapse Specialist 2

Section 3: Technician

3-1: Conducting a Size-up of a Collapsed Heavy Construction-type Structure

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.3.1

Job Performance Requirement

Conduct a size-up of a collapsed heavy construction–type structure, given an incident and specific incident information, so that existing and potential conditions within the structure and the immediate periphery are evaluated, needed resources are defined, hazards are identified, construction and occupancy types are determined, collapse type is identified if possible, the need for rescue is assessed, a scene security perimeter is established, and the size-up is conducted within the scope of the incident management system.

Requisite Knowledge

1. *Identify* heavy construction types
2. *Identify* characteristics, and probable occupant locations
3. *Describe* methods to assess rescue needs
4. *Describe* expected behavior of heavy construction in a structural collapse incident
5. *Describe* causes and associated effects of structural collapses
6. *Describe* types and capabilities of resources
7. *Identify* general hazards associated with structural collapse and size-up
8. *Describe* procedures for implementing site control and scene management

Requisite Skills

1. Categorize heavy construction types
2. Evaluate structural stability and hazards
3. Implement resource and security (scene management) protocols

Content Modification

Block	Modification	Justification
RK1	Changed “Identification of” to “Identify”.	Adjusted to for grammar and readability. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS2: Technician (2021) • Topic 1-3 • Topic 4-1	SCS2 Training Record (2021) • 3	SCS2 Instructor (2021) • JPR 3

3-2: Determining Potential Victim Locations

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.3.2

Job Performance Requirement

Determine potential victim locations in a heavy construction–type incident, given size-up information, a structural collapse tool *cache*, the type of construction and occupancy, time of day, and collapse pattern, so that search areas are established and victims can be located.

Requisite Knowledge

1. *Describe* capabilities and limitation of search instruments and resources
2. *Identify* types of building construction
3. *Describe* occupancy classifications
4. *Identify* collapse patterns
5. *Describe* victim behavior
6. *Recognize* potential areas of survivability

Requisite Skills

1. Use size-up information
2. Use occupancy classification information
3. Use search devices
4. Assess and categorize type of collapse

Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	A kit is a subset of a larger cache, which is more appropriate for this JPR. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS2: Technician (2021) • Topic 1-6 • Topic 4-4	SCS2 Training Record (2021) • 6	SCS2 Instructor (2021) • JPR 6

3-3: Developing a Collapse Rescue Incident Action Plan

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.3.3

Job Performance Requirement

Develop a collapse rescue incident action plan, given size-up information and a heavy collapsed structure, so that initial size-up information is utilized, an incident management system is incorporated, existing and potential conditions within the structure and the immediate periphery are included, specialized resource needs are identified, work perimeters are determined, collapse type/category and associated hazards are identified, construction and occupancy types are determined, incident objectives are established, and scene security measures are addressed.

Requisite Knowledge

1. *Describe* incident-specific size-up information
2. *Describe* incident management system components
3. *Describe* dynamics of incident conditions and peripheral areas
4. *Identify* incident-specific resources in a given geographical area
5. *Describe* construction and occupancy types
6. *Describe* scene security requirements
7. *Identify* personnel needs and limitations
8. *Identify* rescue scene operational priorities

Requisite Skills

1. Utilize size-up information
2. Implement an incident management system
3. Monitor changing conditions specific to the incident
4. Identify potential specialized resources
5. Determine construction and occupancy types
6. Identify specific incident security requirements
7. Create written documentation

Content Modification

Block	Modification	Justification

Cross Reference

Course Plan	Training Records	Task Book
SCS2: Technician (2021) • Topic 1-4 • Topic 4-2	SCS2 Training Record (2021) • 4	SCS2 Instructor (2021) • JPR 4

3-4: Implementing a Collapse Rescue Incident Action Plan

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.3.4

Job Performance Requirement

Implement a collapse rescue incident action plan, given an action plan and a heavy construction–type collapsed structure, so that pertinent information is used, an incident management system is established and implemented, monitoring of dynamic conditions internally and externally is established, specialized resources are requested, hazards are mitigated, victim rescue and extraction techniques are consistent with collapse and construction type, and perimeter security measures are established.

Requisite Knowledge

1. *Describe* components of an action plan specific to collapse incidents
2. *Describe* incident management systems
3. *Identify* dynamics of incident conditions and peripheral areas
4. *Identify* specialized resource lists
5. Recognize hazards
6. *Describe* rescue and extrication techniques consistent with each collapse and construction type
7. *Describe* perimeter security measures
8. *Identify* personnel needs and limitations

Requisite Skills

1. Implement the components of an action plan in a collapse incident
2. Implement an incident management system
3. Initiate hazard mitigation objectives
4. Request specialized resources
5. Initiate rescue objectives
6. Demonstrate perimeter security measures

Content Modification

Block	Modification	Justification
RK4	Changed “identification of” to “Identify”.	Adjusted for grammar and readability. (2021)
RK5	Changed “identification of” to “Recognize”.	Adjusted for grammar and readability. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS2: Technician (2021) • Topic 1-5 • Topic 4-3	SCS2 Training Record (2021) • 5	SCS2 Instructor (2021) • JPR 5

3-5: Searching a Collapsed Structure

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.3.5

Job Performance Requirement

Search a heavy construction–type collapsed structure, given PPE, the structural collapse tool *cache*, an assignment, operational protocols, and size-up information, so that all victim locations and potential hazards are identified, marked, and reported; protocols are followed; the mode of operation can be determined; and rescuer safety is maintained.

Requisite Knowledge

1. *Describe* concepts and operation of the incident management system as applied to the search function
2. *Describe how to* apply specialty tools and locating devices
3. *Describe how to* apply recognized marking systems
4. *Describe* voice sounding techniques
5. *Identify* potential victim locations as related to the type of structure and occupancy
6. *Identify* building construction *type*
7. *Describe* collapse types and their influence on the search function
8. *Describe* operational *search* protocols
9. *Recognize* various hazards

Requisite Skills

1. Implement an incident management system
2. Apply search techniques
3. Use marking systems
4. Identify and mitigate hazards
5. Select and use victim locating devices

Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	A kit is a subset of a larger cache, which is more appropriate for this JPR. (2021)
RK2	Changed “application of” to “how to apply”.	Adjusted for grammar and readability. (2021)
RK3	Changed “application of” to “how to apply”.	Adjusted for grammar and readability. (2021)
RK6	Added “type”.	Added for context. (2021)
RK8	Added “search”.	Added to narrow scope of protocols.

RK9	Changed “and their recognition” to “Recognize”.	Adjusted for grammar and readability. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS2: Technician (2021) • Topic 1-7 • Topic 4-5	SCS2 Training Record (2021) • 7	SCS2 Instructor (2021) • JPR 7

3-6: Stabilizing a Collapsed Structure Using Timber Shoring Systems

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.3.6

Job Performance Requirement

Stabilize a collapsed heavy construction–type structure *using timber shoring systems* as a member of a team, given size-up information, a specific pattern of collapse, a basic structural collapse tool *cache*, and an assignment, so that strategies to effectively minimize the movement of structural components are identified and implemented; hazard warning systems are established and understood by participating personnel; hazard-specific PPE is identified, provided, and utilized; physical hazards are identified; confinement, containment, and avoidance measures are discussed; and a rapid intervention team is established and staged.

Requisite Knowledge

1. Identify appropriate PPE
2. Describe PPE care and maintenance requirements
3. Describe confinement, containment, and avoidance measures
4. *Describe* structural load calculations for shoring system requirements
5. *Describe* shoring systems for stabilization
6. *Describe* specific hazards associated with heavy structural collapse
7. *Describe* strategic planning for collapse incidents
8. *Describe* communications and safety protocols
9. *Identify* atmospheric monitoring equipment needs
10. *Identify* characteristics, expected behavior, type, causes, and associated effects of heavy structural collapses
11. *Recognize* potential for and signs of impending secondary collapse

Requisite Skills

1. Select and construct shoring systems for collapses in heavy structures
2. Use PPE
3. Perform structural load calculations
4. Determine resource needs
5. Select and operate basic and specialized tools and equipment
6. Implement communications and safety protocols
7. Mitigate specific hazards associated with shoring tasks

Content Modification

Block	Modification	Justification
JPR	Added “using timber shoring systems”	Added to distinguish between NFPA paragraph 6.3.6 and 6.3.13. Same task using different materials. (2021)
JPR	Changed “kit” to “cache”.	A kit is a subset of a larger cache, which is more appropriate for this JPR. (2021)
RK1	Split “identification and required care of PPE” into two separate knowledge items.	Needed to separate appropriate PPE selection and PPE care and maintenance. (2021)
RK2	Split “identification and required care of PPE” into two separate knowledge items.	Needed to separate appropriate PPE selection and PPE care and maintenance. (2021)
RK3	Added new RK item.	This is a standard for the JPR but not addressed in the requisite knowledge. (2021)
RK10	Changed “identification” to “Identify”.	Adjusted for grammar and readability. (2021)
RK11	Changed “recognition of” to “Recognize”.	Adjusted for grammar and readability. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS2: Technician (2021) • Topic 1-11 • Topic 4-9	SCS2 Training Record (2021) • 11	SCS2 Instructor (2021) • JPR 11

3-7: Releasing a Victim from Entrapment

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.3.7

Job Performance Requirement

Release a victim from entrapment by components of a heavy construction–type collapsed structure, given PPE and resources for breaching, breaking, lifting, prying, shoring, and/or otherwise moving or penetrating the offending structural component, so that hazards to rescue personnel and victims are minimized, considerations are given to compartment syndrome due to crush injuries, techniques enhance patient survivability, tasks are accomplished within projected time frames, and techniques do not compromise the integrity of the existing structure or structural support systems.

Requisite Knowledge

1. Identify appropriate PPE
2. Describe PPE care and maintenance requirements
3. *Identify* general hazards associated with each type of structural collapse
4. *Describe* methods of evaluating structural integrity
5. *Describe* compartment syndrome protocols
6. *Identify* construction types and collapse characteristics of heavy construction–type structures
7. *Describe* causes and associated effects of structural collapses
8. *Identify* potential signs of impending secondary collapse
9. *Describe how to* select and apply rescue tools and resources
10. *Describe* risk/benefit assessment techniques for extrication methods and time constraints

Requisite Skills

1. Select, use, and care for PPE
2. Operate rescue tools and stabilization systems
3. Recognize compartment syndrome signs and symptoms
4. Complete risk/benefit assessments for selected methods of rescue and time constraints

Content Modification

Block	Modification	Justification
RK1	Changed “identification, utilization, and required care of PPE” into two separate items.	Needed to separate appropriate PPE selection and PPE care and maintenance. (2021)
RK2	Changed “identification, utilization, and required care of PPE” into two separate items.	Needed to separate appropriate PPE selection and PPE care and maintenance. (2021)

RK6	Changed “identification of” to “Identify”.	Adjusted for grammar and readability. (2021)
RK9	Changed “selection and application of” to “how to select and apply”.	Adjusted for grammar and readability. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS2: Technician (2021) • Topic 1-16 • Topic 4-14	SCS2 Training Record (2021) • 16	SCS2 Instructor (2021) • JPR 16

3-8: Removing a Victim from a Collapse Incident

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.3.8

Job Performance Requirement

Remove a victim from a heavy construction–type collapse incident, given a disentangled victim, a basic first aid kit, and victim packaging resources, so that basic life functions are supported as required, victim is evaluated for signs of compartment syndrome, advanced life support is called if needed, methods and packaging devices selected are compatible with intended routes of transfer, universal precautions are employed to protect personnel from bloodborne pathogens, and extraction times meet time constraints for medical management.

Requisite Knowledge

1. Identify appropriate PPE
2. Describe PPE care and maintenance requirements
3. *Identify* general hazards associated with structural collapse
4. *Identify* heavy construction types
5. *Describe* characteristics and expected behavior of each type in a structural collapse incident
6. *Describe* causes and associated effects of structural collapses
7. *Recognize* potential for, and signs of, impending secondary collapse
8. *Describe* characteristic mechanisms of injury and basic life support
9. *Describe* patient packaging principles

Requisite Skills

1. Select, use, and care for PPE
2. *Perform* basic prehospital care *and treatment* of soft-tissue injuries
3. *Stabilize* fractures
4. *Perform* airway maintenance techniques and cardiopulmonary resuscitation
5. *Identify* signs and symptoms of compartment syndrome
6. Select and use of patient packaging equipment

Content Modification

Block	Modification	Justification
RK1	Split “identification, utilization, and required care of PPE resources for structural collapse incidents” into two separate knowledge items.	Needed to separate appropriate PPE selection and PPE care and maintenance. (2021)
RK2	Split “identification, utilization, and required care of PPE resources for structural collapse incidents” into two separate knowledge items.	Needed to separate appropriate PPE selection and PPE care and maintenance. (2021)
RK4	Changed “identification of” to “Identify”.	Adjusted for grammar and readability. (2021)

RK7	Changed “recognition of” to “Recognize”.	Adjusted for grammar and readability. (2021)
RS2	Added “Perform” and “and treatment”.	NFPA did not provide a verb. (2021)
RS3	Changed “fracture stabilization” to “stabilize fractures”.	Adjusted for grammar and readability. (2021)
RS4	Added “Perform”.	NFPA did not provide a verb. (2021)
RS5	Added “Identify”.	NFPA did not provide a verb. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS2: Technician (2021) • Topic 1-17 • Topic 4-15	SCS2 Training Record (2021) • 17	SCS2 Instructor (2021) • JPR 17

3-9: Lifting a Heavy Load as a Team Member

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.3.9

Job Performance Requirement

Lift a heavy load as a team member, given a structural collapse tool *cache* and a load to be lifted, so that the load is lifted; control and stabilization are maintained before, during, and after the lift; and access can be gained.

Requisite Knowledge

1. Describe how to apply levers
2. *Describe* classes of levers
3. *Describe* principles of leverage, gravity, and load balance
4. *Describe* resistance force
5. *Describe* mechanics of load stabilization
6. *Describe* mechanics of load lifting
7. *Describe how to* apply pneumatic, hydraulic, mechanical, and manual lifting tools
8. *Describe* how to calculate the weight of the load
9. *Describe* safety protocols
10. *Describe* stabilization systems

Requisite Skills

1. Evaluate and estimate the weight of the load
2. Operate lifting tools
3. Apply a lever
4. Apply and load stabilization systems

Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	A kit is a subset of a larger cache, which is more appropriate for this JPR. (2021)
RK1	Changed “application of” to “how to apply”.	Adjusted for grammar and readability. (2021)
RK7	Changed “application of” to “how to apply”.	Adjusted for grammar and readability. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS2: Technician (2021) • Topic 1-9 • Topic 4-7	SCS2 Training Record (2021) • 9	SCS2 Instructor (2021) • JPR 9

3-10: Moving a Heavy Load as a Team Member

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.3.10

Job Performance Requirement

Move a heavy load as a team member, given a structural collapse tool *cache*, so that the load is moved the required distance to gain access and so that control is constantly maintained.

Requisite Knowledge

1. *Describe how to* apply of rigging systems
2. Describe how to apply levers
3. *Describe* classes of levers
4. Describe how to apply rollers
5. *Describe* inclined planes
6. *Describe* gravity, *center of gravity*, and load balance
7. *Describe* friction
8. *Describe* mechanics of load stabilization and load lifting
9. *Describe* capabilities and limitations of lifting tools
10. *Describe* how to calculate the weight of the load
11. *Describe* safety protocols

Requisite Skills

1. Evaluate and estimate the weight of the load
2. Operate required tools
3. Construct and use levers*, rollers,* and incline planes
4. Utilize rigging systems
5. Stabilize the load

Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	A kit is a subset of a larger cache, which is more appropriate for this JPR. (2021)
RK1	Changed “application of” to “how to apply”.	Adjusted for grammar and readability. (2021)
RK2	Changed “application of” to “how to apply”.	Adjusted for grammar and readability. (2021)
RK4	Added new RK item.	This tool was missed in the list but is noted in the Annex materials. (2021)
RK6	Added “center of gravity”.	This term is more common in the fire service than “gravity and load balance”. (2021)

RS3	Added “rollers” and changed “incline” to “inclined”.	Added “rollers” to correspond to RK 4. “Incline” is incorrect term. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS2: Technician (2021) • Topic 1-10 • Topic 4-8	SCS2 Training Record (2021) • 10	SCS2 Instructor (2021) • JPR 10

3-11: Breaching Heavy Structural Components

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.3.11

Job Performance Requirement

Breach heavy structural components, given an assignment, PPE, various types of construction materials, and a structural collapse tool *cache*, so that the opening supports the rescue objectives, the necessary tools are selected, structural stability is maintained, and the methods utilized are safe and efficient.

Requisite Knowledge

1. *Describe* effective breaching techniques
2. *Describe* types of building construction and characteristics of materials used in each
3. *Describe* the selection, capabilities, and limitations of tools
4. *Describe* safety protocols for breaching operations
5. *Describe how to* calculate weight
6. *Describe how to* anticipate material movement during breaching and stabilization techniques

Requisite Skills

1. Select and use breaching tools
2. Implement breaching techniques based on *heavy* construction type
3. Use PPE
4. Apply stabilization where required

Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	A kit is a subset of a larger cache, which is more appropriate for this JPR. (2021)
RK5	Changed “calculation of” to “how to calculate”.	Adjusted for grammar and readability. (2021)
RK6	Changed “anticipation of” to “how to anticipate”.	Adjusted for grammar and readability. (2021)
RS2	Added “heavy”.	Added for consistency. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS2: Technician (2021) • Topic 1-13 • Topic 4-11	SCS2 Training Record (2021) • 13	SCS2 Instructor (2021) • JPR 13

3-12: Constructing Cribbing Systems

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.3.12

Job Performance Requirement

Construct cribbing systems, given an assignment, PPE, a structural collapse tool *cache*, various lengths and dimensions of lumber, wedges, and shims, so that the cribbing system will safely support the load, the system is stable, and the assignment is completed.

Requisite Knowledge

1. *Describe* different types of cribbing systems and their construction methods
2. *Describe* limitations of construction lumber
3. *Describe* load calculations
4. *Describe* principles of and applications for cribbing
5. *Describe* safety protocols

Requisite Skills

1. Select and construct cribbing systems
2. Evaluate the structural integrity of the system
3. Determine stability
4. Calculate loads

Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	A kit is a subset of a larger cache, which is more appropriate for this JPR. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS2: Technician (2021) • Topic 1-8 • Topic 4-6	SCS2 Training Record (2021) • 8	SCS2 Instructor (2021) • JPR 8

3-13: Stabilizing a Collapsed Structure Using Mechanical Shoring Systems

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.3.13

Job Performance Requirement

Stabilize a collapsed heavy construction–type structure *using mechanical shoring systems* as a member of a team, given size-up information, hazard-specific PPE, an assignment, a specific pattern of collapse, a structural collapse tool *cache*, specialized equipment necessary to complete the task, and engineering resources if needed, so that hazard warning systems are established and understanding by team members is verified, all unstable structural components that can impact the work and egress routes are identified, alternative egress routes are established when possible, expert resource needs are determined and communicated to command, load estimates are calculated for support system requirements, all shoring systems meet or exceed load-bearing demands, shoring systems are monitored continuously for integrity, safety protocols are followed, a rapid intervention crew (RIC) is established and staged to aid search and rescue personnel in the event of entrapment, an accountability system is established, atmospheric monitoring is ongoing, and progress is communicated as required.

Requisite Knowledge

1. Identify appropriate PPE
2. Describe PPE care and maintenance requirements
3. *Describe how to evaluate* structural load calculations for shoring system requirements
4. *Describe how to select* shoring systems for stabilization
5. *Describe* specific hazards associated with heavy structural collapse
6. *Describe* hazard warning systems
7. *Recognize and describe* specialized resource and equipment needs
8. *Describe* communications and rescuer safety protocols
9. *Describe* atmospheric monitoring equipment needs
10. *Identify* construction types
11. *Describe* characteristics and expected behavior of *heavy construction* in a structural collapse incident
12. *Identify* causes and associated effects of structural collapses
13. *Recognize* potential for and signs of impending secondary collapse

Requisite Skills

1. Select and construct shoring systems for heavy construction–type collapses
2. Use PPE
3. Perform structural load calculations
4. Determine resource needs
5. Select and operate basic and specialized tools and equipment
6. Implement communications and rescuer safety protocol

7. Mitigate specific hazards associated with shoring tasks

Content Modification

Block	Modification	Justification
JPR	Added “using mechanical shoring systems”.	Added to distinguish between NFPA paragraph 6.3.6 and 6.3.13. Same task using different materials. (2021)
JPR	Changed “kit” to “cache”.	A kit is a subset of a larger cache, which is more appropriate for this JPR. (2021)
RK1	Split “identification and required care of PPE” into two separate knowledge items.	Needed to separate appropriate PPE selection and PPE care and maintenance. (2021)
RK2	Split “identification and required care of PPE” into two separate knowledge items.	Needed to separate appropriate PPE selection and PPE care and maintenance. (2021)
RK10	Changed “identification of” to “Identify”.	Adjusted for grammar and readability. (2021)
RK11	Added “heavy construction”.	Added for consistency. (2021)
RK13	Added “recognition of” to “Recognize”.	Added for grammar and readability. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS2: Technician (2021) • Topic 1-12 • Topic 4-10	SCS2 Training Record (2021) • 12	SCS2 Instructor (2021) • JPR 12

3-14: Cutting Through Structural Steel

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.3.14

Job Performance Requirement

Cut through structural steel, given a structural collapse tool *cache*, PPE, and an assignment, so that the steel is efficiently cut, the victim and rescuer are protected, fire control measures are in place, and the objective is accomplished.

Requisite Knowledge

1. *Describe* safety considerations
2. *Describe* the selection, capabilities, and limitations of steel cutting tools
3. *Identify* cutting tool applications
4. *Identify* types of potential and actual hazards and mitigation techniques
5. *Describe* characteristics of steel used in building construction

Requisite Skills

1. Assess tool needs
2. Use cutting tools
3. Implement necessary extinguishment techniques
4. Mitigate hazards
5. Stabilize heavy loads

Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	A kit is a subset of a larger cache, which is more appropriate for this JPR. (2021)

Cross Reference

Course Plan	Training Records	Task Book
SCS2: Technician (2021) • Topic 1-14 • Topic 4-12	SCS2 Training Record (2021) • 14	SCS2 Instructor (2021) • JPR 14

3-15: Coordinating Heavy Equipment Use

Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
   - Paragraph 6.3.15

Job Performance Requirement

Coordinate the use of heavy equipment, given PPE, means of communication, equipment and operator, and an assignment, so that common communications are established, equipment usage supports the operational objective, hazards are avoided, and rescuer and operator safety protocols are followed.

Requisite Knowledge

1. *Describe* types of heavy equipment, capabilities, application, and hazards of heavy equipment and rigging
2. *Describe* safety protocols
3. *Describe* types and methods of communication

Requisite Skills

1. Use hand signals and radio equipment
2. Recognize hazards
3. Assess for operator and rescuer safety
4. Use PPE

Content Modification

Block	Modification	Justification

Cross Reference

Course Plan	Training Records	Task Book
SCS2: Technician (2021) • Topic 1-15 • Topic 4-13	SCS2 Training Record (2021) • 15	SCS2 Instructor (2021) • JPR 15

Operations

Course Plan

Course Details

CTS Guide: Structural Collapse Specialist 1 and 2 (2021)

Description: This course provides the skills and knowledge needed for the operations-level structural collapse specialist to rescue victims from a collapsed light frame and URM construction-type structure; including size up, incident action plans, search, cribbing systems, lifting and moving heavy loads, stabilization, breaching, and rescue.

Designed For: Personnel preparing to pursue technical rescue certification (pending); personnel responsible for meeting local, state, or federal minimum standards; or anyone who functions in a technical rescue environment.

Prerequisites: Rope Rescue Operations or LARRO and Rescue Systems 1 (SFT)

IS-100, IS-200, IS-700, IS-800 (FEMA)*

Confined Space Rescue: Awareness (SFT)

Structural Collapse Specialist (FEMA / computer-based training / 2017 or newer edition) – within two years prior to course registration

Standard: Attend and participate in all course sections

Successful completion of all skills identified on the Training Record.

Hours (Total): 40 hours

(12.75 lecture / 27.25 application)

Maximum Class Size: 48

Instructor Level: SFT Registered Structural Collapse Specialist 1

Instructor/Student Ratio: 1:48 (lecture)

1:6 (application)

Restrictions: All instructors counted toward student ratios, including application components, must be SFT Registered Structural Collapse Specialist 1 Instructors.

SFT Designation: FSTEP

* Courses taught by outside agencies often change names and numbers. Students should enroll in the most current version of any course, even if the course name or number has changed.

