

State of Oregon
Department of Public Safety Standards and Training

Structural Collapse Rescue Technician Task Book

Structural Collapse Rescue Technician Task Book Assigned To:	
Name	DPSST Fire Service #
Agency Name	Date Initiated

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<http://www.oregon.gov/DPSST>

Structural Collapse Rescue Technician Signature Page

A copy of this signature page and documentation of the applicants training must be included with the DPSST Rescue Technician application when applying for NFPA Structural Collapse Rescue Technician certification. Do not send the entire Task Book. Only a certified Rescue Technician in that specialty area may sign off the Task Book.

Attest: The information contained in this Task Book is true and correct to the best of my knowledge. I understand that a false or misleading statement on this document is subject to penalty under ORS 162.055, et al, and ORS 162.305 and may be cause to deny or revoke a fire service professional certification.

<u>Structural Collapse Rescue Technician Task Book Assigned To:</u>		
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Signature	Printed Name	DPSST Fire Service #
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Agency Name	Date Initiated	
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Signature of Certified Technician	Printed Name of Certified Technician	Date Completed

Rescue Technician Evaluators: Each Evaluator must document the following information:

Evaluator: Level of Rescue Technician certification: ___Rope ___Surface Water			
___Vehicle & Machinery ___Confined Space ___Structural Collapse ___Trench			
Sections of chapter signed off by Evaluator: ___2 ___3 ___8			
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Signature of Evaluator	Printed name of Evaluator	DPSST Fire #	Date

Evaluator: Level of Rescue Technician certification: ___Rope ___Surface Water			
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Task Book Qualification Record Books (Task Book) have been developed for various certification levels within the Oregon Department of Public Safety Standards and Training (DPSST) system. Each Task Book lists the job performance requirements (JPRs) for the specific certification level in a format that allows a candidate to be trained and evaluated in the skills of that position. Successful performance of all tasks, as observed and recorded by a certified Rescue Technician in that discipline, will result in the candidate's eligibility for DPSST certification.

To become certified at a specific level, the applicant must successfully complete all the job performance requirements. Before a job performance requirement may be taken, all requisite knowledge and skills must be satisfied. Only requisite knowledge and skills may be signed off in the classroom setting by the instructor. Only a certified Rescue Technician in that specialty rescue area may sign off all relative Task Book evaluations at the candidates agency. When all prescribed requirements are completed, an application for certification may be submitted to DPSST. All certificates are mailed to the Training Officer at the agency.

Note to agencies: It is highly recommended that an agency considering a Rescue Technician program reviews NFPA 1670 and follows those standards. These JPRs are general guidelines. As such they are not intended to replace specific sequences of apparatus or equipment operation that may be outlined by manufacturer specifications. At all times, standard operating procedures of the agency in which the evaluation is being conducted will govern. The agencies should have available for evaluators a copy of manufacturer specifications and the agency's standard operational guidelines.

The JPRs covered in this Task Book meet or exceed all NFPA published standards for this certification level at the time of this publication. Mention of NFPA and its standards do not, and are not intended as adoption of – or reference to – NFPA standards.

HOW TO EVALUATE PERFORMANCE

Each JPR has a corresponding box to the right in which to confirm a candidate's success in a sequence. The evaluator shall indicate successful passing by the candidate of each JPR by initialing and dating. The candidate needs only perform the skill once to complete. These skills are to be tested after the candidate has completed the training program and by using the equipment of the agency. Testing in the training program does not constitute completion of the skill in a Task Book. Requisite knowledge and skills may be signed off in the training program.

- 3-3.7 Transfer a victim to emergency medical services (EMS), given local medical protocols, so that all pertinent information is passed from rescuer to EMS provider, and the victim can be transported to a medical care facility.

Task Book Qualification Record

For the Certification Level of

Structural Collapse Rescue Technician

Prior to becoming certified in this position, the candidate shall successfully complete the following Job Performance Requirements (JPR). The evaluator shall initial and date the appropriate box to indicate successful completion of each. For each JPR there are requisite knowledge and skill requirements. These requirements must be met before candidate may proceed.

