Concrete Mixing and Placement

Safety Program

Provided By:

NATIONAL INDEPENDENT BUSINESS ALLIANCE

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INTRODUCTION

This policy is designed to provide drivers, employees, and all other concerned parties with information regarding the policies and general practices of this company. Written information is provided herein. However, it is not the intent of the company to list all aspects of its programs, policies and or procedures within this policy. It is also understood that the information contained herein is subject to change at the discretion of the company. Additional policies and directives may be issued at any time.

It is the intent of this company to operate a Safe Workplace and in accordance with the regulations set forth by all applicable Regulatory Agencies. Nothing in this policy is designed to supersede these regulations.

All drivers are expected to operate drug-free, safely and courteously on the highways. Evidence that this requirement is not being honored will result in the immediate revocation of the safety clearance of the offending driver.

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Purpose

Concrete mix and pour operations pose significant possible hazards to employees. This chapter sets forth safety requirements and hazard control for these operations.

Policy

It is the policy of (COMPANY) that all concrete pour operations be conducted under the direct supervision of a competent supervisor. This includes an on site pre-safety brief, inspection of forms, bracing and troughs.

Responsibilities

Management

- Ensure all equipment is routinely services and maintained in a safe condition
- Conduct periodic on-site inspection of operations
- Provide operation and safety training for affected employees
- Ensure access to operations areas are controlled

Supervisors

- Provide continuous operation safety observation and control
- Provide immediate corrective training for all unsafe acts
- Conduct pre-pour inspections

Employees

- Follow all safety and operational procedures
- Immediately notify supervisor of all unsafe conditions

Hazards

- Engulfment
- Skin irritant
- Form Blowout
- Eye hazards
- Impact & pinch points

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Hazard Control

Engineering Controls

- Structural forms
- Designed bracing and supports

Administrative Controls

- Employee training
- Operational procedures
- Continuous supervision
- Inspections and audits
- Concrete mix preparation to the design and specific strength required.
- Proper moisture content according to the design specifications.
- Sampling from each batch, or as required by the engineer's specifications
- Assignment and use of PPE

Operational Safety

For work shall be designed, fabricated, erected, supported, braced and maintained so that it will be capable of supporting without failure all vertical lateral loads that may reasonably be anticipated to be applied to the formwork.

Drawings or plans, including all revisions, for the jack layout, for work (including shoring equipment), working decks and scaffolds, shall be available at the job site.

Shoring and re-shoring

1. All shoring equipment (including equipment used is re shoring operations) shall be inspected prior to erection to determine that the equipment meets the requirements specified in the form work drawings.

2. Shoring equipment found to be damaged such that its strength is reduced shall not be used for shoring.

3. Erected shoring equipment shall be inspected immediately prior to, during, and immediately after concrete placement.

4. Shoring equipment that is found to be damaged or weakened after erection, such that its strength is reduced to less than that required by 1926.703(a)(1), shall be immediately reinforced.

5. The sills for shoring shall be sound, rigid, and capable of carrying the maximum intended load.
6. All base plates, shore heads, extension devices, and adjustment screws shall be in firm contact, and secured when necessary, with the foundation and the form.

7. Eccentric loads on shore heads and similar members shall be prohibited unless these members have been designed for such loading.

8. Whenever single post shores are used one on top of another (tiered), the employer shall comply with the following specific requirements in addition to the general requirements for formwork:

    a. The design of the shoring shall be prepared by a qualified designer and the erected shoring shall be inspected by an engineer qualified in structural design.
    b. The single post shores shall be vertically aligned.
    c. The single post shores shall be spliced to prevent misalignment.
    d. The single post shores shall be adequately braced in two mutually perpendicular directions at the splice level.
    e. Each tier shall also be diagonally braced in the same two directions.
    f. Adjustments of single post shores to raise formwork shall not be made after the placement of concrete.
    g. Reshoring shall be erected, as the original forms and shores are removed, whenever the concrete is required to support loads in excess of its capacity.