Table of Contents

Required Resources

Instructor Resources

To teach this course, instructors need:

- *Structural Collapse Specialist Instructor-Led Training (ILT)*
  - (FEMA, Instructor Guide, April 2017)
  - (FEMA, Participant Guide, April 2017)
- NFPA 1006: Standard for Technical Rescue Personnel (2021) (physical or digital access)
- FIRESCOPE ICS 420-1 Field Operations Guide (2017)
- USACE Field Operations Guide (current edition)
- USACE Shoring Operations Guide (current edition)
- Personal Protective Equipment (PPE)

Online Instructor Resources

The following instructor resources are available online at https://osfm.fire.ca.gov/divisions/state-fire-training/cfstes-professional-certification/:

- *Structural Collapse Specialist Instructor-Led Training (ILT)*
  - (FEMA, Instructor Guide, April 2017)
  - (FEMA, Participant Guide, April 2017)

Student Resources

To participate in this course, students need:

- *Structural Collapse Specialist Instructor-Led Training (ILT)*
  - *(FEMA, Participant Guide, April 2017)*
- NFPA 1006: Standard for Technical Rescue Personnel (2021) (physical or digital access)
- FIRESCOPE ICS 420-1 Field Operations Guide (2017)
- USACE Field Operations Guide (current edition)
- USACE Shoring Operations Guide (current edition)
- Personal Protective Equipment (PPE)

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

- Access to an outdoor facility that enables participants to meet the requisite knowledge and skills of NFPA 1006 and fulfill the assigned activities and skills.

Equipment

Student safety is of paramount importance when conducting the type of high-risk training associated with this Structural Collapse course. The equipment listed below is the minimum for the delivery of this course. The equipment complies with or exceeds the standards listed in NFPA 1983: Standard on Fire Service Life Safety Rope, Harness, and Hardware. The student is responsible for providing all PPE and ensuring that all PPE meets AHJ and site requirements.

The following equipment is required to deliver this course:

Amount	Heavy Object Equipment (1 Squad)
2+	Manikins or other items to represent victims
1	Webbing – 1” x 40’
2	Webbing – 1” x 8’
1	Airbag – Control kit storage container
2	Airbag – Regulators
2	Airbag – Control heads (two bag capable)
2	Airbag – Supply air lines
4	Airbag – Airlines (minimum 16’)
1	Airbag – 3 ton
1	Airbag – 5 ton
2	Airbag – 8 to 15 ton
2	Airbag – 16 to 20 ton
2	Airbag – Any type or size (AHJ specific)
As needed	Air supply (SCBA cylinder)
6	Pry Bar – Pinch point (60” minimum)
10	Pry Bar – Crowbar (30” minimum) (2 for HO/8 for shoring)
12	Rollers – Steel pipe (minimum 1.5” by schedule 40)
2	Jacks – Hydraulic low profile (e.g., bottle jack)
2	Jacks – High lift
2	Tape measure (25’ minimum)
2	Come-a-long (minimum capacity 1.25 ton)
2	Chain fall (3-ton capacity) (optional)
2	Grip hoist (optional)
120	Cribbing – 4” x 4” x 18 to 24”
40	Cribbing – 2” x 4” x 18 to 24”
60 sets	Cribbing wedges – 4” x 4” x 18”
20 sets	Cribbing wedges – 2” x 4” x 12”
Optional	Cribbing – 6” x 6” x 36 to 48”
12	Pickets – 1” x 36”

Optional	Improvised levers (optional, e.g., long 4x4s, >8’ ladders)
Optional	Jack – floor
Amount	**Shoring Equipment**
4	Ellis – Shore clamps (4” x 4”)
2	Ellis – Shore clamp wrench (4” x 4”)
2	Ellis – Post screw jack (4” x 4”)
24	Pickets – 1” x 36”
12	Pins – ½” x 18”
1	Drill – right angle (with accessories needed to support operations)
8	Lumber – 6” x 6” (Deadman)
Double the shoring equipment below if running shoring modules.	
12	Tool belts
12	Hammer – Framing (24 oz minimum)
12	Tape measure (25’ minimum)
12	Square – Speed
12	Marking pencils
12	Nail pullers
12	Sheetrock knives
12	Torpedo levels
2	Chalk lines
4	Square – Framing
1	Saw – Chain (with accessories needed to support operations)
Optional	Saw – Miter, 12” (with accessories needed to support operations)
1	Saw – Circular, 7¼” (with accessories to needed support operations)
1	Saw – Circular, 10¼” (with accessories needed to support operations)
2	Nail gun – Framing (with accessories needed to support operations)
2	Nail gun, Palm nailer (with accessories needed to support operations)
As needed	Air supply (SCBA cylinder) or compressor
4	Hammer – Sledge 3 lb.
2	Hammer – Sledge 8 lb.
2	Magnets (for picking up nails) (Optional)
1	Cutting table (per AHJ)
Amount	**Breaching (1 Squad)**
2	Set of irons
2	Axe – Pick head
2	Hammer – Framing (24 oz minimum)
2	Hammer – Sledge 3 lb.
2	Hammer – Sledge 8 lb.
1	Manikins or other items to represent victims
1	Litter
Optional	Saw – Ring (with accessories needed to support operations)

1	Saw – Rotary (with accessories needed to support operations)
1	Saw – Reciprocating (with accessories needed to support operations)
As needed	Other hand tools (per AHJ)
Amount	**Marking Station (1 Squad)**
	See Consumables section
Amount	**Required Site Conditions and Props**
As needed	Breaches must be done with limited access, inside a <36" pipe or similar
4	Concrete slabs and blocks for lifting (3' x 3' x 3')
4	Concrete slabs and blocks for lifting (1' x 4' x 6')
Improved surfaces for moving heavy objects (large enough to support the operation)	
Door/window shores shall be representative of current door/window building code standards (At least 1 window and 1 door will have a rack and frame)	
Insertion points for exterior shores shall be 8' minimum	
Insertion points for interior shores shall be determined by the Registered Instructor	
Amount	**Consumables** (For final count, multiply by the number of modules taught.)
	BREACHING
2	Breach panel – 4' x 4' x ¾" or based on prop dimensions (interior wall)
2	Breach panel – 4' x 4' or based on prop dimensions (concrete 2" thick with welded wire)
2	Breach panel – 4' x 4' or based on prop dimensions (exterior wall)
	MARKING STATION
4	Spray paint – Orange (can)
16	Lumber – ½" x 4' x 4' (oriented strand board)
4	Box lumber crayons
25	FEMA search assessment placard
25	FEMA hazard assessment placard
	SHORING
24	Lumber – 2" x 4" x 8' (lumber lengths may be longer – based on AHJ props)
60	Lumber – 4" x 4" x 8' (lumber lengths may be longer – based on AHJ props)
18	Lumber – 4" x 4" x 12' (lumber lengths may be longer – based on AHJ props)
30	Lumber – 2" x 6" x 12' (lumber lengths may be longer – based on AHJ props)
12	Lumber – ¾" x 4' x 8' (plywood)
1	Nails – 8d duplex, 12 lbs.
1	Nails – 16d duplex, 12 lbs.
1	Nails – 8d, 12 lbs.
1	Nails – 16d, 12 lbs.
1	Nails – 8d nail gun, 12 lbs.
1	Nails – 16d nail gun, 12 lbs.

Personnel

The following personnel are required to deliver this course:

- Any instructor counted toward student ratios must be an SFT Registered Structural Collapse Specialist 1 Instructor.

Time Table

Segment	Lecture	Application	Unit Total
Unit 1: Awareness (Computer-Based Training)			
Completed by students outside of course time.	0.0	0.0	
Unit 1 Totals	**0.0**	**0.0**	**0.0**
Unit 2: Operations (Computer-Based Training)			
Completed by students outside of course time.	0.0	0.0	
Unit 2 Totals	**0.0**	**0.0**	**0.0**
Unit 3: Introduction (Instructor-Led Training)			
Topic 3-1: Orientation and Administration	1.0	1.0	
Unit 3 Totals	**1.0**	**1.0**	**1.0**
Unit 4: Awareness (Instructor-Led Training)			
Topic 4-1: Sizing Up a Structural Collapse Incident	0.50	0.0	
Topic 4-2: Identifying Incident Hazards	0.50	0.25	
Topic 4-3: Recognizing the Need for Technical Resources	0.50	0.0	
Topic 4-4: Applying a Building Marking System	0.0	0.50	
Topic 4-5: Performing Collapse Support Operations	0.0	1.0	
Topic 4-6: Initiating a Search	0.25	0.0	
Topic 4-7: Moving a Victim	0.25	0.0	
Unit 4 Totals	**2.0**	**1.75**	**3.75**
Unit 5: Operations (Instructor-Led Training)			
Topic 5-1: Maintaining Hazard-specific PPE	0.25	0.0	
Topic 5-2: Maintaining Rescue Equipment	1.0	3.0	
Topic 5-3: Conducting a Size-up of a Light Frame or URM Collapsed Structure	0.25	0.0	
Topic 5-4: Developing a Collapse Rescue Incident Action Plan	0.25	0.0	
Topic 5-5: Implementing a Collapse Rescue Incident Action Plan	0.25	0.0	
Topic 5-6: Determining Potential Victim Locations	0.0	0.50	
Topic 5-7: Searching a Collapsed Structure	0.0	0.0	
Topic 5-8: Constructing Cribbing Systems	0.50	0.50	
Topic 5-9: Lifting a Heavy Load as a Team Member	0.50	0.0	
Topic 5-10: Moving a Heavy Load as a Team Member	0.50	5.0	
Topic 5-11: Stabilizing a Collapsed Structure as a Member of a Team	4.0	12.0	
Topic 5-12: Breaching Structural Components	1.0	4.0	
Topic 5-13: Releasing a Victim from Entrapment	0.0	0.0	
Topic 5-14: Removing a Victim from a Collapse Incident	0.0	0.0	

Topic 5-15: Terminating an Incident	1.0	0.0	
Unit 4 Totals	**9.75**	**25.0**	**34.75**
Formative Assessments			
Determined by AHJ or educational institution	**0.0**	**0.0**	**0.0**
Summative Assessment			
Determined by AHJ or educational institution	**0.0**	**0.0**	**0.0**
Course Totals	**12.75**	**27.25**	**40.0**

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.

The following is a breakdown of what a program might look like if there were fewer students. These estimates may need to be adjusted based on student abilities.

- 40 – 50 Students = 260 hours
- 30 – 40 Students = 180 hours
- 20 – 30 Students = 120 hours
- 1 – 20 Students = 60 hours

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.

Suggested Teaching Schedule

Day	Content	Topics
1	• Orientation • Rescue Operations Awareness • PPE and Tool Lab	3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 4-5, 4-6, 4-7, 5-1, 5-2, 5-3, 5-4, 5-5, 5-15
2	• Breaking and Breaching	5-6, 5-7, 5-12, 5-13, 5-14
3	• Exterior Shores	5-11
4	• Interior Shores	5-11
5	• Lifting and Moving	5-8, 5-9, 5-10

Unit 1: Awareness (Computer-Based Testing)

Topic 1-1: Sizing Up a Structural Collapse 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 structural collapse rescue incident so that the scope of the rescue is determined, the number of victims is identified, the last reported location of all the victims is established, witnesses and reporting parties are identified and interviewed, resource needs are assessed, primary search parameters are identified, and the information required to develop an initial incident action plan is obtained.

Enabling Learning Objectives

1. Identify types of reference materials and their uses
   - FEMA CBT: Module 3, ELO 7
2. Describe elements of an incident action plan and related information
   - FEMA CBT: Module 8, ELO 3
3. Describe relationship of the size-up to the incident management system
   - FEMA CBT: Module 8, ELO 2
4. Describe information gathering techniques and how that information is used in the size-up process
   - FEMA CBT: Module 3, ELO 7
5. Describe basic search criteria for structural collapse rescue incidents
   - FEMA CBT: Module 8, ELO 2
6. Read technical rescue reference materials
   - FEMA CBT: Module 3, ELO 7Kjh
7. Gather information
   - FEMA CBT: Module 8, ELO 2
8. Use interview techniques
   - FEMA CBT: Module 8, ELO 2
9. Relay information
   - FEMA CBT: Module 8, ELO 2
10. Use information-gathering sources
    - FEMA CBT: Module 8, ELO 2

Application

1. Covered within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-1.

CTS Guide Reference: CTS 1-6

Topic 1-2: Identifying Incident Hazards

Terminal Learning Objective

At the end of this topic a student, given a specific type of collapse incident, will be able to identify incident hazards so that construction type is determined, all associated hazards are identified, and rescue time constraints are taken into account.

Enabling Learning Objectives

1. Describe types and nature of incident hazards
   - FEMA CBT: Module 3, ELO 7
2. Define isolation terminology
   - FEMA CBT: Module 1, ELO 2
3. Describe methods and equipment
   - FEMA CBT: Module 3, ELO 7
4. Describe implementation techniques
   - FEMA CBT: Module 8, ELO 2
5. Describe operational requirement concerns
   - FEMA CBT: Module 8, ELO 3
6. Describe common risks in collapse incidents
   - FEMA CBT: Module 1, ELO 2
7. Describe risk/benefit analysis methods and practices
   - FEMA CBT: Module 1, ELO 2
8. Identify construction types and collapse characteristics
   - FEMA CBT: Module 3, ELO 6
9. Identify 13 building collapse types
   - FEMA CBT: Module 3, ELO 1
10. Describe subsequent collapse potential and causes
    - FEMA CBT: Module 3, ELO 5 & 6
11. Identify associated types of technical references
    - FEMA CBT: Module 3, ELO 7
12. Identify incident hazards based on construction type
    - FEMA CBT: Module 3, ELO 3
13. Identify collapse zones
    - FEMA CBT: Module 3, ELO 6
14. Assess victim viability based on collapse type and access (risk/benefit)
    - FEMA CBT: Module 3, ELO 6
15. Utilize technical references
    - FEMA CBT: Module 3, ELO 7
16. Operate control and mitigation equipment
    - FEMA CBT: Module 4, ELO 1

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-2.

CTS Guide Reference: CTS 1-1

Topic 1-3: Recognizing the Need for Technical 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 technician-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. Identify operational protocols
   - FEMA CBT: Module 8, ELO 1
2. Identify specific planning forms
   - FEMA CBT: Module 8, ELO 3
3. Recognize hazards
   - FEMA CBT: Module 3, ELO 7
4. Describe incident support operations and resources
   - FEMA CBT: Module 5, ELO 4
5. Describe safety measures
   - FEMA CBT: Module 1, ELO 2
6. Read technical rescue reference materials
   - FEMA CBT: Module 3, ELO 7
7. Gather information
   - FEMA CBT: Module 8, ELO 2
8. Use interview techniques
   - FEMA CBT: Module 8, ELO 2
9. Relay information
   - FEMA CBT: Module 8, ELO 2
10. Use information-gathering sources
    - FEMA CBT: Module 8, ELO 2

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-3.

CTS Guide Reference: CTS 1-7

Topic 1-4: Applying a Building Marking System

Terminal Learning Objective

At the end of this topic a student, given a structural collapse incident, will be able to apply the building marking system so that the search phase of the floor or structure is marked, victim locations and condition are applied to the area, hazards are noted on the structure, and the access and egress points are marked.

Enabling Learning Objectives

1. Identify FEMA and United Nations International Search and Rescue Advisory Group (INSARAG) search marking systems
   - FEMA CBT: Module 3, ELO 8
2. Describe victim marking systems
   - FEMA CBT: Module 3, ELO 8
3. Describe structural marking systems
   - FEMA CBT: Module 3, ELO 8
4. Identify location criteria for application of each system
   - FEMA CBT: Module 3, ELO 8
5. Use marking materials
   - FEMA CBT: Module 3, ELO 8
6. Recognize hazards
   - FEMA CBT: Module 3, ELO 7

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-4.

CTS Guide Reference: CTS 1-3

Topic 1-5: Performing Collapse Support Operations

Terminal Learning Objective

At the end of this topic a student, given an assignment and available resources, will be able to perform collapse support operations at a rescue incident so that scene lighting is provided for the tasks to be undertaken, environmental concerns are addressed, personnel rehabilitation is facilitated, and the support operations facilitate rescue operational objectives.

Enabling Learning Objectives

1. Identify resource management protocols
   - FEMA CBT: Module 5, ELO 4
2. Describe principles for establishing lighting
   - FEMA CBT: Module 1, ELO 2
3. Describe environmental control methods
   - FEMA CBT: Module 1, ELO 2
4. Describe rescuer rehabilitation protocols
   - FEMA CBT: Module 1, ELO 2
5. Access resources
   - FEMA CBT: Module 1, ELO 2
6. Set up lights
   - FEMA CBT: Module 1, ELO 2
7. Initiate environmental controls
   - FEMA CBT: Module 1, ELO 2
8. Set up rehabilitation for rescuers
   - FEMA CBT: Module 1, ELO 2

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-5.

CTS Guide Reference: CTS 1-5

Topic 1-6: Initiating a Search

Terminal Learning Objective

At the end of this topic a student, given PPE, an incident location, and victim investigative information, will be able to initiate a search so that search parameters are established and include surface and nonentry void search, the information found is updated and relayed to command, the personnel assignments match their expertise, all victims are located as quickly as possible, risks to searchers are minimized, and accountability is achieved.

Enabling Learning Objectives

1. Describe basic sight and hailing search techniques
   - FEMA CBT: Module 8, ELO 2
2. Describe operational techniques necessary to operate in the search environment
   - FEMA CBT: Module 8, ELO 2
3. Use hailing techniques, PPE, and triangulation methods
   - FEMA CBT: Module 1, ELO 3
4. Provide for and perform self-escape/self-rescue
   - FEMA CBT: Module 1, ELO 2

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-6.

CTS Guide Reference: CTS 1-2

Topic 1-7: Moving a Victim

Terminal Learning Objective

At the end of this topic a student, given victim transport equipment, litters, other specialized equipment, and victim removal systems specific to the rescue environment, will be able to move a victim so that the victim is moved without further injuries, risks to rescuers are minimized, the victim is secured to the transfer device, and the victim is removed from the hazard.

Enabling Learning Objectives

1. Identify types of transport equipment and removal systems
   - FEMA CBT: Module 2, ELO 4
2. Describe selection factors with regard to specific rescue environments
   - FEMA CBT: Module 3, ELO 6
3. Describe methods to reduce and prevent further injuries
   - FEMA CBT: Module 2, ELO 1
4. Describe types of risks to rescuers
   - FEMA CBT: Module 1, ELO 2
5. Describe ways to secure the victim to transport devices
   - FEMA CBT: Module 2, ELO 4
6. Describe transport techniques
   - FEMA CBT: Module 2, ELO 4
7. Secure a victim to transport equipment
   - FEMA CBT: Module 2, ELO 4

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-7.

CTS Guide Reference: CTS 1-4

Unit 2: Operations (Computer-Based Training)

Topic 2-1: Maintaining Hazard-specific PPE

Terminal Learning Objective

At the end of this topic a student, given clothing or equipment for the protection of the rescuers, including respiratory protection, cleaning and sanitation supplies, maintenance logs or records, inspection procedures, and such tools and resources as are indicated by the manufacturer's guidelines for assembly or disassembly of components during repair or maintenance, will be able to maintain hazard-specific PPE so that damage, defects, and wear are identified and reported or repaired; equipment functions as designed; and preventive maintenance has been performed and documented consistent with the manufacturer's recommendations.

Enabling Learning Objectives

1. Describe functions, construction, and operation of PPE
   - FEMA CBT: Module 1, ELO 3
2. Evaluate operational readiness of PPE
   - FEMA CBT: Module 1, ELO 3

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 5-1.

CTS Guide Reference: CTS 2-13

Topic 2-2: Maintaining Rescue Equipment

Terminal Learning Objective

At the end of this topic a student, given maintenance logs and records, tools, and resources as indicated by the manufacturer's guidelines, inspection procedures, equipment replacement protocol, and organizational standard operating procedure, will be able to maintain rescue equipment so that the operational status of equipment is verified and documented, all components are checked for operation, deficiencies are repaired or reported as indicated by standard operating procedure, and items subject to replacement are correctly disposed of and changed out.

Enabling Learning Objectives

1. Describe functions and operations of rescue equipment
   - (FEMA CBT: Module 4, ELO 1)

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 5-2.

CTS Guide Reference: CTS 2-14

Topic 2-3: Conducting a Size-up of a Light Frame or URM Collapsed Structure

Terminal Learning Objective

At the end of this topic a student, given an incident and specific incident information, will be able to conduct a size-up of a light frame or unreinforced masonry (URM) collapsed structure so that existing and potential conditions within the structure and the immediate periphery are evaluated, needed resources are defined, hazards are identified, construction and occupancy types are determined, collapse type is identified if possible, the need for rescue is assessed, a scene security perimeter is established, and the size-up is conducted within the scope of the incident management system.

Enabling Learning Objectives

1. Identify light frame and URM construction types
   - FEMA CBT: Module 3, ELO1
2. Identify characteristics and probable occupant locations
   - FEMA CBT: Module 3, ELO 6
3. Describe methods to assess rescue needs
   - FEMA CBT: Module 8, ELO 2
4. Describe expected behavior of light frame and URM construction in a structural collapse incident
   - FEMA CBT: Module 3, ELO 3
5. Describe causes and associated effects of structural collapses
   - FEMA CBT: Module 3, ELO 5
6. Identify general hazards associated with structural collapse and size-up
   - FEMA CBT: Module 1, ELO 2
   - FEMA CBT: Module 3, ELO 7
7. Describe procedures for implementing site control and scene management
   - FEMA CBT: Module 1, ELO 2
8. Categorize light frame and URM construction types
   - FEMA CBT: Module 3, ELO 1
9. Evaluate structural stability and hazards
   - FEMA CBT: Module 3, ELO 3
   - FEMA CBT: Module 5, ELO 1
10. Implement resource and security (scene management) protocols
    - FEMA CBT: Module 1, ELO 2

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 5-3.

CTS Guide Reference: CTS 2-1

Topic 2-4: Developing a Collapse Rescue Incident Action Plan

Terminal Learning Objective

At the end of this topic a student, given size-up information and a light frame and URM construction collapsed structure, will be able to develop a collapse rescue incident action plan so that initial size-up information is utilized, an incident management system is incorporated, existing and potential conditions within the structure and the immediate periphery are included, specialized resource needs are identified, work perimeters are determined, collapse type/category and associated hazards are identified, construction and occupancy types are determined, incident objectives are established, and scene security measures are addressed.

Enabling Learning Objectives

1. Describe incident-specific size-up information
   - FEMA CBT: Module 8, ELO 3
2. Describe incident management system components
   - IS-100, IS-200, IS-700, IS-800
3. Describe dynamics of incident conditions and peripheral areas
   - FEMA CBT: Module 8, ELO 1 and 2
4. Describe construction and occupancy types
   - FEMA CBT: Module 3, ELO 1
   - FEMA CBT: Module 8, ELO 2
5. Describe scene security requirements
   - FEMA CBT: Module 1, ELO 2
6. Identify personnel needs and limitations
   - FEMA CBT: Module 1, ELO 2
7. Identify rescue scene operational priorities
   - FEMA CBT: Module 8, ELO 2
8. Utilize size-up information
   - FEMA CBT: Module 8, ELO 3
9. Implement an incident management system
   - FEMA CBT: Module 8, ELO 3
   - IS-100/IS-200/IS-700/IS-800
10. Monitor changing conditions specific to the incident
    - FEMA CBT: Module 1, ELO 2
11. Identify potential specialized resources
    - FEMA CBT: Module 3, ELO 7
12. Determine construction and occupancy types
    - FEMA CBT: Module 3, ELO 1
    - FEMA CBT: Module 8, ELO 2
13. Identify specific incident security requirements
    - FEMA CBT: Module 1, ELO 2
14. Create written documentation
    - FEMA CBT: Module 3, ELO 1

- FEMA CBT: Module 8, ELO 2

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 5-4.

CTS Guide Reference: CTS 2-3

Topic 2-5: Implementing a Collapse Rescue Incident Action Plan

Terminal Learning Objective

At the end of this topic a student, given an action plan and a light frame and URM construction collapsed structure, will be able to implement a collapse rescue incident action plan so that pertinent information is used, an incident management system is established and implemented, monitoring of dynamic conditions internally and externally is established, specialized resources are requested, hazards are mitigated, victim rescue and extraction techniques are consistent with collapse and construction type, and perimeter security measures are established.

Enabling Learning Objectives

1. Describe components of an action plan specific to collapse incidents
   - FEMA CBT: Module 8, ELO 3
2. Describe incident management systems
   - IS-100, IS-200, IS-700, IS-800
3. Recognize hazards
   - FEMA CBT: Module 3, ELO 7
4. Describe rescue and extrication techniques consistent with each collapse and construction type
   - FEMA CBT: Module 3, ELO 6
5. Implement the components of an action plan in a collapse incident
   - FEMA CBT: Module 8, ELO 3
6. Implement an incident management system
   - FEMA CBT: Module 8, ELO 3
7. Initiate hazard mitigation objectives
   - FEMA CBT: Module 3, ELO 7
8. Request specialized resources
   - FEMA CBT: Module 3, ELO 7
9. Initiate rescue objectives
   - FEMA CBT: Module 8, ELO 2

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 5-5.

