



Course:	Rescue System 3: Structural Collapse Technician (2012)	FSTEP
Hours:	24 (Six, 4 hour modules)	
Designed For:	All fire service and allied emergency response personnel.	
Description:	Bridges the training gap between the California State Fire Training Rescue Systems 2 Advanced Rescue Skills course and the Federal Emergency Management Agency Structural Collapse Technician course. Key topics include: powder actuated tools, pneumatic shores, additional tools and techniques for breaking and breaching, cutting a tensioned cable, the "O" course, rigging, and crane operations.	
Prerequisites:	Rescue Systems 2 Confined Space Rescue Technician Trench Rescue Technician Hazardous Materials (Operations Level)	
Certification:	None	
Max. Class Size:	48	
Student to Instructor Ratio:	12:1 and 1 Senior Instructor for 1-4 module delivery (Note: Senior cannot be a Primary in 3 or 4 module classes)	
Restrictions:	Delivered only at an approved RS-2 training site.	

REQUIRED STUDENT MATERIALS	EDITION	VENDORS
▪ Rescue Systems 3 Student/Instructor Manual	2012	Instructor Provided
▪ Rescue Systems 3 Student Task Book	Current	SFT
REQUIRED INSTRUCTOR MATERIALS		
▪ Rescue Systems 3 PowerPoint	2012	Instructor Provided

SFT MATERIALS		
SFT	State Fire Training Website	http://osfm.fire.ca.gov/training/SFTCurriculum.php

RESCUE SYSTEMS 3: STRUCTURAL COLLAPSE TECHNICIAN COURSE PLAN

MODULE I

Topic 1: Introduction And Administration / Safety2:00

Terminal Objective: The student will receive all information regarding administration and operational requirements for completion of this course, along with an understanding of the importance of sound safety practices in all phases of planning and rescue operations.

Enabling Objectives:

1. Receive an overview of the student manual.
2. Receive squad assignments and a schedule of events and rotation times, course agenda, and information regarding the location of specific events.
3. Receive information and the necessary paperwork for reporting injuries.
4. Understand the importance of recognizing and mitigating safety hazards.
5. Be able to perform a risk / hazard analysis for a specific incident and suggest actions to minimize risks and / or eliminate hazards.
6. Understand the importance of safety risk and hazard identification.

Topic 2: Power Actuated Tools1:00

Terminal Objective: The student will understand the function, capacity and how to safely operate power actuated tools used in Urban Search and Rescue to support damaged structures.

Enabling Objectives:

1. Understand the purpose and use of powder actuated tools.
2. Understand how to perform the center punch test.
3. Understand proper safety techniques.
4. Demonstrate the proper operation of powder actuated tools.
5. Receive certification in the use of specific powder actuated tools (optional).
6. Demonstrate proper safety techniques.



RESCUE SYSTEMS 3: STRUCTURAL COLLAPSE TECHNICIAN COURSE PLAN

Topic 3: Rigging1:00

Terminal Objective: The student will understand the function and capacity of rigging used to lift and move and move heavy objects.

Enabling Objectives:

1. Identify different types of rigging equipment.
2. Understand the purpose and use of rigging equipment.
3. Understand effects of critical angles on rigging equipment.
4. Demonstrate the inspection of rigging equipment.

MODULE II

Topic 1: Shoring4:00

Terminal Objective: The student will understand the function and capacity of shoring systems used in Urban Search and Rescue to support damaged structures.

Enabling Objectives:

1. Identify the components of pneumatic shores.
2. Understand the purpose and use of pneumatic shores.
3. Understand the limitations of pneumatic shores.
4. Understand how to construct a spot shore.
5. Understand how to construct a window shore.
6. Construct a vertical shore.
7. Understand how to construct a door shore.
8. Construct a horizontal shore.
9. Construct a raker shore.
10. Understand how to construct a sloped floor shore.
11. Demonstrate proper safety techniques.

MODULE III

Topic 1: Breaking / Breaching4:00

Terminal Objective: The student will properly break and breach to gain access through concrete, steel or other structural components during rescue operations in heavy floor, heavy wall, steel and concrete structures.

