



The National Institute for Occupational Safety and Health (NIOSH)

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through safety and health research



Ironworker Foreman Dies after Falling 50 Feet from Structural Steel in South Carolina

FACE 9024

SUMMARY

A 41-year-old ironworker foreman died as a result of injuries sustained in a 50-foot fall from an 8-inch “I” beam at a construction site. The victim was the foreman of a steel erection crew which had assembled the steel “skeleton” of a large structure at the site of a new paper mill. The crew had completed their work on the structure several days prior to this incident, and had then removed the safety netting, which had been in place during the construction process. As part of their work, the crew had installed a pair of 8-inch “I” beams to serve as a track for an overhead crane. On the morning of the incident, an electrician, who had been working on the overhead crane, told the victim that the “I” beam rails on which the crane operated were misaligned. The victim and one of his co-workers used a cherry-picker manlift (a small crane or derrick that can work and lift in cramped spaces) to access the beam. After looking at the beam, the victim told the co-worker to move the manlift to the far end of the beam while he walked out on the beam to check for the problem. A heavy frost the night prior to the incident had left a coating of ice on the beam. The co-worker mentioned the slipping hazard to the victim and was told by the victim not to worry about it. The victim then stepped from the manlift to the beam and walked approximately 40 feet across the beam before slipping and falling 50 feet to the ground below. NIOSH investigators concluded that, in order to prevent similar occurrences in the future, employers should:

- ensure that workers comply with existing safety policies and procedures at all times
- continually stress to all employees the importance of following established safe work procedures at all times
- ensure that the proper chain of command is followed when problems or potential problems are reported.

INTRODUCTION

On January 27, 1990, a 41-year-old male ironworker foreman died after falling 50 feet from structural steel. On January 30, 1990, officials of the South Carolina Occupational Safety and Health Administration notified the Division of Safety Research (DSR) of the death, and requested technical assistance. A DSR safety specialist discussed this case with compliance personnel, and traveled to the incident site on February 26, 1990, to conduct an investigation. The safety specialist reviewed the incident with representatives from the responding Emergency Medical Service (EMS), the coroner’s office, and the employer; and then investigated and photographed the incident site.

The employer in this incident is a large paper manufacturing firm employing 1,300 individuals at the site of a new pulp and paper plant under construction. On-site safety personnel include a full-time safety engineer with a staff of five. The company has a comprehensive safety program which actively addresses the various hazards likely to be encountered in the

construction trades. Safety training sessions are presented to all employees weekly. In addition, the safety program provides for regular periodic inspection of all safety equipment at the site. Violation of company safety policies is grounds for dismissal, with the safety engineer having full authority to enforce this provision.

INVESTIGATION

The victim worked as the foreman of a structural steel erection crew. This was one of several such crews at the site, all under the general supervision of an "iron superintendent."

This particular crew had erected the structural steel "skeleton" for a large building at the site. When their work on this structure had been completed (several days prior to the incident), the crew removed the safety nets used during the erection of the "skeleton." The removal of these nets was completed 2 days prior to the incident. A 75-ton overhead crane was installed in this structure following the completion of the structural steel work. The exterior walls and the roof of this structure were to be installed at a later time by different work crews.

Standard practice calls for the "iron superintendent" to lay out groundwork for his crews each day. The crews then spend the first few hours of the workday on the ground accomplishing these tasks. During this time, the "iron superintendent" inspects the sites to be worked on that day. After the "iron superintendent" determines that the steel in the area is dry and free of ice, and that no other problems with the steel erection process exist, the crews are allowed to begin work on the steel itself.

On the day of the incident, the victim and his crew reported to work at 7:00 a.m. (their normal starting time). A few minutes after reporting for work, the victim was approached by an electrician (who worked for a subcontractor at the site), who told him that something was wrong with the alignment of the I-beam "rails" upon which the overhead crane was to run. Upon hearing of this supposed defect in work accomplished by his crew, the victim and one of his workers went to the area in question without informing the iron superintendent or any other member of management.

The victim and his co-worker used a "cherry picker" manlift to reach the I-beam rail in question. The rail ran parallel to the floor of the structure at a height of approximately 50 feet. A heavy frost the preceding night had left a coating of ice on all exposed steel at the site.

After visually looking at the beam in question for a moment, the victim told his co-worker to lower the manlift, move it to the other end of the beam, and meet him (the victim) there. In the meantime he (the victim) would exit the manlift and walk the beam to check it out.

The co-worker told the victim that the beam was covered with ice and that he could not walk on it, whereupon the victim told the co-worker not to worry about it. The victim then stepped from the manlift to the beam. The co-worker lowered the manlift bucket from the beam and began to move it to the area designated by his supervisor.

As the co-worker was moving the manlift to the new position, he observed the victim lying on the ground approximately 40 feet down the rail from his starting position. Although the fall was not witnessed, it appears the victim slipped on the ice-covered beam.

The co-worker immediately summoned assistance and the plant Emergency Medical Technicians (EMT's) responded to the scene. The victim was still breathing at this time, and the EMT's attempted to stabilize the victim while awaiting the arrival of an ambulance to transport the victim to the hospital. The local ambulance squad was called by both radio and telephone, and arrived on the scene approximately 25 minutes after the incident.

The victim was placed in the ambulance and transported to the local hospital. En route to the hospital, the victim stopped breathing and the EMT's were unable to detect a pulse. At this time they began Cardiopulmonary Resuscitation (CPR). The victim was pronounced dead shortly after arrival at the hospital.

It was later determined that the problem with the overhead crane had nothing to do with the "alignment" of the frame rails, but was instead an electrical problem.

CAUSE OF DEATH

The coroner's report gave the cause of death as massive head injuries.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should continually stress to all employees the importance of following established safety rules and procedures at all times.

Discussion: In accordance with the OSHA Act, P.L. 91-596, Section 5(b), "Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders ... which are applicable to his own actions and conduct." The employer in this incident managed a comprehensive and detailed safety program on the project which addressed the hazards to which their employees could reasonably expect to be exposed. Existing company safety policies at the time of the incident required all employees to be tied-off whenever they were working above ground level, prohibited going out onto structural steel without authorization from the iron superintendent, and prohibited entering a work area without authorization. Violation of any one of these policies would have been grounds for dismissal. The fact that the incident occurred in spite of these policies clearly shows the need for employers to continually remind all employees of the importance of following established safety rules and procedures at all times.

Recommendation #2: Employers should ensure that workers are aware of and follow established "chain-of-command" reporting procedures whenever any problems or potential problems are detected.

Discussion: An established chain-of-command procedure existed for reporting any problems detected at the jobsite. Had this procedure been followed, the electrician would have reported the perceived problem to his supervisor, who would then have reported the problem to the iron superintendent for resolution.

REFERENCE

1. Public Law 91-596, December 29, 1970, the "Occupational Safety and Health Act of 1970", Section 5(b).

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