CTS Guide Reference: CTS 2-4

Topic 2-6: Determining Potential Victim Locations

Terminal Learning Objective

At the end of this topic a student, given size-up information, a structural collapse tool cache, the type of construction and occupancy, time of day, and collapse pattern, will be able to determine potential victim locations in light frame and URM construction collapse incidents, given so that search areas are established and victims can be located.

Enabling Learning Objectives

1. Describe capabilities and limitations of search instruments and resources
   - FEMA CBT: Module 8, ELO 2
2. Identify types of building construction
   - FEMA CBT: Module 3, ELO 1
3. Describe occupancy classifications
   - FEMA CBT: Module 8, ELO 2
4. Identify collapse patterns
   - FEMA CBT: Module 3, ELO 6
5. Describe victim behavior
   - FEMA CBT: Module 2, ELO 1
6. Recognize potential areas of survivability
   - FEMA CBT: Module 3, ELO 6
7. Use size-up information
   - FEMA CBT: Module 3, ELO 7
8. Use occupancy classification information
   - FEMA CBT: Module 8, ELO 2
9. Use search devices
   - FEMA CBT: Module 8, ELO 2
10. Assess and categorize type of collapse
    - FEMA CBT: Module 3, ELO 3
    - FEMA CBT: Module 3, ELO 6

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 5-6.

CTS Guide Reference: CTS 2-2

Topic 2-7: Searching a Collapsed Structure

Terminal Learning Objective

At the end of this topic a student, given PPE, the structural collapse tool cache, an assignment, operational protocols, and size-up information, will be able to search a light frame and URM construction collapsed structure so that all victim locations and potential hazards are identified, marked, and reported; protocols are followed; the mode of operation can be determined; and rescuer safety is maintained.

Enabling Learning Objectives

1. Describe concepts and operation of the incident management system as applied to the search function
   - FEMA CBT: Module 8, ELO 2
2. Describe how to apply specialty tools and locating devices
   - FEMA CBT: Module 8, ELO 2
3. Describe how to apply recognized marking systems
   - FEMA CBT: Module 3, ELO 8
4. Describe voice sounding techniques
   - FEMA CBT: Module 8, ELO 2
5. Identify potential victim locations as related to the type of structure and occupancy
   - FEMA CBT: Module 3, ELO 6
6. Identify building construction type
   - FEMA CBT: Module 3, ELO 1
7. Describe collapse types and their influence on the search function
   - FEMA CBT: Module 3, ELO 6
8. Describe operational search protocols
   - FEMA CBT: Module 8, ELO 2
9. Recognize various hazards
   - FEMA CBT: Module 1, ELO 2
   - FEMA CBT: Module 3, ELO 7
10. Implement an incident management system
    - IS-100, IS-200, IS-700, IS-800
11. Apply search techniques
    - FEMA CBT: Module 8, ELO 2
12. Use marking systems
    - FEMA CBT: Module 3, ELO 8
13. Identify and mitigate hazards
    - FEMA CBT: Module 1, ELO 2
    - FEMA CBT: Module 3, ELO 7
14. Select and use victim locating devices
    - FEMA CBT: Module 8, ELO 2

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 5-7.

CTS Guide Reference: CTS 2-5

Topic 2-8: Constructing Cribbing Systems

Terminal Learning Objective

At the end of this topic a student, given an assignment, PPE, a structural collapse tool cache, various lengths and dimensions of lumber, wedges, and shims, will be able to construct cribbing systems so that the cribbing system will safely support the load, the system is stable, and the assignment is completed.

Enabling Learning Objectives

1. Describe different types of cribbing systems and their construction methods
   - FEMA CBT: Module 7, ELO 2
2. Describe limitations of construction lumber
   - FEMA CBT: Module 7, ELO 3
3. Describe load calculations
   - FEMA CBT: Module 5, ELO 2
   - FEMA CBT: Module 7, ELO 3
4. Describe principles of and applications for cribbing
   - FEMA CBT: Module 7, ELO 2 and 3
5. Describe safety protocols
   - FEMA CBT: Module 1, ELO 1
   - FEMA CBT: Module 7, ELO 3
6. Select and construct cribbing systems
   - FEMA CBT: Module 7, ELO 2
7. Evaluate the structural integrity of the system
   - FEMA CBT: Module 7, ELO 2 and 3
8. Determine stability
   - FEMA CBT: Module 7, ELO 3
9. Calculate loads
   - FEMA CBT: Module 7, ELO 1

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 5-8.

CTS Guide Reference: CTS 2-12

Topic 2-9: Lifting a Heavy Load as a Team Member

Terminal Learning Objective

At the end of this topic a student, given a structural collapse tool cache and a load to be lifted, will be able to lift a heavy load as a team member so that the load is lifted; control and stabilization are maintained before, during, and after the lift; and access can be gained.

Enabling Learning Objectives

1. Describe how to apply levers
   - FEMA CBT: Module 7, ELO 2 and 3
2. Describe classes of levers
   - FEMA CBT: Module 7, ELO 2 and 3
3. Describe principles of leverage, gravity, and load balance
   - FEMA CBT: Module 7, ELO 1
4. Describe resistance force
   - FEMA CBT: Module 7, ELO 3
5. Describe mechanics of load stabilization
   - FEMA CBT: Module 7, ELO 2
6. Describe mechanics of load lifting
   - FEMA CBT: Module 1 and 2
   - FEMA CBT: Module 7, ELO 2
7. Describe how to apply pneumatic, hydraulic, mechanical, and manual lifting tools
   - FEMA CBT: Module 4, ELO 1
   - FEMA CBT: Module 7, ELO 3
8. Describe how to calculate the weight of the load
   - FEMA CBT: Module 7, ELO 1, 2, 3
9. Describe safety protocols
   - FEMA CBT: Module 1, ELO 2
10. Describe stabilization systems
    - FEMA CBT: Module 7, ELO 2
11. Evaluate and estimate the weight of the load
    - FEMA CBT: Module 5, ELO 2
    - FEMA CBT: Module 7, ELO 1, 2, 3
12. Operate lifting tools
    - FEMA CBT: Module 4, ELO 1
    - FEMA CBT: Module 7, ELO 3
13. Apply a lever
    - FEMA CBT: Module 7, ELO 2 and 3
14. Application load stabilization systems
    - FEMA CBT: Module 7, ELO 2 and 3

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 5-9.

CTS Guide Reference: CTS 2-9

Topic 2-10: Moving a Heavy Load as a Team Member

Terminal Learning Objective

At the end of this topic a student, given a structural collapse tool cache, will be able to move a heavy load as a team member, given so that the load is moved the required distance to gain access and so that control is constantly maintained.

Enabling Learning Objectives

1. Describe how to apply rigging systems
   - FEMA CBT: Module 7, ELO 2 and 3
2. Describe how to apply levers
   - FEMA CBT: Module 7, ELO 2 and 3
3. Describe classes of levers
   - FEMA CBT: Module 7, ELO 3
4. Describe how to apply rollers
   - FEMA CBT: Module 7, ELO 3
5. Describe inclined planes
   - FEMA CBT: Module 7, ELO 3
6. Describe gravity, center of gravity, and load balance
   - FEMA CBT: Module 7, ELO 1
7. Describe friction
   - FEMA CBT: Module 7, ELO 3
8. Describe mechanics of load stabilization and load lifting
   - FEMA CBT: Module 7, ELO 2
9. Describe capabilities and limitations of lifting tools
   - FEMA CBT: Module 4, ELO 1
10. Describe how to calculate the weight of the load
    - FEMA CBT: Module 5, ELO 2
11. Describe safety protocols
    - FEMA CBT: Module 1, ELO 2
12. Evaluate and estimate the weight of the load
    - FEMA CBT: Module 5, ELO 2
13. Operate required tools
    - FEMA CBT: Module 4, ELO 1
14. Construct and use levers, rollers, and inclined planes
    - FEMA CBT: Module 7, ELO 3
15. Utilize rigging systems
    - FEMA CBT: Module 7, ELO 2 and 3
16. Stabilize the load
    - FEMA CBT: Module 7, ELO 2

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 5-10.

CTS Guide Reference: CTS 2-10

Topic 2-11: Stabilizing a Collapsed Structure as a Member of a Team

Terminal Learning Objective

At the end of this topic a student, given size-up information, a specific pattern of collapse, a basic structural collapse tool cache, and an assignment, will be able to stabilize a collapsed light frame and URM construction structure as a member of a team so that strategies to effectively minimize the movement of structural components are identified and implemented; hazard warning systems are established and understood by participating personnel; hazard-specific PPE is identified, provided, and utilized; physical hazards are identified; confinement, containment, and avoidance measures are discussed; and a rapid intervention team is established and staged.

Enabling Learning Objectives

1. Identify appropriate PPE
   - FEMA CBT: Module 1, ELO 3
2. Describe confinement, containment, and avoidance measures
   - FEMA CBT: Module 3, ELO 7
3. Describe structural load calculations for shoring system requirements
   - FEMA CBT: Module 5, ELO 2
4. Describe shoring systems for stabilization
   - FEMA CBT: Module 5, ELO 3
5. Identify specific hazards associated with light frame and URM construction structural collapse
   - FEMA CBT: Module 3, ELO 3
6. Describe strategic planning for collapse incidents
   - FEMA CBT: Module 8, ELO 2
7. Identify atmospheric monitoring equipment needs
   - FEMA CBT: Module 3, ELO 8
8. Identify characteristics, expected behavior, type, causes, and associated effects of light frame and URM construction structural collapses
   - FEMA CBT: Module 3, ELO 2
9. Recognize potential for, and signs of, impending secondary collapse
   - FEMA CBT: Module 5, ELO 1
10. Select and construct shoring systems for collapses in light frame and URM construction structures
    - FEMA CBT: Module 5, ELO 3
11. Use PPE
    - FEMA CBT: Module 1, ELO 3
12. Perform structural load calculations
    - FEMA CBT: Module 5, ELO 2
13. Determine resource needs
    - FEMA CBT: Module 5, ELO 4
14. Select and operate basic and specialized tools and equipment
    - FEMA CBT: Module 4, ELO 1
15. Implement communications and safety protocols

- FEMA CBT: Module 8, ELO 2

16. Mitigate specific hazards associated with shoring tasks
    - FEMA CBT: Module 1, ELO 2

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 5-11.

CTS Guide Reference: CTS 2-6

Topic 2-12: Breaching Structural Components

Terminal Learning Objective

At the end of this topic a student, given an assignment, PPE, various types of construction materials, and a structural collapse tool cache, will be able to breach light frame and URM construction structural components so that the opening supports the rescue objectives, the necessary tools are selected, structural stability is maintained, and the methods utilized are safe and efficient.

Enabling Learning Objectives

1. Describe effective breaching techniques
   - FEMA CBT: Module 6, ELO 1, 2, 3
2. Describe types of building construction and characteristics of materials used in each
   - FEMA CBT: Module 3, ELO 1 and 3
3. Describe the selection, capabilities, and limitations of tools
   - FEMA CBT: Module 4, ELO 1
   - FEMA CBT: Module 6, ELO 2
4. Describe safety protocols for breaching operations
   - FEMA CBT: Module 1, ELO 2
   - FEMA CBT: Module 6, ELO 2
5. Describe how to calculate weight
   - FEMA CBT: Module 5, ELO 2
6. Describe how to anticipate material movement during breaching and stabilization techniques
   - FEMA CBT: Module 3, ELO 2
   - FEMA CBT: Module 6, ELO 3
7. Select and use breaching tools
   - FEMA CBT: Module 6, ELO 2
8. Implement breaching techniques based on light frame and URM construction types
   - FEMA CBT: Module 4, ELO 1
   - FEMA CBT: Module 6, ELO 2
9. Use PPE
   - FEMA CBT: Module 1, ELO 3
10. Apply stabilization where required
    - FEMA CBT: Module 5, ELO 3

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 5-12.

CTS Guide Reference: CTS 2-11

Topic 2-13: Releasing a Victim from Entrapment

Terminal Learning Objective

At the end of this topic a student, given PPE and resources for breaching, breaking, lifting, prying, shoring, and/or otherwise moving or penetrating the offending structural component, will be able to release a victim from entrapment by components of a light frame and URM construction collapsed structure so that hazards to rescue personnel and victims are minimized, considerations are given to compartment syndrome due to crush injuries, techniques enhance patient survivability, tasks are accomplished within projected time frames, and techniques do not compromise the integrity of the existing structure or structural support systems.

Enabling Learning Objectives

1. Identify appropriate PPE
   - FEMA CBT: Module 1, ELO 3
2. Identify general hazards associated with each type of structural collapse
   - FEMA CBT: Module 3, ELO 7
3. Describe methods of evaluating structural integrity
   - FEMA CBT: Module 3, ELO 7
4. Describe compartment syndrome protocols
   - FEMA CBT: Module 2, ELO 2
5. Identify construction types and collapse characteristics of light frame and URM construction structures
   - FEMA CBT: Module 3, ELO 1
6. Describe causes and associated effects of structural collapses
   - FEMA CBT: Module 3, ELO 5
7. Identify potential signs of impending secondary collapse
   - FEMA CBT: Module 5, ELO 1
8. Describe how to select and apply rescue tools and resources
   - FEMA CBT: Module 4, ELO 1
9. Describe risk/benefit assessment techniques for extrication methods and time constraints
   - FEMA CBT: Module 2, ELO 3
10. Select, use, and care for PPE
    - FEMA CBT: Module 1, ELO 3
11. Operate rescue tools and stabilization systems
    - FEMA CBT: Module 4, ELO 1
    - FEMA CBT: Module 5, ELO 3
12. Recognize compartment syndrome indicators
    - FEMA CBT: Module 2, ELO 2
13. Complete risk/benefit assessments for selected methods of rescue and time constraints
    - FEMA CBT: Module 8, ELO 2

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ITL content in Topic 5-13.

CTS Guide Reference: CTS 2-7

Topic 2-14: Removing a Victim from a Collapse Incident

Terminal Learning Objective

At the end of this topic a student, given a disentangled victim, a basic first aid kit, and victim packaging resources, will be able to remove a victim from a light frame and URM construction collapse incident so that basic life functions are supported as required, victim is evaluated for signs of compartment syndrome due to crush injuries, advanced life support is called if needed, methods and packaging devices selected are compatible with intended routes of transfer, universal precautions are employed to protect personnel from bloodborne pathogens, and extraction times meet time constraints for medical management.

Enabling Learning Objectives

1. Identify appropriate PPE
   - FEMA CBT: Module 1, ELO 3
2. Identify general hazards associated with structural collapse
   - FEMA CBT: Module 3, ELO 3
3. Identify light frame and URM construction types
   - FEMA CBT: Module 3, ELO 1
4. Describe characteristics and expected behavior of each type in a structural collapse incident
   - FEMA CBT: Module 3, ELO 6
5. Describe causes and associated effects of structural collapses
   - FEMA CBT: Module 3, ELO 5
6. Recognize potential for and signs of impending secondary collapse
   - FEMA CBT: Module 5, ELO 1
7. Describe characteristic mechanisms of compartment syndrome due to crush injuries and basic life support
   - FEMA CBT: Module 2, ELO 2
8. Describe patient packaging principles
   - FEMA CBT: Module 2, ELO 4
9. Select, use, and care for PPE
   - FEMA CBT: Module 1, ELO 3
10. Perform basic prehospital care and treatment of soft-tissue injuries
    - FEMA CBT: Module 2, ELO 1
11. Stabilize fractures
    - FEMA CBT: Module 2, ELO 4
12. Perform airway maintenance techniques and cardiopulmonary resuscitation
    - FEMA CBT: Module 2, ELO 1
13. Identify signs and symptoms of compartment syndrome
    - FEMA CBT: Module 2, ELO 2
14. Select and use patient packaging equipment
    - FEMA CBT: Module 2, ELO 4

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 5-14.

CTS Guide Reference: CTS 2-8

Topic 2-15: Terminating an Incident

Terminal Learning Objective

At the end of this topic a student, given PPE specific to the incident, isolation barriers, and 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 material 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. Identify PPE characteristics
   - FEMA CBT: Module 1, ELO 3
2. Identify hazards and risks
   - FEMA CBT: Module 1, ELO 2
3. Select and use hazard-specific PPE
   - FEMA CBT: Module 1, ELO 3
4. Use barrier protection techniques
   - FEMA CBT: Module 1, ELO 3

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 2-15.

CTS Guide Reference: CTS 2-15

Unit 3: Introduction (Instructor-Led Training)

Topic 3-1: 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 4: Awareness (Instructor-Led Training)

Topic 4-1: Sizing Up a Structural Collapse 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 structural collapse rescue incident so that the scope of the rescue is determined, the number of victims is identified, the last reported location of all the victims is established, witnesses and reporting parties are identified and interviewed, resource needs are assessed, primary search parameters are identified, and the information required to develop an initial incident action plan is obtained.

Enabling Learning Objectives

1. Identify availability and capability of the resources
    - ICS 420-1 FOG (FIRESCOPE – 2017), Chapter 16

Discussion Questions

1. Determined by instructor

Application

1. Determined by instructor

Instructor Notes

1. See corresponding CBT content in Topic 1-1.

CTS Guide Reference: CTS 1-6

Topic 4-2: Identifying Incident Hazards

Terminal Learning Objective

At the end of this topic a student, given a specific type of collapse incident, will be able to identify incident hazards so that construction type is determined, all associated hazards are identified, and rescue time constraints are taken into account.

Enabling Learning Objectives

1. Describe resource capabilities and limitations
   - ICS 420-1 FOG (FIRESCOPE – 2017), Chapter 16
2. Identify resource capabilities and limitations
   - ICS 420-1 FOG (FIRESCOPE – 2017), Chapter 16

Discussion Questions

1. Determined by instructor

Application

1. Determined by instructor based on FOG content

Instructor Notes

1. See corresponding CBT content in Topic 1-2

CTS Guide Reference: CTS 1-1

Topic 4-3: Recognizing the Need for Technical 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 technician-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 types of incidents common to the AHJ

Discussion Questions

1. Determined by instructor

Application

1. Determined by instructor

Instructor Notes

1. Use the students' AHJ.
2. See corresponding CBT content in Topic 1-3.

CTS Guide Reference: CTS 1-7

Topic 4-4: Applying a Building Marking System

Terminal Learning Objective

At the end of this topic a student, given a structural collapse incident, will be able to apply the building marking system so that the search phase of the floor or structure is marked, victim locations and condition are applied to the area, hazards are noted on the structure, and the access and egress points are marked.

Enabling Learning Objectives

1. None

Discussion Questions

1. Determined by instructor

Application

1. Given a collapse incident scenario (real or simulated), have students apply building markings.

Instructor Notes

1. References:
   - ICS 420-1 FOG (FIRESCOPE – 2017), Chapter 16
   - USACE Field Operations Guide (current edition)
2. See corresponding CBT content in Topic 1-4.

CTS Guide Reference: CTS 1-3

Topic 4-5: Performing Collapse Support Operations

Terminal Learning Objective

At the end of this topic a student, given an assignment and available resources, will be able to perform collapse support operations at a rescue incident so that scene lighting is provided for the tasks to be undertaken, environmental concerns are addressed, personnel rehabilitation is facilitated, and the support operations facilitate rescue operational objectives.

Enabling Learning Objectives

1. None

Discussion Questions

1. Determined by instructor

Application

1. FEMA ILT: Activity 3.1 – Cutting Table (Module 3, Section 21)

Instructor Notes

1. See corresponding CBT content in Topic 1-5.

CTS Guide Reference: CTS 1-5

Topic 4-6: Initiating a Search

Terminal Learning Objective

At the end of this topic a student, given PPE, an incident location, and victim investigative information, will be able to initiate a search so that search parameters are established and include surface and nonentry void search, the information found is updated and relayed to command, the personnel assignments match their expertise, all victims are located as quickly as possible, risks to searchers are minimized, and accountability is achieved.

Enabling Learning Objectives

1. Identify AHJ policies and procedures

Discussion Questions

1. Determined by instructor

Application

1. Determined by instructor

Instructor Notes

1. See corresponding CBT content in Topic 1-6.
2. Use the students' AHJ.

CTS Guide Reference: CTS 1-2

Topic 4-7: Moving a Victim

Terminal Learning Objective

At the end of this topic a student, given victim transport equipment, litters, other specialized equipment, and victim removal systems specific to the rescue environment, will be able to move a victim so that the victim is moved without further injuries, risks to rescuers are minimized, the victim is secured to the transfer device, and the victim is removed from the hazard.

Enabling Learning Objectives

1. Assemble and operate environment-specific victim removal systems
2. Choose an incident-specific transport device

Discussion Questions

1. Determined by instructor

Application

1. Determined by instructor

Instructor Notes

1. ELO 1 and 2 were already covered in Rope Rescue Awareness/Operations, a prerequisite for this course.
2. Topic 5-12 includes the Application for this function.
3. See corresponding CBT content in Topic 1-7.

CTS Guide Reference: CTS 1-4

Unit 5: Operations (Instructor-Led Training)

Topic 5-1: Maintaining Hazard-specific PPE

Terminal Learning Objective

At the end of this topic a student, given clothing or equipment for the protection of the rescuers, including respiratory protection, cleaning and sanitation supplies, maintenance logs or records, inspection procedures, and such tools and resources as are indicated by the manufacturer's guidelines for assembly or disassembly of components during repair or maintenance, will be able to maintain hazard-specific PPE so that damage, defects, and wear are identified and reported or repaired; equipment functions as designed; and preventive maintenance has been performed and documented consistent with the manufacturer's recommendations.

Enabling Learning Objectives

1. Identify PPE
   - Required
     - Helmet
     - Eye protection
     - Ear protection
     - Protective clothing
     - Safety boots
     - Gloves
     - Respirator (half mask)
   - Recommended
     - Head lamp
     - Radio
     - Knee and elbow pads
2. Describe how to use record-keeping systems of the AHJ
3. Describe requirements and procedures for cleaning, sanitizing, and infectious disease control
4. Describe how to use provided assembly and disassembly tools
5. Identify manufacturer and department recommendations
6. Describe pre-use inspection procedures
7. Describe how to determine operational readiness
8. Identify wear and damage indicators for PPE
9. Complete logs and records
10. Use cleaning equipment, supplies, and reference materials
11. Select and use tools specific to the task

Discussion Questions

1. In what environment did you use your PPE?
2. How do the contaminants from that environment affect your PPE?
3. What is your AHJ's policy or procedure for inspecting, cleaning, maintaining, or discarding PPE?

Application

1. Determined by instructor

Instructor Notes

1. See corresponding CBT content in Topic 2-1.

CTS Guide Reference: CTS 2-13

Topic 5-2: Maintaining Rescue Equipment

Terminal Learning Objective

At the end of this topic a student, given maintenance logs and records, tools, and resources as indicated by the manufacturer's guidelines, inspection procedures, equipment replacement protocol, and organizational standard operating procedure, will be able to maintain rescue equipment so that the operational status of equipment is verified and documented, all components are checked for operation, deficiencies are repaired or reported as indicated by standard operating procedure, and items subject to replacement are correctly disposed of and changed out.

Enabling Learning Objectives

1. Describe how to use record-keeping systems
2. Describe manufacturer and organizational care and maintenance requirements
3. Describe how to select and use maintenance tools
4. Describe replacement protocol and procedures
5. Describe disposal methods
6. Describe AHJ standard operating procedures
7. Identify wear and damage indicators for rescue equipment
8. Evaluate operational readiness of equipment
9. Complete logs and records
10. Select and use maintenance tools

Discussion Questions

1. Determined by instructor

Application

1. FEMA ILT:
   - Activity 2.1 Pneumatic Tools (Module 2, Section 92)
   - Activity 2.3 Electric Tools and Manual Tools (Module 2, Section 94)
   - Activity 2.4 Gas-powered Tools (Module 2, Section 95)
   - Activity 2.5 Patient Packaging (Module 2, Section 96)

Instructor Notes

1. This is your "tool lab".
2. Use FEMA ILT: Module 2 as reference.
3. See corresponding CBT content in Topic 2-2.

CTS Guide Reference: CTS 2-14

Topic 5-3: Conducting a Size-up of a Light Frame or URM Collapsed Structure

Terminal Learning Objective

At the end of this topic a student, given an incident and specific incident information, will be able to conduct a size-up of a light frame or unreinforced masonry (URM) collapsed structure so that existing and potential conditions within the structure and the immediate periphery are evaluated, needed resources are defined, hazards are identified, construction and occupancy types are determined, collapse type is identified if possible, the need for rescue is assessed, a scene security perimeter is established, and the size-up is conducted within the scope of the incident management system.

