KENTUCKY State FACE Program
Fatality Assessment & Control Evaluation

Kentucky Injury Prevention and Research Center
Bona fide agent for Kentucky Department for Public Health
333 Waller Avenue, Suite 242 • Lexington, KY 40504 • 859-257-5839

REPORT#: 22KY011 **REPORT DATE:** 06/13/2023

Roofing Worker Dies from Fall—Kentucky

INCIDENT HIGHLIGHTS

DATE:
March 28, 2022

TIME:
1:30 p.m.

VICTIM:
36-year-old Hispanic male roofer

INDUSTRY/NAICS CODE:
Roofing Contractor/238160

EMPLOYERS:
Roofing contractors

SAFETY & TRAINING:
Some elements existed

SCENE:
Apartment building

LOCATION:
Kentucky

EVENT TYPE:
Fall

SUMMARY

At 1:30 p.m. on March 28, 2022, a 36-year-old Hispanic roofer suffered a fatal fall while installing roofing on a two-story apartment building. The worker fell approximately 18 feet to a sidewalk below and died on the scene due to injuries suffered from the fall.
... READ THE FULL REPORT> (p.3)

CONTRIBUTING FACTORS

Key contributing factors identified in this investigation include:

- Working at height
- Need for fall protection
- Need for effective safety training
- Need for effective safety policies
- Need for subcontractor comprehensive safety and health programs

...LEARN MORE> (p.6)

RECOMMENDATIONS

Kentucky investigators concluded that, to help prevent similar occurrences, employers should:

- Implement a job hazard analysis (JHA) process
- Ensure that workers utilize fall protection when exposed to falls at height
- Provide workers with training appropriate to the hazards they may face while at work
- Establish and administer written safety policies with clear work rules and ensure that workers follow them
- Ensure that subcontractors have comprehensive safety and health programs in place....LEARN MORE> (p.6)

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Fatality Assessment and Control Evaluation (FACE) Program

This case report was developed to draw the attention of employers and employees to a serious safety hazard and is based on preliminary data only. This publication does not represent final determinations regarding the nature of the incident, cause of the injury, or fault of employer, employee, or any party involved.

This case report was developed by the Kentucky Fatality Assessment and Control Evaluation (FACE) program. Kentucky FACE is a NIOSH-funded occupational fatality surveillance program with the goal of preventing fatal work injuries by studying the worker, the work environment, and the role of management, engineering, and behavioral changes in preventing future injuries. FACE is part of the Kentucky Injury Prevention and Research Center (KIPRC), a bona fide agent for the Kentucky Department for Public Health.

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INTRODUCTION

At 1:30 p.m. on March 28, 2022, a 36-year-old male Hispanic roofer suffered a fatal fall while installing roofing on a two-story apartment building. The worker fell approximately 18 feet to a sidewalk below. He died on the scene due to injuries suffered from the fall.

EMPLOYERS

Two employers were involved in the incident: a primary roofing contractor and a roofing subcontractor. The primary roofing contractor had been in business for approximately seven years. The worker who was killed in this incident was employed by the roofing subcontractor. The roofing subcontractor had been in business for approximately three years. The roofing subcontractor had five employees, all of whom (including the deceased) were working at the scene at the time of the incident. The roofing subcontractor had been hired by the primary contractor to replace the roofs of several apartment buildings.

WRITTEN SAFETY PROGRAMS and TRAINING

Neither the prime roofing contractor nor the roofing subcontractor had a written safety and health program. The prime contractor did not provide training to the workers involved in the incident. However, the roofing subcontractor had provided training regarding fall hazards and the use of personal fall protection equipment. This training was informal and was not documented.

WORKER INFORMATION

The deceased worker was a 36-year-old Hispanic man who had worked for the roofing subcontractor employer for approximately six months.