Vertical Slip Forms - steel rods or pipes on which jacks climb or by which the forms are lifted shall be:

1. Specifically designed for that purpose and Adequately braced where not encased in concrete.

2. Forms shall be designed to prevent excessive distortion of the structure during the jacking operation.

3. All vertical slip forms shall be provided with scaffolds or work platforms where employees are required to work or pass.

4. Jacks and vertical supports shall be positioned in such a manner that the loads do not exceed the rated capacity of the jacks.

5. The jacks or other lifting devices shall be provided with mechanical dogs or other automatic holding devices to support the slop forms whenever failure of the power supply or lifting mechanism occurs.

6. The form structure shall be maintained within all design tolerances specified for plumpness during the jacking operation.

7. The predetermined safe rate of lift shall not be exceeded.

Reinforcing Steel

Reinforcing steel for walls, piers, columns, and similar vertical structures shall be adequately supported to prevent overturning and to prevent collapse.
Measures shall be taken to prevent unrolled wire mesh from recoiling. Such measures may include, but are not limited to, securing each end of the roll or turning over the roll.

Removal of Formwork

Forms and shores (except those used for slabs on grade and slip forms) shall not be removed until the employer determines that the concrete has gained sufficient strength to support its weight and superimposed loads. Such determination shall be based on compliance with one of the following:

1. The plans and specifications stipulate conditions for removal of forms and shores, and such conditions have been followed, or

2. The concrete has been properly tested with an appropriate 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.

3. Reshoring shall not be removed until the concrete being supported has attained adequate strength to support its weight and all loads in place upon it.

Supervisor Oversight Requirements

1. Conduct a Safety Task Assignment (STA) meeting with the workers at the beginning of each shift to review that hazards that each person may encounter and give instructions for hazard elimination and/or protection.

2. Inspect all tools and equipment at least daily before use.

3. Workers mixing dry contents of concrete or making saw cuts or other dust raising actions with concrete, may be exposed to dust inhalation.

4. Workers should use approved respiratory protection when exposed to silica dust above the threshold limits. Implement dust control measures during sawing, grinding and mixing operations.

5. Ensure backup alarms work on all equipment and/or require all equipment to be escorted into position. Keep workers out of the back-up path of mixing trucks.

6. Be aware of the swing radius of the concrete chutes, pinch points and the handling chutes. Fingers caught in chute pinch points may be amputated.

7. Permit ONE person trained with standard crane hand signals to signal the crane operator swinging the cement bucket. Ensure the swing path of the cement bucket is NOT over any personnel.
8. Check for overhead power lines and avoid contact with float handles, pump booms and other tools and equipment.

9. If electrical line are too close for safe float and finish work, the concrete pour should be reconfigured to avoid potential contact hazards.

10. Protect all moving parts of batch plants, mixers, portable mixers and other equipment with the appropriate safety guards or barriers. Keep fingers, hands, loose clothing and hair away from pinch and catch points.

Prior to workers entering mixing drums, batch plants, excavations, storage bins or other similar spaces:

1. Determine the confines space requirements. If the space is considered to be a confined space by OSHA definition, then follow approved confined space procedures.

2. Use proper Lockout-Tagout (LOTO) procedures when cleaning, performing maintenance and repairing batch plants, mixers and other equipment.

3. Inspect all hand-held electrically powered tools and cords before use and keep them in good repair, as per the Assured Grounding Program. Plug the tools into Ground-Fault Circuit Interrupters (GFCI's).

4. Provide and require the use of approved fall protection when workers are exposed to a fall greater that six-(6) feet or more.

5. Use approved tied-off ladders and stairs to access all excavations and elevated heights.

6. Review Material Safety Data Sheets (MSDS) with the employees concerning the ingredients of the concrete, both the basic and additive ingredients, and other items such as curing compounds and sealants.

7. Secure the work area to keep the curious members of the public and other untrained personnel out. The risk of injury increases dramatically when your workers are distracted by outside hazards.

References

29 CFR part 1926.21(b)(2) through (5) subpart C, General Safety and Health Provisions
29 CFR part 1926.700 subpart Q, Concrete and Masonry Construction
Construction Management Bulletin, Number 49.10, August 1994.
The American Society for concrete Construction Member Handbook, 1993.