

# **Concrete and Masonry Construction Safety**

**MSC-RD-49428**

**Revision 0**

**Effective Date: June 11, 2012**

**Topic: Safety and Health**

## Concrete and Masonry Construction Safety

### CHANGE SUMMARY

#### Rev. 0

#### Description of Change:

Changed the document number from MSC-PRAC-30490 to MSC-RD-49428. Removed references to metric measurements, HNF-PRO-589, HNF-MP-015, MSC-PRAC-30472 and MSC-PRAC-30374. Added references to MSC-PRO-095, MSC-RD-8310, MSC-PRO-8635, MSC-PRO-10588 and DOE-0346.

# Concrete and Masonry Construction Safety

## 1.0 PURPOSE

This document identifies a key aspect of the Safety and Health (S&H) program, and establishes requirements for concrete and masonry construction safety.

## 2.0 SCOPE

This Requirements Document is applicable to Mission Support Contract (MSC) employees involved in MSC work scope involving concrete and masonry construction.

## 3.0 IMPLEMENTATION

This document is effective upon publication.

## 4.0 REQUIREMENTS

The requirements are consistent with those published in the Hanford (MSC) Safety and Health Virtual Manual. Records generated during the performance of this activity are to be included in the Construction Work Package.

### 4.1 GENERAL REQUIREMENTS

- 4.1.1 Follow the safety, precautions, and construction practices recommended by the American Concrete Institute (ACI) publication ACI 347 Formwork for Concrete, Chapter 3.
- 4.1.2 Follow the requirements of American Society of Safety Engineers ASSE A10.9 - Safety Requirements for Masonry and Concrete Work American National Standard for Construction and Demolition Operations.
- 4.1.3 Construct, use, and maintain scaffolds in accordance with practice [MSC-PRO-095, Scaffolds](#).
- 4.1.4 Wear at least the minimum levels of Personal Protective Equipment (PPE) required by the class of work performed. Face shield required during saw cutting.
- 4.1.5 Design, fabricate, erect, support, brace, and maintain formwork to support reasonably anticipated vertical and lateral loads without failure.
- 4.1.6 Inspect shoring equipment before erecting. If the shoring equipment is unsafe, do not use it and dispose of it safely so that no one else will use it.

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### 4.2 CONCRETE

- 4.2.1 Do not place construction loads on a concrete structure or portion of a concrete structure unless a person qualified in structural design has determined that it is capable of supporting the loads.
- 4.2.2 Remove or guard from impalement, protruding reinforcing steel, concrete form pins, and similar objects where there is a possibility workers could fall onto or into them from any level.

**NOTE:** *To protect from impalement, guards, caps, or covers must be manufactured for that purpose or otherwise withstand a drop test of 250 pounds from a 10-foot elevation.*

- 4.2.3 Do not ride on or work under concrete buckets.
- 4.2.4 Use hand protection when applying and finishing cement, sand, and water mixtures; contact Safety and Health for assistance.
- 4.2.5 Equip manually guided, powered, and rotating concrete troweling machines with a control switch (deadman switch) that automatically shuts off the power whenever the operators remove their hands from the equipment handles.
- 4.2.6 Ensure that concrete buggy handles do not extend beyond the wheels on either side of the buggy.
- 4.2.7 Ensure that concrete buckets equipped with hydraulic or pneumatic gates have positive safety latches or equivalent safety devices to prevent premature or accidental dumping.
- 4.2.8 Test for carbon monoxide when using fuel-powered machines inside enclosed spaces or buildings.
- 4.2.9 Do not remove forms and shores (except those used for slab-on-grade and slip forms) until it is determined that the concrete has gained sufficient strength to support its weight and superimposed loads. Base determination on compliance with one of the following:
  - a. The plans and specifications stipulate conditions for removal of forms and shores, and these conditions have been followed.
  - b. The concrete has been properly tested with an appropriate American Society for Testing and 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.

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- 4.2.10 Erected shoring equipment is inspected during and immediately before and after the placement of concrete.
- 4.2.11 Concrete forms and shoring are not removed until the concrete gains sufficient strength to support its weight and superimposed loads.
- 4.2.12 Employees removing formwork or shoring at elevations in excess of 6 feet wear and use fall protection equipment [refer to practice [DOE-0346](#), *Hanford Site Fall Protection Program (HSFPP)*].
- 4.2.13 When climbing formwork, forms are designed and adequately braced to prevent excessive distortion.

### 4.3 MASONRY

Whenever a masonry wall is constructed, a limited access zone is established as follows:

- 4.3.1 Establish the limited access zone before starting construction of a masonry wall.
- 4.3.2 Make the zone equal to the height of the wall to be constructed plus 4 feet for the entire length of the wall.
- 4.3.3 Establish the limited access zone on the opposite side of the wall from the scaffold.
- 4.3.4 Restrict the zone to those actively engaged in the wall construction.
- 4.3.5 Keep the zone in place until the wall is supported well enough to prevent it from overturning or collapsing. If the wall is over 8 feet high, keep the zone in place until the permanent supporting elements of the structure are in place.
- 4.3.6 Guard masonry saws with a semicircular enclosure over the blade.

### 5.0 PROCEDURE REQUIREMENTS

This procedure implements the requirements of:

5.1 [MSC-RD-8310](#), *Document Control Program*, as they apply to the documents covered in this procedure,

5.2 [MSC-PRO-8635](#), *Review and Approval of Technical Documents*

### 6.0 PROCESS

Not Applicable

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## 7.0 FORMS

None

## 8.0 RECORD IDENTIFICATION

All records are generated, processed, and maintained in accordance with [MSC-PRO-10588](#), *Records Management Processes*.

**Records Capture Table**

Name of Document	Submittal Responsibility	Retention Responsibility
Construction Work Package	Construction Supervisor / Superintendent	Project Document Control

## 9.0 REFERENCES

### 9.1 SOURCE REQUIREMENTS

American Society of Safety Engineers (ASSE)

ASSE A10.9 - Safety Requirements for Masonry and Concrete Work American National Standard for Construction and Demolition Operations.

American Concrete Institute (ACI) publication ACI 347 Formwork for Concrete, Chapter 3.

### 9.2 WORKING REFERENCES

[DOE-0346](#), *Hanford Site Fall Protection Program (HSFPP)*

[MSC-PRO-095](#), *Scaffolds*

[MSC-PRO-8635](#), *Review and Approval of Technical Documents*

[MSC-PRO-10588](#), *Records Management Processes*

[MSC-RD-8310](#), *Document Control Program*