EQUIPMENT

The roofing subcontractor's workers used extension ladders to access the apartment building roof and typical roofing tools (e.g., pneumatic nail guns, roofing hammers) for roofing work. The only personal protective equipment used by the deceased worker was gloves. Personal fall protection equipment (fall protection harnesses, ropes, anchorage) was available onsite but was not used by the deceased worker at the time of the incident.

INCIDENT SCENE

The scene was a complex of two-story apartment buildings, as shown in Photo 1. Each building comprised two blocks of four apartment units, with each fourplex being accessed by an entry covered by a portico. Sidewalks lined the front of each apartment building, as did parking lots. At the time of the incident, the roofing subcontractor had positioned materials, equipment, and work vans in the parking lot adjacent to where the fatal fall occurred. The roofing subcontractor had also hung yellow caution tape to indicate work areas, as shown in Photo 2.

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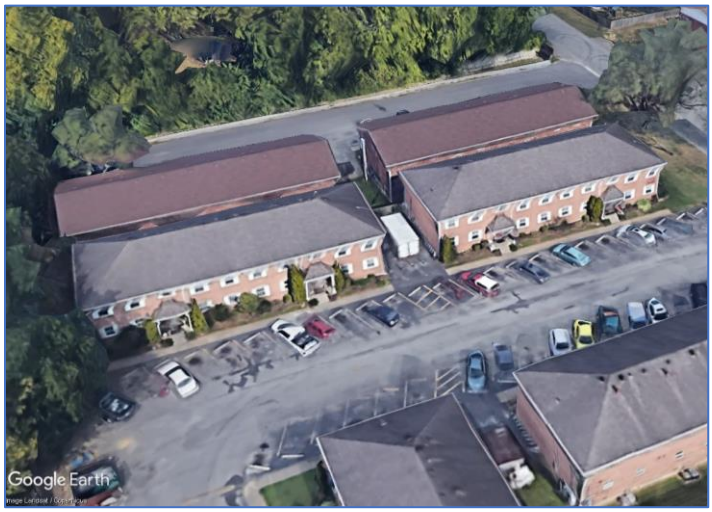

Photo 1. Apartment complex (Google Earth Pro)


Photo 2. Work area (photo by local police department)

WEATHER

The weather at the time of the incident was approximately 59 degrees Fahrenheit, with a 3.1 mile per hour (mph) westerly wind speed, 4.5 mph wind gusts, and no precipitation [Weather Underground, 2023]. These conditions are not considered to have played a significant role in the incident.

INVESTIGATION

On the day of the fatal incident, the roofers began work at approximately 8:00 a.m. They stopped for lunch, during which the roofers descended from the roof and went to an area behind the apartment building for their break. The deceased worker returned to the work area at the front of the apartment building alone and ascended to the roof. He fell shortly thereafter. There were no eyewitnesses to his fall. He was found unresponsive by his coworkers, at a location

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indicated by a yellow "X" in Photo 3. (Note: Weather conditions on the date of the fatal incident differ from those seen in Photo 3 because the photo was taken later.)

Photo 3. Location of fall indicated by yellow X (photo property of FACE)

The deceased worker was not protected against falling by fall protection equipment (fall protection harness, ropes, anchorage) nor using other means of fall protection at the time of his fall. According to the Kentucky Department of Workplace Standards, Division of Compliance (KyOSHA), the roofing subcontractor was aware of the nature of fall hazards and had provided fall protection equipment at the worksite for workers to use. Some of the fall protection equipment was stored in the roofing subcontractor's van and is shown in Photo 4 and Photo 5.


Photo 4. Fall protection gear (courtesy of KyOSHA)

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Photo 5. Fall protection gear (courtesy of KyOSHA)

CAUSE OF DEATH

The coroner determined that the worker died from blunt impact injuries to his head produced by the fall.

