

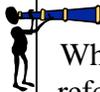
Chapter 5

Construction and Demolition



Purpose:

This chapter is included to provide a summary of some of the important aspects of safety relative to construction, heavy maintenance, and demolition.



Scope:

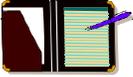
Whereas other chapters pertain to specific disciplines of safety and are only referenced to avoid extensive repetition, this chapter will address the most common and serious areas of risk.

- ❖ Equipment
- ❖ Excavations
- ❖ Elevated Work
- ❖ Fire Safety
- ❖ Toxic and Hazardous Materials
- ❖ Radiation and Radioactivity
- ❖ Personal Protective Equipment
- ❖ Demolition
- ❖ Housekeeping
- ❖ Fall Protection
- ❖ References
- ❖ Related Chapters
- ❖ Attachments



Equipment:

1. **Maintenance and Inspection:** Mechanical equipment shall be maintained in good condition with proper guards. It shall be inspected and tested as required by the pertinent references.
2. **Operators:** Operators shall be properly trained and qualified for the equipment to be operated. Records of training and qualification shall be readily available (Attachment 1). It is suggested that the training and qualification of all operators be at least equivalent to that specified for crane operators in the DOE, “Hoisting and Rigging Manual.”
3. **Clearance:** Heavy equipment and mobile equipment shall be operated with regard for the safety of other workers. Adequate clearance shall be assured from other equipment and from active work areas.



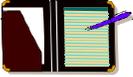
4. Storage: Equipment and supplies not in use shall be safely stored and protected from deterioration.
5. Electrical:
 - a) Particular attention shall be paid to the safety of electrical equipment. Ground fault circuit interruption devices shall be used on all 120-volt single-phase circuits serving outdoor areas or other areas where personal grounding is probable.
 - b) Equipment in proximity to, or passing under, overhead lines shall be subject to the requirements of 29 CFR 1926.550.



Excavations:

29 CFR 1926, subpart P, provides details of the OSHA requirement applicable to excavation and trenching safety. Some Hanford requirement may be more restrictive. The following requirements are repeated with the more restrictive features included.

1. Existing Structures:
 - a) Before any excavation is begun, all available means shall be used to locate all existing structures, above and below grade, in the vicinity. "Structures" shall include pipe, cable, wire, conduit, or other items associated with existing facilities; and shall also include any man-made hole, cavity, or other hazard to the work to be done.
 - b) Current drawings, plots, maps, probes, etc., and appropriate utility personnel shall be used in this search as well as a visual examination of the area.
 - c) Once this search is complete, work may proceed with precautions to prevent damage to the existing structures and to prevent accidents in the current work.
2. Shoring and/or Sloping:
 - a) As a minimum, all trenches and excavations shall be protected against cave-in or collapse as required by 29 CFR 1926, Subpart P. Minimum slope for all trench/excavations when required by 29 CFR 1926, Subpart P will be 1:1 (45 degree angle). NOTE: In Type C soil, sand laden, the slope will be 1 ½ : 1 or about 34 degrees.
 - b) When protection is required, particular attention shall be paid to the effects of previously disturbed soil, the proximity of existing structures, soil moisture, proximity of heavy equipment, etc.
 - c) In trenches, ladders or other safe means of escape must be at intervals no greater than twenty-five feet.
 - d) Adequate barricades and warning devices shall be used around excavations and trenches for the protection of workers and mobile equipment.



3. Excavation Permits:

- a) A safe work permit type of work clearance is required for excavations when powered mechanical equipment is used, or man dug excavations greater than five feet in depth are to be completed, or any combination of the two.



Elevated Work:

1. Ladders:

- a) All ladders used shall meet the intent of 29 CFR 1926, Subpart L and 29 CFR 1910, Subpart D.
- b) Metal ladders used shall not be used for electrical work or near electrical gear or conductors.

2. Scaffolding

- a) Scaffolding shall meet the intent of 29 CFR 1926, Subpart L. It shall be on sound rigid footing. Scaffolding over six feet in height (four feet in confined space or near hazardous areas) must be fully planked on working surfaces and have standard guardrails, midrails, and toe boards on all open sides. Planking shall be secured to prevent displacement.
- b) Scaffolds shall be braced and tied off both horizontally and vertically at sufficient intervals to assure a safe working platform.
- c) Rolling scaffolds must have lockable wheels and the wheels must be attached to the scaffold to prevent them from leaving their position in the frame if the scaffold is tipped.

