

Structural Collapse Technician: Objectives Draft

- 51-1 Identify the properties of materials used in building construction
 - 51-1.1 Steel
 - 51-1.2 Un-reinforced Masonry
 - 51-1.3 Reinforced Masonry
 - 51-1.4 Un-reinforced Concrete
 - 51-1.5 Reinforced Concrete

- 51-2 Identify the following force types as they apply to building materials and / or building construction
 - 51-2.1 Bending
 - 51-2.2 Compression
 - 51-2.3 Tension
 - 51-2.4 Shear

- 51-3 Identify the following loads as they apply to building materials and / or building construction
 - 51-3.1 Static
 - 51-3.2 Dynamic
 - 51-3.3 Concentrated
 - 51-3.4 Uniform

- 51-4 Identify the major fundamental members of structural design
 - 51-4.1 Vertical
 - 51-4.2 Horizontal
 - 51-4.3 Trusses
 - 51-4.4 Combination

51-5 Identify the following load systems as they apply to building construction

- 51-5.1 Lateral systems
- 51-5.2 Braced frame
- 51-5.3 Shear wall
- 51-5.4 Moment / Rigid frame

51-6 Identify the following types of building construction

51-6.1 Light Frame / multi-story structures

- A. Characteristics
- B. Typical Failure
- C. Hazards
- D. Check points
- E. Hazard reduction
- F. Victim access

51-6.2 Heavy floor structures

- A. Characteristics
- B. Typical failures
- C. Hazards
- D. Check points
- E. Hazard reduction
- F. Victim access

51-6.3 Heavy wall structures

- A. Characteristics
- B. Typical failures
- C. Hazards
- D. Check points
- E. Hazard reduction
- F. Victim access

51-6.4 Tilt-Up structures

- A. Characteristics
- B. Typical failures
- C. Hazards
- D. Check points

- E. Hazard reduction
- F. Victim access

51-6.5 Pre-Cast concrete frame structures

- A. Characteristics
- B. Typical failures
- C. Hazards
- D. Check points
- E. Hazard reduction
- F. Victim access

51-7 Identify the common hazards associated with structural collapse incidents

- 51-7.1 Risk assessment components
- 51-7.2 Safety planning
- 51-7.3 Personal protective equipment
- 51-7.4 Respiratory protection

51-8 Identify the components and characteristics of a building assessment

51-9 Identify the components and characteristics of search and reconnaissance

51-10 Identify the components and characteristics of a structural triage

- 51-10.1 Collapse mechanism
- 51-10.2 Collapse patterns

51-11 Describe the different marking systems used in structural collapse

- 51-11.1 Building identification
- 51-11.2 Structure hazard
- 51-11.3 Search assessment
- 51-11.4 Victim identification

51-12 Identify and describe the appropriate uses for the following categories of tools

- 51-12.1 Cutting / Burning
- 51-12.2 Breaching / Breaking
- 51-12.3 Lifting / Moving
- 51-12.4 Monitoring
- 51-12.5 Support
- 51-12.6 Other

51-13 Identify various shoring systems and their applications

- 51-13.1 Identify the function and need for rescue shoring
- 51-13.2 Identify the capacities and configurations of rescue shoring
- 51-13.3 Identify the various types and uses of backing material
- 51-13.4 Identify the various anchoring techniques for all shoring systems
- 51-13.5 Identify and describe the following shoring systems
 - A. Cribbing
 - B. Laced Post
 - C. Sloped floor
 - D. Raker / Double Raker
 - E. Pneumatic shoring

51-14 Identify the various techniques used for Breaching / Breaking / and Cutting heavy materials

- 51-14.1 Horizontal
- 51-14.2 Vertical
- 51-14.3 Overhead

51-15 Identify the various materials and calculate the weight for a given load

- A. Flat object
- B. Rectangle
- C. Square
- D. Round
- E. Pipe
- F. Irregular shapes

51-16 Identify and describe the appropriate techniques used for lifting / moving of a heavy object

- 51-16.1 Hand
- 51-16.2 Mechanical
- 51-16.3 Pneumatic
- 51-16.4 Hydraulic

51-17 Identify and describe the appropriate techniques used for rigging / anchoring

