The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research

Roofer Dies after Falling through Skylight Fixture in Maryland

FACE 9021

SUMMARY

A roofer died from injuries sustained after falling 30 feet through a skylight fixture. The victim was part of a crew removing a tar and gravel built-up roof. He positioned a wheelbarrow full of gravel alongside a skylight so that he could talk to one of the company managers. As he turned back to resume work he fell through the skylight to the concrete floor below. NIOSH investigators concluded that, in order to prevent future similar concurrences:

- **employers should take steps to protect workers from falling through skylights by installing guardrails or covers over the skylights**
- **prime contractors and subcontractors should ensure that safety and health issues are included as part of the contract provisions**
- **building owners should consider installing protective covers over skylights**
- **designers/manufacturers of skylights should evaluate load capacities of current designs and consider strengthening skylight components and/or incorporating safeguards, such as protective screens, into skylight designs. NIOSH has prepared a Hazard Alert publication detailing the hazards associated with falls through skylights and roof openings (DHHS (NIOSH) Publication No. 90-100).**

INTRODUCTION

On November 6, 1989, a 51-year-old male roofer fell through a skylight 30 feet to the concrete floor below. On November 17, 1989, Maryland Occupational Safety and Health Officials notified the Division of Safety Research (DSR) of the fatality and requested technical assistance. On December 14, 1989, a DSR safety engineer conducted an investigation. The DSR investigator examined and photographed the incident site, interviewed company personnel about the incident, and obtained emergency medical services (EMS) and police records.

The employer in this incident is a small roofing and siding contractor who has been in business for 10 months. At the time of the incident, the company employed about 20 people. The company does not have a safety officer but has a written safety policy and safety procedures that were obtained from another roofing company. The co-owners of the company do conduct toolbox safety meetings and on-the-job safety training. The victim had been working for the company for 3 months.

INVESTIGATION

The employer had been subcontracted by the prime contractor to replace the roofing on a bottling plant. The prime contractor was installing insulation below the roof while the subcontractor was to remove the tar and gravel built-up roof and replace it with a new rubber membrane material. The victim and fellow employees were removing the gravel from the roof top.

The roof has 15 rectangular smoke-dome-type, curb-mounted skylights (42 inches by 80 inches). As the victim was moving a full wheelbarrow of gravel toward a trash chute, he stopped and set the wheelbarrow next to a skylight and went over to talk to a company manager. When he returned to the wheelbarrow, he fell through the skylight 30 feet to the floor below. None of the workers on the roof saw the victim fall, but they heard the victim scream as he fell through the skylight. Workers within the bottling plant observed the victim fall feet first and strike a 3-foot-high pallet of bottles, which caused his body to flip and his head to hit the concrete floor.

The EMS was called within a few minutes of the incident. The time of arrival was not included in the emergency services report. When the medical technicians arrived at the scene, the victim was not breathing and had no vital signs. The victim was transported to a hospital where he was later pronounced dead. The EMS records had no information on the time of death. After the incident the employer removed all of the skylights and secured plywood over the openings. The skylights were reinstalled when the work on the roof was completed.

CAUSE OF DEATH

The medical examiner's report stated that the cause of death was traumatic injuries sustained from the fall.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should initiate measures to protect their employees from falling through skylights.

Discussion: According to the subcontract with the prime contractor, the roofing contractor (the victim's employer) was responsible for protecting employees from falls. Methods for protecting workers from falls through skylights include removing the skylights and covering the openings, as was done after the incident, in accordance with CFR 1926.500(b)(4). Alternatively, temporary guardrails or other means of preventing the worker from falling through the skylight could have been installed. Additional information pertaining to falls through skylights and roof openings is contained in a NIOSH Alert on this topic (DHHS(NIOSH) Publication No. 90-100).

Recommendation #2: Prime contractors and subcontractors should ensure that safety and health issues are included as part of the contract provisions.

Discussion: All contracts should contain provisions that ensure the safety and health of all workers covered by that contract. Where prime contractors and subcontractors are involved, the contract must contain clear and concise language as to which party is responsible for a given safety and health issue. Once the provisions for these responsibilities have been established, the respective parties should ensure that the provisions of the contract regarding safety and health are upheld.

Recommendation #3: Building owners should consider installing protective covers over skylights to guard against falls through skylights.

Discussion: Building owner should consider installing guardrails or skylight screens on the skylights as outlined in CFR 1910.23(a)(4). Although the employees of the bottling plant rarely go onto the roof, the new membrane material, which becomes very slick when wet, poses a new hazard for anyone working on the roof and near the skylight. The NIOSH investigator had to move very carefully while inspecting the incident site to keep from falling. With the new roofing material in place, an individual walking on the roof could easily slip and fall through a skylight.

Recommendation #4: Designers/manufacturers of skylights should evaluate current designs to determine the feasibility of increasing load capacities and/or incorporating other safeguards.

Discussion: Designers/manufacturers of skylights should evaluate the materials used to fabricate skylights and current skylight designs to determine the feasibility of increasing load capacity. Load capacity could be increased to provide a margin of safety in the event of an inadvertent fall against a skylight. Additionally, a metal grid or screen installed over the skylight would reduce the exposure to fall hazards for workers on roofs.

REFERENCES

1. DHHS (NIOSH) Publication No. 90-100, Request for Assistance in Preventing Worker Deaths and Injuries from Falls Through Skylights and Roof Openings

2. 29 CFR 1926.500(b)(4). Code of Federal Regulations, Washington, D.C.: U.S. Government Printing Office, Office of the Federal Register

3. 29 CFR 1910.23(a)(4). Code of Federal Regulations, Washington, D.C.: U.S. Government Printing Office, Office of the Federal Register

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