



# The National Institute for Occupational Safety and Health (NIOSH)



## Roofing Mechanic Falls 50 Feet to His Death in New Jersey

New Jersey Case Report: 90NJ009 (formerly NJ9007)

DATE: November 16, 1990

### SUMMARY

On May 24, 1990, a 35-year-old roofing mechanic died after he fell 50 feet through a glass roof opening and landed on a concrete floor. He was employed by a subcontractor to remove large glass skylights, replace the glass with plywood, repair the skylight flashing, and re-roof the new section. New Jersey Department of Health (NJDOH) FACE investigators concluded that, in order to prevent similar incidents in the future, the following safety guidelines should be followed:

- Employers should evaluate each work site and each job for potential safety hazards and plan accordingly
- Employees must provide, and everyone must use, appropriate fall protection equipment whenever there is the potential for a serious fall
- The employer should set up a safety training program and designate one person to be in charge of it
- On-going safety training should be incorporated as an integral part of the work day. Employees should actively participate in the safety training and implement that training into their work practices.

### INTRODUCTION

On June 7, 1990, New Jersey Department of Health FACE personnel received the State of New Jersey Employer's First Report of Accidental Injury or Occupational Disease statement of a work-related fatality. We reported the fatality to the area OSHA office. The OSHA compliance officer and NJDOD FACE Personnel conducted on-site investigation on June 8, 1990, after the OSHA compliance officer determined the exact site of the incident. We were present when the OSHA compliance officer conducted the opening and closing conferences. The employer and his employees were in attendance. Photographs of the site were taken. We also reviewed the report issued by the safety officer employed by the owner of the building.

The employer is a roofing contractor who presently employs 17 workers. He has been in business for eight years and was subcontracted by the general contractor to remove the glass skylight and hardware from the roof, replace the glass with plywood, repair the skylight flashing, and re-roof the newly repaired section.

Renovations were necessary because of leaking and corrosion of the flashing. The roofing contractor worked under a verbal contract with the general contractor; he had no agreement in writing. The roofing contractor has no safety officer and holds no safety training. The workers are not unionized. The victim was employed "off and on" for five years by this

employer and worked as a roofing mechanic for the entire time. According to the employer, a roofing mechanic does all aspects of the job: removes the glass panel and copper hardware, builds the new roof, and applies the roofing material. The crew of four men had been on-site for three to four weeks. They were working on the last quarter of the roof at the time of the fall.

## INVESTIGATION

The roof of the building under renovation had a very large old skylight built of  $\frac{1}{4}$  to  $\frac{1}{2}$  inch corrugated glass embedded with wire to prevent shattering if there was a breakage. The skylight covered the center and most of the length of the roof and gave the appearance of a pitched roof on top of a flat roof. (See diagram number 1.) Inside the building, the first floor consists of a concrete floor work area. A mezzanine was built at the periphery of each side, at the level of the second floor. During the work on the roof, a plastic tarp had been suspended from the mezzanine railings and covered part of the first floor work area. It was moved along as work progressed. The tarp was used to prevent injuries from falling tools or debris but would not have been able to support the weight of a falling man.

Workers had been removing the glass sections, replacing them with wood while kneeling on the section previously constructed. Each glass section measured 2 feet 6 inches by 3 feet. At the time of the incident, the section on which the victim was working consisted of plywood, tar paper and the remaining glass. It was a clear sunny day around 2:45 p.m.; this was the last operation to be done for the day. Co-workers were on the opposite side of the roof from the victim. There was no witness to the fall; therefore, it is not clear exactly what occurred. A worker inside the building heard glass breaking, saw the victim fall 25 feet, hit a steel roof support beam, and then fall another 25 feet to the concrete floor of the second floor mezzanine. He landed on equipment on the floor. (See diagram number 2.) It is unknown if he lost his footing and fell through the skylight, or if he put his hand on it and fell through. He had no fall protection.

Emergency services were summoned. The paramedic unit arrived in ten minutes. The victim was transported by rescue squad to a hospital trauma unit, located in the same city. He died in the emergency room.