- 2-1 Because technical rescue is inherently dangerous and rescue technicians are frequently required to perform rigorous activities in adverse conditions, regional and national safety standards shall be included in agency policies and procedures. Rescue technicians shall complete all activities in the safest possible manner and shall follow national, federal, state, provincial, and local safety standards as they apply to the rescue technician.
- 2-2 Before beginning training activities or engaging in rescue incidents the following requirements shall be complied with:
- (1) Age requirements established by the authority having jurisdiction. (AHJ)
 - (2) Medical requirements established by the AHJ.
 - (3) Minimum physical fitness as required by the AHJ.
 - (4) Emergency medical care performance capabilities for entry-level personnel developed and validated by the AHJ.
 - (5) Minimum educational requirements established by the AHJ.
 - (6) Minimum requirements for hazardous material incident and contact control training for entry-level personnel, validated by the AHJ.
- 2-3 For certification, the rescue technician shall perform all of the job performance requirements in Chapter 3 and all job performance requirements listed in at least one of the specialty areas (Chapters 4-9).

3-2 Site Operations

- 3-2.1 Identify the needed support resources, given a specific type of rescue incident, so that a resource cache is managed, scene lighting is adequate for the tasks to be undertaken, environmental concerns are managed, personnel rehabilitation is facilitated, and the support operation facilitates rescue operational objectives.
- (a) **Requisite Knowledge:** Equipment organization and tracking methods, lighting resource type and availability, shelter and thermal control options, and rehab criteria.
- (b) **Requisite Skills:** The ability to track equipment inventory, identify lighting resources and structures for shelter and thermal protection, select rehab areas, and manage personnel rotations.
- 3-2.2 Size up a rescue incident, given background information and applicable reference materials, so that the type of rescue is determined, the number of victims is identified, the last reported location of all victims is established, witnesses are identified and interviewed, resource needs are assessed, search parameters are identified, and information required to develop an incident action plan is obtained.
- (a) **Requisite Knowledge:** Types of reference materials and their uses, availability and capability of the resources, elements of an action plan and related information, relationship of sizeup to the incident management system, and information gathering techniques and how that information is used in the sizeup process.
- (b) **Requisite Skills:** The ability to read technical rescue reference materials, gather information, relay information, and use information gathering sources.
- 3-2.3 Manage incident hazards, given scene control barriers personal protective equipment, requisite equipment, and available specialized resources, so that all hazards are identified, resource application fits the operational requirements, hazard isolation is considered, risks to rescuers and victims are minimized, and rescue time constraints are taken into account.
- (a) **Requisite Knowledge:** Resource capabilities and limitations, types, and nature of incident hazards, equipment types and their use, isolation terminology, methods, equipment and implementation, operational requirement concerns, common types of rescuer and victim risk, risk-benefit analysis methods and practices, and types of technical references.

(b) **Requisite Skills:** The ability to identify resource capabilities and limitations, identify incident hazards, assess victim viability (risk-benefit), utilize technical references, place scene control barriers, and operate control and mitigation equipment.

3-2.4 Management resources in a rescue incident, given incident information, a means of communication, resources, tactical worksheets, personnel accountability protocol, applicable references, and standard operating procedures, so that references are correctly utilized, personnel are accounted for, deployed resources achieve desired objectives, incident actions are documented, rescue efforts are coordinated, the command structure is established, task assignments are clearly communicated and monitored, and actions are consistent with applicable regulations.

(a) **Requisite Knowledge:** Incident management system, tactical worksheet application and purposes, accountability protocols, resource types and deployment methods, documentation methods and requirements, availability, capabilities and limitations of rescuers and other resources, typical communication problems and needs, communications requirements, methods and means, types of tasks and assignment responsibilities, policies and procedures of the agency, and technical references related to the type of rescue incident.

(b) **Requisite Skills:** The ability to implement an incident management system. Complete tactical worksheets, use reference materials, evaluate incident information, match resources to operational needs, operate communications equipment, manage incident communications, and communicate in a clear and concise manner so that objectives are met.

3-2.5 Conduct a search, given hazard-specific personal protective equipment, equipment pertinent to search mission, an incident location, and victim investigative information, so that search parameters are established, victim profile is established, the entry and exit of all people either involved in the search or already within the search area are questioned and the information is updated and relayed to command, the personnel assignments match their expertise, all victims are located as quickly as possible, applicable technical rescue concerns are managed, risks to searchers are minimized, and all searchers are accounted for.

(a) **Requisite Knowledge:** Local policies and procedures and how to operate in the site-specific search environment.