Enabling Learning Objectives

1. Describe types and capabilities of resources
   - ICS 420-1 FOG (FIRESCOPE – 2017), Chapter 16

Discussion Questions

1. Determined by instructor

Application

1. Determined by instructor

Instructor Notes

1. See corresponding CBT content in Topic 2-3.

CTS Guide Reference: CTS 2-1

Topic 5-4: Developing a Collapse Rescue Incident Action Plan

Terminal Learning Objective

At the end of this topic a student, given size-up information and a light frame and URM construction collapsed structure, will be able to develop a collapse rescue incident action plan so that initial size-up information is utilized, an incident management system is incorporated, existing and potential conditions within the structure and the immediate periphery are included, specialized resource needs are identified, work perimeters are determined, collapse type/category and associated hazards are identified, construction and occupancy types are determined, incident objectives are established, and scene security measures are addressed.

Enabling Learning Objectives

1. Identify incident-specific resources in a given geographical area
   - ICS 420-1 FOG (FIRESCOPE – 2017), Chapter 16
2. Identify potential specialized resources
   - ICS 420-1 FOG (FIRESCOPE – 2017), Chapter 16

Discussion Questions

1. Determined by instructor

Application

1. Determined by instructor

Instructor Notes

1. See corresponding CBT content inn Topic 2-4.

CTS Guide Reference: CTS 2-3

Topic 5-5: Implementing a Collapse Rescue Incident Action Plan

Terminal Learning Objective

At the end of this topic a student, given an action plan and a light frame and URM construction collapsed structure, will be able to implement a collapse rescue incident action plan so that pertinent information is used, an incident management system is established and implemented, monitoring of dynamic conditions internally and externally is established, specialized resources are requested, hazards are mitigated, victim rescue and extraction techniques are consistent with collapse and construction type, and perimeter security measures are established.

Enabling Learning Objectives

1. Identify dynamics of incident conditions and peripheral areas
   - FEMA CBT: Module 8, ELO 3
2. Identify specialized resource lists
   - ICS 420-1 FOG (FIRESCOPE – 2017), Chapter 16
3. Describe perimeter security measures
   - FEMA CBT: Module 1, ELO 2
4. Identify personnel needs and limitations
   - FEMA CBT: Module 1, ELO 2
5. Request specialized resources
   - What to request
   - How to request
   - From whom to request
   - When to request
6. Demonstrate perimeter security measures

Discussion Questions

1. Determined by instructor

Application

1. Determined by instructor

Instructor Notes

1. ELO 1 was already covered in Topic 2-4. You do not need to repeat the material here.
2. ELO 4 was already covered in Topic 2-4. You do not need to repeat the material here.
3. ELO 6 will be discussed but not demonstrated. It is already embedded in other activities.
4. See corresponding CBT content in Topic 2-5.

CTS Guide Reference: CTS 2-4

Topic 5-6: Determining Potential Victim Locations

Terminal Learning Objective

At the end of this topic a student, given size-up information, a structural collapse tool cache, the type of construction and occupancy, time of day, and collapse pattern, will be able to determine potential victim locations in light frame and URM construction collapse incidents, given so that search areas are established and victims can be located.

Enabling Learning Objectives

1. None

Discussion Questions

1. Determined by instructor

Application

1. Given available AHJ search devices (i.e., thermal imager, fiber optics, search cameras, mirrors, flashlights, night vision goggles) have students familiarize themselves with their use.

Instructor Notes

1. See corresponding CBT content in Topic 2-6.

CTS Guide Reference: CTS 2-2

Topic 5-7: Searching a Collapsed Structure

Terminal Learning Objective

At the end of this topic a student, given PPE, the structural collapse tool cache, an assignment, operational protocols, and size-up information, will be able to search a light frame and URM construction collapsed structure so that all victim locations and potential hazards are identified, marked, and reported; protocols are followed; the mode of operation can be determined; and rescuer safety is maintained.

Enabling Learning Objectives

1. None

Discussion Questions

1. Determined by instructor

Application

1. Determined by instructor

Instructor Notes

1. See corresponding CBT content in Topic 2-7.

CTS Guide Reference: CTS 2-5

Topic 5-8: Constructing Cribbing Systems

Terminal Learning Objective

At the end of this topic a student, given an assignment, PPE, a structural collapse tool cache, various lengths and dimensions of lumber, wedges, and shims, will be able to construct cribbing systems so that the cribbing system will safely support the load, the system is stable, and the assignment is completed.

Enabling Learning Objectives

1. Describe different types of cribbing systems and their construction methods
   - FEMA ILT: Module 5, ELO 7
2. Describe limitations of construction lumber
   - FEMA ILT: Module 5, ELO 7
3. Describe load calculations
   - FEMA ILT: Module 5, ELO 7
4. Describe principles of and applications for cribbing
   - FEMA ILT: Module 5, ELO 7
5. Describe safety protocols
   - FEMA ILT: Module 1, ELO 1
6. Select and construct cribbing systems
   - FEMA ILT: Module 5, ELO 7
7. Evaluate the structural integrity of the system
   - FEMA ILT: Module 5, ELO 7
8. Determine stability
   - FEMA ILT: Module 5, ELO 7
9. Calculate loads
   - FEMA ILT: Module 5, ELO 3 and 7

Discussion Questions

1. Determined by instructor

Application

1. Given PPE and materials, have students build cribbing systems.

Instructor Notes

1. Demonstrate all five cribbing systems (two-piece layer crosstie, three-piece layer crosstie, platform crosstie, triangle crosstie, modified crosstie)
2. See corresponding CBT content in 2-8.

CTS Guide Reference: CTS 2-12

Topic 5-9: Lifting a Heavy Load as a Team Member

Terminal Learning Objective

At the end of this topic a student, given a structural collapse tool cache and a load to be lifted, will be able to lift a heavy load as a team member so that the load is lifted; control and stabilization are maintained before, during, and after the lift; and access can be gained.

Enabling Learning Objectives

1. Describe how to apply levers
   - FEMA ILT: Module 5, ELO 2
2. Describe classes of levers
   - FEMA ILT: Module 5, ELO 2
3. Describe principles of leverage, gravity, and load balance
   - FEMA ILT: Module 5, ELO 2
4. Describe mechanics of load stabilization
   - FEMA ILT: Module 5, ELO 7
5. Describe mechanics of load lifting
   - FEMA ILT: Module 5, ELO 2, 5, 6
6. Describe how to apply pneumatic, hydraulic, mechanical, and manual lifting tools
   - FEMA ILT: Module 5, ELO 2, 5, 6
7. Describe how to calculate the weight of the load
   - FEMA ILT: Module 5, ELO 3
8. Describe safety protocols
   - FEMA ILT: Module 1, ELO 1 and 4
9. Describe stabilization systems
   - FEMA ILT: Module 5, ELO 7
10. Evaluate and estimate the weight of the load
    - FEMA ILT: Module 5, ELO 3
11. Operate lifting tools
    - FEMA ILT: Module 2, ELO 2
12. Apply a lever
    - FEMA ILT: Module 5, ELO 2
13. Apply load stabilization systems
    - FEMA ILT: Module 5, ELO 7

Discussion Questions

1. Determined by instructor

Application

1. See Topic 5-10 Application.

Instructor Notes

1. ELO 7 is already covered in Topics 2-9 and 2-10. You do not need to repeat the material.
2. Teach Topic 5-9 in combination with Topic 5-10.
3. See corresponding CBT content in Topic 2-9.

CTS Guide Reference: CTS 2-9

Topic 5-10: Moving a Heavy Load as a Team Member

Terminal Learning Objective

At the end of this topic a student, given a structural collapse tool cache, will be able to move a heavy load as a team member, given so that the load is moved the required distance to gain access and so that control is constantly maintained.

Enabling Learning Objectives

1. Describe how to apply rigging systems
   - FEMA ILT: Module 5, ELO 3
2. Describe how to apply levers
   - FEMA ILT: Module 5, ELO 2
3. Describe classes of levers
   - FEMA ILT: Module 5, ELO 2
4. Describe how to apply rollers
   - FEMA ILT: Module 5, ELO 6
5. Describe inclined planes
   - FEMA ILT: Module 5, ELO 6
6. Describe gravity, center of gravity, and load balance
   - FEMA ILT: Module 5, ELO 3
7. Describe capabilities and limitations of lifting tools
   - FEMA ILT: Module 2, ELO 1
8. Describe how to calculate the weight of the load
   - FEMA ILT: Module 5, ELO 1
9. Describe safety protocols
   - FEMA ILT: Module 1, ELO 1 and 4
10. Evaluate and estimate the weight of the load
    - FEMA ILT: Module 5, ELO 1
11. Operate required tools
    - FEMA ILT: Module 2, ELO 2
12. Construct and use levers, rollers, and inclined planes
    - FEMA ILT: Module 5, ELO 6
13. Utilize rigging systems
    - FEMA ILT: Module 5, ELO 3

Discussion Questions

1. Determined by instructor

Application

1. FEMA ILT:
   - Activity 5.1 – Levers Type 1-3, Rollers, and Bridging (Module 5, Section 14)
   - Activity 5.2 – Airbags and Cribbing (Module 5, Section 17)

Instructor Notes

1. ELO 8 is already covered in Topics 2-9 and 2-10. You do not need to repeat the material.
2. Teach Topic 5-9 in combination with Topic 5-10.
3. See corresponding CBT content in Topic 2-10.

CTS Guide Reference: CTS 2-10

Topic 5-11: Stabilizing a Collapsed Structure as a Member of a Team

Terminal Learning Objective

At the end of this topic a student, given size-up information, a specific pattern of collapse, a basic structural collapse tool cache, and an assignment, will be able to stabilize a collapsed light frame and URM construction structure as a member of a team so that strategies to effectively minimize the movement of structural components are identified and implemented; hazard warning systems are established and understood by participating personnel; hazard-specific PPE is identified, provided, and utilized; physical hazards are identified; confinement, containment, and avoidance measures are discussed; and a rapid intervention team is established and staged.

Enabling Learning Objectives

1. Describe PPE care and maintenance requirements
   - AHJ requirements
   - Manufacturer specifications
2. Describe communications and safety protocols
3. Select and construct shoring systems for collapses in light frame and URM construction structures
   - Class 1
     - Single T-shore (spot shore)
     - Double T-shore
   - Class 2
     - Two-post vertical shore
     - Multi-post vertical shore
     - Horizontal shore
     - Door and window shore
       - Construct in place
       - Prefabricated
   - Class 3
     - Raker shores
       - Flying
       - Split
       - Solid
   - Cribbing
     - Two-piece layer crosstie
     - Three-piece layer crosstie
     - Platform crosstie
     - Triangle crosstie
     - Modified crosstie
   - Ellis
     - Screw
     - Clamp
4. Use PPE
5. Perform structural load calculations

- USACE Field Operations Guide (current edition)

6. Determine resource needs
   - Based on structure type and construction, collapse type/damage, anticipated load, shore type and location
7. Select and operate basic and specialized tools and equipment
8.
9. Implement communications and safety protocols
10. Mitigate specific hazards associated with shoring tasks

Discussion Questions

1. Determined by instructor

Application

1. Given size-up information, a specific pattern of collapse, a basic structural collapse tool cache, and an assignment, have students construct shores to stabilize a collapsed light frame and URM construction structure as a member of a team.
2. FEMA ILT:
   - Activity 3.2 – Class 1 Shoring (Module 3, Section 24)
   - Activity 3.3 – Class 2 Shores: Two-Post Shore (Module 3, Section 26)
   - Activity 3.4 – Class 2 Shores: Window and Doors (Module 3, Section 29)
   - Activity 3.7 – Class 3 Shoring: Raker Shore (Module 3, Section 40)

Instructor Notes

1. The application should include a build for every shoring system listed in ELO 3.
2. Use USACE Shoring Operations Guide (current edition) as reference document.
3. ELO 1 is already covered by Topic 5-1. You do not need to repeat the material.
4. ELOs 7, 8, and 9 will be covered during course activities.
5. See corresponding CBT content in Topic 2-11.

CTS Guide Reference: CTS 2-6

Topic 5-12: Breaching Structural Components

Terminal Learning Objective

At the end of this topic a student, given an assignment, PPE, various types of construction materials, and a structural collapse tool cache, will be able to breach light frame and URM construction structural components so that the opening supports the rescue objectives, the necessary tools are selected, structural stability is maintained, and the methods utilized are safe and efficient.

Enabling Learning Objectives

1. Describe effective breaching techniques
   - FEMA ILT: Module 4, ELO 1, 2, 4, 5
2. Describe the selection, capabilities, and limitations of tools
   - FEMA ILT Module 2, ELO 1 and 2
3. Describe safety protocols for breaching operations
   - FEMA ILT: Module 2, ELO 1
4. Describe how to calculate weight
   - FEMA ILT: Module 5, ELO 1
5. Describe how to anticipate material movement during breaching and stabilization techniques
   - FEMA ILT: Module 4, ELO 4 and 5
6. Select and use breaching tools
   - FEMA ILT: Module 2, ELO 2
7. Implement breaching techniques based on light frame and URM construction types
   - FEMA ILT: Module 2, ELO 2
8. Use PPE
   - FEMA ILT: Module 1, ELO 1 and 8
9. Apply stabilization where required
   - FEMA ILT: Module 3, ELO 1

Discussion Questions

1. Determined by instructor

Application

1. Activity 4.4 – Horizontal Breach (Dirty) (Module 4, Section 17)
2. Activity 4.5 – Vertical Breach (Dirty) (Module 4, Section 25)
3. FEMA ILT: Activity 4.8 – The Funhouse (Module 4, Section 23)

Instructor Notes

1. See corresponding CBT content in Topic 2-12.

CTS Guide Reference: CTS 2-11

Topic 5-13: Releasing a Victim from Entrapment

Terminal Learning Objective

At the end of this topic a student, given PPE and resources for breaching, breaking, lifting, prying, shoring, and/or otherwise moving or penetrating the offending structural component, will be able to release a victim from entrapment by components of a light frame and URM construction collapsed structure so that hazards to rescue personnel and victims are minimized, considerations are given to compartment syndrome due to crush injuries, techniques enhance patient survivability, tasks are accomplished within projected time frames, and techniques do not compromise the integrity of the existing structure or structural support systems.

Enabling Learning Objectives

1. Describe PPE care and maintenance requirements

Discussion Questions

1. Determined by instructor

Application

1. Determined by instructor

Instructor Notes

1. ELO 1 is already covered in Topic 5-1. You do not need to repeat the material.
2. Conduct a conversation with the students about how to move a victim safely through the opening and the surrounding area.
3. Application completed in Topic 5-12.
4. See corresponding CBT content in Topic 2-13.

CTS Guide Reference: CTS 2-7

Topic 5-14: Removing a Victim from a Collapse Incident

Terminal Learning Objective

At the end of this topic a student, given a disentangled victim, a basic first aid kit, and victim packaging resources, will be able to remove a victim from a light frame and URM construction collapse incident so that basic life functions are supported as required, victim is evaluated for signs of compartment syndrome due to crush injuries, advanced life support is called if needed, methods and packaging devices selected are compatible with intended routes of transfer, universal precautions are employed to protect personnel from bloodborne pathogens, and extraction times meet time constraints for medical management.

Enabling Learning Objectives

1. Describe PPE care and maintenance requirements

Discussion Questions

1. Determined by instructor

Application

1. Given a disentangled victim and victim packaging resources, remove a victim from a light frame and/or URM construction collapse incident.

Instructor Notes

1. ELO 1 is already covered in Topic 5-1. You do not need to repeat the material.
2. Application can be completed as part of Topic 5-12.
3. See corresponding CBT content in Topic 2-14.

CTS Guide Reference: CTS 2-8

Topic 5-15: Terminating an Incident

Terminal Learning Objective

At the end of this topic a student, given PPE specific to the incident, isolation barriers, and 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 material 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 isolation techniques
2. Recognize statutory requirements identifying responsible parties
3. Describe how to use an accountability system
4. Describe reporting methods
5. Describe post-incident analysis techniques
6. Identify and perform decontamination
7. Collect data
8. Follow record-keeping/reporting protocol
9. Complete post-incident analysis activities

Discussion Questions

1. Determined by instructor

Application

1. Determined by instructor

Instructor Notes

1. See USACE Field Operations Guide (current edition) – Reassignment/Demobilization Operational Checklist.
2. Complete all ELOs in accordance with students' AHJ.
3. See corresponding CBT content in Topic 2-15.

CTS Guide Reference: CTS 2-15

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.

Technician

Course Plan

Course Details

CTS Guide: Structural Collapse Specialist 1 and 2 (2021)

Description: This course provides the skills and knowledge needed for the technician-level structural collapse specialist to rescue victims from a collapsed heavy construction-type structure; including size up, incident action plans, search, cribbing systems, lifting and moving heavy loads, stabilization, breaching, and rescue.

Designed For: Personnel preparing to pursue technical rescue certification (pending); personnel responsible for meeting local, state, or federal minimum standards; or anyone who functions in a technical rescue environment.

Prerequisites: Structural Collapse Specialist 1: Operations (SFT)

Confined Space Rescue: Technician (SFT)

Powder Actuated Tool Licensing (RAMSET / online certificate)

Structural Collapse Specialist (FEMA / computer-based training / 2017 or newer edition) – within two years prior to course registration *

Standard: Attend and participate in all course sections.

Successful completion of all skills identified on the Training Record.

Hours (Total): 40 hours

(8.5 lecture / 31.5 application)

Maximum Class Size: 48

Instructor Level: SFT Registered Structural Collapse Specialist 2 Instructor

Instructor/Student Ratio: 1:48 (lecture)

1:6 (application)

Restrictions: All instructors counted toward student ratios, including application components, must be SFT Registered Structural Collapse Specialist 1 Instructors.

SFT Designation: FSTEP (CFSTES pending)

* Courses taught by outside agencies often change names and numbers. Students should enroll in the most current version of any course, even if the course name or number has changed.

Table of Contents

Required Resources

Instructor Resources

To teach this course, instructors need:

- *Structural Collapse Specialist Instructor-Led Training (ILT)*
  - (FEMA, Instructor Guide, April 2017)
  - (FEMA, Participant Guide, April 2017)
- NFPA 1006: Standard for Technical Rescue Personnel (2021) (physical or digital access)
- FIRESCOPE ICS 420-1 Field Operations Guide (2017)
- USACE Field Operations Guide (current edition)
- USACE Shoring Operations Guide (current edition)
- Personal Protective Equipment (PPE)

Online Instructor Resources

The following instructor resources are available online at https://osfm.fire.ca.gov/divisions/state-fire-training/cfstes-professional-certification/:

- *Structural Collapse Specialist Instructor-Led Training (ILT)*
  - (FEMA, Instructor Guide, April 2017)
  - (FEMA, Participant Guide, April 2017)

Student Resources

To participate in this course, students need:

- *Structural Collapse Specialist Instructor-Led Training (ILT)*
  - (FEMA, Participant Guide, April 2017)
- NFPA 1006: Standard for Technical Rescue Personnel (2021) (physical or digital access)
- FIRESCOPE ICS 420-1 Field Operations Guide (2017)
- USACE Field Operations Guide (current edition)
- USACE Shoring Operations Guide (current edition)
- Personal Protective Equipment (PPE)

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

- Access to an outdoor facility that enables participants to meet the requisite knowledge and skills of NFPA 1006 and fulfill the assigned activities and skills.

Equipment

Student safety is of paramount importance when conducting the type of high-risk training associated with this Structural Collapse course. The equipment listed below is the minimum for the delivery of this course. The equipment complies with or exceeds the standards listed in NFPA 1983: Standard on Fire Service Life Safety Rope, Harness, and Hardware. The student is responsible for providing all PPE and ensuring that all PPE meets AHJ and site requirements.

The following equipment is required to deliver this course:

Amount	Heavy Object Equipment (1 Squad)
1	Webbing – 1” x 40’
2	Webbing – 1” x 8’
1	Airbag – Control kit storage container
2	Airbag – Regulators
2	Airbag – Control heads (two bag capable)
2	Airbag – Supply air lines
4	Airbag – Airlines (minimum 16 foot)
1	Airbag – 3 ton
1	Airbag – 5 ton
2	Airbag – 8 to 15 ton
2	Airbag – 16 to 20 ton
1	Airbag – Any type or size (AHJ specific)
As needed	Air supply (SCBA cylinder)
6	Pry Bar – Pinch point (60” minimum)
10	Pry Bar – Crowbar (30” minimum) (2 for HO/8 for Shoring)
12	Rollers – Steel pipe (minimum 1.5” by schedule 40)
6	Jacks - Hydraulic low profile (e.g., bottle jack)
2	Jacks - High lift
2	Tape measure (25’ minimum)
2	Come-a-long (minimum capacity 1.25 ton)
2	Chain fall (3-ton capacity)
2	Grip hoist
120	Cribbing – 4” x 4” x 18 to 24”
40	Cribbing – 2” x 4” x 18 to 24”
60 sets	Cribbing wedges – 4” x 4” x 18”
20 sets	Cribbing wedges – 2” x 4” x 12”
Optional	Cribbing – 6” x 6” x 36 to 48”
12	Pickets – 1” x 36”
Optional	Improvised levers (optional, e.g., long 4’ x 4’, >8’ ladders)

Optional	Jack – floor
8	Hoist ring – Steel ½" x 2½" (Crosby or other US equivalent)
8	Eye nut – ½" (Crosby or other US equivalent)
2	Hammer – Rotary – electric (with accessories needed to support operations)
2	Bulb syringe
4	Deep well sockets for use with torque wrench (½" drive)
4	Torque wrench – ½" drive, 10-250 lbs. adjustable
12	Screw pin shackles – round
12	Screw Pin shackles – flat
1	Crane or other piece of heavy equipment capable of lifting anticipated loads w/operator
As needed	Synthetic sling edge protection
2	Synthetic sling (various size/lengths and capabilities)
8	Wire rope sling (various Lengths and capabilities)
1	50' tag line
Optional	Vehicle extrication tools (with accessories needed to support operations)
2	Paratech – Hydra fusion w/pump and hose
1	Paratech – Strut with two base plates
Amount	**Shoring**
1	Drill – right angle (with accessories needed to support operations)
24	Pickets – 1" x 48"
4	Lumber – 6" x 6" Deadman for raker systems
4	Lumber - 4"x6" Deadman for mechanical sloped floor
1	Paratech – US&R strut system or equivalent
6	Lumber – 4" x 6" x 3' header/footer mechanical spot shore
4	Lumber – 4" x 6" x 8' header/footer mechanical vertical shore system
4	Lumber – 4" x 4" x 4' header/footer mechanical window shore
4	Lumber – 4" x 4" x 7' header/footer mechanical door shore
SHORING Equipment (Double if running timber and mechanical shores at the same time.)	
12	Tool belts
12	Hammer – Framing (24 oz minimum)
12	Tape measure (25' minimum)
4	Square – Framing
12	Square – Speed
12	Marking pencils
12	Nail pullers
12	Sheetrock knives
12	Torpedo levels
2	Chalk lines
Optional	Saw – Miter – 12" (with accessories needed to support operations)
4	Saw – Circular – 7¼" (with accessories needed to support operations)

4	Saw – Circular – 10¼" (with accessories needed to support operations)
2	Saw – Chain (with accessories/PPE needed to support operations)
2	Nail gun (framing) (with accessories needed to support operations)
2	Nail gun (palm nailer) (with accessories needed to support operations)
As needed	Air supply (SCBA cylinder) or compressor
4	Hammer – Sledge 3 lbs.
2	Hammer – Sledge 8 lbs.
1	Cutting table (per AHJ)
2	Magnets (for picking up nails) (Optional)
12	Pins ½' x 18"
Amount	**Breaching/Burning/Breaking (BBB)**
2	Set of irons
2	Axes – Pick head
2	Hammer – Framing (24 oz minimum)
2	Hammer – Sledge (3 lbs.)
2	Hammer – Sledge (8 lbs.)
2	Hammer – Rotary (with accessories needed to support operations)
1	Manikins or other items to represent victims
1	Litter
2	Drill core – w/2" bit (with accessories needed to support operations)
Optional	Saw – Ring (with accessories needed to support operations)
Optional	Saw – Cut and break (with accessories needed to support operations)
4	Saw – Rotary (with accessories needed to support operations)
4	Saw – Reciprocating (with accessories needed to support operations)
1	Grinder (with accessories needed to support operations)
2	Breaker – Combination of 60 lbs. to 90 lbs. (with accessories needed to support operations)
1	Rebar cutter
1	Stanley hydraulic power unit w/ tools or equivalent (with accessories needed to support operations)
2	Torch – Oxygen/acetylene (with accessories needed to support operations)
2	Torch – Petrogen (with accessories needed to support operations)
Optional	Torch – Exothermic (with accessories needed to support operations)
Optional	Torch – Plasma (with accessories needed to support operations)
6	Torch – Strikers
6	Torch – PPE (Nomex hoods, burner's eye protection, gloves, outerwear)
6	Torch – Tip charts
2	Full face shield (minimum)
4	Fire extinguisher
1	Air monitor
1	Ventilation fan w/ducting
1	Powder actuated device (e.g., RamSet, Hilti)

As needed	Steel marking utensil (e.g., soapstone)
As needed	Water supply (with accessories needed to support training)
As needed	Other hand tools (specific to AHJ)
Amount	**Props and Required Site Items**
	Need to be able to cantilever steel beams
	Breaches must be done within limited access (inside a 36" pipe or something similar)
	Need a high-profile object to lift using Paratech Hydra Fusion
	Items for lifting (cars, pipes, scrap concrete, scrap steel, etc.)
2	Large pieces of concrete and or steel (minimum 500 lbs.)
2	Large piece of concrete (minimum 1,000 lbs.)
4	Concrete slabs and blocks for lifting (3' x 3' x 3')
4	Concrete slabs and blocks for lifting (1' x 4' x 6')
	Door/window shores shall represent current door/window building code standards. At least one window and one door will have a rack and frame.
	Insertion points for exterior shores shall be 8' minimum.
	Insertion points for interior shores shall be determined by the Registered Instructor.
	Heavy objects must have an improved and an unimproved surface to work on.
	Need one tensioning device for the five-strand cable.
Amount	**Consumables (Multiply by the number of modules to be taught for final counts.)**
	BREACHING/BURNING/BREACKING (BBB)
3	Breach panel – 4' x 4' x 6" concrete with rebar (single row)
1	Breach panel – 4' x 4' x 9" concrete with rebar (double row)
2	Steel I-beams – 6" x 5'
2	Rebar #5 – 10' bar
3	Plate steel – (minimum ¼") (4' x 4')
1	20' x 5 strand steel wire (tensioned)
	SHORING
40	Lumber – 2" x 4" x 8'
14	Lumber – 2" x 4" x 12'
120	Lumber – 4" x 4" x 8' *
25	Lumber – 4" x 4" x 12' *
12	Lumber – 4" x 4" x 16' *
30	Lumber – 2" x 6" x 12'*
30	Lumber – ¾" x 4' x 8' (Plywood)
2 TBD	Lumber – 6" x 6" x 4' (Deadman)
Optional	Wood pallets – For cribbing and end cuts
Optional	Lumber – 6" x 6" x 12' (for lace post)
8	Lumber – 4" x 6" x 12' (for mechanical shores

1	Nails – 8d duplex 12 lbs.
1	Nails – 16d duplex 12 lbs.
1	Nails – 8d 12 lbs.
1	Nails – 16d 12 lbs.
1	Nails – 8d nail gun nails 12 lbs.
1	Nails – 16d nail gun nails 12 lbs.
	HEAVY OBJECTS
36	Concrete screws (with accessories needed to support operation)
25	Concrete wedge anchors – ½" x5½"

* Lumber sizes are dependent on prop sizes. AHJ shall provide appropriate amount of wedge sets.

