

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

## INCIDENT HIGHLIGHTS

**DATE:**

May 24, 2022

**TIME:**

3:03 p.m.

**VICTIM:**

44-year-old Hispanic  
demolition laborer

**INDUSTRY/NAICS CODE:**

Site Preparation  
Contractor/238910

**EMPLOYER:**

Site Preparation Contractor

**SAFETY & TRAINING:**

Some elements existed

**SCENE:**

Building demolition

**LOCATION:**

Kentucky

**EVENT TYPE:**

Fall



[Kentucky FACE Program](#)

**REPORT#:** 22KY046

**REPORT DATE:** 06/07/2023

## Demolition Laborer Dies in Fall Through Skylight

### SUMMARY

On May 24, 2022, a 44-year-old Hispanic demolition laborer suffered a fatal fall while working on the roof of a building that was undergoing demolition. The employee was walking backwards when he stepped onto a skylight in the roof and fell through it, falling approximately 19 feet to a concrete floor below.

... [READ THE FULL REPORT](#)> (p.3)

### CONTRIBUTING FACTORS

**Key contributing factors identified in this investigation include:**

- Working at height
- Exposure to falls through skylights
- Multi-employer worksites
- Lack of understanding of workplace hazards and control methods
- Lack of safety training and communication

... [LEARN MORE](#)> (p.6)

### RECOMMENDATIONS

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

- Properly assess the assigned work for recognized hazards (e.g., job safety analysis, job hazard analysis, pre-task plan, etc.)
- Provide appropriate fall arrest systems for employees working at height, including working around skylights, with a fall distance of 6 feet or more (e.g., guardrail system, covers, personal fall arrest system).
- Consider prevention through design to “design out” or minimize hazards and risk.
- Train employees on how to recognize fall hazards associated with the work being performed and the procedures to be followed in order to minimize these hazards
- Provide training in a language that workers can understand.
- Ensure that employers understand their responsibilities for the safety and health of their employees working on multi-employer worksites.

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# KENTUCKY

## State **FACE** Program

### Fatality Assessment & Control Evaluation

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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 the 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. The FACE program is located in the Kentucky Injury Prevention and Research Center (KIPRC). KIPRC is a bona fide agent for the Kentucky Department for Public Health.

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## **INTRODUCTION**

At 3:03 p.m. on May 24, 2022, a 44-year-old demolition laborer was killed when he fell through a roof skylight of a building that was undergoing demolition. The employee was working on the roof, removing roofing components, when he walked backward and stepped onto a skylight. The skylight broke under his weight, and the employee was killed after falling approximately 19 feet to a concrete floor below.

## **EMPLOYER**

The employer was a site preparation contractor (referred to hereafter as *demolition employer*) that had been in business for approximately 25 years. The demolition employer had 16 employees, four of which (including the deceased) were working at the scene at the time of the incident. The demolition employer had been contracted to demolish the structure involved in the incident.

According to the Kentucky Department of Workplace Standards, Division of Compliance (KyOSHA), the demolition employer stated that the deceased worker was an employee of a subcontractor and therefore the safety and health responsibilities for the worker fell to the subcontractor. However, KyOSHA determined that the deceased was an employee of the demolition employer.

## **WRITTEN SAFETY PROGRAMS and TRAINING**

The demolition employer had a few elements of a safety and health program. According to information provided by KyOSHA, the employer had 1) maintained injury and illness recordkeeping (i.e., OSHA 300 logs) and 2) provided fall protection training to some of its employees. However, none of the four employees, including the deceased employee, had been provided fall protection training by the demolition employer.

## **WORKER INFORMATION**

The construction laborer was a 44-year-old male of Hispanic ethnicity who had worked for the demolition employer for five days. He weighed approximately 126 pounds. He was not using personal fall arrest equipment at the time of the incident.

## **EQUIPMENT**

Equipment noted at the scene included two scissor-style personnel lifts used for roof access by employees. A boom-style lift, an excavator, and a skid-steer were used for material handling. One of the scissor lifts used by the deceased employee to access the roof, or a similar type, is shown in Photo 1.

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Photo 1. Scissor lift (Property of FACE program)

### INCIDENT SCENE

The scene was an older structure that formerly housed an automobile dealership and attached maintenance garage. A showroom had been located in the front portion, with a garage in the rear. The garage was approximately 19 feet high from grade and was undergoing demolition on the day of the fatal incident. A newer building had been built behind the older structure, and the older structure was being razed. The older structure was underlaid by a concrete pad and surrounded by an asphalt lot. The roof was constructed of corrugated metal with a low-slope pitch (defined under [29 CFR 1926.500\[b\]](#) as a roof having a slope less than or equal to 4 in 12 [vertical to horizontal]). Photo 2 provides a Google Earth [[2023](#)] photo of the building as it appeared on March 6, 2021, with an overhead view of the roof with skylights in place. The skylight involved in the fatal incident is indicated with a red circle.