(b) **Requisite Skills:** The ability to enter, maneuver in, and exit the search environment and provide for and perform self-escape/rescue.

3-2.6 Perform ground support and operations for helicopter activities, given a rescue scenario/incident, helicopter, operational plans, personal protective equipment, requisite equipment, and available specialized resources, so that rescue personnel are familiar with operational characteristics of the aircraft and demonstrate operational proficiency in establishing and securing landing zones and communicating with aircraft personnel until the assignment is complete.

(a) **Requisite Knowledge:** Ground support operations relating to helicopter use and deployment, operation plans for helicopter service activities, type-specific personal protective equipment, aircraft familiarization and hazard areas specific to helicopter, scene control and landing zone requirements, aircraft safety systems, and communications protocols.

(b) **Requisite Skills:** The ability to provide ground support operations, review standard operating procedures for helicopter operations, use personal protective equipment, establish and control landing zones, and communicate with aircrews.

3-2.7 Terminate the incident, given isolation barriers and specialized teams and equipment so that all personnel are accounted for and removed from the scene, hazards are eliminated or controlled, further entry is denied, the victim is transported to the appropriate care facility, the scene is rendered safe, rescue personnel are returned to a state of readiness, appropriate reporting and documentation of the incident is completed, and a critique and critical incident stress debriefing is conducted with rescue personnel.

(a) **Requisite Knowledge:** How to secure a scene, forms for documentation, resources for critical incident stress debriefing, and local medical transportation protocol.

(b) **Requisite Skills:** The ability to provide scene security, complete reporting documentation of the incident, and apply local medical transportation protocol.

3-3 Victim Management

3-3.1 Access a victim, given tool kits, personal protective equipment, and other equipment designed to allow physical approach to the victim so that hazards are managed, the rescuer can approach the victim, the access point is determined, the means of access is maintained and secured, and an escape route is identified.

- (a) **Requisite Knowledge:** Recognition and methods to manage potential hazards within the rescue environment, methods and means to gain access, use of appropriate personal protective equipment and tool kit(s) used to gain access to the victim, and factors used to identify escape routes.
- (b) **Requisite Skills:** The ability to manage hazards, use provided tools, use personal protective equipment, and choose safe entry and escape routes and techniques and tools (specific to the rescue environment) to make access to the victim.
- 3-3.2 Assess a victim, given personal protective equipment to include protection for airborne and bloodborne pathogens and a basic first aid kit, so that required resources can be identified and obtained, injuries are identified, risks to rescuers are minimized, victim viability is established, and treatment priorities are established.
- (a) **Requisite Knowledge:** Victim assessment procedures, universal precautions for infectious disease, emergency medical care, considerations related to mechanisms of injuries, issues relating to protocol, and types of resources and availability.
- (b) **Requisite Skills:** The ability to use personal protective clothing, use personal protective equipment, follow established assessment procedures, relate mechanism of injury to assessment, and evaluate scene hazards.
- 3-3.3 Stabilize the victim, given a basic first aid kit, so that the victim's airway is established and maintained, ventilation is adequate, circulation is maintained, severe bleeding is controlled, spinal immobilization precautions are taken, and the victim is treated for shock.
- (a) **Requisite Knowledge:** Emergency medical care and uses for personal protective equipment.
- (b) **Requisite Skills:** The ability to initiate emergency medical care and use personal protective equipment.
- 3-3.4 Triage victims, given triage tags and local protocol, so that rescue versus recovery factors are considered, triage decisions reflect resource capabilities, severity of injuries is determined, and victim care and rescue priorities are established in accordance with local protocol.
- (a) **Requisite Knowledge:** Types and systems of triage according to local protocol, resource availability, methods to determine injury severity, ways to manage resource, and prioritization requirements.

- (b) **Requisite Skills:** The ability to use triage materials, techniques, and resources and to categorize victims properly.

- 3-3.5 Package an ill or injured victim, given a basic first aid kit and other specialized equipment if available, so that environmental conditions are considered, illnesses or injuries are managed, and the potential for further injury is minimized.

- (a) **Requisite Knowledge:** Effects of environmental conditions on packaging, emergency medical care, packaging equipment and methods, ways to minimize additional injuries, immobilization techniques, and application of victim personal protective equipment.

- (b) **Requisite Skills:** The ability to select and apply packaging equipment, protect a victim, immobilize injuries, and apply personal protective equipment to a victim.

