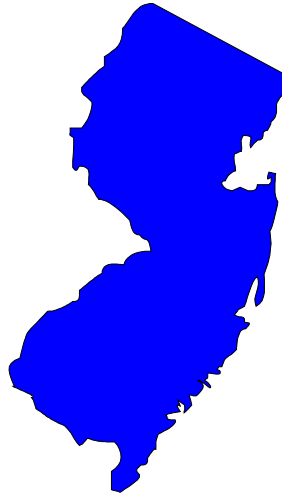


F.A.C.E. INVESTIGATION REPORT

Fatality Assessment and Control Evaluation Project

FACE #96-NJ-059-01
Iron Worker Dies After Falling
18 Feet While Constructing a Roof



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

SUBJECT: FACE Investigation #96-NJ-059-01
Iron Worker Dies After Falling 18 Feet While Constructing a Roof

DATE: December 30, 1996

SUMMARY

On August 6, 1996, a 34-year-old iron worker was killed after he fell from the roof of a building under construction. The incident occurred at the construction site of a pre-engineered (prefabricated) steel storage building that was being assembled at a large nursing home facility. The victim and a co-worker were attaching the steel roof panels to the building when the victim went to the edge of the roof to drive in a screw. He was leaning over the roof plate with a screw gun when he apparently slipped or lost his balance, falling 18 feet to the ground below. NJDOH FACE investigators concluded that, to prevent similar incidents in the future, these safety guidelines should be followed:

- o Employers should provide adequate fall protection to all employees exposed to fall hazards.
- o Employers should conduct a job hazard analysis of all work activities with the participation of the workers.
- o Employers should develop, implement, and enforce a comprehensive employee safety program.

Although not related to this incident, the following recommendation is made to employers who install or work near skylights:

- o Employers should read and follow the recommendations in the attached publication, *NIOSH Alert: Preventing worker Deaths and Injuries from Falls Through Skylights and Roof Openings*.

INTRODUCTION

On August 26, 1996, NJ FACE personnel were notified through a newspaper article of a work-related fatal fall that occurred on August 6, 1996. A FACE investigator contacted the employer and arranged to do a site visit, which was conducted on September 9, 1996. 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 construction company that specialized in assembling pre-engineered (prefabricated) buildings. The company has been in business for more than 12 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 employees who had previous construction experience and/or labor union training. Although the company did not have a safety or fall protection program, safety belts and ropes were available on their truck.

The victim was a 34-year-old male iron worker who had worked on and off for the company for over ten years. The victim had been a union iron worker until about five years prior to the incident when the iron work slowed. For the past two years he had been working full time with the construction company, and was a close friend with the company owner and his co-workers.

INVESTIGATION

The incident occurred outdoors on the grounds of a large nursing home, where a new storage building was being constructed about 100 yards from the main building. A general contractor was hired to oversee the construction and accepted bids for the various subcontracting jobs. This building was to be constructed of pre-engineered (prefabricated) steel sheets that fit together and attached to a structural steel framework. The general contractor had accepted the bid from the construction company to do the iron work on the building, including erecting the steel framework and assembling the pre-engineered sections. Construction on the storage building started in June 1996, with the excavation and pouring of the concrete foundation. The construction company arrived on site in the middle of July to unload materials and started work soon after. The 40 foot by 100 foot building was scheduled to be completed in October 1996.

The day of the incident was clear and warm. A co-worker picked up the victim at his house, who commented that he had slept well and "felt the best he ever had." They arrived on site at 6:30 a.m. and started by doing ground work. At this point, the walls of the building had been completed and the company had started on assembling the roof panels. The corrugated steel roof

panels were approximately 22 feet long by 3 feet wide and snapped together with a tongue and groove built into the lengths of the panels. Each panel was long enough to cover half the width of the building, from the peak of the roof to the overhanging edge. The usual procedure for installing the roof panels was to position a new panel alongside a previously installed one. Once positioned, a worker drove a screw into the panel near the roof edge to prevent it from sliding off the sloping roof. The worker walked down the length of the panel, using his foot to snap the tongue and groove into place. A special clip was used to secure the panels to the steel framework. Once snapped together, the panels were difficult to move due to a mastic in the groove that sealed the panels together.

Because of dew settling from the cool night, the workers had to wait a short time for the roof to dry before going up. At about 8:00 a.m., the crew raised an extension ladder to the roof and tied it off. The roof, which had a slope of 2-12, was about half finished at this point. The remaining panels were already on the roof, having been previously hoisted up by crane. Three workers went up on the roof and successfully installed several panels. At about 8:50 a.m., the victim was using a screw gun near the edge of the roof to secure a new panel. The company owner, who was about five feet away, saw the victim standing on a secured panel and leaning forward with the screw gun. There was reportedly some problem with the panel, the edge of which was kicking up at the end. The owner was not looking directly at the victim when he saw him lose balance and fall. The victim went over the edge, injuring his leg on the panel, and fell 18 feet 2 inches to the packed dirt below.

The owner yelled for the worker on the ground to go to the victim. He then went to the nursing home and called 911. Medical staff from the nursing home helped the victim, finding him agitated and incoherent with head and chest injuries. A medevac helicopter was called but was unable to respond due to fog at the heliport. The EMS arrived about 25 minutes after the 911 call and transported the victim to the hospital, where he died at 12:26 p.m.

CAUSE OF DEATH

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

RECOMMENDATIONS & DISCUSSIONS

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

Discussion: In this situation, the employee fell as he was working near an unguarded roof edge. To prevent similar falls, the FACE program recommends that all employees working within six feet of an unguarded roof edge be protected with an appropriate fall protection system. The most common type is the personnel 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. A second, more complex system is the use of safety nets around the roof perimeter. More information is included in the attached OSHA publication, *Fall Protection in Construction*.

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. The following sources of information may be helpful in developing a safety program and obtaining information on safety standards:

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 which cover the following counties:

Hunterdon, Middlesex, Somerset, Union, and Warren counties...(908) 750-4737
Essex, Hudson, Morris, and Sussex counties.....(201) 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

NJ Department of Labor, OSHA Consultative Services: This organization, located in the New Jersey Department of Labor, will provide free consultation on methods of improving health and safety in the workplace and complying with OSHA standards. The program may be contacted at (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 is 6 Commerce Drive, Cranford, New Jersey 07016, telephone (908) 272-7712

Although not related to this incident, the following recommendation is made to employers who install or work near skylights:

Recommendation #4: Employers should read and follow the recommendations in the attached publication, *NIOSH Alert: Preventing worker Deaths and Injuries from Falls Through Skylights and Roof Openings.*

Discussion: It was noted that the building roof had several skylights built into it that can present an additional hazard to roofers. After studying a number of fatalities involving falls through skylights, NIOSH published an alert with case studies and recommendations for preventing future incidents. This publication is attached to this report.

ATTACHMENTS

Fall Protection in Construction. OSHA Publication 3146, US Department of Labor, OSHA Publications Office, Washington DC, (202)219-4667. 1995.

NIOSH ALERT: Preventing Worker Deaths and Injuries from Falls Through Skylights and Roof Openings. DHHS (NIOSH) Publication 90-100, National Institute for Occupational Safety and Health, Cincinnati OH, (513) 533-8287.

DISTRIBUTION LIST

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NIOSH

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Incident Site Owner

NJ State Medical Examiner

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NJDOH Census of Fatal Occupational Injuries (CFOI) Project

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