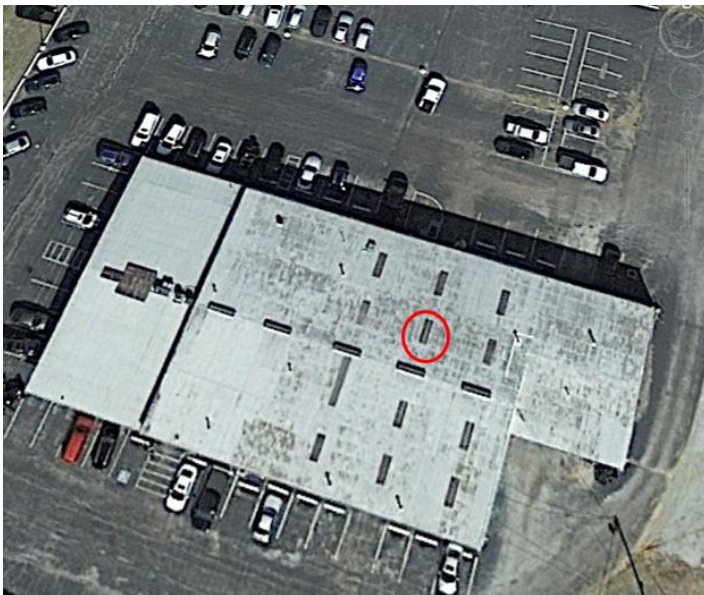


Photo 2. Google Earth view of building on March 6, 2021



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## WEATHER

The weather at the time of the incident was approximately 68 degrees Fahrenheit, with a 4 mile per hour (mph) northeasterly wind speed, 9 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, four employees began work at approximately 9:00 a.m. These employees were tasked with removing sections of the garage roof. At the time of the incident, a portion of the roof had already been removed, as shown in Photo 3. Progression of the demolition work is shown in Photo 4.



Photo 3. Building undergoing demolition on day of fatal incident (Courtesy of KyOSHA)



Photo 4. Building framework remaining at time of FACE site visit (Property of FACE program)

The employees working on the roof were exposed to falls from unprotected edges around the periphery of the roof as well as from the periphery of the interior area where the roofing had been removed. Employees were not provided personal fall arrest equipment for the job. At the time of the incident, there were eight skylights in the remaining roof, including the skylight through which the deceased employee fell. The skylight construction material was unknown but believed to be polycarbonate plastic.

The four employees were observed by their supervisor to be working without any means of fall protection (e.g., guardrail system, covers, personal fall arrest system) before the incident. A witness reported that the deceased employee was walking backward across the roof when he stepped onto a skylight and fell through it. Following a call to 911, local fire department personnel arrived and began cardiopulmonary resuscitation, with emergency medical services arriving shortly thereafter. The employee died of his injuries a few feet from where he fell. The skylight that the employee fell through is indicated by a red circle in Photo 5.

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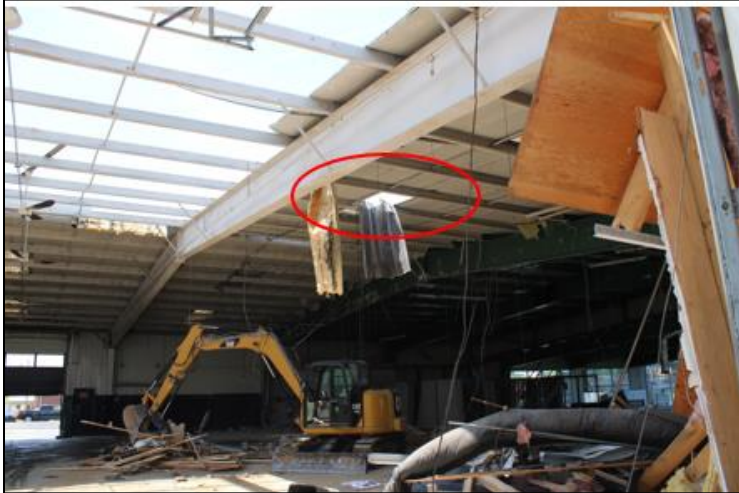


Photo 5. Skylight (Courtesy of KyOSHA)

### CAUSE OF DEATH

The employee died from blunt force injuries to his head, torso, and extremities 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. Kentucky FACE has identified the following hazards as key contributing factors in this incident:

