

# F.A.C.E. INVESTIGATION REPORT

## Fatality Assessment and Control Evaluation Project

FACE #97-NJ-067-01  
Iron Worker Dies After Falling 26 Feet  
From a Steel Beam



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FROM: Fatality Assessment and Control Evaluation (FACE) Project  
New Jersey Department of Health and Senior Services (NJDHSS)

SUBJECT: FACE Investigation #97-NJ-067-01  
Iron Worker Dies After Falling 26 Feet From a Steel Beam

DATE: February 25, 1998

### **SUMMARY**

On September 3, 1997, a 39-year-old iron worker was killed after he fell from a structural steel beam of a church under construction. The incident occurred as the victim and three co-workers were erecting the structural steel skeleton for the circular, three-story building. The victim and a second employee worked on the steel while another co-worker operated the crane. A fourth employee worked on the ground. At about 3:45 p.m., the victim was sitting on a horizontal steel beam where it joined with a vertical steel support column. As the crane lowered a 26-foot long steel beam towards him, the victim reached for the beam while holding onto the vertical support. At this point he apparently lost his balance, falling 26 feet from the beam to a cement pad below. NJDHSS FACE investigators concluded that, to prevent similar incidents in the future, these safety guidelines should be followed:

- ! Employers should provide adequate fall protection to all employees exposed to fall hazards.
- ! Employers should conduct a job hazard analysis of all work activities with the participation of the workers.
- ! Employers should develop, implement, and enforce a comprehensive employee safety program.
- ! Contractors should become familiar with available resources on safety standards and safe work practices.

## **INTRODUCTION**

On September 4, 1997, NJ FACE personnel were verbally notified through a NJDHSS employee of a work-related fatal fall that occurred the previous day. FACE investigators contacted the area OSHA office for more information and conducted an unannounced site visit on the same day. During the site visit, FACE investigators interviewed the employer and a co-worker and examined and photographed the incident site. Additional information was obtained from the OSHA compliance officer, the police report, and the medical examiner's report.

The employer was a small steel erection company that had been in business for ten years and employed four workers (including the owner) at the time of the incident. The company did not have a job training program and hired non-union employees as they were needed. Although the company did not have a safety or fall protection program, safety belts were available on their truck. The victim was a 39-year-old male iron worker who had worked for the company for eight days. The employer described him as an experienced iron worker who was hired when he went to the owner looking for work. Like his co-workers, the victim was a Portuguese national who spoke limited English.

## **INVESTIGATION**

The incident occurred outdoors at the construction site of a large church being built in a suburban area. The 200 by 220-foot radial-shaped church was being built on one acre of land and was to have a basement, ground floor, and upper level. A general contractor was hired to accept bids from the various subcontractors and to oversee the construction, but did not have any direct responsibility for these workers. Each subcontractor provided labor, materials, and equipment for the job, while the general contractor ensured that the building was constructed to specifications.

Construction had started in October 1996 and was expected to be completed in June 1998. At the time of the incident, the land had been cleared and the excavation and steel erection subcontractors were on site. Steel erection had started in July 1997 and was expected to take five months to finish. The steel arrived at the site by truck, each piece previously numbered for easy identification and placement. After referring to the blueprints, a ground worker identified the correct steel parts and slung them to a crane line. The crane operator raised the steel to the iron workers, who joined the beams with a few bolts to hold them in place. Once the beams were positioned, the iron workers placed the remaining bolts and tightened them down. On an average day, the iron workers could erect 40 pieces of steel on a ground floor and 25 pieces for the upper floors.

It rained early on the morning of the incident but soon cleared to a temperature of 72 degrees with gusty winds. The crew of four ironworkers arrived at the site at 11:30 a.m. and started work at 12:00 to erect steel beams on the upper floors of the building. A semicircular excavation had been dug for the basement, and vertical steel support columns were set into concrete piles in the basement level. The horizontal steel beams for the first (ground) floor had been completed, and the workers were connecting the horizontal steel beams for the second floor. Climbing a temporary ladder to the second floor beams, the victim and a second ironworker worked on fitting and bolting the beams together. Neither worker used fall protection at this height, about 26 feet above the basement level. The company owner operated the crane and the fourth worker was the groundsman. They worked uneventfully through the afternoon until they reached the last beam of the day. As the groundsman slung the crane line to the 30 foot long by 16 inch wide beam, the victim and his co-worker sat straddling a steel cross beam. The victim was sitting with his back against a vertical steel column and smoking a cigarette, waiting for the beam to be raised. At 3:45 p.m., the crane operator lifted the beam to the victim, who reached out to it with one hand while holding the vertical beam behind him with his other hand. His co-workers reported that the victim suddenly grabbed for the steel column before falling into the basement excavation, landing on the pad of a concrete piling.

