The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research

Foreman Falls to His Death From a Steel Beam in South Carolina

FACE 8817

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 March 2, 1988, a 42-year-old male foreman died after falling 17 feet from a steel beam and becoming impaled on a 1/2-inch-diameter cement reinforcement rod.

Contacts/Activities

Officials of the Occupational Safety and Health Program for the State of South Carolina notified DSR of this fatality and requested technical assistance. On April 18, 1988, a DSR research team conducted a site visit, met with the company owner, and reviewed the incident with the OSHA compliance officer.

Overview of Employer's Safety Program

The victim was employed as a foreman by a steel erection company that had been in operation for 12 years. At the time of the incident, the company employed five workers. The company had no written safety program. Employees received on-the-job training and work safety procedures were discussed during tailgate safety meetings at the worksite.

Synopsis of Events

For the 2 weeks prior to the incident, the company owner, a crew foreman (the victim), and three workers were involved in the construction of the steel "I"-beam framework of a mini-mall. The mini-mall, when completed, would consist of two structures located 5 feet apart and joined together in the front by a canopy.

Two crews were doing separate jobs. Steel erectors were constructing the steel framework while block masons were digging ditches and placing concrete footing for the side walls of the mini-mall. At 36-inch intervals, 1/2-inch-diameter steel reinforcement rods protruded vertically 18 inches upward from the footing. The ditch was approximately 80 feet long.

The crew had completed work on the first structure and on the morning of the incident were continuing construction on the second structure. The first task of the day was to install a 20-foot-long, 8-inch "I" beam approximately 17 feet above ground between two columns. Standard procedure called for the beam to be lifted into place by a crane. Two workers would then use ladders to reach the ends of the beam and make the connections. On this occasion, however, instead of using ladders to reach the connection points, the victim and a co-worker sat on opposite ends of the beam while it was lifted into position. Neither man was using fall protection devices. The company owner, operating the crane, raised the beam into position directly above the ditch containing the concrete footing.

When the beam was in position, the co-worker grasped a column and prepared to make the connection. As he reached behind himself to grab his wrench from his belt, the wire rope choker supporting the beam slid toward the victim. The co-worker lost his balance and fell from the beam into the 3-foot-deep ditch containing the concrete footing. The victim slid toward the connecting collar causing the beam to stand straight up. The victim then fell from the beam, and landed in the ditch on his right side, impaled on the 1/2-inch reinforcement rod.

The reinforcement rod penetrated approximately 8 inches into the victim's body and pierced his heart. The emergency medical service (EMS) was summoned and arrived in approximately 10 minutes. The victim was transported to the hospital where he was pronounced dead on arrival. The co-worker was also transported to the hospital where he was treated and later released.

Cause of Death

The medical examiner listed the cause of death as exsanguination due to a penetrating injury caused by the reinforcement rod.

Recommendations/Discussion

Recommendation #1: Employers should ensure that employees do not ride loads that are being lifted or otherwise moved by a crane.

Discussion: Standard operating procedures for the company called for the men to use ladders to access the connection points for the beams. Instead, the owner allowed the men to ride the beam while he operated the crane. OSHA Standard 1910.180(h)(3)(v) states, "No hoisting, lowering swinging, or traveling shall be done while anyone is on the load or hook." Additionally, Section 18.1.10 of the Construction Safety Standards developed by the U.S. Department of the Interior, Bureau of Reclamation, states that, "No person shall be permitted to ride loads." In this incident, had the employees followed standard procedures and not ridden the beam, the likelihood that a fatality would occur would have been greatly reduced.

Recommendation #2: Employers should ensure that recognized hazards are guarded or otherwise controlled before any work is performed.

Discussion: The protruding reinforcing rods presented a serious hazard to the men working above the ditch and should have been guarded. OSHA Standard 1926.700(b)2 states, "Employees shall not be permitted to work above vertically protruding reinforcing steel unless it has been protected to eliminate the hazard of impalement." If the reinforcing rods had been guarded the fatality might have been prevented.

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