Personnel

The following personnel are required to deliver this course:

- Any instructor counted toward student ratios must be an SFT Registered Structural Collapse Specialist 2 Instructor.

Time Table

Segment	Lecture	Application	Unit Total
Unit 1: Technician (Computer-based Training)			
Completed by students outside of course time.	0.0	0.0	
Unit 1 Totals	**0.0**	**0.0**	**0.0**
Unit 2: Introduction (Instructor-led Training)			
Topic 2-1: Orientation and Administration	1.0	0.0	
Unit 2 Totals	**1.0**	**0.0**	**1.0**
Unit 3: PPE and Tools (Instructor-led Training)			
3-1: Maintaining Hazard-specific PPE	0.25	0.0	
3-2: Maintaining Rescue Equipment	1.0	1.0	
Unit 3 Totals	**1.25**	**1.0**	**2.25**
Unit 4: Technician (Instructor-led Training)			
Topic 4-1: Conducting a Size-up of a Collapsed Heavy Construction-type Structure	0.25	0.0	
Topic 4-2: Developing a Collapse Rescue Incident Action Plan	0.25	0.0	
Topic 4-3: Implementing a Collapse Rescue Incident Action Plan	0.25	0.0	
Topic 4-4: Determining Potential Victim Locations	0.0	0.0	
Topic 4-5: Searching a Collapsed Structure	0.0	0.0	
Topic 4-6: Constructing Cribbing Systems	0.50	0.50	
Topic 4-7: Lifting a Heavy Load as a Team Member	0.50	0.0	
Topic 4-8: Moving a Heavy Load as a Team Member	0.50	6.0	
Topic 4-9: Stabilizing a Collapsed Structure Using Timber Shoring Systems as a Member of a Team	0.50	5.5	
Topic 4-10: Stabilizing a Collapsed Structure Using Mechanical Shoring Systems as a Member of a Team	0.50	5.5	
Topic 4-11: Breaching Structural Components	1.0	7.0	
Topic 4-12: Cutting Through Structural Steel	1.0	3.0	
Topic 4-13: Coordinating the Heavy Equipment Use	1.0	3.0	
Topic 4-14: Releasing a Victim from Entrapment	0.0	0.0	
Topic 4-15: Removing a Victim from a Collapse Incident	0.0	0.0	
Unit 4 Totals	**6.25**	**30.5**	**36.75**
Formative Assessments			
Determined by AHJ or educational institution	**0.0**	**0.0**	**0.0**
Summative Assessment			
Determined by AHJ or educational institution	**0.0**	**0.0**	**0.0**
Course Totals	**8.5**	**31.5**	**40.0**

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.

The following is a breakdown of what a program might look like if there were fewer students. These estimates may need to be adjusted based on student abilities.

- 40 – 50 Students = 260 hours
- 30 – 40 Students = 180 hours
- 20 – 30 Students = 120 hours
- 1 – 20 Students = 60 hours

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.

Suggested Teaching Schedule

Day	Content	Topics
1	• Orientation • Tool lab • Pneumatic struts	4-1, 4-2, 4-3, 4-10
2	• Breaking and breaching (clean and dirty)	4-3, 4-4, 4-5, 4-11, 4-14
3	• Heavy equipment • Exterior Shores	4-9, 4-13, 4-15
4	• Lifting and moving • Interior Shores	4-6, 4-7, 4-8, 4-9, 4-15
5	• Cutting and burning • Obstacle course	4-6, 4-7, 4-8, 4-12

Unit 1: Technician (Computer-based Training)

Topic 1-1: Maintaining Hazard-specific PPE

Terminal Learning Objective

At the end of this topic a student, given clothing or equipment for the protection of the rescuers, including respiratory protection, cleaning and sanitation supplies, maintenance logs or records, inspection procedures, and such tools and resources as are indicated by the manufacturer's guidelines for assembly or disassembly of components during repair or maintenance, will be able to maintain hazard-specific PPE so that damage, defects, and wear are identified and reported or repaired; equipment functions as designed; and preventive maintenance has been performed and documented consistent with the manufacturer's recommendations.

Enabling Learning Objectives

1. Describe functions, construction, and operation of PPE
   - FEMA CBT: Module 1, ELO 3
2. Evaluate operational readiness of PPE
   - FEMA CBT: Module 1, ELO 3

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 3-1.

CTS Guide Reference: CTS 2-13

Topic 1-2: Maintaining Rescue Equipment

Terminal Learning Objective

At the end of this topic a student, given maintenance logs and records, tools, and resources as indicated by the manufacturer's guidelines, inspection procedures, equipment replacement protocol, and organizational standard operating procedure, will be able to maintain rescue equipment so that the operational status of equipment is verified and documented, all components are checked for operation, deficiencies are repaired or reported as indicated by standard operating procedure, and items subject to replacement are correctly disposed of and changed out.

Enabling Learning Objectives

1. Describe functions and operations of rescue equipment
   - (FEMA CBT: Module 4, ELO 1)

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 3-2.

CTS Guide Reference: CTS 2-14

Topic 1-3: Conducting a Size-up of a Collapsed Heavy Construction-type Structure

Terminal Learning Objective

At the end of this topic a student, given an incident and specific incident information, will be able to conduct a size-up of a collapsed heavy construction–type structure, so that existing and potential conditions within the structure and the immediate periphery are evaluated, needed resources are defined, hazards are identified, construction and occupancy types are determined, collapse type is identified if possible, the need for rescue is assessed, a scene security perimeter is established, and the size-up is conducted within the scope of the incident management system.

Enabling Learning Objectives

1. Identify heavy construction types
   - FEMA CBT: Module 3, ELO 1
2. Identify characteristics, and probable occupant locations
   - FEMA CBT: Module 3, ELO 6
3. Describe methods to assess rescue needs
   - FEMA CBT: Module 8, ELO 2
4. Describe expected behavior of heavy construction in a structural collapse incident
   - FEMA CBT: Module 3, ELO 3
5. Describe causes and associated effects of structural collapses
   - FEMA CBT: Module 3, ELO 5
6. Describe types and capabilities of resources
   - FEMA CBT: Module 3, ELO 7
7. Identify general hazards associated with structural collapse and size-up
   - FEMA CBT: Module 1, ELO 2
   - FEMA CBT: Module 3, ELO 7
8. Describe procedures for implementing site control and scene management
   - FEMA CBT: Module 1, ELO 2
9. Categorize heavy construction types
   - FEMA CBT: Module 3, ELO 1
10. Evaluate structural stability and hazards
    - FEMA CBT: Module 3, ELO 3
    - FEMA CBT: Module 5, ELO 1
11. Implement resource and security (scene management) protocols
    - FEMA CBT: Module 1, ELO 2

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-1.

CTS Guide Reference: CTS 3-1

Topic 1-4: Developing a Collapse Rescue Incident Action Plan

Terminal Learning Objective

At the end of this topic a student, given size-up information and a heavy collapsed structure, will be able to develop a collapse rescue incident action plan so that initial size-up information is utilized, an incident management system is incorporated, existing and potential conditions within the structure and the immediate periphery are included, specialized resource needs are identified, work perimeters are determined, collapse type/category and associated hazards are identified, construction and occupancy types are determined, incident objectives are established, and scene security measures are addressed.

Enabling Learning Objectives

1. Describe incident-specific size-up information
   - FEMA CBT: Module 8, ELO 3
2. Describe incident management system components
   - FEMA CBT: Module 8, ELO 3
   - IS-100, IS-200, IS-700, IS-800
3. Describe dynamics of incident conditions and peripheral areas
   - FEMA CBT: Module 8, ELO 1 and 2
4. Identify specific incident security requirements
   - FEMA CBT: Module 1, ELO 2
5. Describe construction and occupancy types
   - FEMA CBT: Module 3, ELO 1
   - FEMA CBT: Module 8, ELO 2
6. Describe scene security requirements
   - FEMA CBT: Module 1, ELO 2
7. Identify personnel needs and limitations
   - FEMA CBT: Module 1, ELO 2
8. Identify rescue scene operational priorities
   - FEMA CBT: Module 8, ELO 2
9. Utilize size-up information
   - FEMA CBT: Module 8, ELO 3
10. Implement an incident management system
    - FEMA CBT: Module 8, ELO 3
    - IS-100, IS-200, IS-700, IS-800
11. Monitor changing conditions specific to the incident
    - FEMA CBT: Module 1, ELO 2
12. Identify potential specialized resources
    - FEMA CBT: Module 3, ELO 7
13. Determine construction and occupancy types
    - FEMA CBT: Module 3, ELO 1
    - FEMA CBT: Module 8, ELO 2
14. Create written documentation

- FEMA CBT: Module 3, ELO 1
- FEMA CBT: Module 8, ELO 2

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-2.

CTS Guide Reference: CTS 3-3

Topic 1-5: Implementing a Collapse Rescue Incident Action Plan

Terminal Learning Objective

At the end of this topic a student, given an action plan and a heavy construction–type collapsed structure, will be able to implement a collapse rescue incident action plan, so that pertinent information is used, an incident management system is established and implemented, monitoring of dynamic conditions internally and externally is established, specialized resources are requested, hazards are mitigated, victim rescue and extraction techniques are consistent with collapse and construction type, and perimeter security measures are established.

Enabling Learning Objectives

1. Describe components of an action plan specific to collapse incidents
   - FEMA CBT: Module 8, ELO 1, 2, 3
2. Describe incident management systems
   - IS-100, IS-200, IS-700, IS-800
3. Identify dynamics of incident conditions and peripheral areas
   - FEMA CBT: Module 3, ELO 1, 2, 3
4. Identify specialized resource lists
   - FEMA CBT: Module 3, ELO 7
5. Recognize hazards
   - FEMA CBT: Module 3, ELO 7
6. Describe rescue and extrication techniques consistent with each collapse and construction type
   - FEMA CBT: Module 2, ELO 3
   - FEMA CBT: Module 8, ELO 2
7. Describe perimeter security measures
   - FEMA CBT: Module 1
8. Identify personnel needs and limitations
   - FEMA CBT: Module 1, ELO 2
9. Implement the components of an action plan in a collapse incident
   - FEMA CBT: Module 8, ELO 3
10. Implement an incident management system
    - FEMA CBT: Module 8, ELO 3
11. Initiate hazard mitigation objectives
    - FEMA CBT: Module 3, ELO 7
12. Request specialized resources
    - FEMA CBT: Module 3, ELO 7
13. Initiate rescue objectives
    - FEMA CBT: Module 8, ELO 2
14. Demonstrate perimeter security measures
    - FEMA CBT: Module 1, ELO 2

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-3.

CTS Guide Reference: CTS 3-4

Topic 1-6: Determining Potential Victim Locations

Terminal Learning Objective

At the end of this topic a student, given size-up information, a structural collapse tool cache, the type of construction and occupancy, time of day, and collapse pattern, will be able to determine potential victim locations in a heavy construction–type incident so that search areas are established and victims can be located.

Enabling Learning Objectives

1. Describe capabilities and limitation of search instruments and resources
   - FEMA CBT: Module 8, ELO 2
2. Identify types of building construction
   - FEMA CBT: Module 3, ELO 1
3. Describe occupancy classifications
   - FEMA CBT: Module 8, ELO 2
4. Identify collapse patterns
   - FEMA CBT: Module 3, ELO 6
5. Describe victim behavior
   - FEMA CBT: Module 2, ELO 1
6. Recognize potential areas of survivability
   - FEMA CBT: Module 3, ELO 6
7. Use size-up information
   - FEMA CBT: Module 3, ELO 7
8. Use occupancy classification information
   - FEMA CBT: Module 8, ELO 2
9. Use search devices
   - FEMB CBT: Module 8, ELO 2
10. Assess and categorize type of collapse
    - FEMA CBT: Module 3, ELO 3
    - FEMA CBT: Module 3, ELO 6

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-4.

CTS Guide Reference: CTS 3-2

Topic 1-7: Searching a Collapsed Structure

Terminal Learning Objective

At the end of this topic a student, given PPE, the structural collapse tool cache, an assignment, operational protocols, and size-up information, will be able to search a heavy construction–type collapsed structure so that all victim locations and potential hazards are identified, marked, and reported; protocols are followed; the mode of operation can be determined; and rescuer safety is maintained.

Enabling Learning Objectives

1. Describe concepts and operation of the incident management system as applied to the search function
   - FEMA CBT: Module 3, ELO 8
   - FEMA CBT: Module 8, ELO 3
2. Describe how to apply specialty tools and locating devices
   - FEMA CBT: Module 8, ELO 2
3. Describe how to apply recognized marking systems
   - FEMA CBT: Module 3, ELO 8
4. Describe voice sounding techniques
   - FEMA CBT: Module 8, ELO 2
5. Identify potential victim locations as related to the type of structure and occupancy
   - FEMA CBT: Module 8, ELO2
6. Identify building construction type
   - FEMA CBT: Module 3, ELO 3
7. Describe collapse types and their influence on the search function
   - FEMA CBT: Module 3, ELO 6
8. Describe operational search protocols
   - FEMA CBT: Module 8, ELO 2
9. Recognize various hazards
   - FEMA CBT: Module 3, ELO 7
10. Implement an incident management system
    - FEMA CBT: Module 8, ELO 3
11. Apply search techniques
    - FEMA CBT: Module 8, ELO 2
12. Use marking systems
    - FEMA CBT: Module 3, ELO 8
13. Identify and mitigate hazards
    - FEMA CBT: Module 3, ELO 7
14. Select and use victim locating devices
    - FEMA CBT: Module 8, ELO 2

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-5.

CTS Guide Reference: CTS 3-5

Topic 1-8: Constructing Cribbing Systems

Terminal Learning Objective

At the end of this topic a student, given an assignment, PPE, a structural collapse tool cache, various lengths and dimensions of lumber, wedges, and shims, will be able to construct cribbing systems, so that the cribbing system will safely support the load, the system is stable, and the assignment is completed.

Enabling Learning Objectives

1. Describe different types of cribbing systems and their construction methods
   - FEMA CBT: Module 7, ELO 2
2. Describe limitations of construction lumber
   - FEMA CBT: Module 7, ELO 3
3. Describe load calculations
   - FEMA CBT: Module 7, ELO 3
4. Describe principles of and applications for cribbing
   - FEMA CBT: Module 7, ELO 2 and 3
5. Describe safety protocols
   - FEMA CBT: Module 7, ELO 3
6. Select and construct cribbing systems
   - FEMA CBT: Module 7, ELO 2
7. Evaluate the structural integrity of the system
   - FEMA CBT: Module 7, ELO 2 and 3
8. Determine stability
   - FEMA CBT: Module 7, ELO 3
9. Calculate loads
   - FEMA CBT: Module 7, ELO 1

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-6.

CTS Guide Reference: CTS 3-12

Topic 1-9: Lifting a Heavy Load as a Team Member

Terminal Learning Objective

At the end of this topic a student, given a structural collapse tool cache and a load to be lifted, will be able to lift a heavy load as a team member, so that the load is lifted; control and stabilization are maintained before, during, and after the lift; and access can be gained.

Enabling Learning Objectives

1. Describe how to apply levers
   - FEMA CBT: Module 7, ELO 2
2. Describe classes of levers
   - FEMA CBT: Module 7, ELO 2
3. Describe principles of leverage, gravity, and load balance
   - FEMA CBT: Module 7, ELO 1
4. Describe resistance force
   - FEMA CBT: Module 7, ELO 3
5. Describe mechanics of load stabilization
   - FEMA CBT: Module 7, ELO 2
6. Describe mechanics of load lifting
   - FEMA CBT: Module 7, ELO 2 and 3
7. Describe how to apply pneumatic, hydraulic, mechanical, and manual lifting tools
   - FEMA CBT: Module 4, ELO 1
8. Describe how to calculate the weight of the load
   - FEMA CBT: Module 7, ELO 2
9. Describe stabilization systems
   - FEMA CBT: Module 7, ELO 2
10. Evaluate and estimate the weight of the load
    - FEMA CBT: Module 7, ELO 2
11. Operate lifting tools
    - FEMA CBT: Module 7, ELO 3
12. Apply a lever
    - FEMA CBT: Module 7, ELO 2
13. Apply load stabilization systems
    - FEMA CBT: Module 7, ELO 2

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-7.

CTS Guide Reference: CTS 3-9

Topic 1-10: Moving a Heavy Load as a Team Member

Terminal Learning Objective

At the end of this topic a student, given a structural collapse tool cache, will be able to move a heavy load as a team member, so that the load is moved the required distance to gain access and control is constantly maintained.

Enabling Learning Objectives

1. Describe how to apply rigging systems
   - FEMA CBT: Module 7, ELO 2 and 3
2. Describe how to apply levers
   - FEMA CBT: Module 7, ELO 2 and 3
3. Describe classes of levers
   - FEMA CBT: Module 7, ELO 3
4. Describe how to apply rollers
   - FEMA CBT: Module 7, ELO 3
5. Describe inclined planes
   - FEMA CBT: Module 7, ELO 3
6. Describe gravity, center of gravity, and load balance
   - FEMA CBT: Module 7, ELO 1
7. Describe friction
   - FEMA CBT: Module 7, ELO 3
8. Describe mechanics of load stabilization and load lifting
   - FEMA CBT: Module 7, ELO 2
9. Describe capabilities and limitations of lifting tools
   - FEMA CBT: Module 4, ELO 1
10. Describe how to calculate the weight of the load
    - FEMA CBT: Module 5, ELO 2
11. Describe safety protocols
    - FEMA CBT: Module 1, ELO 2
12. Evaluate and estimate the weight of the load
    - FEMA CBT: Module 5, ELO 2
13. Operate required tools
    - FEMA CBT: Module 4, ELO 1
14. Construct and use levers, rollers, and inclined planes
    - FEMA CBT: Module 7, ELO 3
15. Utilize rigging systems
    - FEMA CBT: Module 7, ELO 2 and 3
16. Stabilize the load
    - FEMA CBT: Module 7, ELO 2

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-8.

CTS Guide Reference: CTS 3-10

Topic 1-11: Stabilizing a Collapsed Structure Using Timber Shoring Systems as a Member of a Team

Terminal Learning Objective

At the end of this topic a student, given size-up information, a specific pattern of collapse, a basic structural collapse tool cache, and an assignment, will be able to stabilize a collapsed heavy construction–type structure using timber shoring systems as a member of a team so that strategies to effectively minimize the movement of structural components are identified and implemented; hazard warning systems are established and understood by participating personnel; hazard-specific PPE is identified, provided, and utilized; physical hazards are identified; confinement, containment, and avoidance measures are discussed; and a rapid intervention team is established and staged.

Enabling Learning Objectives

1. Identify appropriate PPE
   - FEMA CBT: Module 1, ELO 3
2. Describe confinement, containment, and avoidance measures
   - FEMA CBT: Module 3, ELO 7
3. Describe structural load calculations for shoring system requirements
   - FEMA CBT: Module 5, ELO 2
4. Describe shoring systems for stabilization
   - FEMA CBT: Module 5, ELO 3
5. Describe specific hazards associated with heavy structural collapse
   - FEMA CBT: Module 5, ELO 4
6. Describe strategic planning for collapse incidents
   - FEMA CBT: Module 8, ELO 2
7. Describe communications and safety protocols
   - FEMA CBT: Module 8, ELO 2
8. Identify the need for atmospheric monitoring equipment
   - FEMA CBT: Module 3, ELO 8
9. Identify characteristics, expected behavior, type, causes, and associated effects of heavy structural collapses
   - FEMA CBT: Module 3, ELO 2
10. Recognize potential for and signs of impending secondary collapse
    - FEMA CBT: Module 5, ELO 1
11. Select and construct shoring systems for collapses in heavy structures
    - FEMA CBT: Module 5, ELO 3
12. Perform structural load calculations
    - FEMA CBT: Module 5, ELO 2
13. Determine resource needs
    - FEMA CBT: Module 5, ELO 4
14. Select and operate basic and specialized tools and equipment
    - FEMA CBT: Module 4, ELO 1
15. Use PPE (AHJ)

- FEMA CBT: Module 1, ELO 3

16. Implement communications and safety protocols
    - FEMA CBT: Module 8, ELO 2
17. Mitigate specific hazards associated with shoring tasks
    - FEMA CBT: Module 5, ELO 3 and 4

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-9.

CTS Guide Reference: CTS 3-6

Topic 1-12: Stabilizing a Collapsed Structure Using Mechanical Shoring Systems as a Member of a Team

Terminal Learning Objective

At the end of this topic a student, given size-up information, hazard-specific PPE, an assignment, a specific pattern of collapse, a structural collapse tool cache, specialized equipment necessary to complete the task, and engineering resources if needed, will be able to stabilize a collapsed heavy construction–type structure using mechanical shoring systems as a member of a team so that hazard warning systems are established and understanding by team members is verified, all unstable structural components that can impact the work and egress routes are identified, alternative egress routes are established when possible, expert resource needs are determined and communicated to command, load estimates are calculated for support system requirements, all shoring systems meet or exceed load-bearing demands, shoring systems are monitored continuously for integrity, safety protocols are followed, a rapid intervention crew (RIC) is established and staged to aid search and rescue personnel in the event of entrapment, an accountability system is established, atmospheric monitoring is ongoing, and progress is communicated as required.

Enabling Learning Objectives

1. Identify appropriate PPE
   - FEMA CBT: Module 1, ELO 3
2. Describe how to evaluate structural load calculations for shoring system requirements
   - FEMA CBT: Module 5, ELO 2
3. Describe how to select shoring systems for stabilization
   - FEMA CBT: Module 5, ELO 3 and 4
4. Describe specific hazards associated with heavy structural collapse
   - FEMA CBT: Module 3, ELO 3 and 6
5. Describe hazard warning systems
   - FEMA CBT: Module 3, ELO 7
6. Recognize and describe specialized resource and equipment needs
   - FEMA CBT: Module 3, ELO 7
7. Describe communications and rescuer safety protocols
   - FEMA CBT: Module 1, ELO 1 and 2
8. Describe atmospheric monitoring equipment needs
   - FEMA CBT: Module 1, ELO 3
9. Identify construction types
   - FEMA CBT: Module 3, ELO 1
10. Describe characteristics and expected behavior of heavy construction in a structural collapse incident
    - FEMA CBT: Module 3, ELO 2 and 3
11. Identify causes and associated effects of structural collapses
    - FEMA CBT: Module 3, ELO 2 and 6
12. Recognize potential for and signs of impending secondary collapse
    - FEMA CBT: Module 5, ELO 1

13. Select and construct shoring systems for heavy construction–type collapses
    - FEMA CBT: Module 5, ELO 3 and 4
14. Use PPE
    - FEMA CBT: Module 1, ELO 3
15. Perform structural load calculations
    - FEMA CBT: Module 5, ELO 2
16. Determine resource needs
    - FEMA CBT: Module 3, ELO 7
17. Select and operate basic and specialized tools and equipment
    - FEMA CBT: Module 4, ELO 1
18. Implement communications and rescuer safety protocol
    - FEMA CBT: Module 8, ELO 2
19. Mitigate specific hazards associated with shoring tasks
    - FEMA CBT: Module 5, ELO 3 and 4

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-10.