CONTRIBUTING FACTORS

Occupational injuries and fatalities are often the result of one or more contributing factors or key events in a larger sequence of events that ultimately result in the injury or fatality. FACE has identified the following as key contributing factors in this incident:

- Working at height
- Need for fall protection
- Need for effective safety training
- Need for effective safety policies
- Need for subcontractor comprehensive safety and health programs

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should implement a job hazard analysis (JHA) process.

Discussion: JHA is a technique used to protect employees that focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and the work environment [**OSHA, 2002**]. The JHA breaks down a work task into smaller tasks and then determines hazards that could arise during the work. The JHA process is completed by applying controls to prevent hazards.

Essential questions employers can use to discover hazards include:

- What can go wrong?
- What are the consequences?
- How could it occur?
- What contributing factors might exist?

If a JHA had been performed prior to beginning work, the hazards associated with working at height may have been identified and controls such as those discussed below in this report could have been implemented.

Recommendation #2: Employers should ensure that workers utilize fall protection when working at height.

Discussion: This fatal incident might have been prevented with the use of fall protection. The deceased worker was not using personal fall protection equipment, although it was available. Personal fall arrest systems (PFAS) are commonly used for fall protection with residential roofing work. PFAS are made up of an anchor point (A), a connecting device (C), and a body harness (B) worn by the worker, as shown in Image 1. Employers should, at a minimum, provide and ensure that workers at height use PFAS as required by OSHA (**n.d.**) under 29 CFR 1926, Subpart M. To help employers, the agency produced Protecting Roofing Workers (**2015**), which provides detailed guidance on applicable regulations and the means to safeguard roofing workers from falls.

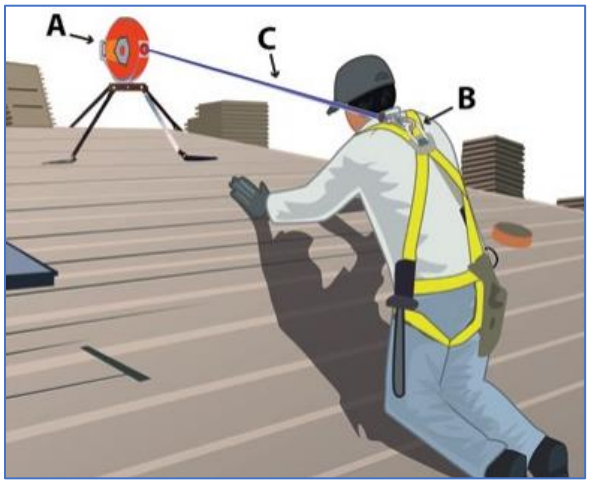

Image 1. PFAS (**OSHA, 2015**)

Guardrail systems have been developed for residential roofing work. Guardrail systems allow workers greater range of movement and are less cumbersome than PFAS in some situations, although PFAS may be needed during guardrail system installation or leading-edge work. In other situations, a combination of guardrails and PFAS may be preferable. Examples of guardrail systems are shown in Images 2–4.

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Image 2. Hugs (2023)


Image 3. Hugs (2023)

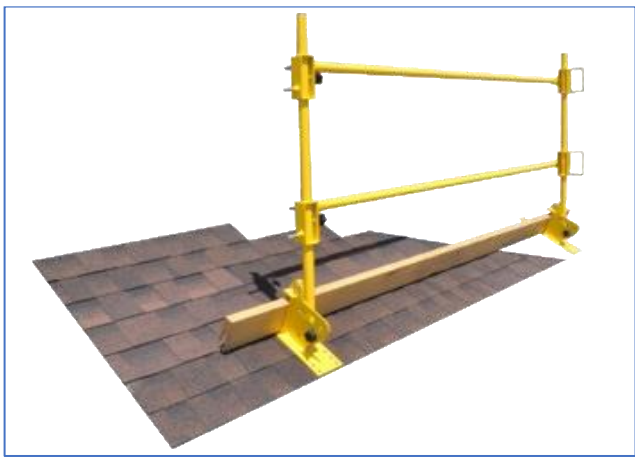
Image 4. Raptor (2023)

Recommendation #3: Employers should ensure that workers are provided with training appropriate to the hazards they may face while at work.

