



SECTION 23

MASONRY CONSTRUCTION



1. Masonry Construction:

- A.** Whenever a masonry wall is being constructed, a limited access zone will be established prior to construction meeting the following requirements.
1. Equal to the height of the wall to be constructed plus 4 feet, and shall run the entire length of the wall;
 2. Shall be located on the side of the wall that will be unscaffolded
 3. Restricted to entry only by employees actively engaged in constructing the wall
 4. Shall remain in place until the wall is adequately supported to prevent overturning and collapse unless the height of wall is over 8 feet and remain in place until permanent supporting elements of the structure are in place.

2. Concrete Work:

A. General Requirements

1. All requirements and materials used in concrete construction and masonry work shall meet the applicable requirements for design, construction, inspection, testing, maintenance, and operations.
2. Employees working more than six feet above any adjacent working surfaces, placing and tying reinforcing steel in wall, piers, columns, etc. shall be provided with a safety harness or equivalent protection.
3. Large throat openings snap hooks (rebar or ladder hooks) are positioning only and must be used with a regular lanyard and snap hook for fall protection. Using both while climbing is required for complete protection.
4. Stripped forms and shoring shall be removed and stockpiled promptly after stripping in all areas in which persons are required to work or pass. Protruding nails, wire, ties, and other form accessories, not necessary to subsequent work, shall be pulled, cut, or other means taken to eliminate the hazard.
5. Employees shall not be permitted to apply a cement, sand, and water mixture through a pneumatic hose unless they are wearing protective head and face equipment.
6. Employees shall not be permitted to work above vertically protruding reinforcing steel unless it has been protected to eliminate the hazard of impalement.
7. Wire mesh rolls shall be secured at each end to prevent dangerous recoiling action.
8. Riding concrete buckets for any purpose shall be prohibited, and vibrator crews shall be kept out from under concrete buckets suspended from cranes or cableways.



9. Employees (except those essential to the post-tensioning operations) must not be permitted to be behind the jack during tensioning operations.
10. Signs and barriers must be erected to limit employees' access to the post tensioning area during tensioning operations.
11. When discharging on a slope, the wheels or ready – mix trucks shall be blocked and the brakes set to prevent movement.
12. Handles of bull floats, used where they may contact energized electrical conductors, shall be constructed of non – conductive material, or insulated with a non-conductive sheath whose electrical and mechanical characteristics provide the equivalent protection of a handle constructed of non conductive material.
13. Powered and rotating type concrete troweling machines that are manually guided shall be equipped with a control switch that will automatically shut off the power whenever the operator removes his hands from the equipment handles (dead – man switch.)

B. Cast-in-Place Concrete

1. Formwork must be designated, fabricated, erected, supported, braced, and maintained so that it will be capable of supporting, without failure, all vertical and lateral loads that might be applied to the formwork in conformance with sections 6 and 7 of the “American National Standard for Construction and Demolition Operations – Concrete and Masonry Work”, (ANSI A10.9-1983).
2. Drawings and plans, including all revisions for the jack layout, formwork (including shoring equipment), working decks and scaffolds, must be available at the jobsite.
3. All shoring equipment (including equipment used in re-shoring operations) must be inspected prior to erection to determine that the equipment meets the requirements specified in the formwork drawings.
4. Shoring equipment found to be damaged must not be used for shoring. Erecting shoring equipment must be inspected immediately prior to, during, and immediately after concrete placement. Shoring equipment that is found to be damaged or weakened after erection must be immediately reinforced.
5. If single-post shores are used for on top of another (tiered), then additional shoring requirements must be met. The shores must be:
 - a) Deigned by a qualified designer and the erected shoring must be inspected by an engineer qualified in structural design,
 - b) Vertical aligned,
 - c) Spliced to prevent misalignment, and



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- d) Adequately braced in two mutually perpendicular directions at the spliced level. Each tier also must be diagonally braced in the same two directions.
6. Adjustment of single-post shores to raise formwork must not be made after the placement of concrete.
7. Re-shoring must be erected, as the original forms, and shores are removed, whenever the concrete is required to support loads in excess of its capacity.
8. The steel rods or pipes on which jacks climb or by which the forms are lifted must be (1) specifically designed for that purpose and (2) adequately braced where not encased in concrete. Forms must be designed to prevent excessive distortion of the structure during the jacking operation.
9. Jacks and vertical supports must be positioned in such a manner that the loads do not exceed the rated capacity of the jacks.
10. The jacks of other lifting devices must be provided with mechanical dogs or other automatic holding devices to support the slip forms whenever failure of the power supply or lifting mechanisms occurs.
11. The form structure must be maintained within all design tolerances specified for plumbness during the jacking operation. The pre-determined safe rate of lift must not be exceeded.
12. All vertical slip forms must be provided with scaffolds or work platforms where employees are required to work or pass.
13. Reinforcing steel walls, piers, columns, and similar vertical structures must be adequately supported to prevent overturning and collapse.
14. Forms and shores (except those used for slabs on grade and slip forms) must not be removed until the concrete has gained sufficient strength to support its weight and that of superimposed loads. Such determination must be based on compliance with one of the following:
 - a) The plans and specifications stipulate conditions for removal of forms and shores, and such conditions have been followed, or
 - b) The concrete has been properly tested with an appropriate American Society for Testing Materials (ASTM) standard test method designed to indicate the concrete compressive strength, and the test results indicate that the concrete has gained sufficient strength to support its weight and superimposed loads.
15. Re-shoring must not be removed until the concrete being supported has attained adequate strength to support its weight and all loads in place upon it.



C. Pre-cast Concrete

1. Pre-cast concrete wall units, structural framing, and tilt-up wall panels must be adequately supported to prevent overturning and to prevent collapse until permanent connections are completed.
2. Lifting insets that are embedded or otherwise attached to tilt-up wall panels must be adequately supported at least two times the maximum intended load applied or transmitted to them; lifting inserts for other pre-cast members must be capable of supporting four times the load.
3. Only essential employees are permitted under pre-cast concrete that is being lifted or tilted into position.