CTS Guide Reference: CTS 3-13

Topic 1-13: Breaching Structural Components

Terminal Learning Objective

At the end of this topic a student, given an assignment, PPE, various types of construction materials, and a structural collapse tool cache, will be able to breach heavy structural components, so that the opening supports the rescue objectives, the necessary tools are selected, structural stability is maintained, and the methods utilized are safe and efficient.

Enabling Learning Objectives

1. Describe effective breaching techniques
   - FEMA CBT: Module 6, ELO 1, 2, 3
2. Describe types of building construction and characteristics of materials used in each
   - FEMA CBT: Module 3, ELO 3
3. Describe the selection, capabilities, and limitations of tools
   - FEMA CBT: Module 4, ELO 1
4. Describe safety protocols for breaching operations
   - FEMA CBT: Module 6, ELO 2 and 3
5. Describe how to calculate weight
   - FEMA CBT: Module 6, ELO 1 and 3
   - FEMA CBT: Module 7, ELO 1
6. Describe how to anticipate material movement during breaching and stabilization techniques
   - FEMA CBT: Module 6, ELO 3
7. Select and use breaching tools
   - FEMA CBT: Module 6, ELO 2
8. Implement breaching techniques based on heavy construction types
   - FEMA CBT: Module 6, ELO 2 and 3
9. Use PPE
   - FEMA CBT: Module 1, ELO 3
10. Apply stabilization where required
    - FEMA CBT: Module 5, ELO 3 and 4

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-11.

CTS Guide Reference: CTS 3-11

Topic 1-14: Cutting Through Structural Steel

Terminal Learning Objective

At the end of this topic a student, given a structural collapse tool cache, PPE, and an assignment, will be able to cut through structural steel so that the steel is efficiently cut, the victim and rescuer are protected, fire control measures are in place, and the objective is accomplished.

Enabling Learning Objectives

1. Describe safety considerations
   - FEMA CBT: Module 6, ELO 2
2. Describe the selection, capabilities, and limitations of steel cutting tools
   - FEMA CBT: Module 4, ELO 1 and 2
3. Identify cutting tool applications
   - FEMA CBT: Module 4, ELO 1 and 2
4. Identify types of potential and actual hazards and mitigation techniques
   - FEMA CBT: Module 1, ELO 2
   - FEMA CBT: Module 3, ELO 7
5. Describe characteristics of steel used in building construction
   - FEMA CBT: Module 3, ELO 3
6. Assess tool needs
   - FEMA CBT: Module 4, ELO 1 and 2
7. Use cutting tools
   - FEMA CBT: Module 4, ELO 1 and 2
8. Mitigate hazards
   - FEMA CBT: Module 1, ELO 2
   - FEMA CBT: Module 3, ELO 7
9. Stabilize heavy loads
   - FEMA CBT: Module 7, ELO 2

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-12.

CTS Guide Reference: CTS 3-14

Topic 1-15: Coordinating Heavy Equipment Use

Terminal Learning Objective

At the end of this topic a student, given PPE, means of communication, equipment and operator, and an assignment, will be able to coordinate the use of heavy equipment so that common communications are established, equipment usage supports the operational objective, hazards are avoided, and rescuer and operator safety protocols are followed.

Enabling Learning Objectives

1. Describe types of heavy equipment, capabilities, application, and hazards of heavy equipment and rigging
   - FEMA CBT: Module 7, ELO 2 and 3
2. Describe safety protocols
   - FEMA CBT: Module 7, ELO 3
3. Describe types and methods of communication
   - FEMA CBT: Module 7, ELO 2
4. Use hand signals and radio equipment
   - FEMA CBT: Module 7, ELO 2
5. Recognize hazards
   - FEMA CBT: Module 1, ELO 2
   - FEMA CBT: Module 3, ELO 7
6. Assess for operator and rescuer safety
   - FEMA CBT: Module 1, ELO 2
7. Use PPE
   - FEMA CBT: Module 1, ELO 3

Application

1. Completed within CBT

Instructor Notes

1. See corresponding ILT content in Topic 4-13.

CTS Guide Reference: CTS 3-15

Topic 1-16: Releasing a Victim from Entrapment

Terminal Learning Objective

At the end of this topic a student, given PPE and resources for breaching, breaking, lifting, prying, shoring, and/or otherwise moving or penetrating the offending structural component, will be able to release a victim from entrapment by components of a heavy construction–type collapsed structure so that hazards to rescue personnel and victims are minimized, considerations are given to compartment syndrome due to crush injuries, techniques enhance patient survivability, tasks are accomplished within projected time frames, and techniques do not compromise the integrity of the existing structure or structural support systems.

Enabling Learning Objectives

1. Identify appropriate PPE
   - FEMA CBT: Module 1, ELO 3
2. Identify general hazards associated with each type of structural collapse
   - FEMA CBT: Module 3, ELO 7
3. Describe methods of evaluating structural integrity
   - FEMA CBT: Module 8, ELO 2
4. Describe compartment syndrome protocols
   - FEMA CBT: Module 2, ELO 2
5. Identify construction types and collapse characteristics of heavy construction–type structures
   - FEMA CBT: Module 3, ELO 1
6. Describe causes and associated effects of structural collapses
   - FEMA CBT: Module 3, ELO 7
7. Identify potential signs of impending secondary collapse
   - FEMA CBT: Module 5, ELO 1
8. Describe how to select and apply rescue tools and resources
   - FEMA CBT: Module 4, ELO 1
9. Describe risk/benefit assessment techniques for extrication methods and time constraints
   - FEMA CBT: Module 2, ELO 3
10. Select, use, and care for PPE
    - FEMA CBT: Module 1, ELO 3
11. Operate rescue tools and stabilization systems
    - FEMA CBT: Module 4, ELO 1
    - FEMA CBT: Module 5, ELO 3
12. Recognize compartment syndrome signs and symptoms
    - FEMA CBT: Module 2, ELO 2
13. Complete risk/benefit assessments for selected methods of rescue and time constraints
    - FEMA CBT: Module 2, ELO 3

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-14.

CTS Guide Reference: CTS 3-7

Topic 1-17: Removing a Victim from a Collapse Incident

Terminal Learning Objective

At the end of this topic a student, given a disentangled victim, a basic first aid kit, and victim packaging resources, will be able to remove a victim from a heavy construction–type collapse incident so that basic life functions are supported as required, victim is evaluated for signs of compartment syndrome, advanced life support is called if needed, methods and packaging devices selected are compatible with intended routes of transfer, universal precautions are employed to protect personnel from bloodborne pathogens, and extraction times meet time constraints for medical management.

Enabling Learning Objectives

1. Identify appropriate PPE
   - FEMA CBT: Module 1, ELO 3
2. Identify general hazards associated with structural collapse
   - FEMA CBT: Module 3, ELO 3
   - FEMA CBT: Module 3, ELO 7
3. Identify heavy construction types
   - FEMA CBT: Module 3, ELO 3
4. Describe characteristics and expected behavior of each type in a structural collapse incident
   - FEMA CBT: Module 3, ELO 1
5. Describe causes and associated effects of structural collapses
   - FEMA CBT: Module 3, ELO 7
6. Recognize potential for, and signs of, impending secondary collapse
   - FEMA CBT: Module 5, ELO 1
7. Describe characteristic mechanisms of injury and basic life support
   - FEMA CBT: Module 2, ELO 1
8. Describe patient packaging principles
   - FEMA CBT: Module 2, ELO 1
9. Select, use, and care for PPE
   - FEMA CBT: Module 1, ELO 3
10. Perform basic prehospital care and treatment of soft-tissue injuries
    - FEMA CBT: Module 2, ELO 1
11. Stabilize fractures
    - FEMA CBT: Module 2, ELO 1
12. Perform airway maintenance techniques and cardiopulmonary resuscitation
    - FEMA CBT: Module 2, ELO 1
13. Identify signs and symptoms of compartment syndrome
    - FEMA CBT: Module 2, ELO 2
14. Select and use of patient packaging equipment
    - FEMA CBT: Module 2, ELO 4

Application

1. Completed within CBT modules

Instructor Notes

1. See corresponding ILT content in Topic 4-15.

CTS Guide Reference: CTS 3-8

Unit 2: Introduction (Instructor-led Training)

Topic 2-1: 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 3: PPE and Tools (Instructor-led Training)

Topic 3-1: Maintaining Hazard-specific PPE

Terminal Learning Objective

At the end of this topic a student, given clothing or equipment for the protection of the rescuers, including respiratory protection, cleaning and sanitation supplies, maintenance logs or records, inspection procedures, and such tools and resources as are indicated by the manufacturer's guidelines for assembly or disassembly of components during repair or maintenance, will be able to maintain hazard-specific PPE so that damage, defects, and wear are identified and reported or repaired; equipment functions as designed; and preventive maintenance has been performed and documented consistent with the manufacturer's recommendations.

Enabling Learning Objectives

1. Identify PPE
   - Required
     - Helmet
     - Eye protection
     - Ear protection
     - Protective clothing
     - Safety boots
     - Gloves
     - Respirator (half mask)
   - Recommended
     - Head lamp
     - Radio
     - Knee and elbow pads
2. Describe how to use record-keeping systems of the AHJ
3. Describe requirements and procedures for cleaning, sanitizing, and infectious disease control
4. Describe how to use provided assembly and disassembly tools
5. Identify manufacturer and department recommendations
6. Describe pre-use inspection procedures
7. Describe how to determine operational readiness
8. Identify wear and damage indicators for PPE
9. Complete logs and records
10. Use cleaning equipment, supplies, and reference materials
11. Select and use tools specific to the task

Discussion Questions

1. In what environment did you use your PPE?
2. How do the contaminants from that environment affect your PPE?
3. What is your AHJ's policy or procedure for inspecting, cleaning, maintaining, or discarding PPE?

Application

1. Determined by instructor

Instructor Notes

1. See corresponding CBT content in Topic 1-1.

CTS Guide Reference: CTS 2-13

Topic 3-2: Maintaining Rescue Equipment

Terminal Learning Objective

At the end of this topic a student, given maintenance logs and records, tools, and resources as indicated by the manufacturer's guidelines, inspection procedures, equipment replacement protocol, and organizational standard operating procedure, will be able to maintain rescue equipment so that the operational status of equipment is verified and documented, all components are checked for operation, deficiencies are repaired or reported as indicated by standard operating procedure, and items subject to replacement are correctly disposed of and changed out.

Enabling Learning Objectives

1. Describe how to use record-keeping systems
2. Describe manufacturer and organizational care and maintenance requirements
3. Describe how to select and use maintenance tools
4. Describe replacement protocol and procedures
5. Describe disposal methods
6. Describe AHJ standard operating procedures
7. Identify wear and damage indicators for rescue equipment
8. Evaluate operational readiness of equipment
9. Complete logs and records
10. Select and use maintenance tools

Discussion Questions

1. Determined by instructor

Application

1. FEMA ILT:
   - Activity 2.1 Pneumatic Tools (Module 2, Section 92)
   - Activity 2.3 Electric Tools and Manual Tools (Module 2, Section 94)
   - Activity 2.4 Gas-powered Tools (Module 2, Section 95)
   - Activity 2.5 Patient Packaging (Module 2, Section 96)

Instructor Notes

1. This is your "tool lab".
2. Use FEMA ILT: Module 2 as reference.
3. See corresponding CBT content in Topic 1-2.

CTS Guide Reference: CTS 2-14

Unit 4: Technician (Instructor-led Training)

Topic 4-1: Conducting a Size-up of a Collapsed Heavy Construction-type Structure

Terminal Learning Objective

At the end of this topic a student, given an incident and specific incident information, will be able to conduct a size-up of a collapsed heavy construction–type structure, so that existing and potential conditions within the structure and the immediate periphery are evaluated, needed resources are defined, hazards are identified, construction and occupancy types are determined, collapse type is identified if possible, the need for rescue is assessed, a scene security perimeter is established, and the size-up is conducted within the scope of the incident management system.

Enabling Learning Objectives

1. Describe types and capabilities of resources
    - ICS 420-1 (FIRESCOPE – 2017), Chapter 16

Discussion Questions

1. Determined by instructor.

Application

1. Determined by instructor.

Instructor Notes

1. See NFPA 1006 (2021) Annex F, Confined Space Entry Permit. Discuss with students.
2. See corresponding CBT content in Topic 1-3.

CTS Guide Reference: CTS 3-1

Topic 4-2: Developing a Collapse Rescue Incident Action Plan

Terminal Learning Objective

At the end of this topic a student, given size-up information and a heavy collapsed structure, will be able to develop a collapse rescue incident action plan so that initial size-up information is utilized, an incident management system is incorporated, existing and potential conditions within the structure and the immediate periphery are included, specialized resource needs are identified, work perimeters are determined, collapse type/category and associated hazards are identified, construction and occupancy types are determined, incident objectives are established, and scene security measures are addressed.

Enabling Learning Objectives

1. Identify incident-specific resources in a given geographical area
   - ICS 420-1 FOG (FIRESCOPE – 2017), Chapter 16
2. Identify potential specialized resources
   - ICS 420-1 FOG (FIRESCOPE – 2017), Chapter 16

Discussion Questions

1. Determined by instructor

Application

1. Determined by instructor

Instructor Notes

1. See corresponding CBT content in Topic 1-4.

CTS Guide Reference: CTS 3-3

Topic 4-3: Implementing a Collapse Rescue Incident Action Plan

Terminal Learning Objective

At the end of this topic a student, given an action plan and a heavy construction–type collapsed structure, will be able to implement a collapse rescue incident action plan, so that pertinent information is used, an incident management system is established and implemented, monitoring of dynamic conditions internally and externally is established, specialized resources are requested, hazards are mitigated, victim rescue and extraction techniques are consistent with collapse and construction type, and perimeter security measures are established.

Enabling Learning Objectives

1. Identify specialized resource lists
   - ICS 420-1 FOG (FIRESCOPE – 2017), Chapter 16
2. Request specialized resources
   - What to request
   - How to request
   - From whom to request
   - When to request

Discussion Questions

1. Determined by instructor

Application

1. Determined by instructor

Instructor Notes

1. See corresponding CBT content in Topic 1-5.

CTS Guide Reference: CTS 3-4

Topic 4-4: Determining Potential Victim Locations

Terminal Learning Objective

At the end of this topic a student, given size-up information, a structural collapse tool cache, the type of construction and occupancy, time of day, and collapse pattern, will be able to determine potential victim locations in a heavy construction–type incident so that search areas are established and victims can be located.

Enabling Learning Objectives

1. None

Discussion Questions

1. Determined by instructor

Application

1. Given available AHJ search devices (i.e., thermal imager, fiber optics, search cameras, mirrors, flashlights, night vision goggles) have students familiarize themselves with their use.

Instructor Notes

1. See corresponding CBT content in Topic 1-6.

CTS Guide Reference: CTS 3-2

Topic 4-5: Searching a Collapsed Structure

Terminal Learning Objective

At the end of this topic a student, given PPE, the structural collapse tool cache, an assignment, operational protocols, and size-up information, will be able to search a heavy construction–type collapsed structure so that all victim locations and potential hazards are identified, marked, and reported; protocols are followed; the mode of operation can be determined; and rescuer safety is maintained.

Enabling Learning Objectives

1. None

Discussion Questions

1. Determined by instructor

Application

1. Given a collapse incident scenario (real or simulated), have students apply building markings.

Instructor Notes

1. See corresponding CBT content in Topic 1-7.

CTS Guide Reference: CTS 3-5

Topic 4-6: Constructing Cribbing Systems

Terminal Learning Objective

At the end of this topic a student, given an assignment, PPE, a structural collapse tool cache, various lengths and dimensions of lumber, wedges, and shims, will be able to construct cribbing systems, so that the cribbing system will safely support the load, the system is stable, and the assignment is completed.

Enabling Learning Objectives

1. Describe different types of cribbing systems and their construction methods
   - FEMA ILT: Module 5, ELO 7
2. Describe limitations of construction lumber
   - FEMA ILT: Module 5, ELO 7
3. Describe load calculations
   - FEMA ILT: Module 5, ELO 7
4. Describe principles of and applications for cribbing
   - FEMA ILT: Module 5, ELO 7
5. Describe safety protocols
   - FEMA ILT: Module 1, ELO 1
6. Select and construct cribbing systems
   - FEMA ILT: Module 5, ELO 7
7. Evaluate the structural integrity of the system
   - FEMA ILT: Module 5, ELO 7
8. Determine stability
   - FEMA ILT: Module 5, ELO 7
9. Calculate loads
   - FEMA ILT: Module 5, ELO 3 and 7

Discussion Questions

1. Determined by instructor

Application

1. Given materials, have students build cribbing systems.

Instructor Notes

1. Describe all five cribbing systems (two-piece layer crosstie, three-piece layer crosstie, platform crosstie, triangle crosstie, modified cross tie).
2. See corresponding CBT content in Topic 1-8.

CTS Guide Reference: CTS 3-12

Topic 4-7: Lifting a Heavy Load as a Team Member

Terminal Learning Objective

At the end of this topic a student, given a structural collapse tool cache and a load to be lifted, will be able to lift a heavy load as a team member, so that the load is lifted; control and stabilization are maintained before, during, and after the lift; and access can be gained.

Enabling Learning Objectives

1. Describe how to apply levers
   - FEMA ILT: Module 5, ELO 2
2. Describe classes of levers
   - FEMA ILT: Module 5, ELO 2
3. Describe principles of leverage, gravity, and load balance
   - FEMA ILT: Module 5, ELO 2
4. Describe mechanics of load stabilization
   - FEMA ILT: Module 5, ELO 7
5. Describe mechanics of load lifting
   - FEMA ILT: Module 5, ELO 2, 5, 6
6. Describe how to apply pneumatic, hydraulic, mechanical, and manual lifting tools
   - FEMA ILT: Module 5, ELO 2, 5, 6
7. Describe how to calculate the weight of the load
   - FEMA ILT: Module 5, ELO 3
8. Describe safety protocols
   - FEMA ILT: Module 1, ELO 1 and 4
9. Describe stabilization systems
   - FEMA ILT: Module 5, ELO 7
10. Evaluate and estimate the weight of the load
    - FEMA ILT: Module 5, ELO 3
11. Operate lifting tools
    - FEMA ILT: Module 2, ELO 2
12. Apply a lever
    - FEMA ILT: Module 5, ELO 2
13. Apply load stabilization systems
    - FEMA ILT: Module 5, ELO 7

Discussion Questions

1. Determined by instructor

Application

1. See Topic 3-8 Application.

Instructor Notes

1. Teach Topic 3-7 in combination with Topic 3-8.
2. ELO 7 is covered in Topics 1-7 and 1-8. You do not need to repeat the material.
3. See corresponding CBT content in Topic 1-9.

CTS Guide Reference: CTS 3-9

Topic 4-8: Moving a Heavy Load as a Team Member

Terminal Learning Objective

At the end of this topic a student, given a structural collapse tool cache, will be able to move a heavy load as a team member, so that the load is moved the required distance to gain access and control is constantly maintained.

Enabling Learning Objective s

1. Describe how to apply rigging systems
   - FEMA ILT: Module 5, ELO 3
2. Describe how to apply levers
   - FEMA ILT: Module 5, ELO 2
3. Describe classes of levers
   - FEMA ILT: Module 5, ELO 2
4. Describe how to apply rollers
   - FEMA ILT: Module 5, ELO 6
5. Describe inclined planes
   - FEMA ILT: Module 5, ELO 6
6. Describe gravity, center of gravity, and load balance
   - FEMA ILT: Module 5, ELO 3
7. Describe capabilities and limitations of lifting tools
   - FEMA ILT: Module 2, ELO 1
8. Describe how to calculate the weight of the load
   - FEMA ILT: Module 5, ELO 1
9. Describe safety protocols
   - FEMA ILT: Module 1, ELO 1 and 4
10. Evaluate and estimate the weight of the load
    - FEMA ILT: Module 5, ELO 1
11. Operate required tools
    - FEMA ILT: Module 2, ELO 2
12. Construct and use levers, rollers, and inclined planes
    - FEMA ILT: Module 5, ELO 6
13. Utilize rigging systems
    - FEMA ILT: Module 5, ELO 3

Discussion Questions

1. Determined by instructor

Application

1. FEMA ILT:
   - Activity 5.1 – Lever Type 1-3, Rollers, and Bridging (Module 5, Section 14)
   - Activity 5.2 – Airbags and Cribbing (Module 5, Section 17)
   - Activity 5.3 – Rigging (Module 5, Section 20)
   - Activity 5.4 – Cranes (Module 5, Section 22)
   - Activity 5.5 – Anchors and Bolting (Module 5, Section 25)
   - Activity 5.6 – Mechanical Advantage (MA) Systems (Module 5, Section 27)

- Activity 5.7 – Obstacle (O) Course (Module 5, Section 29)

Instructor Notes

1. Teach Topic 3-7 in combination with Topic 3-8.
2. Only do the load calculation portion of Activity 5.4. The rest is covered in another topic.
3. Use USACE Shoring Operations Guide (current edition) as a reference.
4. See corresponding CBT content in Topic 1-10.

CTS Guide Reference: CTS 3-10

Topic 4-9: Stabilizing a Collapsed Structure Using Timber Shoring Systems as a Member of a Team

Terminal Learning Objective

At the end of this topic a student, given size-up information, a specific pattern of collapse, a basic structural collapse tool cache, and an assignment, will be able to stabilize a collapsed heavy construction–type structure using timber shoring systems as a member of a team so that strategies to effectively minimize the movement of structural components are identified and implemented; hazard warning systems are established and understood by participating personnel; hazard-specific PPE is identified, provided, and utilized; physical hazards are identified; confinement, containment, and avoidance measures are discussed; and a rapid intervention team is established and staged.

Enabling Learning Objectives

1. Describe PPE care and maintenance requirements

Discussion Questions

1. Determined by instructor

Application

1. FEMA ILT:
   - Activity 3.5 – Class 3 Shoring Laced Post Shore (Module 3, Section 31)
     - Traditional
     - Plywood Laced Post (PLP)
   - Activity 3.6 – Class 3 Shoring Sloped Floor Shore (Module 3, Section 34)
     - Application 3.1 – Sloped Floor Shore Build (Module 3, Section 37)
   - Activity 3.7 – Class 3 Shoring Raker Shore (Module 4, Section 40)
2. Given hazard-specific PPE, an assignment, a specific pattern of collapse, a structural collapse tool cache, and specialized equipment necessary to complete the task, have students build a:
   - Double raker shore (required)
   - Triple raker shore (optional)

Instructor Notes

1. ELO 1 is covered in Topic 1-1. You do not need to repeat the material.
2. See corresponding CBT content in Topic 1-11.

CTS Guide Reference: CTS 3-6

Topic 4-10: Stabilizing a Collapsed Structure Using Mechanical Shoring Systems as a Member of a Team

Terminal Learning Objective

At the end of this topic a student, given size-up information, hazard-specific PPE, an assignment, a specific pattern of collapse, a structural collapse tool cache, specialized equipment necessary to complete the task, and engineering resources if needed, will be able to stabilize a collapsed heavy construction–type structure using mechanical shoring systems as a member of a team so that hazard warning systems are established and understanding by team members is verified, all unstable structural components that can impact the work and egress routes are identified, alternative egress routes are established when possible, expert resource needs are determined and communicated to command, load estimates are calculated for support system requirements, all shoring systems meet or exceed load-bearing demands, shoring systems are monitored continuously for integrity, safety protocols are followed, a rapid intervention crew (RIC) is established and staged to aid search and rescue personnel in the event of entrapment, an accountability system is established, atmospheric monitoring is ongoing, and progress is communicated as required.

