NJ FACE

INVESTIGATION REPORT

Fatality Assessment & Control Evaluation Project

FACE 04-NJ-034 **December 27, 2005**

Roofer Killed After Falling From a Ladder Lowered From a School Roof

On May 13, 2005, a 26-year-old roofer was killed when he fell while climbing down an extension ladder that he had just lowered from the first story roof of a high school. The incident occurred at an urban high school that had contracted with the victim's employer to renovate the school's flat roof. This was the last day of the construction project, and the work crew was completing the final tasks for the project and packing up their equipment. The victim had been assigned to clamp on a drain basket and reattach an electrical box near the edge of the roof. The victim climbed up to the roof through an interior stairwell and retrieved a 28-foot fiberglass extension ladder that was on the roof. When he reached his work area, he lowered the ladder to the ground from the top of the 15-foot-high roof. As he started to climb down the ladder, the locking mechanism that secured the sections together failed, causing the top ladder section to suddenly slide downward. The victim fell from the ladder, striking his head on a piece of metal extending from the wall, and landed on a concrete walkway below. He died at the scene of the incident. NJ FACE investigators recommend following these safety guidelines to prevent similar incidents:

- **Employees must be trained in the proper use of ladders.**
- **Employers should regularly inspect ladders to ensure that they are kept in good operating order.**
- **Employers should conduct a job hazard analysis of all work activities with the participation of the workers.**

NJ Department of Health & Senior Services
Occupational Health Service
PO Box 360, Trenton NJ 08625-0360
(609) 984-1863

INTRODUCTION

On May 13, 2004, NJ FACE was informed by the NJDHSS Public Employees Occupational Safety and Health Program of a fatal incident that occurred a few hours earlier. A NJ FACE investigator immediately traveled to the site and met with the Federal OSHA Compliance Officer who was investigating the incident. The FACE investigator also interviewed the school principal for background information and briefly spoke with a representative from the victim's employer. Photographs were taken of the incident site from a distance; however, the FACE investigator was not permitted to approach the incident scene for a close examination. The victim's employer was located in another state and could not be interviewed. Because of this, NJ FACE requested a copy of the OSHA investigation file which was obtained through a Freedom of Information Act request. Additional information on this incident was obtained from the police report, medical examiner's report, and newspaper articles.

The victim's employer was a construction company specializing in roofing construction (SIC 1761, NAICS 238160). The company had been in business since 1984 and employed approximately 60 nonunion workers. The company, which is based outside of New Jersey, works throughout the eastern United States and specializes in large multi-million dollar projects. The victim was a 26-year-old white male construction worker who had worked for the company for four years.

INVESTIGATION

The incident occurred outside a large high school located in an urban area. Approximately 2,300 students were enrolled in grades 9 through 12 at this school. The high school building was a 72-year-old, three-story, brick central structure with a sloped roof (Photo 1). Over time, additional buildings were constructed, resulting in a sprawling wing of several buildings on the west side of the school and a smaller wing on the east side. The wings were a combination of single- and two-story brick buildings with flat tar roofs. The school was undergoing extensive renovations as part of the New Jersey Educational Facilities Construction and Financing Act, which established $8.6 billion to overhaul hundreds of schools throughout the 21 state counties. This

Photo 1
Front of School
(website photograph)

high school was to receive funds to renovate the existing building and to construct new additions. The project was to be done in six separate phases to minimize disruption to the school, which would be open during the construction. The victim's company was awarded a $1.26 million contract to replace the school's roofs in October, 2003, and they started work shortly thereafter.

