

CSI Country Wide Case Study Safety Strategy Discussion

Construction Safety Investigator

CHUBB

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 should not be limited to the subject above and should pertain to the activities that workers will be involved in that may have the potential for safety-related exposures.

Case Day:

3/23/15

Accident Type:

Climbing Scaffold Collapse

Relevant laws, rules and codes may include:

29CFR 1926.20(a)(1); 1926.21(b)(2); 29 CFR 1926.451(f)(1); 29 CFR 1926.451(a)(1);
29 CFR 1926.451(c)(1)(ii)

Case:

Workers Killed When Climbing Scaffold Collapsed During Disassembly

Accident Detail:

A mid-rise steel framed building with concrete floor slabs was under construction with the exterior of the building to be clad with glass curtain walls.

The mast scaffold in question was a 45 ft. long, 6 ft. wide (4 ft. wide main platform plus 2 ft. wide extension) work platform, which traveled up and down the mast to the desired location of activity by means of a drive system attached to the mast.

The mast was braced for lateral stability at certain floors of the structure by three ties, two at approximately right angles to the face of the building, and one diagonally to resist torsional forces.

The scaffold vendor was responsible for assembling and disassembling the mast scaffold, but not to operate the platform during construction. They (vendor) would later be called back by the GC to disassemble it. In addition, the scaffold vendor provided training to the contractor employees to operate the mast climber.

When the vendor returned to begin disassembly of the mast scaffold, the scaffold failed and collapsed. The vendor utilized two certified technicians for the assembly and disassembly.

There were four employees on the scaffold platform which was near the 9th floor at the time of the collapse. All four workers fell to the ground with the falling mast and platform. Three of the workers were killed and the fourth suffered severe injuries.

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?

Accident Scene Conclusion:

The investigation revealed the following:

- When the frequency and location of the mast tie-ins was evaluated, the distance between the ties did not conform to the manufacturer’s recommendation not to exceed 40 ft.; two of the ties were 47ft apart.
- During disassembly, the certified technicians removed thirteen mast sections down to the 9th floor tie, placing the 13 disassembled sections and 6 ties over the mast climbing platform deck. At this stage, the technician decided not to proceed to the ground to unload the 13 removed sections and the ties before continuing.
- In preparation for disassembling the tower section from the 9th to the 6th floors, the ties at the 9th floor were removed from the concrete floor slab inside the structure. At that point, the tower leaned away from the building and collapsed on the ground.
- The cause of the failure was excessive free standing height of the mast and higher magnitude of loads placed on the platform than permitted by the manufacturer.
 - The actual freestanding height of the mast was 47 feet vs. the allowable 40 feet.
 - Loads placed on the platform were approximately 4,260 pounds; higher than the allowable 3000 pounds.
 - Failure of the swing bolts near the 6th floor connecting the lower and upper sections of the mast triggered the failure.
 - The mast climbing platform erected was of a non-standard configuration because of the upper rear platform, and the contractor did not consult the mfr. to obtain the correct corresponding load chart for the modified configuration; therefore the mast climbing platform was operated with an improper load chart.

Preventive Safety Measures 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.
- Assemble, operate, maintain and disassemble scaffolds according to all engineering data, drawings, and specifications as well as manufacturer instructions.
- Scaffolds and scaffold components shall not be loaded in excess of their maximum intended loads or rated capacities, whichever is less.
- Guys, ties, and braces shall be installed according to the scaffold manufacturer’s recommendations.
- Never modify or alter a scaffold unless engineered, designed and approved to do so by the manufacturer.

Attendance Roster:

Reference: This case investigation was reported by the U.S. Department of Labor, Occupational Safety and Health Administration - Incident 3/23/15, Raleigh, NC

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