The employer was given several citations for violation of standards, several of which did not pertain to the fatal fall. The compliance officer determined the employees to be in imminent danger and the employer stopped all roofing work at that time.

## CAUSE OF DEATH

The medical examiner listed the cause of death as multiple injuries.

## RECOMMENDATIONS/DISCUSSIONS

**Recommendation #1: The employer must assess each job and plan that job with hazards in mind.**

Discussion: Assessing and planning with safety in mind forces a fresh look at ways of performing tasks and focuses attention on safety hazards. Employees should be included in this phase as much as possible. If safety hazards exist in a building or work site, over which the employer has no control, the employer must have the correction of such safety hazards specified in the contract. In this situation the subcontractor had no written contract. Free information and assistance is available to the employer through the OSHA consultative services. Maintenance of an accident prevention program is required by 29 CFR 1926.20(b)(1).<sup>1</sup>

**Recommendation #2: The employer must provide training which addresses hazards at each job site.**

Discussion: The employer should set up a safety program and designate one person to be responsible for safety at each work site. Training should include measures to ensure physical safety and use of equipment, as well as dangers of exposure to hazardous substances. This is mandated by 29 CFR 1926.21(b)(2).<sup>2</sup> The employer's emphasis on safety will encourage employees to use safe work practices even when the employer is not present.

**Recommendation #3: Fall protection must be provided and utilized whenever the potential for a serious fall exists.**

Discussion: The victim wore no fall protection. He had no safety belt, harness, lanyard or life line available. There was no suitable structure to which he could have tied off. A roofing bolt, to which the worker would have tied off, could have been installed. According to 29 CFR 1926.105(a)<sup>3</sup>, safety nets are required when the working area is more than 25 feet above the ground and other safety devices (safety lines, belts) are impractical. Although a tarp was suspended to catch falling debris, its purpose was to protect anyone working or walking under that area. It was not a safety net and would not have held the weight of a falling man. A safety net should have been suspended under the entire area from which a worker could have fallen. It should have been hung under the plastic tarp. The victim landed on an area which was unprotected by either a tarp or net.

**Recommendation #4: A fall prevention system should have been utilized to prevent an fall from the perimeter of the roof.**

Discussion: Although no worker fell from the roof, the possibility of a fall existed. The roofers were working sixty feet above the ground on the low-pitched roof (a rise less than 4 feet for each 12 feet in length) with no fall protection of any type. This violates 29 CFR 1926.5000(g)(1)<sup>4</sup>. Methods of appropriate fall protection are stated in 29 CFR 1926.500(g)(1)(i) through (iii).<sup>5</sup>

## REFERENCES

1. 29 CFR 1926.20(b)(1) Code of Federal Regulations. Washington, DC: US Government Printing Office, Office of the Federal Register.
2. 29 CFR 1926.21(b)(2) Code of Federal Regulations. Washington, DC: US Government Printing Office, Office of the Federal Register.
3. 29 CFR 1926.105(a) Code of Federal Regulations. Washington, DC: US Government Printing Office, Office of the Federal Register.
4. 29 CFR 1926.500(g)(1) Code of Federal Regulations. Washington, DC: US Government Printing Office, Office of the Federal Register.
5. 29 CFR 1926.500(g)(1)(i) through (iii) Code of Federal Regulations. Washington, DC: US Government Printing Office, Office of the Federal Register.

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### FATAL ACCIDENT CIRCUMSTANCES AND EPIDEMIOLOGY (FACE) PROJECT

Staff members of the FACE project of the New Jersey Department of Health, Occupational Health Service, perform FACE investigations when there is a work-related fatal fall or electrocution reported. The goal of these investigations 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.

To contact [New Jersey State FACE program personnel](#) regarding State-based FACE reports, please use information listed on the [Contact Sheet](#) on the NIOSH FACE web site. Please contact [In-house FACE program personnel](#) regarding In-house FACE reports and to gain assistance when State-FACE program personnel cannot be reached.

[Back to New Jersey FACE reports](#)

[Back to NIOSH FACE Web](#)

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