The day of the incident, a Thursday, was sunny and clear. The company had completed the roof replacement the day before and was going through a "punch list" of corrective tasks, general cleanup, and packing. This was to be their last day on this job. The victim arrived at work in the morning and was assigned by his supervisor to do several tasks on the punch list, including the reinstallation of drain covers on the roofs and the attachment of an electrical box near the intersection of two buildings. According to records, the supervisor gave the victim his assignment and opened an access hatch so he could use an interior stairwell to get onto the roof. This was the last time the victim was seen before the incident. After climbing to the roof, the victim went to his assigned work area to install and caulk a roof drain. The area was the intersection of two school buildings, where one building was about five feet higher than the next. The victim was working on the higher building, about 15 feet from the ground. As he was on the roof, the victim apparently found and carried a 28-foot, two-section fiberglass extension ladder to his worksite (Photo 2). A school surveillance camera just below his worksite recorded the ladder as the victim lowered it from the roof of the building. The victim apparently lowered the ladder to get back down to the ground, or to possibly work on the roof from a different angle. After placing and adjusting the ladder, the victim climbed onto it. Apparently, the fly-lock mechanism that locks the ladder sections together was not properly set, causing it to slip when the victim placed his weight on the ladder. The top section of the ladder slid down several rungs until it hit the ground, causing the victim to fall from the ladder. The police report stated that the sliding ladder was seen in the video, although the camera angle was such that the victim's fall was not seen. As he fell, the victim's head struck a piece of angle iron which protruded about 18 inches from the building, before landing on the concrete sidewalk below (Photos 3 & 4).

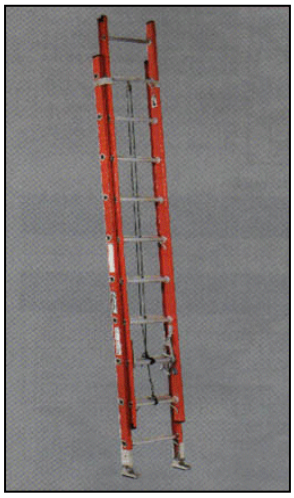

Photo 2
Identical Ladder
(Manufacturer's Photo)

Photos 3 & 4
Incident Site, victim landed near box on sidewalk.
Ladder was originally raised near the doorway on the left.

A high school student in a nearby classroom saw the victim fall and notified school security, who then informed the school nurse. The nurse called 911 for assistance and administered first aid to the victim, who was gravely injured and unresponsive. All students in the nearby classrooms were moved away from the incident site, and the police arrived to secure the scene. EMS arrived and resuscitation efforts were ceased after the victim's injuries were assessed. He was pronounced dead at the scene by telemetry at 12:30 p.m.

RECOMMENDATIONS/DISCUSSIONS

Recommendation #1: Employees must be trained in the proper use of ladders.

Discussion: The victim's decision to retrieve a ladder and set it up from the top of a building indicates a lack of training and supervision in the use of ladders. The American National Standards Institute (ANSI) prohibits this practice, noting in section 9.3.13.1 of their ANSI Standard A14.5 1992 for reinforced plastic ladders:

> "Adjustment of extension ladders shall only be made by the user when standing at the base of the ladder so the user may observe when the locks are properly engaged."
> "Adjustments of extension ladders from the top of the ladder (or any level over the locking device) is a dangerous practice and shall not be attempted."

To prevent similar incidents, NJ FACE recommends that employers develop and implement a comprehensive training program that provides detailed instruction in the set-up, use, and care of ladders. At a minimum, this training should cover the topics outlined in the OSHA publication, *Stairways and Ladders, a Guide to OSHA Rules.*

Recommendation #2: Employers should regularly inspect ladders to ensure that they are kept in good operating order.

Discussion: While viewing the OSHA photographs of the incident, NJ FACE investigators noted that the ladder the victim was using was improperly labeled as 32 feet in length. The photographs also suggest that the rope used to raise the top ladder section may not have been properly mounted to the ladder. NJ FACE recommends an equipment inspection and maintenance program to ensure that ladders and other construction equipment are properly maintained and removed from service when found to be defective.

Recommendation #3: Employers should conduct a job hazard analysis of all work activities with the participation of the workers.

Discussion: To prevent incidents such as this, NJ FACE recommends that employers conduct a job hazard analysis of all work areas and job tasks with the employees. A job hazard analysis should begin by reviewing the work activities that the employee is responsible for and the equipment that is needed. Each task is further examined for mechanical, electrical, chemical, or any other hazard the worker may encounter. Additional information may be found in the OSHA publication 3071, *Job Hazard Analysis.*

RECOMMENDED RESOURCES

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

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

Federal OSHA will 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) 757-5181

💻 Federal OSHA Website: *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 and Senior Services (NJDHSS) which investigates health hazards. PEOSH has information that may also benefit private employers.

NJDLWD, Office of Public Employees Safety

☎Telephone: (609) 633-3896

💻 Website: *www.nj.gov/labor/lsse/lspeosh.html*

NJDHSS, Public Employees Occupational Safety & Health Program

☎Telephone: (609) 984-1863

💻 Website: *www.state.nj.us/health/eoh/peoshweb*

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 💻 Website: *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. 💻 Website: *www.njsafety.org*

Internet Resources

Other useful internet sites for occupational safety and health information:

CDC/NIOSH website - *www.cdc.gov/niosh*

USDOL Employment Laws Assistance for Workers and Small Businesses - *www.dol.gov/elaws*

National Safety Council - *www.nsc.org*

NJ FACE reports - *www.state.nj.us/health/eoh/survweb/face.htm*

CDC/NIOSH FACE website - *www.cdc.gov/niosh/face/faceweb.html*

REFERENCES

1. *Stairways and Ladders, a Guide to OSHA Rules.* US Department of Labor Publication # OSHA-3124-12R, 2003. USDOL, OSHA Publications Office, 200 Constitution Avenue NW, Washington DC 20210.

2. *Job Hazard Analysis.* US Department of Labor Publication # OSHA-3071, 2002 (revised). USDOL, OSHA Publications Office, 200 Constitution Avenue NW, Washington DC 20210.

3. *American National Standard for Ladders - Portable Reinforced Plastic - Safety Requirements.* ANSI A14.5, 1992. American National Standards Institute (ANSI) 25 West 43rd Street, New York, NY 10036

4. *Fly-Lock Mechanism Failure - False Lock.* Ryan Engineering, www.ryan-engineering.com/main/Publications/ladders/fly_lock_failure.htm

DISTRIBUTION LIST

NIOSH
Employer
NJ State Medical Examiner
County Medical Examiner
Local Health Officer
USDOL-OSHA New Jersey Area Offices (4)
NJDLWD Office of Public Employees Safety
NJDLWD Occupational Safety and Health On-Site Consultation Program
NJDHSS Public Employees Occupational Safety & Health Program
NJDHSS Occupational Health Service Internet Site
NJDHSS Census of Fatal Occupational Injuries (CFOI) Project

Fatality Assessment and Control Evaluation (FACE) Project
Investigation # 04-NJ-034

Staff members of the New Jersey Department of Health and Senior Services, Occupational Health Service, perform FACE investigations when there is a report of a targeted work-related fatal injury. The goal of FACE is to prevent fatal work injuries by studying the work environment, the worker, the task and 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: Alaska, California, Iowa, Kentucky, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, New York, Oklahoma, Oregon, Washington, West Virginia, and Wisconsin. Please visit the NJ FACE website at *www.state.nj.us/health/eoh/survweb/face.htm* or the CDC/NIOSH FACE website at *www.cdc.gov/niosh/face/faceweb.html* for more information.

This NJ FACE report is supported by Cooperative Agreement # 1 U60 OH0345-01 from the Centers for Disease Control and Prevention (CDC). Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the CDC.

Patrick Bost, M.S.
FACE Investigator
Occupational Health Surveillance Program

Daniel Lefkowitz, Ph.D.
FACE Project Coordinator
Occupational Health Surveillance Program

Emily O'Hagan, R.N., M.P.H.
FACE Investigator
Occupational Health Surveillance Program

Barbara Gerwel, M.D.
Project Coordinator
Occupational Health Surveillance Program

Donald Schill, M.S., CIH
Research Scientist
Occupational Health Surveillance Program

David Valiante, M.S., CIH
Program Manager / Principal Investigator
Occupational Health Surveillance Program

Gary Ludwig, M.S.
Director
Occupational Health Service

Eddy A. Bresnitz, M.D., M.S.
Deputy Commissioner/State Epidemiologist
Public Health Services