- 51-17.1 Anchoring
- 51-17.2 Lifting devices
- 51-17.3 Slings and chains
- 51-17.4 Sling arrangements
- 51-17.5 Rigging fittings

51-18 Identify and describe safe crane operations

- 51-18.1 Types of cranes
- 51-18.2 Components / accessories
- 51-18.3 Baskets

51-19 Identify and describe safe signaling techniques used in crane operations

- 51-19.1 Visual / Hand
- 51-19.2 Audio / Radio

51-20 Identify the need for victim assessment, care, and packaging

Structural Collapse Technician: Practical Objectives Draft

51-21 Given a summary of marking systems, an unstable structure, marking system tools, proper personal protective equipment, the student shall demonstrate working knowledge of the marking system with 100% accuracy.

51-22 Given a summary of tools, a drill site with applicable materials, proper personal protective equipment, the student shall demonstrate appropriate techniques for safe operations with 100% accuracy

- 51-22.1 Cutting / Burning
- 51-22.2 Breaching / Breaking
- 51-22.3 Lifting / Moving
- 51-22.4 Monitoring
- 51-22.5 Support
- 51-22.6 Other

51-23 Given a summary of shoring systems, materials / tools for shoring, an unstable structure / object / environment, proper personal protective equipment, the student shall demonstrate appropriate application, construction, and positioning of the shoring system.

- 51-23.1 Cribbing
- 51-23.2 Laced post
- 51-23.3 Sloped floor
- 51-23.4 Raker / Double raker
- 51-23.5 Pneumatic shoring

51-24 Given a summary of Breaching, Breaking, and Cutting tools, a drill site with applicable materials (heavy materials- concrete, steel), proper personal protective equipment, the student shall demonstrate appropriate techniques for safe operations with 100% accuracy

- 51-34.1 Horizontal (lift-outs)
- 51-34.2 Vertical (stitch cuts)
- 51-34.3 Overhead (dirty break)

51-25 Given a summary of various materials identified as a load, shape and dimensions of an object, proper personal protective equipment, the student shall select the appropriate formula and estimate the weight of an object with 100% accuracy

- 51-25.1 Flat object
- 51-25.2 Rectangle
- 51-25.3 Square
- 51-25.4 Round
- 51-25.5 Pipe
- 51-25.6 Irregular shapes

51-26 Given a summary of tools used for lifting heavy objects, a drill site with applicable materials (a large heavy object), proper personal protective equipment, the student shall demonstrate the safe operations for lifting and stabilizing a large heavy object with 100% accuracy

- 51-26.1 Hand
- 51-26.2 Mechanical
- 51-26.3 Pneumatic
- 51-26.4 Hydraulic

51-27 Given a summary of hand tools (simple levers, rollers), a drill site with applicable materials (a large heavy object), a designated obstacle course, proper personal protective equipment, the student shall demonstrate safe operations while lifting / moving the heavy object through the prescribed obstacle course with 100% accuracy

51-28 Given a summary of tools used for anchoring, assorted anchoring hardware, a drill site with applicable materials, proper personal protective equipment, the student shall demonstrate proper positioning and installation of anchoring hardware to be used in horizontal, vertical, and overhead operations with 100% accuracy

- A. Wire nails
- B. Concrete screws
- C. Wedge anchors
- D. Epoxy anchors

- E. Hoist rings
- F. Eye Nuts

51-29 Given a summary of safe crane operations, a crane with qualified a operator, a drill site with applicable materials (large heavy objects), proper personal protective equipment, the student shall direct the movement of a heavy object using hand signals with 100% accuracy

51-30 Given a summary of equipment used for rigging a heavy object, a drill site with applicable materials (large heavy objects), a crane with a qualified operator, a designated signaling system, proper personal protective equipment, the student shall demonstrate safe techniques for rigging a heavy object with 100% accuracy

- 51-30.1 Single vertical hitch
- 51-30.2 Single chocker hitch
- 51-30.3 Single basket hitch
- 51-30.4 Double wrap basket hitch
- 51-30.5 Two leg bridle hitch

51-31 Given a summary of an injury to a victim, a victim, an unstable environment, equipment for packaging, proper personal protective equipment, the student shall demonstrate proper technique for accessing the victim, assess the injury(s), identify proper care, utilize the appropriate packaging equipment and extricate the victim with 100% accuracy