- 3-3.6 Move a victim to low-angle environment, given victim transport equipment, litters, other specialized equipment if available, and victim removal systems appropriate to the specific rescue environment, so that the victim is moved without undue further injuries, risks to rescuers are minimized, the integrity of the victim's securement within the transfer device is established and maintained, the means of attachment to the rope rescue system is secure, and the victim is removed from the hazard.

- (a) **Requisite Knowledge:** Types of transport equipment and removal systems, selection factors with regard to specific rescue environments, methods to reduce and prevent further injuries, types of risks, common to rescuers, ways to establish and maintain victim securement, transport techniques, rope rigging applications and methods, and types of specialized equipment and their uses.

- (b) **Requisite Skills:** The ability to secure a victim to transport equipment, assemble and operate environment-specific victim removal systems, and choose an incident-specific transport device.

- 3-3.7 Transfer a victim to emergency medical services (EMS) given local medical protocols, so that all pertinent information is passed from rescuer to EMS provider, and the victim can be transported to a medical facility.

- (a) **Requisite Knowledge:** Medical protocols for victim transfer, uses for checklists, triage tags or report forms utilized for this purpose by the authority having jurisdiction, risks, laws and liabilities related to victim transfer, and information needs of the EMS provider.

- (b) **Requisite Skills:** The ability to report victim conditions and history to the EMS provider and to complete reports and checklists, and verbal communication skills.

3-4 Maintenance

- 3-4.1 Inspect and maintain hazard-specific personal protective equipment, given clothing or equipment for the protection of the rescuers, including respiratory protection, cleaning and sanitation supplies, maintenance logs or records, and such tools and resources as are indicated by 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 as needed, equipment functions as designed, and preventive maintenance has been performed and documented consistent with the manufacturer's recommendations.

- (a) **Requisite Knowledge:** Functions, construction, and operation of personal protective equipment; use of record-keeping systems of the authority having jurisdiction; requirements and procedures for cleaning, sanitizing and infectious disease control; use of provided assembly and disassembly tools; manufacturer and agency recommendations; pre-use inspection procedures; and ways to determine operational readiness.

- (b) **Requisite Skills:** The ability to identify wear and damage indicators for personal protective equipment; evaluate operational readiness of personal protective equipment; complete logs and records; use cleaning equipment, supplies, and reference materials; and select and use tools appropriate to the task.

- 3-4.2 Inspect and maintain rescue equipment, given maintenance logs and records, tools and resources as indicated by the manufacturer's guidelines, an 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 protocol are correctly disposed of and changed.

- (a) **Requisite Knowledge:** Functions and operations of rescue equipment, use of record-keeping systems, manufacturer and organizational care and maintenance requirements, selection and use of maintenance tools, replacement protocol and procedures, disposal methods, and organizational standard operating procedures.

- (b) **Requisite Skills:** The ability to identify wear and damage indicators for rescue equipment, evaluate operation readiness of equipment, complete logs and records, and select and use maintenance tools.

3-5 Ropes/Rigging

- 3-5.1 Tie knots, bends, and hitches, given ropes and webbing, so that the knots are properly dressed, recognizable, and safetied as required.

- (a) **Requisite Knowledge:** Knot efficiency, proper knot utilization, rope construction, rope terminology, and methods of safety.

- (b) **Requisite Skills:** Tie representative knots, bends, or hitches for the following purposes:

- 1) End of the line loop
- 2) Midline loop
- 3) Securing rope around desired objects
- 4) Joining rope or webbing ends together
- 5) Gripping rope

- 3-5.2 Construct a single-point anchor system, given life safety rope, edge protection, and other auxiliary rope rescue equipment if available, so that the chosen anchor system fits the incident needs, meets or exceeds the expected load, and does not interfere with rescue operations, the critical angle is not exceeded, a safe and efficient anchor point is chosen, the need for redundant anchor points is assessed and used as required, the anchor system is inspected and loaded prior to being placed into service, and the integrity of the system is maintained throughout the operation.

- (a) **Requisite Knowledge:** Application of knots, safe rigging principles, anchor selection criteria, system safety check procedures, rope construction, and rope rescue equipment applications and limitations.

- (b) **Requisite Skills:** The ability to select rope and equipment; tie knots; rig systems; evaluate anchor points for desired strength, location, and surface contour; and perform a system safety check.

