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			Initial Issue Date	1992
Concrete/Masonry Policy			Revision Date:	Jan 1, 2017
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Purpose

The purpose of this program is to establish minimum safety requirements for performing concrete and masonry work. It is also intended to provide guideline to protect all employees from silica dust.

Scope

Applies to all SESAC employees, subcontractors, vendors, and visitors. When work is performed on a non-owned or operated site, the Owner's or Controlling Contractor's program shall take precedence, however, this document covers SESAC employees and contractors and shall be used on owned premises, or when an Owner's or Controlling Contractor's program doesn't exist or is less stringent.

Key Responsibilities

Safety Manager

Assign responsibilities and assist supervisor and site managers in assuring employees are in compliance with regulatory requirements following company procedures.

Performs Worksite Hazard Assessments to verify compliance with this policy on a periodic basis.

Supervisors

Supervisors shall be responsible for the implementation of this policy and regularly monitor employees to ensure compliance.


Supervisors will ensure that all equipment needed is available as necessary.

Employees

Complying with the correct use and care of PPE.

Reference Documents

- 29 CFR 1926 Subpart Q 1926.700 – 1926.706 – Concrete and Masonry Construction
- 29 CFR 1926.250 – General Requirements for Storage
- OSHA Silica eTool – Silica Advisor
- OSHA Construction eTool – Constructing Masonry Walls
- OSHA Construction eTool - Unguarded Protruding Steel Rebars
- OSHA Publication #3106 – Concrete and Masonry Construction
- OSHA Publication – Overview of Subpart Q/Concrete and Masonry
- OSHA Outreach Program – Concrete and Masonry Construction

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- OSHA Guidance Documents - Preventing Skin Problems from Working with Portland Cement
- OSHA Interpretations - 10/30/2003 - Revised Response/Storage of Materials On a Scaffold for More Than One Shift's Work
- OSHA Fatal Facts – Accident Summary # 42
- OSHA Fatal Facts – Accident Summary #49

Definitions

Bull float means a tool used to spread out and smooth concrete.

Formwork means the total system of support for freshly placed or partially cured concrete, including the mold or sheeting (form) that is in contact with the concrete as well as all supporting members including shores, re-shores, hardware, braces, and related hardware.

Limited access zone means an area alongside a masonry wall, which is under construction, and which is clearly demarcated to limit access by employees.

Precast concrete means concrete members (such as walls, panels, slabs, columns, and beams) which have been formed, cast, and cured prior to final placement in a structure.

Reshoring means the construction operation in which shoring equipment (also called re-shores or reshoring equipment) is placed, as the original forms and shores are removed, in order to support partially cured concrete and construction loads.

Shore means a supporting member that resists a compressive force imposed by a load.

Vertical slip forms means forms which are jacked vertically during the placement of concrete.

General Requirements


Construction loads

No construction loads shall be placed on a concrete structure or portion of a concrete structure unless the employer determines, based on information received from a person who is qualified in structural design, that the structure or portion of the structure is capable of supporting the loads.

Reinforcing steel

All protruding reinforcing steel, onto and into which employees could fall, shall be guarded to eliminate the hazard of impalement.

Post-tensioning operations

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No employee (except those essential to the post-tensioning operations) shall be permitted to be behind the jack during tensioning operations.

Signs and barriers shall be erected to limit employee access to the post-tensioning area during tensioning operations.

Concrete buckets

No employee shall be permitted to ride concrete buckets.

Working under loads

No employee shall be permitted to work under concrete buckets while buckets are being elevated or lowered into position.

To the extent practical, elevated concrete buckets shall be routed so that no employees, or the fewest number of employees, are exposed to the hazards associated with falling concrete buckets.

Personal protective equipment

No employee shall be permitted to apply a cement, sand, and water mixture through a pneumatic hose unless the employee is wearing protective head and face equipment.

Equipment and Tools

Bulk cement storage

Bulk storage bins, containers, and silos shall be equipped with conical or tapered bottoms and mechanical or pneumatic means of starting the flow of material.


No employee shall be permitted to enter storage facilities unless the ejection system has been shut down, locked out, and tagged to indicate that the ejection system is not to be operated.

Concrete mixers

Concrete mixers with one cubic yard (-8 m³) or larger loading skips shall be equipped with a mechanical device to clear the skip of materials and guardrails installed on each side of the skip.