Discussion: In this fatal incident, the roofing subcontractor provided informal training regarding the hazard of falls at height. Training should include the recognition of hazards and use of appropriate methods to control exposure to falls (e.g., use of fall protection equipment). Training should be provided in the language(s) and at literacy level(s) that all workers understand.

In developing training programs, employers should follow the best practices such as those provided by OSHA in *Resource for Development and Delivery of Training to Workers* [2021]. This publication includes guidance tailored to occupational safety training programs such as:

- Characteristics of sound training programs
- Best practices for training adults
- Principles of adult education
- Program design, delivery, and evaluation elements

OSHA's webpage, Fall Prevention Campaign—Training Resources [n.d.], provides access to training resources regarding fall hazards and controls specific to the construction industry. Resources from the webpage include:

- OSHA Alliance Program Toolbox talks and training products
- Prevention videos (v-Tools)
- CPWR: Stop Construction Falls

Recommendation #4: Employers should establish and administer written safety policies with clear work rules and ensure that workers follow them.

Discussion: In this fatal incident, neither the prime roofing contractor nor the roofing subcontractor had written safety policies regarding how and when fall protection was to be used by workers. The subcontractor had provided personal fall protection equipment but the workers were not utilizing it while working on the roof. To ensure worker compliance with safe work rules, employers should first establish and administer written safety policies appropriate to the hazards their workers may face at the worksite and then educate and train workers regarding them.

Employers should also develop and implement a disciplinary system to ensure workers follow the established policies and rules. OSHA's *Voluntary Protection Programs Policies and Procedures Manual* [2022] requires a written disciplinary system addressing safety and health violations. This system can be a subpart of an all-encompassing workplace disciplinary system. The safety and health disciplinary system must include:

1. Procedures for appropriate disciplinary action or reorientation of managers, supervisors, and non-supervisory workers who violate or disregard safety and health policies, safety rules, safe work practices, proper materials handling, or emergency procedures;
2. Clear communication to workers and management;
3. Equitable enforcement;
4. Safeguards to ensure workers report injuries, illnesses, workplace hazards, accidents, or near misses, without fear of retaliation; and
5. Disciplinary policies and how these will be applied to contactors and their workers.

Recommendation #5: Prime contractors should ensure that subcontractors have comprehensive safety and health programs in place.

Discussion: Prime contractors can help ensure that subcontractors' employees are provided with comprehensive safety and health programs by including this as a specific requirement in contracts and bid documents. These documents should specify that contractors' safety and health programs will appropriately address the tasks their workers will be required to perform for the job safely.

Prime contractors should review the guidance in OSHA's *Recommended Practices for Safety and Health Programs in Construction, OSHA 3886* [2016]. This publication provides the core elements of construction safety and health programs:

- Management leadership,
- Worker participation,
- Hazard identification and assessment,
- Hazard prevention and control,
- Education and training,
- Program evaluation and improvement, and
- Communication and coordination for employers on multiemployer worksites.

Likewise, general contractors should consider reviewing the guidance provided by the American National Standards Institute (ANSI) in *ANSI/ASSP A10.33-2020 Safety and Health Program Requirements for Multi-Employer Worksites* [ANSI, 2023]. This consensus standard includes provisions that set forth employer responsibilities relative to employee safety as they apply to owners, contractors, subcontractors, sub-tier contactors, and suppliers who perform work on a construction or demolition project.

Safety and health programs, as well as the training they include, should be provided in the language(s) and at a literacy level(s) that all workers can understand. These provisions may have allowed the workers involved in this fatal incident to better understand the safest way to perform the roofing job.

DISCLAIMER

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INVESTIGATOR INFORMATION

Investigation conducted and report prepared by Dr. David Stumbo, OHST, CSP.

ACKNOWLEDGMENT

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