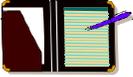
3. Steel Erection

- a) During steel erection over ten feet where a protective work platform cannot be provided, workers shall be either tied off or protected by safety nets. Unless protected by safety nets, workers will not be allowed to walk steel. Crawling or crabbing is the method to be used for moving on steel. Proper protective gear shall also be used. Every precaution shall be taken to prevent injury from falling or falling objects.
- b) Safe access to steel erection will be accomplished by the use of ladders or other equivalent methods.
- c) When a torch or other flame device is to be used, all safety lines and lanyards shall be of wire cable or other flame resistant construction.



Fire Safety:

1. Fire safety shall be maintained by application of 29 CFR 1926, Subpart F, "Fire Protection and Prevention."



2. Government- furnish buildings used to house temporary operational activities, unless owned by the construction contractor, shall be made of fire resistive or fire retardant materials and shall meet the same fire safety standards as are required of permanent structures.
3. Construction buildings owned by a construction contractor shall not be located closer than 50 feet to government-owned structures unless approved (nor should they be used to store items important to the construction program).
4. Safe work type permits, signed by the responsible line supervisor and local safety representative, shall be required for all heat cutting, welding, and brazing outside recognize welding shops.
5. In addition to the above, applicable parts of Chapters 13-15, “Industrial Fire Protection,” shall be applied.



Toxic and Hazardous Materials:

Toxic and hazardous materials shall be transported, stored, used and disposed of in accordance with the applicable requirements. Material Safety Data Sheets (MSDS) shall be provided in the work place and be made available to each worker.



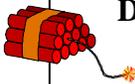
Radiation and Radioactivity:

All work shall be subjected to the provisions of “10 CFR 835,” Rad Con. Manual. The responsibilities and provisions for radiation safety shall be clearly defined in each construction contract.



Personal Protective Equipment:

Personal protective equipment shall be supplied and used as required. (29 CFR 1926, Subpart T)



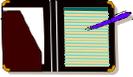
Demolition:

Demolition shall be done in accordance with 29 CFR 1926, Subpart T, and such other parts of this manual as apply.



Housekeeping:

1. Housekeeping shall meet the intent of 29 CFR 1926.25. In addition:
 - a) Material shall be properly stored.
 - b) Access ways and work areas shall be free of obstructions.
 - c) Scrap shall be stored and reclaimed.
 - d) Waste shall be properly disposed of at least daily.
 - e) Hoses and electrical cords shall be consolidated and supported to protect them and prevent their interfering with work. Electrical



cords shall not lie in water or on wet surfaces unless specifically approved and labeled for such services. Electrical cords and hoses will be protected from traffic.



Fall Protection:

1. Fall Protection shall be done in accordance with 29 CFR 1926, Subpart M, and other parts of this manual as apply. When there is a question, and a determination cannot be made, the most stringent shall apply.
2. When working on roof tops workers shall be properly tied off. A spotter is permitted for short jobs and very few workers. When using a spotter, they shall have no other assigned duties.
3. Fall Protection shall be provided for all ladders (inside or outside) that exceed 20 feet in height.



References:

- ❖ 10 CFR 835,” Rod Con. Manual
- ❖ 29 CFR Part 1910, “Occupational Safety and Health Standards.”
- ❖ 29 CFR Part 1926, “Occupational Safety and Health Regulations for Construction.”
- ❖ “ Hoisting and Rigging Manual.”



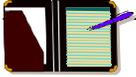
Related Chapters:

- ❖ Chapter 1, “General.”
- ❖ Chapter 2, “Codes and Standards.”
- ❖ Chapters 13-15, “Industrial Fire Protection.”
- ❖ Chapter 15, “Industrial Hygiene; General”
- ❖ Chapter 16, “Industrial Hygiene; Factors.”
- ❖ Chapter 17, “Safety Inspection Checklist.”



Attachments:

- ❖ Attachment 1: *Operator Training Records*



Attachment 1:
Operator Training Records



Please insert a copy of applicable operator training records following this page or indicate the location of these records on the form below.

Facility Name:		
Training Records Location:	Initial:	Date: