

NJ FACE INVESTIGATION REPORT



Fatality Assessment & Control Evaluation Project

FACE 13-NJ-015

August 26, 2014

Laborer Dies after Falling Through 40-Foot High Roof of Recycling Facility

A 50-year-old male laborer fell through the roof of a large recycling facility. The incident occurred on a flat roof approximately 40 feet above the floor of the recycling plant. The victim fell 30 feet and hit an air compressor on a raised platform (approximately 10 feet off the ground). On the day of the incident, the victim and two other workers were assigned to clear a layer of stones that was in place to protect the roof from ultraviolet light damage. The workers were using brooms and shovels to load the stones into wheelbarrows, which were taken to the edge of the roof and dumped to a dumpster below. The victim stepped on an area of the roof that failed and fell to his death.

Contributing Factors:

- Deterioration of corrugated metal roof deck
- Lack of fall protection

NJ FACE investigators recommend that these safety guidelines be followed to prevent similar incidents:

- **All walking or working surfaces should have the structural integrity to support workers.**
- **All workers engaged in roofing activities with unprotected sides and edges six feet or higher should be trained on and outfitted with personal protective equipment.**
- **A safety and health plan based on a job hazard analysis should be developed by the employer and followed where workers are assigned tasks.**



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INTRODUCTION

In Spring 2013, NJ FACE staff was notified of the death of a 50-year-old, 180-pound male laborer who died after falling through the roof of a recycling facility. The 500-foot-long and 75-foot-wide recycling facility was located in an industrialized area of southern NJ. The victim had worked for the company that owned the facility as a laborer on-and-off for about one year. Training was conducted on site by the employer.

A NJ FACE investigator contacted the OSHA Area office and conducted a concurrent investigation. Additional information was obtained from the medical examiner's report, death certificate, police report, and the news.

INVESTIGATION

The incident occurred on a mostly clear (scattered clouds), March day (approximately 31°F at the time of the incident, wind speed was up to 11 mph, and no recorded precipitation). The incident site was a large 35- to 40-year-old steel building, with the original roof, that housed a recycling facility of non-consumables (plastics, aluminum, cardboard, etc.). The building was located in an industrialized area of southern NJ. The owner of the building leased the space to the recycling facility, and was in charge of the maintenance of the structure. Three general laborers (nonunion), one of whom was the decedent, worked for the company that owned the building. Their job tasks primarily consisted of yard work. After the building tenant complained of roof leaks, the building owner assigned these three laborers to clean stones off the flat part of the roof in order to expose areas where roof repairs were needed. The roof was approximately two inches thick and consisted of various layers of material (Figure 1). The roof base was corrugated metal decking and was topped with loose stone for protection from ultraviolet light.

On the day of the incident, the three workers arrived on site at approximately 8 am, and used an articulating boom aerial lift to ascend onto the roof. The equipment (brooms, shovels, and wheelbarrows) needed to clear the stones were already on the roof. Fall protection equipment was not used. It had been anticipated that the job would take seven days to complete and would be conducted on-and-off for three weeks. The incident occurred on the fourth day.

At the time of the incident, the decedent and two co-workers had split into two groups, with the decedent working about 250-feet away from the other workers (Figure 2). The stones were swept into lines, and then shoveled into wheelbarrows which, when filled, were brought to the edge of the roof and dumped

into a dumpster on the ground. While sweeping stones, the two coworkers noticed that the decedent was no longer on the roof. Thinking he had descended down for a break, they continued their work. Shortly afterwards, one of the workers received a call that someone had fallen off the roof. They rushed over to near where the deceased was working and found a hole in the roof (Figures 3-4). The coworkers saw him lying on a raised platform that held an air compressor, about 30 feet below. An employee of the recycling company called 9-1-1, and the victim was declared dead at the scene.

FIGURE 1: Cross section of roof (not to scale).

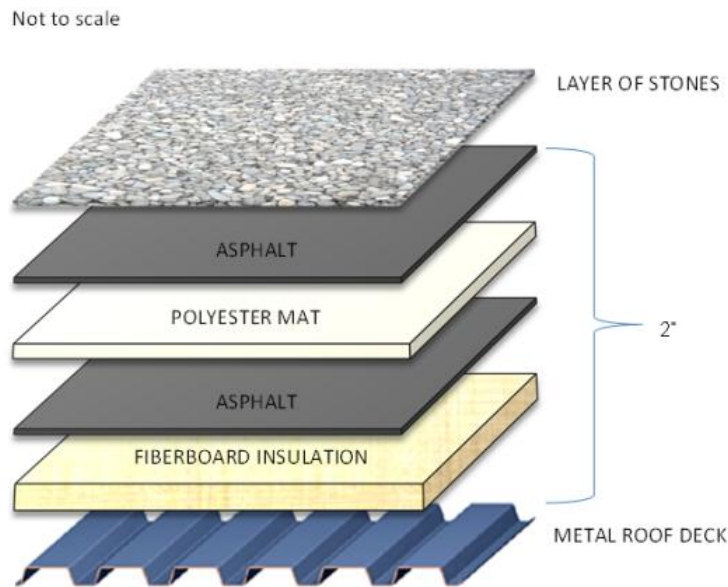
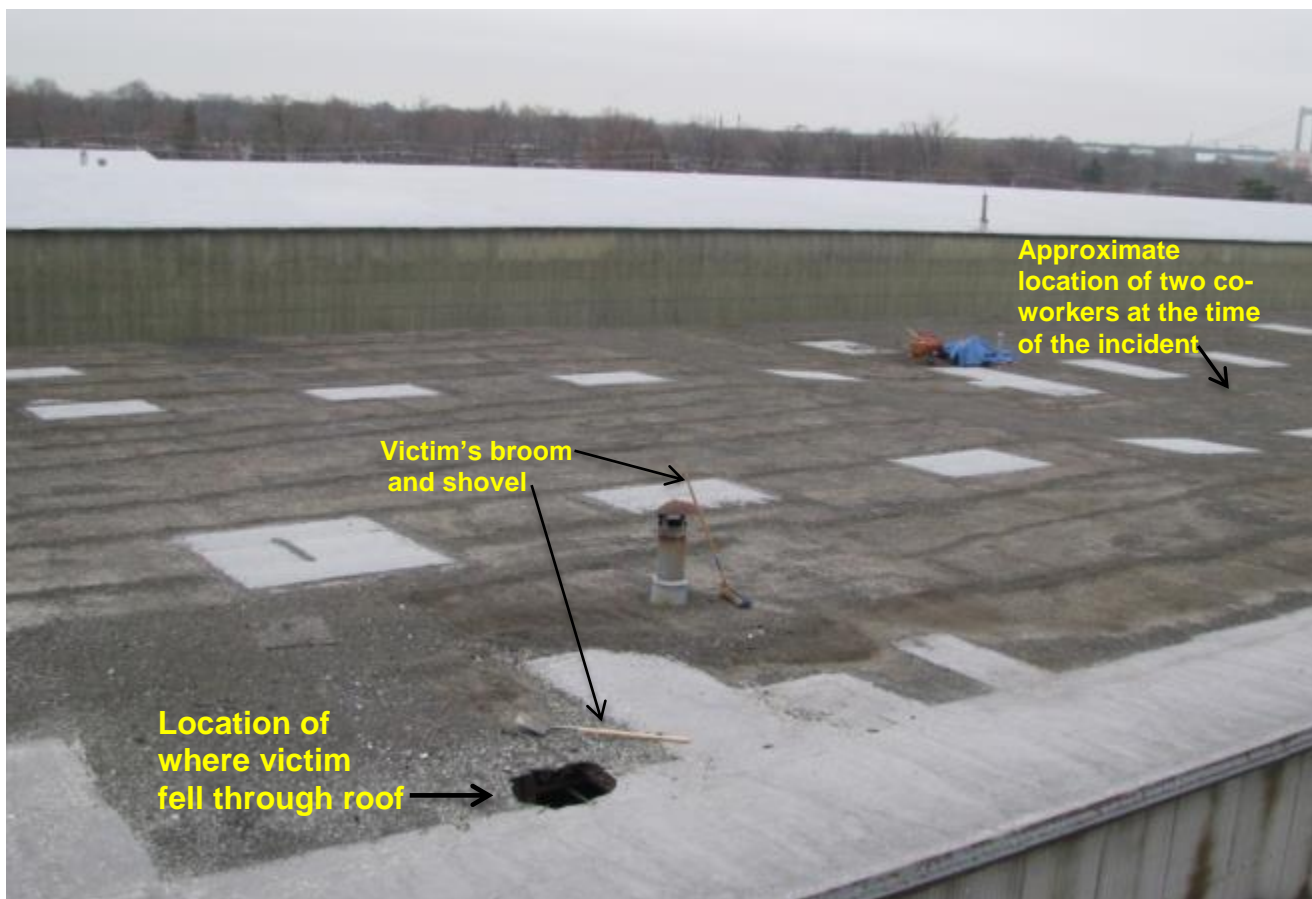


FIGURE 2. Scene at time of incident with location of where victim fell through the roof.



Articulating boom aerial lift (on ground)

Dumpster (on ground)

FIGURE 3. Close up of roof where victim fell.



FIGURE 4. Pictures from inside plant, underneath where victim fell (left: hole had been repaired since the incident; right: close up of hole on day of incident).



RECOMMENDATIONS/DISCUSSIONS

Recommendation #1: All walking or working surfaces should have the structural integrity to support workers.

Discussion: According to OSHA's fall protection standard (29 CFR 1926.501), any walking or working surface should be structurally sound, and employees should only be allowed to walk/work on surfaces that can support their weight.¹ In this case, the roof where the workers were clearing stones had areas where the steel decking had rusted/deteriorated. A thorough inspection of the roof from the inside may have revealed the issues with the underlying metal roof deck. The damaged areas may only be detectable through visual inspection from the inside of the building. In addition, water invading through deterioration at specific points can travel across beams/joists and drip to the ground in different locations. NJ FACE recommends developing a roof inspection checklist, and/or hiring a roofing expert to conduct a thorough investigation. An example of a roof inspection checklist can be found at the following: <http://www.gcr1.com/fpc/checklist.pdf>.

Recommendation #2: All workers engaged in roofing activities with unprotected sides and edges six feet or higher should be trained on and outfitted with personal protective equipment.

Discussion: As per 29 CFR 1926.501 (b)(10), any employee engaged in roofing activities on low-slope roofs with unprotected sides and edges 6 feet or more above a lower level must have fall protection.² Options for fall protection include guardrails, safety nets, fall arrest systems or a combination of the three with a warning line system. NJ FACE recommends a combination of guardrails and a personal fall arrest system consisting of a harness with retractable lanyard anchored to a secure point. These systems are inexpensive and easy to use and install, and provide minimum interference with job tasks. When workers are working at heights greater than six feet and are outfitted with fall arrest systems, training should be provided on fall hazards and the proper use of fall protection equipment.

Although guardrails would not have prevented the incident, NJ FACE recommends their use on any flat roof. Additionally, the job task of pushing the wheelbarrow to the edge of the roof and dumping collected stones (especially without guardrails) was very dangerous, an alternative method should have been adopted (such as the use of an enclosed chute).

Recommendation #3: A safety and health plan based on a job hazard analysis should be developed by the employer and followed where workers are assigned tasks.

Discussion: Employers should conduct a job hazard analysis, with the participation of employees, of all

work areas and job tasks. A job hazard analysis should begin by reviewing the work activities for which the employee is responsible, and the equipment that is needed. Each task is further examined for mechanical, electrical, chemical, or any other hazard the worker may encounter. A source of information on conducting a job hazard analysis can be obtained from the US Department of Labor.³ Additional resources also be found in the Appendix.