- Working at height
- Exposure to falls through skylights
- Multi-employer worksites
- Lack of understanding of workplace hazards and control methods
- Lack of safety training and communication

### RECOMMENDATIONS/DISCUSSION

***Recommendation #1: Employers should safeguard employees working around skylights.***

Discussion: The Bureau of Labor Statistics reported that in 2021, 62 fatalities in the construction industry resulted from a fall through a surface or existing opening [2023]. Employers must, at a minimum, comply with OSHA's standard [29 CFR 1926.501\(b\)\(4\)\(i\)](#), which requires that employees on walking/working surfaces be protected from falling through skylights that are more than six feet above a lower level by a personal fall arrest system, skylight covers, or a guardrail system erected around them. NIOSH cautions in its publication, [NIOSH ALERT: Preventing Worker Deaths and Injuries from Falls Through Skylights and Roof Openings](#), that railings or screens guarding all skylights should be installed before roofing work begins and remain in place until all work is completed.

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OSHA requires in [29 CFR 1926.502\(i\)\(2\)](#) that skylight covers must be:

- Capable of supporting, without failure, at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time,
- Secured when installed to prevent accidental displacement by the wind, equipment, or employees, and
- Color coded or marked with the word “HOLE” or “COVER” to provide warning of the hazard.

Examples of protective systems for skylight railings and covers are shown below in photos 6 and 7, respectively.



Photo 6. [Blue Water-Roof Hatch & Skylight Fall Protection Safety Rails](#), Colorado Safety Supply Company [2023]

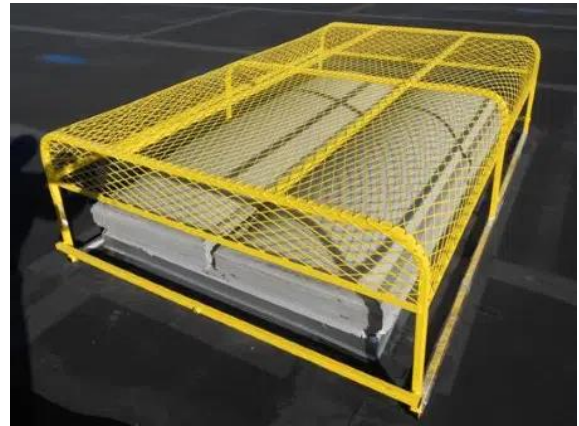


Photo 7. Skyguard Skylight Screen, [Edge Fall Protection \[2023\]](#)

***Recommendation #2: Employers should provide safeguards for employees working at height.***

Discussion: Working at height poses a serious and potentially fatal hazard. Exposure to falls is especially noteworthy because of the likelihood of encountering unprotected sides and edges as well as skylights and other roof openings.

OSHA’s fall protection standard [29 CFR 1926.501, Duty of have fall protection](#), gives the following options for protecting employees working at height:

- Guardrails and covers (see Recommendation #1, above)
- Safety net systems
- Personal fall arrest systems



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OSHA's [Fall Protection in Construction \[2015\]](#) provides detailed guidance on the various forms of fall protection and their proper use. Photos 8 and 9 provide examples of safety net systems and personal fall arrest systems, respectively.



Photo 8. Safety net system [[OSHA, 2015](#)]



Photo 9. Personal fall arrest system [[OSHA, n.d.](#)]



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NIOSH [2023] provides that controlling employee exposure to workplace hazards is vital to protecting workers and that the use of a hierarchy of controls is best for controlling exposures, as shown in Image 1. Guardrails, covers, and safety nets are forms of engineering controls and therefore are preferred over personal fall arrest systems, which are personal protective equipment. However, personal fall arrest systems may be appropriate in many cases, such as when engineering controls are being installed or when their use is not feasible.

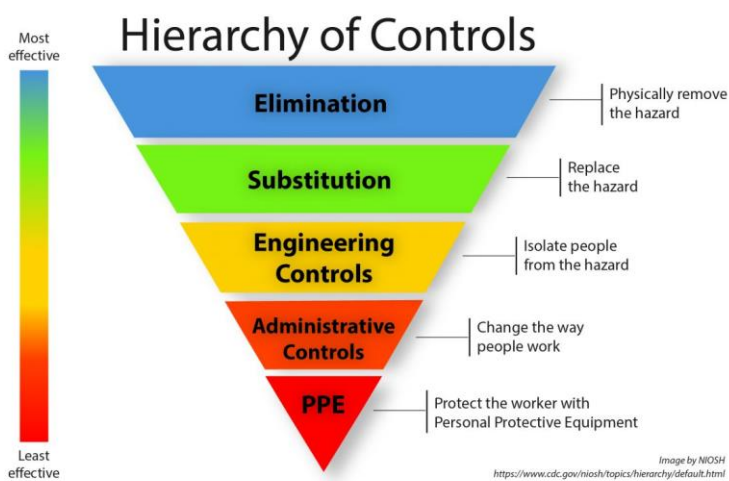


Image 1. Hierarchy of Controls [NIOSH, 2023]