- 3-5.3 Construct a simple rope mechanical advantage system, given life safety rope, carabiners, pulleys, rope grab devices, and auxiliary rope rescue equipment if available, so that the system constructed can accommodate the load, is efficient, and is connected to an anchor system and the load.

- (a) **Requisite Knowledge:** Principles of mechanical advantage, capabilities and limitations of various simple rope mechanical advantage systems, applications of knots, safe rigging principles, and system safety check procedures.
 - (b) **Requisite Skills:** The ability to select rope and equipment, tie knots, choose and rig systems, attach the mechanical advantage system to the anchor system and load, and perform a system safety check.
- 3-5.4 Direct a team in the operation of a simple rope mechanical advantage system, given rescue personnel, and established rope rescue system incorporating a simple rope mechanical advantage system, a load to be removed, and an anchor system, so that the movement is controlled, the load can be held in place when needed, operating methods do not stress the system to the point of failure, appropriate commands are used to direct the operation, and potential problems are readily identified, communicated, and managed.
- (a) **Requisite Knowledge:** Principles of mechanical advantage, capabilities and limitations of various simple rope mechanical advantage systems, proper operation of simple rope mechanical advantage systems, personnel assignments, and operational commands.
 - (b) **Requisite Skills:** Direct personnel effectively, use operational commands, analyze system efficiency, identify safety concerns, and perform system safety check.
- 3-5.5 Construct a lowering system, given an anchor system, life safety rope(s), descent control device, and auxiliary rope rescue equipment if available, so that the system can accommodate the load, is efficient, is capable of holding the load in place or lowering with minimal effort over the desired distance, and is connected to an anchor system and the load.
- (a) **Requisite Knowledge:** Capabilities and limitations of various descent control devices, capabilities and limitations of various lowering systems, applications of knots, safe rigging principles, and system safety check procedures.
 - (b) **Requisite Skills:** The ability to tie knots, perform rigging, properly attach to descent control device, anchor system, and load, and perform a system safety check.
- 3-5.6 Direct a lowering operation, given appropriate rescue personnel, an established lowering system, and a load to be moved, so that the movement is controlled, the load can be held in place when needed, operating methods do not stress the system to the point of failure, rope commands are used to direct the operations, and potential problems are readily identified, communicated, and managed.

(a) **Requisite Knowledge:** Applications and use of descent control devices, capabilities and limitations of various lowering systems, proper operation of lowering systems, personnel assignments, and operational commands.

(b) **Requisite Skills:** The ability to direct personnel effectively, use operational commands, analyze system efficiency, manage movement of the load, identify safety concerns, and perform a system safety check.

3-5.7 Construct a belay system, given life safety rope, anchor systems, personal protective equipment, and auxiliary rope rescue equipment if available, so that the system is capable of arresting a fall, a fall will not result in system failure, the system is not loaded unless actuated, actuation of the system will not injure or render the belayer ineffective, the belayer is not rigged into the equipment components of the system, and the system is suitable to the site and is connected to an anchor system and the load.

(a) **Requisite Knowledge:** Principles of belay systems, capabilities and limitations of various belay devices, application of knots, safe rigging principles, and system safety check procedures.

(b) **Requisite Skills:** The ability to select a system, tie knots, perform rigging, attach to anchor system and load, don and use task-specific personal protective equipment, and perform a system safety check.

3-5.8 Operate a belay system during a lowering or raising operation, given an operating lowering or hauling system, a belay system, and a load, so that the belay line is not loaded during operation of the primary rope rescue system, the belay system, and a load, so that the belay line is not loaded during operation of the primary rope rescue system, the belay system is prepared for actuation at all times during the operation, the belayer is attentive at all times during the operation, the load's position is continually monitored, and the belayer moves rope through the belay device as designed.

(a) **Requisite Knowledge:** Application and use of belay devices, proper operation of belay systems in conjunction with normal lowering and hauling operations, and operational commands.

(b) **Requisite Skills:** The ability to tend a belay system as designed, tie approved knots, assess system effectiveness, properly attach a belay line to a belay device, don and use task-specific personal protective equipment, perform a system safety check, and manage and communicate belay system status effectively.

3-5.9 Belay a falling load, given a belay system and a dropped load, so that the belay line is not taut until the load is falling, the belay device is actuated when the load falls, the fall is arrested, the belayer utilizes the belay system as designed, and the belayer is not injured or rendered ineffective during actuation of the belay system.