The general contractor was working nearby in a construction trailer when he heard a man yell. He looked out the window and saw one of the ironworkers running and yelling to call the police. The GC immediately called the police and went to the victim, finding him badly injured and unresponsive. A police officer arrived quickly and started CPR when the paramedics arrived and started advanced life support. The medics were able to regain a pulse but lost it again as the victim was transported to the emergency room. He did not respond to further treatment and died in the emergency room at 4:50 p.m.

### **CAUSE OF DEATH**

The county medical examiner determined the cause of death to be from “blunt force trauma to the head and neck.”

### **RECOMMENDATIONS & DISCUSSIONS**

***Recommendation #1: Employers should provide adequate fall protection to all employees exposed to fall hazards.***

Discussion: The victim fell as he was working on the steel girders, possibly losing his balance while reaching for the beam in the gusty winds. The FACE program strongly recommends that

ironworkers use some type of fall protection system while working on the steel. One method is the use of safety nets which provides fall protection without tying the employee to a safety line. A more common method is the personal fall arrest system, which consists of a harness and lifeline tied into an anchorage point. This system permits the use of a self-retracting cable reel for lifelines that allows the worker greater mobility. Fall protection is required under the federal OSHA standard 29 CFR 1910.105 for steel workers operating 25 feet or more from the ground.

***Recommendation #2: Employers should conduct a job hazard analysis of all work activities with the participation of the workers.***

Discussion: It is recommended that employers conduct a daily job hazard analysis of the work activities and construction area with the employees. This can be done while planning the day's work, and should include an examination of the work area for fall hazards, loose debris, electrical, weather conditions, and other hazards the workers may encounter. After identifying the hazards, the crew should be instructed on how to correct or avoid them.

***Recommendation #3: Employers should develop, implement, and enforce a comprehensive employee safety program.***

Discussion: FACE recommends that employers should emphasize worker safety by developing, implementing, and enforcing a comprehensive safety program to reduce or eliminate hazardous situations. The safety program should include, but not be limited to, the recognition and avoidance of fall hazards and include appropriate worker training. As all of the company workers spoke Portuguese, it is recommended that the program is written be in the primary language of the employees.

***Recommendation #4: Contractors should become familiar with available resources on safety standards and safe work practices.***

Discussion: It is extremely important that contractors obtain accurate information on working safely and following the all OSHA standards. The following sources of information may be helpful:

#### **U.S. Department of Labor, OSHA**

On request, OSHA will provide information on safety standards and requirements for fall protection. OSHA has several offices in New Jersey that cover the following areas:

Hunterdon, Middlesex, Somerset, Union, and Warren counties.....(732) 750-4737  
 Essex, Hudson, Morris, and Sussex counties.....(973) 263-1003  
 Bergen and Passaic counties.....(201) 288-1700  
 Atlantic, Burlington, Cape May, Camden, Cumberland, Gloucester,  
 Mercer, Monmouth, Ocean, and Salem counties.....(609) 757-5181

**NJDOL OSHA Consultative Services**

This organization, located in the New Jersey Department of Labor, will provide free advice for business owners on methods of improving health and safety in the workplace and complying with OSHA standards. Their telephone number is (609) 292-3922.

**New Jersey State Safety Council**

The NJ Safety Council provides a variety of courses on work-related safety. There is a charge for the seminars. The address and telephone number is: NJ State Safety Council, 6 Commerce Drive, Cranford, New Jersey 07016. Telephone (908) 272-7712

**Internet Resources**

Information on OSHA standards can also be easily obtained over the internet at the US Department of Labor’s OSHA website [www.osha.gov](http://www.osha.gov) . Other useful information can be found the USDOL’s Employment Laws Assistance for Workers and Small Business (ELAWS) system at [www.dol.gov/elaws](http://www.dol.gov/elaws) .

**ATTACHMENTS**

*Job Hazard Analysis*. OSHA 3071, US Department of Labor, Occupational Safety and Health Administration, Washington DC. 1988.

## **DISTRIBUTION LIST**

### **Immediate Distribution**

NIOSH

Employer

Incident Site Owner

Decedent's Family

NJ State Medical Examiner

County Medical Examiner

Local Health Officer

NJDHSS Census of Fatal Occupational Injuries (CFOI) Project

### **General Distribution**

USDOL-OSHA New Jersey Area Offices (4)

NJDOL Public Employees OSHA

NJDHSS Public Employees OSHA

NJDOL OSHA Consultative Service

NJ State Safety Council

NJ Institute of Technology

NJ Shade Tree Federation

NJ Utilities Association

NJ School Boards Association

University of Medicine & Dentistry of NJ

Public Service Electric and Gas Company

Liberty Mutual Insurance Company Research Center

Private Consultants (3)

Private Companies (8)