Power concrete trowels

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 hands of the operator are removed from the equipment handles.

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Concrete buggies

Concrete buggy handles shall not extend beyond the wheels on either side of the buggy

Concrete pumping systems

Concrete pumping systems using discharge pipes shall be provided with pipe supports designed for 100 percent overload.

Compressed air hoses used on concrete pumping system shall be provided with positive fail-safe joint connectors to prevent separation of sections when pressurized.

Concrete buckets

Concrete buckets equipped with hydraulic or pneumatic gates shall have positive safety latches or similar safety devices installed to prevent premature or accidental dumping.

Concrete buckets shall be designed to prevent concrete from hanging up on top and the sides.

Tremies

Sections of tremies and similar concrete conveyances shall be secured with wire rope (or equivalent materials) in addition to the regular couplings or connections.

Bull floats

Bull float handles used where they might contact energized electrical conductors, shall be constructed of nonconductive material or insulated with a nonconductive sheath of which it's electrical and mechanical characteristics provide the equivalent protection of a handle constructed of nonconductive material.

Masonry saws


Masonry saw shall be guarded with a semicircular enclosure over the blade.

A method for retaining blade fragments shall be incorporated in the design of the semicircular enclosure.

Lockout/Tagout procedures

No employee shall be permitted to perform maintenance or repair activity on equipment (such as compressors mixers, screens or pumps used for concrete and masonry construction activities) where the inadvertent operation of the equipment could occur and cause injury, unless all potentially hazardous energy sources have been locked out and tagged.

Tags shall read Do Not Start or similar language to indicate that the equipment is not to be

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operated.

Cast in Place Concrete

General requirements for formwork

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

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

Shoring and reshoring

All Shoring equipment (including equipment used in reshoring operations) shall be inspected prior to erection to determine that the equipment meets the requirements specified in the formwork drawings.

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

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

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.

The sills for shoring shall be sound, rigid, and capable of carrying the maximum intended load.

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.


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

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:

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.

The single post shores shall be vertically aligned.

The single post shores shall be spliced to prevent misalignment.

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The single post shores shall be adequately braced in two mutually perpendicular directions at the splice level. Each tier shall also be diagonally braced in the same two directions.

Adjustment of single post shores to raise formwork shall not be made after the placement of concrete.

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

The steel rods or pipes on which jacks climb or by which the forms are lifted shall be specifically designed for that purpose and adequately braced where not encased in concrete.

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

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

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

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

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

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.

Employers shall take measures 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:

The plans and specifications stipulate conditions for removal of forms and shores, and such

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conditions have been followed, or

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.

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.

Precast Concrete

Precast concrete wall units, structural framing, and tilt-up wall panels shall be adequately supported to prevent overturning and to prevent collapse until permanent connections are completed.

Lifting inserts which are embedded or otherwise attached to tilt-up precast concrete members shall be capable of supporting at least two times the maximum intended load applied or transmitted to them.

Lifting inserts which are embedded or otherwise attached to precast concrete members, other than the tilt-up members, shall be capable of supporting at least four times the maximum intended load applied or transmitted to them.

Lifting hardware shall be capable of supporting at least five times the maximum intended load applied transmitted to the lifting hardware.

No employee shall be permitted under precast concrete members being lifted or tilted into position except those employees required for the erection of those members.

Masonry Operations

A limited access zone shall be established whenever a masonry wall is being constructed. The limited access zone shall conform to the following.


The limited access zone shall be established prior to the start of construction of the wall.

The limited access zone shall be equal to the height of the wall to reconstruct plus four feet, and shall run the entire length of the wall.

The limited access zone shall be established on the side of the wall which will be unscaffolded.

The limited access zone shall be restricted to entry by employees actively engaged in constructing the wall. No other employees shall be permitted to enter the zone. The limited access zone shall remain in place until the wall is adequately supported to prevent overturning and to prevent collapse unless the height of wall is over eight feet, in which case, the limited access zone shall remain in place until it is adequately braced.

All masonry walls over eight feet in height shall be adequately braced to prevent overturning

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and to prevent collapse unless the wall is adequately supported so that it will not overturn or collapse. The bracing shall remain in place until permanent supporting elements of the structure are in place.