The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research

Ironworker Dies in Fall from a Warehouse Under Construction

FACE 8934

Introduction

The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR), performs Fatal Accident Circumstances and Epidemiology (FACE) investigations when a participating state reports an occupational fatality and requests technical assistance. The goal of these evaluations is to prevent fatal work injuries in the future by studying the working environment, the worker, the task the worker was performing, the tools the worker was using, the energy exchange resulting in fatal injury, and the role of management in controlling how these factors interact.

On April 29, 1989, a 40-year-old male ironworker died as a result of injuries that occurred when he fell nearly 40 feet from a steel beam of a warehouse under construction.

Contacts/Activities

State officials notified DSR of this fatality and requested technical assistance. On May 17, 1989, two research safety specialists discussed the incident with the company and the Occupational Safety and Health Administration's (OSHA) district office. The county coroner was contacted and photographs of the incident site were taken.

Overview of Employer's Safety Program

The victim had been employed for 13 years as an ironworker by a steel erection company. The company, which has been in business for 15 years, normally employs 5 workers. The company does not have a written safety and health program. At the time of the incident, hard hats were the only personal protective equipment being used by the company's employees.

Synopsis of Events

The construction company had been subcontracted to erect the steel framework for a 300,000-square-foot distribution warehouse. The warehouse frame was constructed mainly of vertical "I" beams measuring 37 feet 8 inches tall, 5 ½-inch-wide flange horizontal "I" beams, and bar joists (i.e., light steel joists of open web construction with a single zig-zagged bar welded to upper and lower chords at the points of contact) to support the roof.

On the day of the incident the victim was working as a member of a six-person crew which included the company owner. Since only half of the building frame had been erected, the crew was still in the process of erecting the skeleton steel.

The victim's task was to connect bar joists to the horizontal 5½-inch-wide flange "I" beams. The victim was positioned on the top of a beam (approximately 38 feet above the ground) in order to connect the beams with bolts and nuts. After completing a connection, he stood up on the beam and began moving to the location of the next connection. The owner, who was operating a crane to move a bar joist into position for connection, saw the victim slip and fall from the beam. The victim struck a horizontal "I" beam 15 to 20 feet below, and then fell to the brick-and dirt-covered ground.

The owner/crane operator told an employee to telephone for an ambulance. The Emergency Medical Service (EMS) responded in approximately 4 minutes after being called. The EMS provided advanced life support and transported the victim to the local hospital. The victim was pronounced dead in the hospital's emergency room a short time later.

Cause of Death

The county coroner stated that death resulted from multiple traumatic injuries sustained from the fall.

Recommendations/Discussion

Recommendation #1: Whenever any work is performed at an elevation where the potential for a serious or fatal fall exists, the employer should ensure that fall protection equipment is provided and used by all employees.

Discussion: The victim was working 37 feet 8 inches above the 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 protective equipment in all operations where there is an exposure to hazardous conditions." If the employer had provided and required the use of fall protection (i.e., safety belt, lanyard, and lifeline) this incident may have been prevented.

Additionally, when the traditional safety belt/lanyard combination is impractical, an alternate form of fall protection (e.g., safety nets as specified in 29 CFR 1926.105) should be used. The use of safety nets may also have prevented this death.

Recommendation #2: Worker safety should be considered and addressed in the planning phase of construction projects.

Discussion: Safety concerns should be discussed and incorporated into all construction projects during planning and throughout all construction phases of the project. In this instance, there was no planning of safety procedures because employees were allowed to work in an area where the potential for a fall existed without adequate fall protection. Employees walked across steel beams without using fall protection (e.g., lifeline, belt/lanyard) or having passive fall protection (e.g., nets, catch platforms) in place.

Recommendation #3: The employer should design, develop, and implement a comprehensive safety program.

Discussion: In this company the acceptance of a potentially serious or fatal fall, as indicated by the normal operating procedures of working without fall protection during connecting operations, demonstrates a lack of commitment to employee safety. Employers should emphasize safety of their employees by designing, developing, implementing, and enforcing a comprehensive safety program to prevent incidents such as this. The safety program should include, but not be limited to, the recognition and avoidance of fall hazards and the use of appropriate fall protection.

Recommendation #4: Prime contractors and subcontractors should abide by 29 CFR 1926.16 (a), Rules of Construction, which states: "In no case shall the prime contractor be relieved of overall responsibility for compliance with this part for all work to be performed under the contract."

Discussion: Although the subcontractor failed to provide a safety and health program for the employees, the prime contractor was equally at fault by not addressing the issue. The prime contractor should use contract language that requires subcontractors to identify how they intend to implement a site safety and health program. The program should be consistent with the prime contractor's program and differences should be negotiated before the subcontractor begins work. In this particular case, it is evident that the prime contractor did not require the subcontractor to utilize fall protection measures. Had such language been in the contract and enforced on the site, the subcontractor would probably have implemented some type of fall protection measures along with a written safety and health program for this particular site.

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