(a) **Requisite Knowledge:** Application and use of belay devices, effective emergency operation of belay devices to arrest falls, personal protective equipment, and operating procedures.

(b) **Requisite Skills:** The ability to operate a belay system as designed, tie approved knots, use task-specific personal protective equipment, recognize and rapidly react to a falling load, and communicate belay system actuation.

3-5.10 Conduct a system safety check, given a rope rescue system and rescue personnel, so that a physical/visual check of the system is made to ensure proper rigging, a load test is performed prior to life-loading the system, and verbal confirmation of these actions is announced and acknowledged before life-loading the rope rescue system.

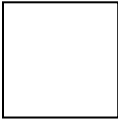
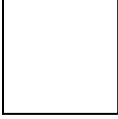
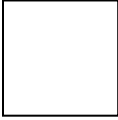
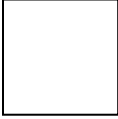
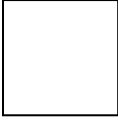
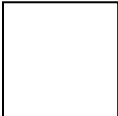
(a) **Requisite Knowledge:** System safety check procedures, construction and operation of rope rescue systems and their individual components, proper personal protective equipment, equipment inspection criteria, signs of equipment damage, principles of safe rigging, and equipment replacement criteria.

(b) **Requisite Skills:** The ability to apply and use personal protective equipment, inspect rope rescue system components for damage, assess a rope rescue system for improper configuration, secure equipment components, inspect all rigging, and perform a system safety check.

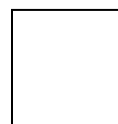
8 Structural Collapse Rescue

8-1.1 Conduct a size-up of a collapsed structure, given an incident and available 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.

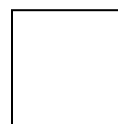
- (a) **Requisite Knowledge:** Identification of construction types, characteristics, and probable occupant locations, methods to assess rescue needs; expected behavior of each construction type in a structure collapse incident; causes and associated effects of structural collapse, types and capabilities of resources; general hazards associated with structural collapse and size-up; and procedures for implementing site control and scene management.
 - (b) **Requisite Skills:** The ability to categorize construction types, evaluate structural stability and hazards, and implement resource and security (scene management) protocols.
- 8-1.2 Determine potential victim locations, given size-up information, a structural collapse tool kit, the type of construction and occupancy, time of day, and collapse pattern, so that search areas are established and victim can be located.
- (a) **Requisite Knowledge:** Capabilities and limitations of search instruments and resources, types of building construction, occupancy classifications, collapse patterns, victim behavior, and potential areas of survivability.
 - (b) **Requisite Skills:** The ability to use size-up information, use occupancy classification information, use search devices, and assess and categorize type of collapse.
- 8-1.3 Develop a collapse rescue incident action plan, given size-up information and a 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.
- (a) **Requisite Knowledge:** Incident-specific size-up information, incident management system components, dynamics of incident conditions and peripheral areas, incident-specific resources in a given geographical area, construction and occupancy types, scene security requirements, personnel needs and limitations, and rescue scene operational priorities.
 - (b) **Requisite Skills:** The ability to utilize size-up information, implement an incident management system, monitor changing conditions specific to the incident, identify potential specialized resources, determine construction and occupancy types, identify specific incident security requirements, and create written documentation.

- 8-1.4 Implement a collapse rescue incident action plan, given an action plan and a 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. 
- (a) **Requisite Knowledge:** Components of an action plan specific to collapse incidents, incident management systems, dynamics of incident conditions and peripheral areas, identification of specialized resource lists, hazard identification, rescue and extrication techniques consistent with each collapse and construction type, perimeter security measures, and personnel needs and limitations. 
- (b) **Requisite Skills:** The ability to implement the components of an action plan in a collapse incident, implement an incident management system, initiate hazard mitigation objectives, request specialized resources, initiate rescue objectives, and demonstrate perimeter security measures. 
- 8-1.5 Search a collapsed structure, given personal protective equipment, the structural collapse tool kit, 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. 
- (a) **Requisite Knowledge:** Concepts and operation of the incident management system as applied to the search function, application of specialty tools and locating devices, application of recognized marking systems, voice sounding techniques, potential victim locations as related to the type of structure and occupancy, building construction, collapse types and their influence on the search functions, operational protocols, and various hazards and their recognition. 
- (b) **Requisite Skills:** The ability to implement an incident management system, apply search techniques, use marking systems, identify and mitigate hazards, and select and use victim locating devices. 

