

Worksite: _____ Instructor: _____ Date/Time: _____

Topic C325: Heavy Concrete (B)

Introduction: Concrete is used in many construction processes, from pouring foundations for homes, to building huge highway bridges and interchange ramps; it is an extremely versatile material. Regardless of the method of construction being utilized, safe work practices must be observed in order to avoid injury. All personnel must comply with OSHA's Concrete Construction standards to protect against accidents and injuries.

Following are OSHA safety procedures for different types of Concrete Construction:

For tilt-up work, make sure all required wall anchors are cast in the wall when it is formed on the ground.

Precast Concrete: Precast 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. Lifting inserts that are embedded or otherwise attached to tilt-up wall panels must be capable of supporting 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. Lifting hardware shall be capable of supporting at least five times the maximum intended load applied or transmitted to the lifting hardware. Only essential employees are permitted under pre-cast concrete that is being lifted or tilted into position.

Tilt-up work: Make sure all required wall anchors are cast in the wall when it is formed on the ground. Install appropriately sized bolts and shackles to do the lift and attach braces to the wall before the lift. After the wall is tilted into place, secure the braces at an appropriate angle before the lifting cables are released. Stand clear of the wall and out of its drop zone until it is securely braced. Use appropriate fall-protection equipment to walk or straddle upper wall areas.

Shoring and Reshoring: 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. Damaged shoring equipment must not be used for shoring. Erected shoring equipment must be inspected immediately prior to, during, and immediately after concrete placement. The shores must be as follows:

- Designed by a qualified designer and the erected shoring must be inspected by an engineer qualified in structural design.
- Vertically aligned and spliced to prevent misalignment. Adequately braced in two mutually perpendicular directions at the splice level. Each tier also must be diagonally braced in the same two directions.
- Adjustment of single-post shores to raise formwork must not be made after the placement of concrete.
- Reshoring must be erected, as the original forms and shores are removed, if the concrete is required to support loads in excess of its capacity.

Vertical Slip Forms: Forms must be designed to prevent excessive distortion of the structure during the jacking operation. Jacks and vertical supports must be positioned in such a manner that the loads do not exceed the rated capacity of the jacks. The jacks or 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. The predetermined safe rate of lift must not be exceeded. All vertical slip forms must be provided with scaffolds or work platforms where employees are required to work or pass.

Lift-Slab Operations: Jacking equipment must be marked with the manufacturer's rated capacity and must be capable of supporting at least two and one-half times the load being lifted during jacking operations and the equipment must not be overloaded. No employee, except those essential to the jacking operation, shall be permitted under a slab being lifted and is not even permitted in the structure while jacking operation is under way unless structure is sufficiently reinforced.

Conclusion: Construction operations that involve placing and lifting large quantities of concrete are hazardous. Everyone involved in Concrete Construction must apply these safe work practices. Watch out for yourself and for the other guy in order to avoid accident and injury.

Employee Attendance: (Names or signatures of personnel who are attending this meeting)

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These guidelines do not supersede local, state, or federal regulations and must not be construed as a substitute for, or legal interpretation of, any OSHA regulations.