Enabling Learning Objectives

1. Describe PPE care and maintenance requirements
2. Describe how to evaluate structural load calculations for shoring system requirements
   - FEMA ILT: Module 5, ELO 3
3. Describe how to select shoring systems for stabilization
   - FEMA ILT: Module 3, ELO 3 and 4
4. Describe specific hazards associated with heavy structural collapse
   - FEMA ILT: Module 1, ELO 1 and 3
5. Describe hazard warning systems
   - FEMA ILT: Module 1, ELO 1 and 3
6. Recognize and describe specialized resource and equipment needs
   - FEMA ILT: Module 1, ELO 1 and 3
7. Describe communications and rescuer safety protocols
   - FEMA ILT: Module 1, ELO 1 and 3
8. Describe atmospheric monitoring equipment needs
   - FEMA ILT: Module 1, ELO 1 and 3
9. Select and construct shoring systems for heavy construction–type collapses
   - FEMA ILT: Module 3, ELO 4
10. Perform structural load calculations
    - FEMA ILT: Module 5, ELO 3
11. Select and operate basic and specialized tools and equipment
    - FEMA ILT: Module 2, ELO 1 and 2
12. Mitigate specific hazards associated with shoring tasks
    - FEMA ILT: Module 1, ELO 5

Discussion Questions

1. Determined by instructor

Application

1. Given hazard-specific PPE, an assignment, a specific pattern of collapse, a structural collapse tool cache, and specialized equipment necessary to complete the task, have students build the following shoring systems:
    - Single T-shore (spot shore)
    - Double T-shore
    - Two-post vertical shore
    - Multi-post vertical shore
    - Horizontal shore
    - Door and window shore
    - Raker shore
    - Slope floor shore (type 2)
    - Slope floor shore (type 3)
    - Raker shore (flying) (optional)

Instructor Notes

1. ELO 1 is covered in Topic 1-1. You do not need to repeat the material.
2. See corresponding CBT content in Topic 1-12.

CTS Guide Reference: CTS 3-13

Topic 4-11: Breaching Structural Components

Terminal Learning Objective

At the end of this topic a student, given an assignment, PPE, various types of construction materials, and a structural collapse tool cache, will be able to breach heavy structural components, so that the opening supports the rescue objectives, the necessary tools are selected, structural stability is maintained, and the methods utilized are safe and efficient.

Enabling Learning Objectives

1. Describe effective breaching techniques
   - FEMA ILT: Module 4, ELO 1, 2, 3, 4, 5, 6, 7
2. Describe the selection, capabilities, and limitations of tools
   - FEMA ILT: Module 2, ELO 1 and 2
3. Describe safety protocols for breaching operations
   - FEMA ILT: Module 4, ELO 1, 2, 3, 4, 5, 6, 7
4. Describe how to calculate weight
   - FEMA ILT: Module 5, ELO 3
5. Describe how to anticipate material movement during breaching and stabilization techniques
   - FEMA ILT: Module 4, ELO 5
6. Select and use breaching tools
   - FEMA ILT: Module 2, ELO 2
7. Implement breaching techniques based on heavy construction types
   - FEMA ILT: Module 4, ELO 1, 2, 3, 4, 5, 6, 7
8. Use PPE
   - FEMA ILT: Module 1, ELO 1 and 8
9. Apply stabilization where required
   - FEMA ILT: Module 3, ELO 1, 2, 3, 4

Discussion Questions

1. Determined by instructor

Application

1. FEMA ILT:
   - Activity 4.1 – Drill and Breaker Workshop (Module 4, Section 10)
   - Activity 4.2 – Saw Workshop (Module 4, Section 13)
   - Activity 4.4 – Horizontal Breach (Clean and Dirty) (Module 4, Section 17)
     - Application 4.1 – Performing a Step Cut (Module 4, Section 21)
   - Activity 4.5 – Vertical Breach (Clean and Dirty) (Module 4, Section 25)
     - Application 4.2 – Performing a Stitch Cut (Module 4, Section 27)
   - Activity 4.7 – Confined Space Breach (Module 4, Section 31)
   - Activity 4.8 – Fun House (Module 4, Section 33)
2. Gallows – Given PPE, a rope system, and tools, have students demonstrate breaching concrete and performing a bit change while suspended by a rope system. (Optional, based on resources)

Instructor Notes

1. Torch use Application is covered in Topic 3-12.

2. See corresponding CBT content in Topic 1-13.

CTS Guide Reference: CTS 3-11

Topic 4-12: Cutting Through Structural Steel

Terminal Learning Objective

At the end of this topic a student, given a structural collapse tool cache, PPE, and an assignment, will be able to cut through structural steel so that the steel is efficiently cut, the victim and rescuer are protected, fire control measures are in place, and the objective is accomplished.

Enabling Learning Objectives

1. Describe safety considerations
   - FEMA ILT: Module 4, ELO 3 and 7
2. Describe the selection, capabilities, and limitations of steel cutting tools
   - FEMA ILT: Module 2, ELO 1 and 2
   - FEMA ILT: Module 4, ELO 3, 6, 7
3. Identify cutting tool applications
   - FEMA ILT: Module 2, ELO 1 and 2
   - FEMA ILT: Module 4, ELO 3, 6, 7
4. Assess tool needs
   - FEMA ILT: Module 2, ELO 1 and 2
5. Use cutting tools
   - FEMA ILT: Module 2, ELO 1 and 2
6. Implement necessary extinguishment techniques
7. Stabilize heavy loads
   - FEMA ILT: Module 5, ELO 7

Discussion Questions

1. Determined by instructor

Application

1. FEMA ILT:
   - Activity 4.3 – Torch Use Workshop (Module 4, Section 15)
   - Activity 4.6 – Torch Application Workshop (Module 4, Section 29)
2. Crane Cart Cutting – Given PPE, a torch, and crane with a basket, have students cut steel while suspended in the basket. (Optional, based on resources)

Instructor Notes

1. See corresponding CBT content in Topic 1-14.

CTS Guide Reference: CTS 3-14

Topic 4-13: Coordinating the Heavy Equipment Use

Terminal Learning Objective

At the end of this topic a student, given PPE, means of communication, equipment and operator, and an assignment, will be able to coordinate the use of heavy equipment so that common communications are established, equipment usage supports the operational objective, hazards are avoided, and rescuer and operator safety protocols are followed.

Enabling Learning Objectives

1. Describe types of heavy equipment, capabilities, application, and hazards of heavy equipment and rigging
   - FEMA ILT: Module 5, ELO 3 and 5
2. Describe safety protocols
   - FEMA ILT: Module 1, ELO 1
3. Describe types and methods of communication
   - FEMA ILT: Module 5, ELO 4
4. Use hand signals and radio equipment
   - FEMA ILT: Module 5, ELO 4
5. Assess for operator and rescuer safety
   - FEMA ILT: Module 1, ELO 1

Discussion Questions

1. Determined by instructor

Application

1. FEMA ILT:
   - Activity 5.3 – Rigging (Module 5, Section 20)
   - Activity 5.4 – Cranes (Module 5, Section 22)
     - You can use a crane or a rotator (14-ton minimum) for this activity.
   - Activity 5.5 – Anchors and Bolting (Module 5, Section 25)

Instructor Notes

1. See corresponding CBT content in Topic 1-15.

CTS Guide Reference: CTS 3-15

Topic 4-14: Releasing a Victim from Entrapment

Terminal Learning Objective

At the end of this topic a student, given PPE and resources for breaching, breaking, lifting, prying, shoring, and/or otherwise moving or penetrating the offending structural component, will be able to release a victim from entrapment by components of a heavy construction–type collapsed structure so that hazards to rescue personnel and victims are minimized, considerations are given to compartment syndrome due to crush injuries, techniques enhance patient survivability, tasks are accomplished within projected time frames, and techniques do not compromise the integrity of the existing structure or structural support systems.

Enabling Learning Objectives

1. Describe PPE care and maintenance requirements

Discussion Questions

1. Determined by instructor

Application

1. Determined by instructor

Instructor Notes

1. ELO 1 is covered in Topic 1-1. You do not need to repeat the material.
2. See corresponding CBT content in Topic 1-16.

CTS Guide Reference: CTS 3-7

Topic 4-15: Removing a Victim from a Collapse Incident

Terminal Learning Objective

At the end of this topic a student, given a disentangled victim, a basic first aid kit, and victim packaging resources, will be able to remove a victim from a heavy construction–type collapse incident so that basic life functions are supported as required, victim is evaluated for signs of compartment syndrome, advanced life support is called if needed, methods and packaging devices selected are compatible with intended routes of transfer, universal precautions are employed to protect personnel from bloodborne pathogens, and extraction times meet time constraints for medical management.

Enabling Learning Objectives

1. Describe PPE care and maintenance requirements (AHJ)

Discussion Questions

1. Determined by instructor

Application

1. Given a disentangled victim and victim packaging resources, remove a victim from a heavy construction type construction collapse incident.

Instructor Notes

1. ELO 1 is covered in Topic 1-1. You do not need to repeat the material.
2. See corresponding CBT content in Topic 1-17.

CTS Guide Reference: CTS 3-8

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.

Structural Collapse Specialist 1

(NFPA 1006: Structural Collapse Rescue Awareness/Operations)

Instructor Task Book (2021)

California Department of Forestry and Fire Protection
Office of the State Fire Marshal
State Fire Training

Overview

Authority

This instructor task book includes the training standards set forth in:

- NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)

Published: Month Year

Published by: State Fire Training, PO Box 944246, Sacramento, CA 94244-2460

Cover photo courtesy of Daily Mirror, United Kingdom.

2001 - 2021
This curriculum is dedicated to all first responders.

Purpose

The State Fire Training instructor task book is a performance-based document. It lists the minimum requirements a candidate must meet to teach a specific State Fire Training course or course series.

Assumptions

Except for Fire Fighter and Emergency Vehicle Technician (EVT) certifications, a candidate may begin the task book initiation process upon completion of all required education components (courses).

Each job performance requirement (JPR) shall be evaluated after the candidate initiates the task book.

State Fire Training task books do not count towards the NWCG task book limit. There is no limit to the number of State Fire Training task books a candidate may pursue at one time if the candidate meets the initiation requirements for each.

It is the candidate's responsibility to routinely check the State Fire Training website for updates to an initiated task book. All State Fire Training issued updates to an initiated task book are required for task book completion.

A candidate must consistently work to complete all requirements documented in this instructor task book since its initiation date. Significant gaps between JPR sign offs may result in

disqualification from teaching Structural Collapse Specialist 1: Technician as a registered instructor or a candidate must initiate a new task book using State Fire Training's current published version.

Roles and Responsibilities

Candidate

The candidate is the individual pursuing instructor registration.

Initiation

The candidate shall:

1. Complete the Initiation Requirements section.
   - Please print.
2. Complete a block on the Signature Verification page with a handwritten signature.

Completion

The candidate shall:

1. Complete all Job Performance Requirements.
   - Ensure that an evaluator initials, signs, and dates each task to verify completion.
2. Complete the Completion Requirements section.
3. Sign and date the Candidate verification section on the Review and Approval page with a handwritten signature.
4. Obtain their fire chief's handwritten (not stamped) signature on the Fire Chief verification section on the Review and Approval page.
5. Create and retain a physical or high-resolution digital copy of the completed task book.

Submission

The candidate shall:

1. Submit a copy (physical or digital) of the completed task book and any supporting documentation to State Fire Training.
   - See Submission and Review below.

A candidate should not submit a task book until they have completed all requirements and obtained all signatures. State Fire Training will reject and return an incomplete task book.

Evaluator

An evaluator is any individual who verifies that the candidate can satisfactorily execute a job performance requirement (JPR).

A qualified evaluator is a Registered Instructor of SCS1: Operations and SCS2: Technician, designated by the candidate's fire chief (or authorized designee), and shall possess the equivalent or higher-level certification. If no such evaluator is present within the organization, the fire chief (or authorized designee) shall designate an individual with more experience than the candidate and a demonstrated ability to execute the job performance requirements. For instructor task books that do not require fire chief initiation, academy instructors serve as or designate evaluators.

An instructor task book may have more than one evaluator.

All evaluators shall:

1. Complete a block on the Signature Verification page with a handwritten signature.
2. Review and understand the candidate's instructor task book requirements and responsibilities.
3. Verify the candidate's successful completion of one or more job performance requirements through observation.
    - Do not evaluate any job performance requirement (JPR) until after the candidate initiates the task book.
    - Sign all appropriate lines in the instructor task book with a handwritten signature or approved digital signature (e.g., DocuSign or Adobe Sign; a scanned copy of a signature is not acceptable) to record demonstrated performance of tasks.

Fire Chief

The fire chief is the individual who initiates (when applicable) and then reviews and confirms the completion of a candidate's instructor task book.

A fire chief may identify an authorized designee already on file with State Fire Training to fulfill any task book responsibilities assigned to the fire chief. (See *State Fire Training Procedures Manual*, 4.2.2: Authorized Signatories)

Initiation

The fire chief shall:

1. Review and understand the candidate's instructor task book requirements and responsibilities.
2. Complete a block on the Signature Verification page with a handwritten signature.
3. Designate qualified evaluators.

Completion

The fire chief shall:

1. Confirm that the candidate has obtained the appropriate signatures to verify successful completion of each job performance requirement.
   - Ensure that all job performance requirements were evaluated after the initiation date.
2. Confirm that the candidate meets the Completion Requirements.
3. Sign and date the Fire Chief verification statement under Review and Approval with a handwritten signature.
   - If signing as an authorized designee, verify that your signature is on file with State Fire Training.

Submission and Review

A candidate should not submit a task book until they have completed all requirements and obtained all signatures. State Fire Training will reject and return an incomplete task book.

To submit a completed task book, please send the following items to the address below:

1. A copy of the completed task book (candidate may retain the original)
2. All supporting documentation
3. Payment

State Fire Training
Attn: Instructor Registration
PO Box 944246
Sacramento, CA 94244-2460

State Fire Training reviews all submitted task books.

- If the task book is complete, State Fire Training will authorize the task book and retain a digital copy of the authorized task book in the candidate's career file.
- If the task book is incomplete, State Fire Training will return the task book with a notification indicating what needs to be completed prior to resubmission.

Completion of this instructor task book is one step in the instructor registration process. Please refer to the *State Fire Training Procedures Manual* for the complete list of qualifications required to teach SCS1: Operations.

Initiation Requirements

The following requirements must be completed prior to initiating this task book.

Candidate Information

Name: _____

SFT ID Number: _____

Fire Agency: _____

Initiation Date: _____

Prerequisites

The candidate meets the following prerequisites.

1. SFT Primary Instructor qualifications (See *State Fire Training Procedures Manual* 6.2.1: Qualifications)

Include documentation to verify prerequisite requirements when you submit your instructor task book unless verification is already documented in your SFT User Portal.

Education

That candidate has completed the following courses.

1. Structural Collapse Specialist 1: Operations

Include documentation to verify education requirements when you submit your instructor task book unless verification is already documented in your SFT User Portal.

Fire Chief Approval

State Fire Training confirms that a fire chief's approval is not required to initiate this task book.

Signature Verification

The following individuals have the authority to verify portions of this instructor task book using the signature recorded below.

Please print except for the Signature line where a handwritten signature is required.
Add additional signature pages as needed.

Name: ______________________	**Name:** ______________________
Job Title: ______________________	Job Title: ______________________
Organization: ______________________	Organization: ______________________
Signature: ______________________	Signature: ______________________
Name: ______________________	**Name:** ______________________
Job Title: ______________________	Job Title: ______________________
Organization: ______________________	Organization: ______________________
Signature: ______________________	Signature: ______________________
Name: ______________________	**Name:** ______________________
Job Title: ______________________	Job Title: ______________________
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Name: ______________________	**Name:** ______________________
Job Title: ______________________	Job Title: ______________________
Organization: ______________________	Organization: ______________________
Signature: ______________________	Signature: ______________________
Name: ______________________	**Name:** ______________________
Job Title: ______________________	Job Title: ______________________
Organization: ______________________	Organization: ______________________
Signature: ______________________	Signature: ______________________

Job Performance Requirements

Job Performance Requirements

The candidate must complete each job performance requirement (JPR) in accordance with the standards of the authority having jurisdiction (AHJ) or the National Fire Protection Association (NFPA), whichever is more restrictive.

When California requirements exceed or require revision to the NFPA standard, the corresponding Office of the State Fire Marshal approved (OSFM) additions or revisions appear in italics.

All JPRs must be completed within a California fire agency or State Fire Training Accredited Regional Training Programs (ARTP).

Each JPR shall be evaluated after the candidate initiates the task book.

Each task must be performed twice.

- The two instances must occur during two different courses.
- The same evaluator cannot sign off on the same task twice.

Examples of correct and incorrect evaluation:

Correct: Task completed during two separate courses and evaluated by two separate individuals.

1. Assemble a comprehensive burn plan ("burn book") that contains all documentation necessary to conduct a live fire training evolution in accordance with NFPA standards and the policies and procedures of State Fire Training (SFT) and the authority having jurisdiction (AHJ).	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Describe purpose of a live fire burn plan	AAA123	2/8/18	JAS	BBB123	5/15/18	CWJ
b. Identify components of a live fire burn plan ("burn book")	AAA123	2/8/18	JAS	BBB123	5/15/18	CWJ
c. Identify records-retention requirements for burn plans	AAA123	2/8/18	JAS	BBB123	5/15/18	CWJ

Incorrect: Task completed twice during one course but evaluated by two separate individuals.

1. **Assemble a comprehensive burn plan ("burn book") that contains all documentation necessary to conduct a live fire training evolution in accordance with NFPA standards and the policies and procedures of State Fire Training (SFT) and the authority having jurisdiction (AHJ).**	1st Evaluation			2nd Evaluation		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Describe purpose of a live fire burn plan	AAA123	2/8/18	JAS	AAA123	2/8/18	CWJ
b. Identify components of a live fire burn plan ("burn book")	AAA123	2/8/18	JAS	AAA123	2/8/18	CWJ
c. Identify records-retention requirements for burn plans	AAA123	2/8/18	JAS	AAA123	2/8/18	CWJ

Incorrect: Task completed during two separate courses but evaluated by the same individual.

1. **Assemble a comprehensive burn plan ("burn book") that contains all documentation necessary to conduct a live fire training evolution in accordance with NFPA standards and the policies and procedures of State Fire Training (SFT) and the authority having jurisdiction (AHJ).**	1st Evaluation			2nd Evaluation		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Describe purpose of a live fire burn plan	AAA123	2/8/18	JAS	BBB123	5/15/18	JAS
b. Identify components of a live fire burn plan ("burn book")	AAA123	2/8/18	JAS	BBB123	5/15/18	JAS
c. Identify records-retention requirements for burn plans	AAA123	2/8/18	JAS	BBB123	5/15/18	JAS

Structural Collapse Specialist 1 Instructor

Awareness

1. Size up a structural collapse incident.	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Determine scope of the rescue						
b. Identify number of victims						
c. Establish last reported location of all victims						
d. Identify and interview witnesses and reporting parties						
e. Assess resource needs						
f. Identify primary search parameters						
g. Obtain information to develop incident action plan						

2. Identify incident hazards.	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Determine construction type						
b. Identify all associated hazards						
c. Account for rescue time constraints						

3. Recognize the need for technical resources.	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Identify need for additional resources						

b. Initiate response system						
c. Secure scene and render it safe until additional resources arrive						
d. Incorporate awareness-level personnel into operational plan						
4. Apply a building marking system.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Mark search phase of the floor or structure using the national and INSARAG system • Victim • Search						
b. Apply victim locations and condition to area						
c. Note hazards on structure						
d. Mark access and egress points						
5. Perform collapse support operations.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Provide scene lighting for tasks to be undertaken						
b. Address environmental concerns						
c. Facilitate personnel rehabilitation						
d. Ensure support operations facilitate rescue operational objectives						

6. Initiate a search.	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Establish search parameters that include surface and non-entry void search						
b. Update and relay information to command						
c. Ensure personnel assignments match their expertise						
d. Locate all victims as quickly as possible						
e. Minimize risks to searchers						
f. Achieve accountability						

7. Move a victim.	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Move victim without further injuries						
b. Minimize risks to rescuers						
c. Secure victim to transfer device						
d. Remove victim from hazard						

Operations

8. Maintain hazard-specific PPE.	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Identify damage, defects, and wear						

b. Report or repair identify damage, defects, and wear						
c. Ensure equipment functions as designed						
d. Perform and document preventive maintenance consistent with manufacturer's recommendations						
9. Maintain rescue equipment.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Verify and document operational status of equipment						
b. Check all components for operation						
c. Repair or report deficiencies as indicated by standard operating procedure						
d. Correctly dispose of change out items subject to replacement						
10. Conduct a size-up of a light frame or URM collapse structure.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Evaluate existing and potential conditions within structure and immediate periphery						
b. Define needed resources						
c. Identify hazards						
d. Determine construction and occupancy types						
e. Identify collapse type if possible						
f. Assess the need for rescue						
g. Establish a scene security perimeter						
h. Conduct size-up within scope of the incident management system						

11. Develop a collapse rescue incident action plan.	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Utilize initial size-up information						
b. Incorporate an incident management system						
c. Include existing and potential conditions within structure and immediate periphery						
d. Identify specialized resource needs						
e. Determine work perimeters						
f. Identify collapse type/category and associated hazards						
g. Determine construction and occupancy types						
h. Establish incident objectives						
i. Address scene security measures						
12. Implement a collapse rescue incident action plan.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Use pertinent information						
b. Establish and implement an incident management system						
c. Establish monitoring of dynamic conditions internally and externally						
d. Request specialized resources						
e. Mitigate hazards						
f. Ensure that victim rescue and extraction techniques are consistent with collapse and construction type						

g. Establish perimeter security measures						
13. Determine potential victim locations.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Establish search areas						
b. Locate victims						
14. Search a collapsed structure.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Identify, mark, and report victim locations and potential hazards						
b. Follow protocols						
c. Determine mode of operation						
d. Maintain rescuer safety						
15. Construct cribbing and shoring systems.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Construct a stable single t shore (spot shore) that safely supports a load						
b. Construct a stable double t shore that safely supports a load						
c. Construct a two-post vertical shore that safely supports a load						
d. Construct a multi-post vertical shore that safely supports a load						
e. Construct a horizontal shore that safely supports a load						

f. Construct a "construct in place" door and window shore that safely supports a load						
g. Construct a prefabricated door and window shore that safely supports a load						
h. Construct a flying raker shore that safely supports a load						
i. Construct a split sole raker shore that safely supports a load						
j. Construct a solid sole raker shore that safely supports a load						
k. Construct a two-piece layer cross tie crib bed that safely supports a load						
l. Construct a three-piece layer cross tie crib bed that safely supports a load						
m. Construct a platform cross tie crib bed that safely supports a load						
n. Construct a triangle cross tie crib bed that safely supports a load						
o. Construct a modified cross tie crib bed that safely supports a load						
p. Construct an Ellis screw shore that safely supports a load						
q. Construct an Ellis clamp shore that safely supports a load						
16. Lift a heavy load as a team member.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Maintain control and stabilization before, during, and after the list						
b. Gain access						

17. Move a heavy load as a team member.	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Move load the required distance to gain access						
b. Maintain constant control						
18. Stabilize a collapsed structure as a member of a team.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Identify and implement strategies to effectively minimize movement of structural components						
b. Establish hazard warning systems are ensure participating personnel understand them						
c. Identify, provide, and utilize hazard-specific PPE						
d. Identify physical hazards						
e. Discuss confinement, containment, and avoidance measures						
f. Establish and stage a rapid intervention team						
g. Stabilize a collapsed structure using a single t-shore (spot shore)						
h. Stabilize a collapsed structure using a double t-shore						
i. Stabilize a collapsed structure using a two-post vertical shore						
j. Stabilize a collapsed structure using a multi-post vertical shore						
k. Stabilize a collapsed structure using a horizontal shore						
l. Stabilize a collapsed structure using a “construct in place” door and window shore						

m. Stabilize a collapsed structure using a prefabricated door and window shore						
n. Stabilize a collapsed structure using a flying raker shore						
o. Stabilize a collapsed structure using a split sole raker shore system						
p. Stabilize a collapsed structure using a solid sole raker shore system						
q. Stabilize a collapsed structure using a two-piece layer cross tie crib bed						
r. Stabilize a collapsed structure using a three-piece layer cross tie crib bed						
s. Stabilize a collapsed structure using a platform cross tie crib bed						
t. Stabilize a collapsed structure using a triangle cross tie crib bed						
u. Stabilize a collapsed structure using a modified cross tie crib bed						
v. Stabilize a collapsed structure using an Ellis screw jacks						
w. Stabilize a collapsed structure using Ellis clamps						
19. Breach structural components.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Breach a light frame (3/4” plywood) interior/exterior wall • Ensure opening supports rescue objectives • Select necessary tools • Maintain stability • Use safe and efficient methods						

b. Breach (2” thick) lightweight concrete • Ensure opening supports rescue objectives • Select necessary tools • Maintain stability • Use safe and efficient methods						
20. Release a victim from entrapment.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Minimize hazards to rescue personnel and victims						
b. Consider compartment syndrome due to crush injuries						
c. Utilize techniques that promote patient survivability						
d. Accomplish tasks within projected time frames						
e. Ensure techniques do not compromise integrity of existing structure or structural support systems						
21. Remove a victim from a collapse incident.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Support basic life functions as required						
b. Evaluate victim for signs of compartment syndrome due to crush injuries						
c. Call advanced life support if needed						
d. Ensure methods and packaging devices selected are compatible with intended routes of transfer						
e. Employ universal precautions to protect personnel from bloodborne pathogens						
f. Ensure extraction times meet time constraints for medical management						

22. Terminate an incident.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Protect and account for rescuers and bystanders during termination operations						
b. Notify responsible party of any modification or damage created during the operational period						
c. Account for documentation of loss or material use						
d. Perform scene documentation						
e. Transfer scene control to responsible party						
f. Communicate potential or existing hazards to responsible party						
g. Conduct a debriefing, post-incident analysis, and critique						
h. Terminate command						

Completion Requirements

The following requirements must be completed prior to submitting this task book.