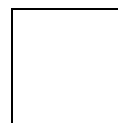
8-1.6 Stabilize a collapsed light-frame structure as a member of a team, given size-up information, a specific pattern of collapse, a basic structural collapse tool kit, and an assignment, so that strategies to effectively minimize the movement of structural components are identified and implemented; hazard warning systems are established and understood by participating personnel; incident-specific personal protective equipment 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.



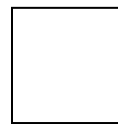
(a) **Requisite Knowledge:** Identification and proper care of personal protective equipment; structural load calculations for shoring system requirements; shoring systems for stabilization; specific hazards associated with light-frame structural collapse; strategic planning for collapse incidents; communications and safety protocols; atmospheric monitoring equipment needs; identification, characteristics, expected behavior, type, causes, and associated effects of light-frame structural collapses; and recognition, of, potential for, and signs of impending secondary collapse.



(b) **Requisite Skills:** The ability to select and construct shoring systems for collapses in light-frame structures, use personal protective equipment, perform structural load calculations, determine resource needs, select and operate basic and specialized tools and equipment, implement communications and safety protocols, and mitigate specific hazards associated with shoring tasks.



8-1.7 Stabilize a collapsed heavy construction-type structure as a member of a team, given size-up information, hazard-specific personal protective equipment, as assignment, a specific pattern of collapse, a basic structural collapse tool kit, 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 are monitored, continuously for integrity, safety protocols are followed, Rapid Intervention Team (RITs) are established and staged to aid search and rescue personnel in the event of entrapment, as accountability system is established, atmospheric monitoring is ongoing, and progress is communicated as required.



(a) **Requisite Knowledge:** Identification as proper care of personal protective equipment, structural load calculations for shoring system requirements, shoring systems for stabilization, specific hazards associated with heavy structural collapse, hazard warning systems, specialized resource and equipment needs, communications and safety protocols, atmospheric monitoring equipment needs, identification of construction types, characteristics and expected behavior of each type in a structural collapse incident, causes and associated effects of structural collapses, and recognition of potential for and signs of impending secondary collapse.

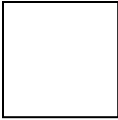
(b) **Requisite Skills:** The ability to select and construct shoring systems for heavy construction-type collapses, use personal protective equipment, perform structural load calculations, determine resource needs, select and operate basic and specialized tools and equipment, implement communications and safety protocol, and mitigate specific hazards associated with shoring tasks.

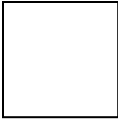
8-1.8 Implement collapse support operations at a rescue incident, given an assignment and available resources, so that scene lighting is adequate for the tasks to be undertaken, environmental concerns are managed, personnel rehabilitation is facilitated, and the support operations facilitate rescue operational objectives.

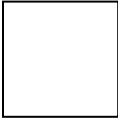
(a) **Requisite Knowledge:** Resource management protocols, principles for establishing lighting, environment control methods, and rescuer rehabilitation practices and procedures.

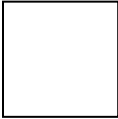
(b) **Requisite Skills:** The ability to manage resources, set up lights, initiate environmental controls, and set up rehabilitation for rescuers.

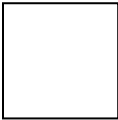
8-1.9 Release a victim from entrapment by components of a collapsed structure, given personal protective equipment and resources for breaching, breaking, lifting, prying, shoring, and/or otherwise moving or penetrating the offending structural component, so that hazards to rescue personnel and victim are minimized, considerations are given to crush syndrome, 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.

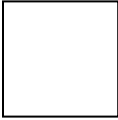
(a) **Requisite Knowledge:** Identification, utilization, and proper care of personal protective equipment; general hazards associated with each type of structural collapse; methods of evaluating structural integrity, crush syndrome protocols; identification of construction types and collapse characteristics; causes and associated effects of structural collapses; potential signs of impending secondary collapse; selection and application of rescue tools and resources; and risk-benefit assessment techniques for extrication methods and time constraints. 

