Massachusetts Construction Worker Dies in Fall Through a Roof Opening While Performing Iron Work

MASSACHUSETTS FACE 94-MA-11

SUMMARY

On January 31, 1994 a 23 year old, male, construction worker was fatally injured on a Massachusetts construction site when he fell approximately 20 feet through a roof opening to ice covered ground. The victim was not wearing any fall protection. On the day of the incident the victim and his coworkers were positioning and welding metal decking to the structural steel beams. The victim had been pulled off this job, and was capping the roof when he fell through the 3 by 40 square foot opening. Sheet metal workers found the unconscious victim lying on the ground, and yelled for assistance. An iron working coworker immediately sought emergency medical assistance and the victim was airlifted to a hospital where he died the next day of multiple injuries.

To prevent future similar occurrences, the FACE Program recommends that employers:

- **require floor openings to be adequately protected and/or personal protective equipment to be used in the presence of fall hazards;**
- **ensure that fall protection equipment is provided and used by all employees whenever any work is preformed at an elevation where the potential for a serious or fatal fall exists;**
- **design, develop and implement a comprehensive safety program that includes, but is not limited to fall protection;**

INTRODUCTION

The Massachusetts FACE Project learned of this death through an obituary in a metropolitan newspaper on February 3, 1994. On March 2, 1994 the FACE Investigator and Director travelled to the incident site and met with the victim's employer. FACE staff also interviewed the general contractor and one of the victim's coworkers, both of whom were on site the day of the incident. The police report, newspaper clippings, death certificate, and multiple photos, were collected throughout the course of the investigation. The OSHA area office was also consulted.

The employer, in business for less than a year, was an iron working contractor. The company was comprised of 3 to 7 individuals, one to three of whom worked as iron workers. The employer was subcontracted by a general construction company to provide the iron work for a new federal building. The company did not have a designated safety officer, nor any written safety rules or procedures. Safety issues were discussed, however, during the planning of the project, and each day on the site.

The victim had worked on the site since the project's inception five weeks earlier. He did not have previous iron work experience and he was not a union employee. He had 4-5 years experience working on construction sites. His training was primarily on the job.

INVESTIGATION

During the last week of December 1993, the employer began work on its contract to construct the steel framework for a new federal building. The employer was contracted to erect and connect the steel building frame, weld in the support system, and cover the roof with metal decking.

On the day of the incident, the weather was cold and clear. The sun had melted the bulk of the ice off of the roof, but the ground below was covered with ice. The crew was building the roof by welding and bolting the bridging, or joists, and metal decking to the structural steel beams. The crew's procedure was to first weld the joists in place from above, and then position and bolt the metal plate (generally 26 or 20 feet long by 3 feet wide) over the area where they had just placed the joists. As they completed a section of the roof, the crew would move on to a new area, moving the pieces of bridging with them.

Late in the day, the crew had finished decking the majority of the roof. Several openings in the roof still existed, including one 3 foot by 40 foot opening (the size of 2 pieces of metal decking) at the roof's center. According to the employer, this hole had not yet been covered because approximately 80 pieces of bridging were left on the roof and they were partially stretched across the opening. The crew had asked the crane operator to lower the material to the ground, and they were waiting for this task to be completed before decking over the hole. The OSHA Compliance Officer, however, learned that the opening had not yet been covered because additional work (welding of moment connections) remained at the ridge.

While the crew was finishing the metal decking, the general contractor reportedly asked the employer to begin the work of capping the roof's expansion joints with the center plate. The employer asked the victim to stop working on the metal decking and to begin capping the roof. According to the employer, the victim was warned that he could only partially lay the center plate because there was still an opening left in the roof's center where the cap was to be bolted. The victim was reportedly instructed to lay the center plate up to the place in the roof where the opening was.

Shortly after the victim began this task, he was found by the sheet metal workers lying on the ground below the roof opening. Although the victim's coworkers were on the roof at the time of the fall, no one witnessed the incident.

The FACE Project concluded that the victim, most likely, backed into the opening while he was pulling the pieces of center plate into position. Earlier on, the victim's coworker had apparently seen the victim using this technique to position the center plate. Furthermore, when the victim was found on the ground, the center plate had been positioned, but not bolted, right up to the roof opening.

Sheet metal workers found the victim and they yelled to the employer that one of his men was down. An iron working coworker immediately called for emergency medical assistance, and the victim was airlifted to a hospital. He died the following day.

CAUSE OF DEATH

The medical examiner listed the cause of death as multiple injuries due to blunt trauma.

RECOMMENDATIONS

Recommendation #1: Employers should require floor openings to be adequately protected and/or personal protective equipment to be used in the presence of fall hazards.

Discussion: OSHA Standard 29 CFR 1926.500 (b) requires temporary or emergency floor openings to be guarded by a standard railing and toeboard, or with a secured cover capable of supporting the maximum intended load. In instances where a guardrail or cover is not practical for the work being done (such as the task of installing permanent protective covers) alternative forms of equally protective fall protection, such as safety nets or catch platforms, could be used. At a minimum the opening should have been cordoned off and clearly marked with a hazard warning. Had some form of fall protection been used to guard the roof opening, this death may have been prevented.

Recommendation #2: Employers should ensure that fall protection equipment is provided and used by all employees whenever any work is preformed at an elevation where the potential for a serious or fatal fall exists.

Discussion: The victim was working 20 feet above the ice covered ground in an area where the potential for a fall existed. The Code of Federal Regulations (29 CFR 1926.28 a) states that “the employer is responsible for requiring the wearing of appropriate personal protection equipment in all operations where there is an exposure to hazardous conditions.” When the traditional safety belt/lanyard combination is impractical, an alternative form of fall protection, such as safety nets (CFR 1926.105) should be used. The use of a safety net may have prevented this death.

Recommendation #3: Employers should design, develop and implement a comprehensive safety program that includes, but is not limited to fall protection.

Discussion: Although the company discussed safety issues on a daily basis, the company did not have a written safety program, training program, or a designated safety officer (competent person). Employers should develop, implement, and enforce a comprehensive safety program that includes, but is not limited to, routine job site hazard surveys, the use of appropriate fall protection, and worker training on the recognition and avoidance of fall hazards. Employers should also appoint an individual with safety knowledge, and the authorization to take corrective measures to eliminate hazards, to be the designated safety officer, or competent person, on site. Currently most OSHA construction standards (29 CFR 1926) require the involvement of a “competent person” in the implementation of safety provisions.

REFERENCES

Office of the Federal Register: Code of Federal Regulations, Title 29 Labor, Part 1926, Sections 500(b), 28(a), 105, revised July 1, 1993.

Back to Massachusetts FACE reports (http://wwwn.cdc.gov/NIOSH-FACE/Default.cshtml?Category=0000&Category2=ALL&State=MA&Submit=Submit)

Back to NIOSH FACE Web

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