Experience

The candidate meets the following experience requirements.

1. OSFM certified Fire Fighter 2 or IFSAC/ProBoard Fire Fighter 2

Position

State Fire Training confirms that there are no position requirements for instructor registration.

Updates

The candidate has completed and enclosed all updates to this certification task book released by State Fire Training since its initial publication.

Number of enclosed updates: _____

Completion Timeframe

The candidate has consistently worked to complete all requirements documented in this instructor task book since its initiation date. The candidate acknowledges that significant gaps between JPR sign offs may result in disqualification from teaching Structural Collapse Specialist 2: Technician as a registered instructor or the candidate must initiate a new task book using State Fire Training's current published version.

Initiation Date (see Initiation Date under Initiation Requirements): _____

Review and Approval

Candidate

Candidate (please print): _____

I, the undersigned, am the person applying to teach Structural Collapse Specialist 1: Operations. I hereby certify under penalty of perjury under the laws of the State of California, that the completion of all requirements documented herein is true in every respect. I understand that misstatements, omissions of material facts, or falsification of information or documents may be cause for rejection or revocation.

Signature: _____ Date: _____

Fire Chief

Candidate's Fire Chief (please print): _____

I, the undersigned, am the person authorized to verify the candidate's qualifications to teach Structural Collapse Specialist 1: Operations. I hereby certify under penalty of perjury under the laws of the State of California, that the completion of all requirements documented herein are true in every respect. I understand that misstatements, omissions of material facts, or falsification of information or documents may be cause for rejection.

Signature: _____ Date: _____

Structural Collapse Specialist 2

(NFPA 1006: Structural Collapse Rescue Technician)

Instructor Task Book (2021)

California Department of Forestry and Fire Protection
Office of the State Fire Marshal
State Fire Training

Overview

Authority

This instructor task book includes the training standards set forth in:

- NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)

Published: Month Year

Published by: State Fire Training, PO Box 944246, Sacramento, CA 94244-2460

Cover photo courtesy of the 9/11 Memorial & Museum collection.

2001 - 2021
This curriculum is dedicated to all first responders.

Purpose

The State Fire Training instructor task book is a performance-based document. It lists the minimum requirements a candidate must meet to teach a specific State Fire Training course or course series.

Assumptions

Except for Fire Fighter and Emergency Vehicle Technician (EVT) certifications, a candidate may begin the task book initiation process upon completion of all required education components (courses).

Each job performance requirement (JPR) shall be evaluated after the candidate initiates the task book.

State Fire Training task books do not count towards the NWCG task book limit. There is no limit to the number of State Fire Training task books a candidate may pursue at one time if the candidate meets the initiation requirements for each.

It is the candidate's responsibility to routinely check the State Fire Training website for updates to an initiated task book. All State Fire Training issued updates to an initiated task book are required for task book completion.

A candidate must consistently work to complete all requirements documented in this instructor task book since its initiation date. Significant gaps between JPR sign offs may result in

disqualification from teaching Structural Collapse Specialist 2: Technician as a registered instructor or a candidate must initiate a new task book using State Fire Training's current published version.

Roles and Responsibilities

Candidate

The candidate is the individual pursuing instructor registration.

Initiation

The candidate shall:

1. Complete the Initiation Requirements section.
   - Please print.
2. Complete a block on the Signature Verification page with a handwritten signature.

Completion

The candidate shall:

1. Complete all Job Performance Requirements.
   - Ensure that an evaluator initials, signs, and dates each task to verify completion.
2. Complete the Completion Requirements section.
3. Sign and date the Candidate verification section on the Review and Approval page with a handwritten signature.
4. Obtain their fire chief's handwritten (not stamped) signature on the Fire Chief verification section on the Review and Approval page.
5. Create and retain a physical or high-resolution digital copy of the completed task book.

Submission

The candidate shall:

1. Submit a copy (physical or digital) of the completed task book and any supporting documentation to State Fire Training.
   - See Submission and Review below.

A candidate should not submit a task book until they have completed all requirements and obtained all signatures. State Fire Training will reject and return an incomplete task book.

Evaluator

An evaluator is any individual who verifies that the candidate can satisfactorily execute a job performance requirement (JPR).

A qualified evaluator is a Registered Instructor of SCS1 or SCS2, designated by the candidate's fire chief (or authorized designee), and shall possess the equivalent or higher-level certification. If no such evaluator is present within the organization, the fire chief (or authorized designee) shall designate an individual with more experience than the candidate and a demonstrated ability to execute the job performance requirements. For instructor task books that do not require fire chief initiation, academy instructors serve as or designate evaluators.

An instructor task book may have more than one evaluator.

All evaluators shall:

1. Complete a block on the Signature Verification page with a handwritten signature.
2. Review and understand the candidate's instructor task book requirements and responsibilities.
3. Verify the candidate's successful completion of one or more job performance requirements through observation.
    - Do not evaluate any job performance requirement (JPR) until after the candidate initiates the task book.
    - Sign all appropriate lines in the instructor task book with a handwritten signature or approved digital signature (e.g., DocuSign or Adobe Sign; a scanned copy of a signature is not acceptable) to record demonstrated performance of tasks.

Fire Chief

The fire chief is the individual who initiates (when applicable) and then reviews and confirms the completion of a candidate's instructor task book.

A fire chief may identify an authorized designee already on file with State Fire Training to fulfill any task book responsibilities assigned to the fire chief. (See *State Fire Training Procedures Manual*, 4.2.2: Authorized Signatories)

Initiation

The fire chief shall:

1. Review and understand the candidate's instructor task book requirements and responsibilities.
2. Complete a block on the Signature Verification page with a handwritten signature.
3. Designate qualified evaluators.

Completion

The fire chief shall:

1. Confirm that the candidate has obtained the appropriate signatures to verify successful completion of each job performance requirement.

- Ensure that all job performance requirements were evaluated after the initiation date.

2. Confirm that the candidate meets the Completion Requirements.
3. Sign and date the Fire Chief verification statement under Review and Approval with a handwritten signature.
    - If signing as an authorized designee, verify that your signature is on file with State Fire Training.

Submission and Review

A candidate should not submit a task book until they have completed all requirements and obtained all signatures. State Fire Training will reject and return an incomplete task book.

To submit a completed task book, please send the following items to the address below:

1. A copy of the completed task book (candidate may retain the original)
2. All supporting documentation
3. Payment

State Fire Training
Attn: Instructor Registration
PO Box 944246
Sacramento, CA 94244-2460

State Fire Training reviews all submitted task books.

- If the task book is complete, State Fire Training will authorize the task book and retain a digital copy of the authorized task book in the candidate's career file.
- If the task book is incomplete, State Fire Training will return the task book with a notification indicating what needs to be completed prior to resubmission.

Completion of this instructor task book is one step in the instructor registration process. Please refer to the *State Fire Training Procedures Manual* for the complete list of qualifications required to teach Structural Collapse Specialist 2.

Initiation Requirements

The following requirements must be completed prior to initiating this task book.

Candidate Information

Name: _____

SFT ID Number: _____

Fire Agency: _____

Initiation Date: _____

Prerequisites

The candidate meets the following prerequisites.

1. SFT Primary Instructor qualifications (See *State Fire Training Procedures Manual* 6.2.1: Qualifications)

Include documentation to verify prerequisite requirements when you submit your instructor task book unless verification is already documented in your SFT User Portal.

Education

That candidate has completed the following courses.

1. Structural Collapse Specialist 1: Operations
2. Structural Collapse Specialist 2: Technician

Include documentation to verify education requirements when you submit your instructor task book unless verification is already documented in your SFT User Portal.

Fire Chief Approval

State Fire Training confirms that a fire chief's approval is not required to initiate this task book.

Signature Verification

The following individuals have the authority to verify portions of this instructor task book using the signature recorded below.

Please print except for the Signature line where a handwritten signature is required.
Add additional signature pages as needed.

Name: ____________________
Job Title: ____________________
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Job Performance Requirements

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Each JPR shall be evaluated after the candidate initiates the task book.

Each task must be performed twice.

- The two instances must occur during two different courses.
- The same evaluator cannot sign off on the same task twice.

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Correct: Task completed during two separate courses and evaluated by two separate individuals.

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	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Describe purpose of a live fire burn plan	AAA123	2/8/18	JAS	BBB123	5/15/18	CWJ
b. Identify components of a live fire burn plan ("burn book")	AAA123	2/8/18	JAS	BBB123	5/15/18	CWJ
c. Identify records-retention requirements for burn plans	AAA123	2/8/18	JAS	BBB123	5/15/18	CWJ

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	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Describe purpose of a live fire burn plan	AAA123	2/8/18	JAS	AAA123	2/8/18	CWJ
b. Identify components of a live fire burn plan ("burn book")	AAA123	2/8/18	JAS	AAA123	2/8/18	CWJ
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Incorrect: Task completed during two separate courses but evaluated by the same individual.

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c. Identify records-retention requirements for burn plans	AAA123	2/8/18	JAS	BBB123	5/15/18	JAS

Structural Collapse Specialist 2 Instructor

Technician

1. Maintain hazard-specific PPE.	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Identify damage, defects, and wear						
b. Report or repair identify damage, defects, and wear						
c. Ensure equipment functions as designed						
d. Perform and document preventive maintenance consistent with manufacturer's recommendations						
2. Maintain rescue equipment.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Verify and document operational status of equipment						
b. Check all components for operation						
c. Repair or report deficiencies as indicated by standard operating procedure						
d. Correctly dispose of change out items subject to replacement						
3. Conduct a size-up of a collapsed heavy construction-type structure.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Evaluate existing and potential conditions within structure and immediate periphery						

b. Define needed resources						
c. Identify hazards						
d. Determine construction and occupancy types						
e. Identify collapse type if possible						
f. Assess the need for rescue						
g. Establish a scene security perimeter						
h. Conduct size-up within scope of the incident management system						
4. Develop a collapse rescue incident action plan.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Utilize initial size-up information						
b. Incorporate an incident management system						
c. Include existing and potential conditions within structure and t immediate periphery						
d. Identify specialized resource needs						
e. Determine work perimeters						
f. Identify collapse type/category and associated hazards						
g. Determine construction and occupancy types						
h. Establish incident objectives						
i. Address scene security measures						

5. Implement a collapse rescue incident action plan.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Use pertinent information						
b. Establish and implement an incident management system						
c. Establish monitoring of dynamic conditions internally and externally						
d. Request specialized resources						
e. Mitigate hazards						
f. Ensure victim rescue and extraction techniques are consistent with collapse and construction type						
g. Establish perimeter security measures						
6. Determine potential victim locations.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Establish search areas						
b. Locate victims						
7. Search a collapsed structure.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Identify, mark, and report all victim locations and potential hazards						
b. Follow protocols						
c. Determine mode of operation						
d. Maintain rescuer safety						

8. Construct cribbing systems.	1st Evaluation			2nd Evaluation		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Construct a stable two-piece layer cross tie that safely supports a load						
b. Construct a stable three-piece layer cross tie that safely supports a load						
c. Construct a stable platform cross tie that safely supports a load						
d. Construct a stable triangle cross tie that safely supports a load						
e. Construct a stable modified cross tie that safely supports a load						
9. Lift a heavy load as a team member.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Maintain control and stabilization before, during, and after the list						
b. Gain access						
10. Move a heavy load as a team member.*	**1st Evaluation**			**2nd Evaluation**		
	Course Code	Date	Initials	Course Code	Date	Initials
a. Move load the required distance to gain access						
b. Maintain constant control						
c. Activity 5.1 – Lever Type 1-3, Rollers, and Bridging						
d. Activity 5.2 – Airbags and Cribbing						
e. Activity 5.3 - Rigging						

f. Activity 5.4 - Cranes						
g. Activity 5.5 – Anchors and Bolting						
h. Activity 5.6 – Mechanical Advantage (MA) Systems						
i. Activity 5.7 – Obstacle (O) Course (crane only here for load calculations)						
11. Stabilize a collapsed structure using timber shoring systems as a member of a team.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Identify and implement strategies to effectively minimize movement of structural components						
b. Establish hazard warning systems and ensure participating personnel understand them						
c. Identify, provide, and utilize hazard-specific PPE						
d. Identify physical hazards						
e. Discuss confinement, containment, and avoidance measures						
f. Establish and stage and a rapid intervention team						
g. Stabilize a collapsed structure using a double raker shoring system						
h. Stabilize a collapsed structure using a triple raker shoring system						
i. Stabilize a collapsed structure using a laced post shoring system						
j. Stabilize a collapsed structure using plywood laced post shoring system (PLP)						
k. Stabilize a collapsed structure using a Type 2 sloped floor shoring system						

l. Stabilize a collapsed structure using. a Type 3 sloped floor shoring system						
12. Stabilize a collapsed structure using mechanical shoring systems as a member of a team.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Establish hazard warning systems and ensure participating personnel understand them						
b. Identify all unstable structural components that can impact the work and egress routes						
c. Establish alternative egress routes when possible						
d. Determine expert resource needs and communicate to command						
e. Calculate load estimates for support system requirements						
f. Ensure all shoring systems meet or exceed load-bearing demands						
g. Monitor shoring systems continuously for integrity						
h. Follow safety protocols						
i. Establish and stage a rapid intervention crew (RIC) to aid search and rescue personnel in the event of entrapment						
j. Establish an accountability system						
k. Ensure ongoing atmospheric monitoring						
l. Communicate progress as required						
m. Stabilize a collapsed structure using a single t shore (spot shore)						
n. Stabilize a collapsed structure using a double t shoring system						

o. Stabilize a collapsed structure using a two-post vertical shore						
p. Stabilize a collapsed structure using a multi-post vertical shoring system						
q. Stabilize a collapsed structure using a horizontal shoring system						
r. Stabilize a collapsed structure using a door and window shoring system						
s. Stabilize a collapsed structure using a flying raker shoring system						
t. Stabilize a collapsed structure using a split raker shoring system						
u. Stabilize a collapsed structure using a solid raker shoring system						
v. Stabilize a collapsed structure using a Type 2 slope floor shoring system						
w. Stabilize a collapsed structure using a Type 3 slope floor shoring system						
13. Breach heavy structural components.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Complete a vertical (clean) breach • Ensure opening supports rescue objectives • Select necessary tools • Maintain stability • Use safe and efficient methods						
b. Complete a vertical (dirty) breach • Ensure opening supports rescue objectives • Select necessary tools • Maintain stability • Use safe and efficient methods						

c. Complete a horizontal (clean) breach • Ensure opening supports rescue objectives • Select necessary tools • Maintain stability • Use safe and efficient methods						
d. Complete a horizontal (dirty) breach • Ensure opening supports rescue objectives • Select necessary tools • Maintain stability • Use safe and efficient methods						
e. Complete a confined space breach • Ensure opening supports rescue objectives • Select necessary tools • Maintain stability • Use safe and efficient methods						
f. Complete a gallows breach • Ensure opening supports rescue objectives • Select necessary tools • Maintain stability • Use safe and efficient methods						
14. Cut through structural steel.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Cut steel efficiently						
b. Protect victim and rescuer						
c. Put fire control measures in place						
d. Shackle, plunge, and create line cuts on steel plate						
e. Shackle and cut I-beams						

f. Straight cut rebar						
g. Heat tension cable until it fails						
h. Cut steel while suspended from a crane cart						
15. Coordinate the use of heavy equipment.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Use rigging • Establish common communications • Ensure equipment usage supports operational objective • Avoid hazards • Follow rescuer and operator safety protocols						
b. Use a crane or rotator • Establish common communications • Ensure equipment usage supports operational objective • Avoid hazards • Follow rescuer and operator safety protocols						
c. Use anchors and bolting • Establish common communications • Ensure equipment usage supports operational objective • Avoid hazards • Follow rescuer and operator safety protocols						
16. Release a victim from entrapment by components of a heavy construction-type collapsed structure.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Minimize hazards to rescue personnel and victims						

b. Consider compartment syndrome due to crush injuries						
c. Utilize techniques that promote patient survivability						
d. Accomplish tasks within projected time frames						
e. Ensure techniques do not compromise integrity of existing structure or structural support systems						
17. Remove a victim from a heavy construction-type collapse incident.	**1st Evaluation**			**2nd Evaluation**		
	Course Code	**Date**	**Initials**	**Course Code**	**Date**	**Initials**
a. Support basic life functions as required						
b. Evaluate victim for signs of compartment syndrome						
c. Call advanced life support if needed						
d. Ensure methods and packaging devices selected are compatible with intended routes of transfer						
e. Employ universal precautions to protect personnel from bloodborne pathogens						
f. Ensure extraction times meet time constraints for medical management						

* See FEMA's *Structural Collapse Specialist Instructor-Led Training* (ILT)

Completion Requirements

The following requirements must be completed prior to submitting this task book.

Experience

The candidate meets the following experience requirements.

1. OSFM certified Fire Fighter 2 or ISFAC/ProBoard Fire Fighter 2

Include documentation to verify prerequisite requirements when you submit your instructor task book unless verification is already documented in your SFT User Portal.

Position

State Fire Training confirms that there are no position requirements for instructor registration.

Updates

The candidate has completed and enclosed all updates to this instructor task book released by State Fire Training since its initial publication.

Number of enclosed updates: _____

Completion Timeframe

The candidate has consistently worked to complete all requirements documented in this instructor task book since its initiation date. The candidate acknowledges that significant gaps between JPR sign offs may result in disqualification from teaching Structural Collapse Specialist 2: Technician as a registered instructor or the candidate must initiate a new task book using State Fire Training's current published version.

Initiation Date (see Initiation Date under Initiation Requirements): _____

Review and Approval

Candidate

Candidate (please print): _____

I, the undersigned, am the person applying to teach Structural Collapse Specialist 2: Technician. I hereby certify under penalty of perjury under the laws of the State of California, that the completion of all requirements documented herein is true in every respect. I understand that misstatements, omissions of material facts, or falsification of information or documents may be cause for rejection or revocation.

Signature: _____ Date: _____

Fire Chief

Candidate's Fire Chief (please print): _____

I, the undersigned, am the person authorized to verify the candidate's qualifications to teach Structural Collapse Specialist 2: Technician. I hereby certify under penalty of perjury under the laws of the State of California, that the completion of all requirements documented herein are true in every respect. I understand that misstatements, omissions of material facts, or falsification of information or documents may be cause for rejection.

Signature: _____ Date: _____

Structural Collapse Specialist 1 (2021) Training Record

Name: _____

SFT ID Number: _____

	Skill	SCS1 Topic	Evaluator Initials
	Awareness		
1.	Size up a structural collapse incident.	4-1	
2.	Identify incident hazards.	4-2	
3.	Recognize the need for technical resources.	4-3	
4.	Apply a building marking system.	4-4	
5.	Perform collapse support operations.	4-5	
6.	Initiate a search.	4-6	
7.	Move a victim.	4-7	
	Operations		
8.	Maintain hazard-specific PPE.	5-1	
9.	Maintain rescue equipment.	5-2	
10.	Conduct a size-up of a light frame or URM collapsed structure.	5-3	
11.	Develop a collapse rescue incident action plan.	5-4	
12.	Implement a collapse rescue incident action plan.	5-5	
13.	Determine potential victim locations.	5-6	
14.	Search a collapsed structure.	5-7	
15.	Construct cribbing systems.	5-8	
16.	Lift a heavy load as a team member.	5-9	
17.	Move a heavy load as a team member.	5-10	
18.	Stabilize a collapsed structure as a member of team using each of the techniques itemized below:	5-11	n/a
18a.	• Using a double t-shore	5-11	

18b.	• Using a two-post vertical shore	5-11	
18c.	• Using a multi-post vertical shore	5-11	
18d.	• Using a horizontal shore	5-11	
18e.	• Using a construct-in-place shore for a door or window	5-11	
18f.	• Using a prefabricated shore for a door or window	5-11	
18g.	• Using a flying raker shore	5-11	
18h.	• Using a split raker shore	5-11	
18i.	• Using a solid raker shore	5-11	
18j.	• Using a two-piece layer cross tie	5-11	
18k.	• Using a three-piece layer cross tie	5-11	
18l.	• Using a platform cross tie	5-11	
18m.	• Using a triangle cross tie.	5-11	
18n.	• Using a modified cross tie	5-11	
18o.	• Using an Ellis screw	5-11	
18p.	• Using an Ellis clamp	5-11	
19a.	Breach structural components using a horizontal dirty breach.	5-12	
19b.	Breach structural components using a vertical dirty breach.	5-12	
20.	Release a victim from entrapment.	5-13	
21.	Remove a victim from a collapse incident.	5-14	
22.	Terminate an incident.	5-15	

A candidate has successfully completed a skill when they perform it to the corresponding Terminal Learning Objective standard found in State Fire Training's SCS1: Operations (2021) course.

SFT Course ID: _____

Course Delivery Date: _____

Instructor of Record: _____

Instructor SFT ID Number: _____

Structural Collapse Specialist 2 (2021) Training Record

Name: _____

SFT ID Number: _____

	Skill	SCS2 Topic	Evaluator Initials
1.	Maintain hazard-specific PPE.	3-1	
2.	Maintain rescue equipment.	3-2	
3.	Conduct a size-up of a collapsed heavy construction–type structure.	4-1	
4.	Develop a collapse rescue incident action plan.	4-2	
5.	Implement a collapse rescue incident action plan.	4-3	
6.	Determine potential victim locations.	4-4	
7.	Search a collapsed structure.	4-5	
8.	Construct cribbing systems using each of the techniques itemized below:	4-6	n/a
8a.	• Using a two-piece layer cross tie	4-6	
8b.	• Using a three-piece layer cross tie	4-6	
8c.	• Using a platform cross tie	4-6	
8d.	• Using a triangle cross tie	4-6	
8e.	• Using a modified cross tie	4-6	
9.	Lift a heavy load as a team member.	4-7	
10.	Move a heavy load as a team member using each of the techniques itemized below:	4-8	n/a
10a.	• Using Type 1-3 levers	4-8	
10b.	• Using rollers	4-8	
10c.	• Using bridging	4-8	
11.	Stabilize a collapsed structure using timber shoring systems as a member of a team using each of the techniques itemized below:	4-9	n/a
11a.	• Using a double raker shoring system	4-9	

11b.	• Using a triple raker shoring system	4-9	
11c.	• Using a laced post shoring system	4-9	
11d.	• Using plywood laced post shoring system (PLP)	4-9	
11e.	• Using a Type 2 sloped floor shoring system	4-9	
11f.	• Using a Type 3 sloped floor shoring system	4-9	
12.	Stabilize a collapsed structure using mechanical shoring systems as a member of a team using each of the techniques itemized below:	4-10	n/a
12a.	• Using a single t shore (spot shore)	4-10	
12b.	• Using a double t shoring system	4-10	
12c.	• Using a two-post vertical shore	4-10	
12d.	• Using a multi-post vertical shoring system	4-10	
12e.	• Using a horizontal shoring system	4-10	
12f.	• Using a door and window shoring system	4-10	
12g.	• Using a flying raker shoring system	4-10	
12h.	• Using a split raker shoring system	4-10	
12i.	• Using a solid raker shoring system	4-10	
12j.	• Using a Type 2 slope floor shoring system	4-10	
12k.	• Using a Type 3 slope floor shoring system	4-10	
13.	Breach heavy structural components using each of the techniques itemized below:	4-11	n/a
13a.	• Using a vertical (clean) breach	4-11	
13b.	• Using a vertical (dirty) breach	4-11	
13c.	• Using a horizontal (clean) breach	4-11	
13d.	• Using a horizonal (dirty) breach	4-11	
13e.	• Using a confined space breach	4-11	
13f.	• Using a gallows breach (optional)	4-11	
14.	Cut through structural steel using each of the techniques itemized below:	4-12	n/a
14a.	• Shackle, plunge and create line cuts on steel plate	4-12	
14b	• Shackle and cut I-beams	4-12	

14c.	• Straight rebar cut	4-12	
14d.	• Heat tension cable until it fails	4-12	
14e.	• Cut steel while suspended from a crane cart (optional)	4-12	
15.	Coordinate the use of heavy equipment.	4-13	
16.	Release a victim from entrapment by components of a heavy construction–type collapsed structure.	4-14	
17.	Remove a victim from a heavy construction–type collapse incident.	4-15	

A candidate has successfully completed a skill when they perform it to the corresponding Terminal Learning Objective standard found in State Fire Training's SCS2: Technician (2021) course.

SFT Course ID: _____

Course Delivery Date: _____

Instructor of Record: _____

Instructor SFT ID Number: _____