

CSI Country-Wide Case Study Safety Strategy Discussion

Construction Safety Investigator



Instructions:

The objective of this tool is to provide field supervisors with information to proactively engage workers and discuss safety related concerns that they may encounter. Safety discussions typically pertain to all activities that workers will be involved in that may have the potential for safety related exposures. This case study is based on facts and materials developed and first published by the agency/organization identified in the section below entitled Source of Case Study Investigative Information.

Case Day:

April 2013

Accident Type:

Caught Under – Masonry Block Wall

Relevant Laws, Rules, and Codes May Include:

29CFR 1926.20(a)(1); 29 CFR 1926.20(b)(2); 1926.20(f)(2); 1926.21; 29CFR1926.706(b); 29 CFR 1926.706(a); MIOSHA Construction Standards

Case:

Laborer, Pipefitter, and Utility Foreman Crushed by Falling Block Wall

Accident Detail:

Three construction workers; a laborer, and a pipefitter and a utility foreman were crushed when an inadequately braced 24-foot-tall block wall they were working near fell on them during a 33-mph wind gust.

The project was a 28,000-square-foot commercial retail development located in Tennessee. At the time of the incident, the laborer was applying caulking to the expansion joints of a block wall, and the pipefitter and the utility foreman were installing piping for the building's sprinkler system in a trench next to the block wall. A wind gust caused the block wall to fall onto the laborer, pipefitter, and utility foreman.

The project superintendent called 911, and emergency medical services were dispatched. Although EMS arrived at the incident within 4 minutes, the laborer and pipefitter were pronounced dead at the scene. The utility foreman was airlifted to a local hospital and survived.

Reconstructive Safety Evaluation:

- What are some of the possible causes of the accident being discussed?
- What actions could have been taken that might have prevented this accident from occurring?

Agency's Accident Scene Conclusion:

- Prior to building the wall, the masonry subcontractor noticed the rebar in the wall footer was not positioned in the center of the footer (off-center by 2 to 4 inches) according to the engineering drawings
- The masonry subcontractor notified the prime contractor of the error, and the prime contractor instructed the masonry contractor to fix it by bending the rebar toward the center of the footer so it would fit inside the center of the blocks. The resultant rebar/grout combination was no longer strong enough to resist the lateral loads of the wind coming from the west.
- The out-of-place rebar went unnoticed by the engineer during inspection and the engineer was not notified of the change in the rebar
- The incident wall was 149 feet long and was not structurally tied to the other three walls at the time of the incident. The wall was originally braced with three wooden braces on the inside and three wooden braces on the outside, with the braces opposing each other.
- The braces consisted of three pieces: one vertical scaffold board, positioned on the wall but not attached to the wall; a cleat board measuring 2-inch by 4-inch placed horizontally across the vertical scaffold board approximately 9 to 10½ feet up the scaffold board; and another scaffold board was wedged at an angle between the cleat and a 4-foot-long piece of rebar driven into the ground. Two masonry blocks were placed on top of the rebar and board as extra weight for the scaffold board and as protection around the rebar.
- The spacing between braces varied, as did the angle of the braces. Two of the three outside braces were removed, leaving one brace in the center of the outside wall the day before the incident to allow the waterproofing subcontractor to caulk the control joints. No permanent supporting elements of the structure were in place.
- The weather on the day of the incident had 18 mph average southerly wind speeds, 32 mph maximum wind speed, and 39 mph wind gusts - weather is believed to have been a factor in this incident.
- A 3-foot deep, 5½ foot wide, and 8-foot-long trench ran parallel to the east wall. The trench was positioned 15 feet from the wall.

As a result of the investigation, the following hazards were determined as key contributing factors in this incident:

- Deviation from engineering drawings
- Inadequate inspection of rebar placement
- Inadequate bracing for the block wall
- Wall height extending too far above the bracing
- Worker proximity to unbraced block wall
- Lack of competent person to monitor wind speed
- Inadequate training related to masonry wall safety

Preventive Safety Measures Identified by the Investigating Agency Include:

- Ensure that employees follow the engineering/architectural drawings during building construction and obtain engineering approval before plan changes are made
- Develop and follow a masonry wall bracing plan, train employees on proper masonry wall bracing, and ensure masonry walls are properly braced throughout the project
- Develop and implement a restricted/limited access zone
- Train workers on the hazards of working around unsupported masonry walls
- Assign a competent person trained to monitor wind speeds
- Schedule work tasks to limit exposure of nonessential workers to hazards posed by masonry walls under construction

Additional Commentary on Preventive Safety Measures from Chubb Include:

- Complete a Job Safety Task Analysis that includes scope of work, anticipated exposures, and safety equipment and/or procedures needed to ensure the task is completed successfully and safely.
- Conduct a pre-work meeting to review the JSTA and ensure workers understand the task to be completed, any safe working procedures and have the necessary safety equipment.
- Employees should have adequate training on job-specific tasks. Proper training must extend to all workers, including day laborers. Language barriers and communication should also be considered during training.

Attendance Roster

Source of Case Study Investigative Information:

This case study is based on facts and materials developed and first published by the following agencies during their investigation of the applicable incident:

- U.S. Centers for Disease Control and Prevention (CDC) and National Institute for Occupational Safety and Health Office of the Director (NIOSH)

The source material is otherwise available on the agency website for no charge. Chubb's use of information sourced from these or any other governmental agency does not constitute endorsement or recommendation of Chubb by these governmental agencies.

Source and Links to Relevant Material:

NIOSH FACE Program, FACE Report 2014-02;
<https://www.cdc.gov/niosh/face/in-house/full201402.html>

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