Enabling Objectives:

1. Use rotary hammer to breach a 2" minimum inspection hole.
2. Breach concrete while suspended by a rope system.
3. Construct a rope system consistent with Rescue Systems 1.
4. Identify safety concerns when breaching concrete.
5. Set up and operate the Stanley hydraulic power unit.
6. Use the hydraulic chainsaw.
7. Demonstrate a bevel cut for a "lift out".
8. Use the hydraulic circular saw.
9. Use the hydraulic breakers.
10. Drill 2" core hole in concrete.
11. Use gas and electric concrete coring tools.
12. Demonstrate proper safety techniques.

MODULE IV

Topic 1: Cutting / Burning4:00

Terminal Objective: The student will understand the capabilities and limitations of all types of burning equipment that can be used in USAR operations.

Enabling Objectives:

1. Use the oxy/acetylene cutting torch.
2. Use the oxy/gasoline cutting torch.



RESCUE SYSTEMS 3: STRUCTURAL COLLAPSE TECHNICIAN COURSE PLAN

3. Use the exothermic cutting torch.
4. Demonstrate the proper technique for a piercing / plunge cut with each cutting torch.
5. Demonstrate the proper technique for a line cut with each cutting torch.
6. Demonstrate the proper technique for cutting a tensioned cable or wire rope.
7. Cut a hole in steel for a sling attachment (optional).
8. Demonstrate proper safety techniques.

MODULE V

Topic 1: Lifting / Moving ("O" Course)4:00

Terminal Objective: Size-up objects that have entrapped people and efficiently apply a variety of machines and power to safely move these objects.

Enabling Objectives:

1. Use levers to lift, move, and lower a heavy object.
2. Use pipes as rollers to move a heavy object.
3. Use wood timbers as rails.
4. Use an inclined plane.
5. Use crib beds to lift and stabilize a heavy object.
6. Construct a mechanical advantage system with rope and pulleys.
7. Construct an "A" Frame Gantry.
8. Use proper staffing and commands.
9. Demonstrate proper safety techniques.

MODULE VI

Topic 1: Lifting / Moving (Crane Operations)4:00

Terminal Objective: Size-up objects that have entrapped people and efficiently apply a variety of machines and power to safely move these objects.

Enabling Objectives:

1. Accurately calculate load weights.
2. Find the center of gravity of different size loads and irregular shaped objects.
3. Use different methods to rig wire rope slings on a load.
4. Use different methods to rig synthetic slings on a load.
5. Properly use shackles in rigging a load.
6. Rig loads of different sizes and shapes.
7. Become familiar with different types of cranes.
8. Understand how to set up a crane.
9. Demonstrate proper crane hand signals.
10. Demonstrate proper safety techniques.



SITE REQUIREMENTS

The following are minimum requirements for a Rescue Systems 3: Structure Collapse Technician Bridge Training Site.

- The facilities and props for each module should be in close proximity to each other to facilitate time frames.
- The requesting agency assumes all responsibility, liability, and maintenance for the engineering design, strength, stability, and adequacy of all props.
- The requesting agency further assumes all responsibility, liability, and maintenance for all tools, equipment and supplies used at the site for the delivery of Rescue Systems 2 / Structure Collapse Technician Bridge classes.
- This includes, but is not limited to, power tools, hand tools, and shoring materials.

■ Orientation

- Classroom
- Audiovisual equipment
- Wash areas
- Bathrooms
- Rehabilitation area
- Safe and adequate parking