(b) **Requisite Skills:** The ability to select, use, and care for personal protective equipment, operate rescue tools and stabilization systems, recognize crush syndrome indicators, and complete risk-benefit assessments for selected methods of rescue and time constraints. 

8-1.10 Remove a victim from a 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 crush 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. 

(a) **Requisite Knowledge:** Identification, utilization and proper care of personal protective equipment resources for structural collapse incidents, general hazards associated with structural collapse; identification of construction types; characteristics and expected behavior of each type in a structural collapse incident; causes and associated effects of structural collapses; recognition of potential for and signs of impending secondary collapse; characteristics mechanisms of injury and basic life support; and patient packaging principles. 

(b) **Requisite Skills:** Selection, use, and care of personal protective equipment, basic pre-hospital care of soft-tissue injuries, fracture stabilization, airway maintenance techniques, and cardiopulmonary resuscitation; selection and use of patient packaging equipment. 

8-1.11 Lift a heavy load as a team member, given a structural collapse tool kit and a load to be lifted, so that the load is lifted in a safe manner, control and stabilization are maintained before, during, and after the lift, and access can be gained. 

- (a) **Requisite Knowledge:** Application of levers; classes of lever; principles of leverage, gravity, and load balance; resistance force; mechanics of load stabilization; mechanics of load lifting; application of pneumatic, hydraulic, mechanical, and manual lifting tools; how to calculate the weight of the load; safety considerations; and stabilization systems.
- (b) **Requisite Skills:** The ability to evaluate and estimate the weight of the load, the proper operations of lifting tools, the proper application of a lever, and the proper application of load stabilization systems.
- 8-1.12 Move a heavy load as a team member, given a structural collapse tool kit, so that the load is moved the required distance to gain access and so that control is constantly maintained.
- (a) **Requisite Knowledge:** Applications of rigging systems, applications of levers, classes of levers, inclined planes, gravity and load balance, friction, mechanics of load stabilization and load lifting, capabilities and limitations of lifting tools, how to calculate the weight of the load, and safety considerations.
- (b) **Requisite Skills:** The ability to evaluate and estimate the weight of the load, operate required tools, construct and use levers, incline planes, utilize rigging systems, and stabilize the load.
- 8-1.13 Breach structural components, given an assignment, personal protective equipment, various types of construction materials, and a structural collapse tool kit, so that the opening supports the rescue objectives, the proper tools are selected, structural stability is maintained, and the methods utilized are safe and efficient.
- (a) **Requisite Knowledge:** Effective breaching techniques; types of building construction and characteristics of materials used in each; the selection, capabilities, and limitations of tools, safety considerations for breaching operations; calculation of weight; and anticipation of material movement during breaching and stabilization techniques.
- (b) **Requisite Skills:** Select and use breaching tools, implement breaching techniques based on building construction type, apply safe practices, select and use personal protective equipment, and apply stabilization where required.
- 8-1.14 Cut through structural steel, given a structural collapse tool kit, personal protective equipment, 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.

- (a) **Requisite Knowledge:** Safety considerations; the selection, capabilities, and limitations of steel cutting tools; cutting tool applications; types of potential and actual hazards and mitigation techniques; and characteristics of steel used in building construction.
 - (b) **Requisite Skills:** The ability to assess tool needs, use cutting tools, implement necessary extinguishment techniques, mitigate hazards, and stabilize heavy loads.
- 8-1.15 Construct cribbing systems, given an assignment, personal protective equipment, a structural collapse tool kit, various lengths and dimensions of construction-grade lumber, wedges, and shims, so that the cribbing system will safely support the load, the system is stable, and the assignment is completed.
- (a) **Requisite Knowledge:** Different types of cribbing systems and their construction methods, limitations of construction lumber, load calculations, principles of and applications for cribbing, and safety considerations.
 - (b) **Requisite Skills:** The ability to select and construct cribbing systems, evaluate the structural integrity of the system, determine stability, and calculate loads.
- 8-1.16 Coordinate the use of heavy equipment, given personal protective equipment, 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 is maintained.
- (a) **Requisite Knowledge:** Types of heavy equipment, capabilities, application and hazards of heavy equipment and rigging, safety considerations, types of communication, and methods to establish common communications.
 - (b) **Requisite Skills:** The ability to use hand signals, use radio equipment, recognize hazards, assess for operator and rescuer safety, and use personal protective equipment.