APPENDIX

RECOMMENDED RESOURCES

It is essential that employers obtain accurate information on health, safety, and applicable OSHA standards. NJ FACE recommends the following sources of information which can help both employers and employees:

U.S. Department of Labor, Occupational Safety & Health Administration (OSHA)


Federal OSHA can provide information on safety and health standards on request. OSHA has several offices in New Jersey that cover the following counties:

 Hunterdon, Middlesex, Somerset, Union, and Warren counties.....	732-750-3270
 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.....	856-596-5200
 Web site: www.osha.gov	

New Jersey Public Employees Occupational Safety and Health (PEOSH) Program


The PEOSH Act covers all NJ state, county, and municipal employees. Two state departments administer the Act; the NJ Department of Labor and Workforce Development (NJDLWD), which investigates safety hazards, and the NJ Department of Health (NJDOH) which investigates health hazards. PEOSH has information that may also benefit private employers.

NJDLWD, Office of Public Employees Safety

 Telephone: 609-633-3896


 Web site: www.nj.gov/labor/lse/lspeosh.html

NJDOH, Public Employees Occupational Safety & Health Program

 Telephone: 609-984-1863

 Web site: www.nj.gov/health/peosh

On-site Consultation for Public Employers

 Telephone: 609-984-1863 (health) or 609-633-2587 (safety)

 Web site: www.state.nj.us/health/eoh/peoshweb/peoshcon.htm

New Jersey Department of Labor and Workforce Development, Occupational Safety and Health On-Site Consultation Program

This program provides free advice to private businesses on improving safety and health in the workplace and complying with OSHA standards.

☎ Telephone: 609-984-0785

💻 Web site: www.nj.gov/labor/lsse/lsonsite.html

New Jersey State Safety Council

The New Jersey State Safety Council provides a variety of courses on work-related safety. There is a charge for the seminars.

☎ Telephone: 908-272-7712.

💻 Web site: www.njsafety.org

The Campaign to Prevent Falls in Construction

The Campaign is a joint effort by government-labor-management to address the top cause of construction industry fatalities.

💻 Web sites: www.stopconstructionfalls.com; <https://www.osha.gov/stopfalls/>;
<http://www.cdc.gov/niosh/construction/stopfalls.html>;

Internet Resources

Other useful Internet sites for occupational safety and health information:

- CDC/NIOSH – www.cdc.gov/niosh
- USDOL Employment Laws Assistance for Workers and Small Businesses – www.dol.gov/elaws
- National Safety Council – www.nsc.org
- NJDOH FACE reports – www.nj.gov/health/surv/face/index.shtml
- CDC/NIOSH FACE – www.cdc.gov/niosh/face/faceweb.html
- OSHA – www.osha.gov
- ANSI – www.ansi.org

REFERENCES

1. Occupational Safety and Health Administration (OSHA). *Duty to have fall protection, General*; 29 CFR 1926.501(a)(2).

2. Occupational Safety and Health Administration (OSHA). *Duty to have fall protection, Roofing work on Low-slope roofs*; 29 CFR 1926.501(b)(10)
3. *Job Hazard Analysis*. US Department of Labor Publication # OSHA-3071, 1998 (revised). USDOL, OSHA Publications, PO Box 37535, Washington DC 20013-7535

Fatality Assessment and Control Evaluation (FACE) Project
Investigation # 13-NJ-015

This report was prepared by staff members of the New Jersey Department of Health's Occupational Health Surveillance Unit. The goal of FACE is to prevent fatal work-related injuries by studying the work environment, the worker, the task, the tools the worker was using, the energy exchange resulting in the fatal injury, and the role of management in controlling how these factors interact. FACE gathers information from multiple sources that may include interviews of employers, workers, and other investigators; examination of the fatality site and related equipment; and reviewing OSHA, police, and medical examiner reports, employer safety procedures, and training plans. The FACE program does not determine fault or place blame on employers or individual workers. Findings are summarized in narrative investigation reports that include recommendations for preventing similar events. All names and other identifiers are removed from FACE reports and other data to protect the confidentiality of those who participate in the program.

NIOSH-funded state-based FACE Programs include: California, Iowa, Kentucky, Massachusetts, Michigan, New Jersey, New York, Oregon, and Washington. Please visit the NJ FACE Web site at www.nj.gov/health/surv/face/index.shtml or the CDC/NIOSH FACE Web site at www.cdc.gov/niosh/face/faceweb.html for more information.

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