■ Shoring

- Structure(s) adequate for operations of interior and exterior shoring systems that is of sound and safe engineering design.
 - ◆ Area large enough to accommodate lumber supply (near cutting station).
- Interior Shores
 - ◆ 20' x 20' minimum working area with an 8' minimum ceiling height.
- Vertical Shore
 - ◆ Area with simulated or actual joists to set one vertical shore with two posts.
- Window Shore
 - ◆ 24" x 24" minimum window opening.
- Horizontal / Door Shore
 - ◆ Hallway or door opening with vertical walls that are at least 30" wide.
- Sloped Floor Shore
 - ◆ 20' x 20' minimum working area with a 12' wide x 12' long sloped surface.
 - ◆ Configured so that the sloped surface is no shorter than 3' in height at the low end.
 - ◆ Slope angle to be at least 6" in 10' (3 deg, 5%) to a maximum of 120" in 10' (45 deg, 100%).
 - ◆ Earth or hard surface.
- Raker Shore
 - ◆ 20' x 20' minimum working area.
 - ◆ 16' x 16' minimum wall.
- Cutting station.
 - ◆ 20' x 20' minimum working area.
 - ◆ Cutting table built to USAR specifications.
- Powder Actuated Tools
 - ◆ 20' x 20' minimum working area.
 - ◆ Poured concrete 3" minimum thickness
 - (1) One square foot minimum
 - ◆ Steel "I" Beam
 - (1) One foot minimum
 - ◆ Concrete / masonry blocks
 - (1) One square foot minimum

■ Breaking / Breaching / Cutting / Burning

- 20' x 20' minimum working area.
 - ◆ Concrete, asphalt, or unimproved ground.
- Concrete slab 6" minimum thickness with #3 rebar 12" on center grid pattern.



- ◆ Gallows and Coring Tool
 - (1) One square foot per student minimum
- ◆ Stanley Tool
 - (4) Four square feet per student minimum
- Suitable frame or other method to secure the concrete slab perpendicular to the ground.
- Suitable anchors to allow work while suspended from a rope system.
- 1/4" plate steel
 - ◆ (1) One square foot per student minimum
- Steel "I" beam
 - ◆ (1) One foot per student minimum
- 1/2" min. wire rope or cable.
 - ◆ (1) One foot per student minimum
- **Lifting / Moving**
 - 50' x 50' minimum working area with 20' clear area on each side.
 - ◆ Concrete, asphalt, or unimproved ground
 - Two (2) 30' x 30' minimum working areas.
 - ◆ Concrete or asphalt
 - Crane
 - ◆ 14 ton minimum
 - ◆ Area for crane to set up
 - Concrete, asphalt, or unimproved ground
 - Two (2) 3' x 3' x 3' concrete cubes.
 - One (1) 5' x 8' x 12" reinforced concrete slab.
 - One (1) 4' x 8' minimum, solid reinforced concrete cylinder
 - Three (3) 5' x 8' x 6" minimum, reinforced concrete slabs
 - Two (2) 30" high by 5' long minimum concrete barrier
 - Other irregular shaped concrete and / or steel objects

SITE DEVIATION

- In the event that a training site has a facility, structure, or prop that does not comply with the Rescue Systems 2 / Structure Collapse Technician Bridge Site Requirements and Equipment Standards, the site has the opportunity to apply for a site deviation.
- A Rescue Systems 2 / Structure Collapse Technician Bridge Senior Instructor or designee submits to the Chief of State Fire Training a formal letter requesting site deviation. This letter must describe the site deviation in detail by listing:
 - The need and parameters of the deviation.
 - New or revised lesson plans linked to the deviation that ensure consistency with the standards, Terminal Objective and Enabling Objectives of the approved Rescue Systems 2 / Structure Collapse Technician Bridge curriculum.
 - Demonstration, either live or through visual aids, of any deviated technique or procedure.
- The Chief of State Fire Training will review the request for site deviation.
 - Any deficiencies will be appropriately documented and discussed with the Rescue Systems 2 / Structure Collapse Technician Bridge Senior Instructor or designee requesting the site deviation.
 - If site deviation is denied, a provisional accreditation may be granted at this time.
 - If a site is not approved, they have three (3) months to comply with the site requirements identified as deficient in the inspection report.

EQUIPMENT STANDARDS

- The equipment listed below is the minimum for each Rescue Systems 2 / Structure Collapse Technician Bridge Training Site.
- Student safety is of paramount importance when conducting the type of high risk training associated with the Rescue Systems 2 / Structure Collapse Technician Bridge course.
- All PPE shall be the responsibility of the student and shall meet agency and site requirements.
- Lumber List does not include material for prop construction.



RESCUE SYSTEMS 3 (2012)

Course Plan

- This list is the equipment and materials needed to conduct a one (1) squad class of 12 students. If conducting a class with two (2) or more squads, the list will need to be adjusted accordingly.