**Recommendation #3: Employers should consider prevention through design (PtD) to “design out” or minimize hazards and risk.**

Discussion: Most skylights in the U.S. are not designed to withstand the weight of an individual. Use of guardrails, grids, internal and external screens, or specifically designed products meeting fall protection standards can be used to prevent falls through skylights. Also, some skylights are designed to withstand human impact or point loads. For example, in the United Kingdom, nonfragile roofing products are widely used to prevent falls through skylights [ACR - Advisory Committee for Roof Safety, 2000].

In considering fall hazard control methods, employers should consider the Prevention through Design (PtD) approach to prevent and minimize potential hazards. This approach is considered by the National Institute for Occupational Safety and Health [NIOSH, 2013] to be one of the best ways to prevent and control occupational injuries, illnesses, and fatalities.



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The mission of the national PtD initiative is to prevent or reduce occupational injuries, illnesses, and fatalities through the inclusion of prevention considerations in all designs that impact workers. The mission can be achieved by:

- Eliminating hazards and controlling risks to workers to an acceptable level “at the source” or as early as possible in the life cycle of items or workplaces;
- Including design, redesign, and retrofit of new and existing work premises, structures, tools, facilities, equipment, machinery, products, substances, work processes, and the organization of work; and
- Enhancing the work environment through the inclusion of prevention methods in all designs that impact workers and others on the premises.

PtD encompasses all the efforts to anticipate and “design out” hazards to workers; such efforts can include changes to construction design, work methods and operations, equipment, and the organization of work, along with use of new technologies. The focus of PtD is on workers who execute the designs or must work with the products of the design. The initiative has been developed to support designing out hazards, the most reliable and effective type of prevention. By utilizing Prevention through Design, employers can eliminate fall hazards associated with skylights by excluding them from building designs. Facilities with existing skylights can phase out and remove the skylights in lieu of repairing them, thus eliminating the hazard and future exposure.

***Recommendation #4: Employers should train employees on how to recognize the hazards of falls and the procedures to be followed to minimize this hazard while accounting for each worker’s primary language.***

Discussion: Employers must, at a minimum, comply with OSHA’s standard [29 CFR 1926.503\(a\)\(1\)](#), which requires that employers provide a training program for each employee who might be exposed to fall hazards.

OSHA provides generalized guidance on providing effective training to employees in publications such as Resource for Development and Delivery of Training to Workers [\[2021\]](#). This publication contains instruction helpful to employers on topics such as:

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



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Also, OSHA's webpage [Fall Prevention Campaign - Training Resources](#) provides access to training resources regarding fall hazards and controls specific to the construction industry. Resources include:

- OSHA Alliance Program Toolbox talks and training products
- Prevention videos
- CPWR: Stop Construction Falls
- Best practices for training adults
- Principles of adult education
- Program design, delivery, and evaluation elements.

Research indicates that Hispanic workers die from construction falls at a substantially higher rate than non-Hispanic workers [Center for Construction Research and Training, 2023]. Accordingly, training should be provided to employees in their primary language and should account for cultural relevance.

***Recommendation #5: Employers must ensure that they understand their responsibilities for the safety and health of their employees working on multi-employer worksites.***

Discussion: The OSHA policy [CPL 2-0.124: Multi-Employer Citation Policy \[1999\]](#) sets forth how employers are responsible for employee safety and health on multi-employer worksites. This policy establishes four categories of employers: creating, exposing, correcting, and controlling. Each of these categories carries its own respective responsibilities for employee safety and health, and an employer may fall into more than one category concurrently.

Employers should also review OSHA's publication, Recommended Practices for Safety and Health Programs in Construction, OSHA 3886 [\[2016\]](#). This publication includes guidance on how employers can establish effective communication and coordination with other employers on multi-employer worksites. Likewise, employers should consider following the guidance provided by the American National Standards Institute's A10.33-2020 Safety and Health Program Requirements for Multi-Employer Worksites [\[2023\]](#). This consensus standard includes provisions that set forth employer responsibilities relative to employee safety as they apply to owners, contractors, subcontractors, sub-tier contractors, and suppliers who perform work on a construction or demolition project.

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## INVESTIGATOR INFORMATION

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

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