

OSHA
Susan Harwood
Training and Educational Material
Development Grant
FY 2011

Developing Fall Protection Training Materials
for Non-English Speaking and Illiterate
Construction Workers

English

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A. Long description

(Excerpt¹ from FACE website (Case 9519) with partial modifications in the scenario)

On July 20, 1995, a 41-year-old male sheet metal mechanic (the victim) died after falling 30 feet through roofing insulation and landing on a hardwood floor.

The employer in this incident was a roofing contractor that had been in operation for 22 years and employed 12 workers. The employer had a written safety policy and safety program. General written safety rules were reviewed with all employees upon hire. Training was accomplished on the job. Tailgate safety meetings were conducted by the job foreman when necessary. Safety meetings were held prior to the start of each job to discuss the safety hazards associated with that job. The victim had worked for the employer for 12 years and had 15 years prior experience. This was the first fatality experienced by the employer.

The employer had been contracted to replace the fiberglass insulation and corrugated metal roof panels on an 80-foot-wide by 140-foot-long church roof with a 1:12 pitch. A five-man crew (general superintendent, foreman, roofer, and 2 sheet metal mechanics) was sent to the site to complete the task. The men were to remove 36-inch wide sections of metal roof panels and insulation at a time and replace them with new panels and insulation. This required removing three, 3-foot-wide by 6-foot-long panels and replacing them with the new 20-inch-wide by 16-foot-long panels.

To remove the panels, the roofer would hold the end of the old panels up and pull them back as the sheet metal mechanics removed the screws that attached the panels to the roof joists. Because the men were installing panels smaller in width than those being replaced, open space with exposed insulation existed around the work area.

At 3:00 p.m. on the second day at the site, work had progressed to a point where the men had completed work on an area measuring approximately 25 feet by 115 feet. As the victim finished removing the screws holding the next piece of old panel, he stood up and stepped backward into an opening approximately 3 feet by 6 feet that was covered only with fiberglass insulation, and fell 30 feet to the hardwood floor inside the church, striking his head.

B. Learning objectives

- a. By the time the trainee completes the training, he/she should be able to understand how unsafe working conditions might lead to a roof fall fatality similar to case #2. “Each employer -- shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees” (OSH Act Section 5(a)(1)).

¹ Italic text at section a (long description) represents excerpts from FACE website.

- b. “The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury” (1926.21(b)(2)). The second goal of the training for this case is to raise the workers’ awareness on the cause of a roof deck fall accident and the safe way to perform work that involves removal of old metal roof panels and installation of new ones, in order to avoid falling through openings in the middle of the roof.

C. Lesson plan

The trainee will be shown the figures, which are to be narrated by the trainer, to understand completely the situation leading to the fall. Also, he/she will be taught safe methods of task performance to avoid the incident. Life lines and harness, and using plywood to temporarily cover the exposed areas of the roof are some of the options to be introduced as safe methods of task performance. Worker’s rights to (1) have a safe and healthful work environment and (2) file a complaint free from discrimination are other objectives of this case which should be addressed. It is recommended that copies of the OSHA safety and health complaint form be distributed to the trainees to show the required elements in a valid complaint. The trainer should emphasize that if the worker requests anonymity, the worker’s identity would remain anonymous after filling a complaint form.

Finally, the worker’s knowledge should be assessed through two major questions which address: a) the cause of the roof deck fall incident presented during the training, and b) the alternative safe actions that could be taken to avoid similar incidents.

D. Assumptions

- a. **Activity:** Removing screws of the old metal roof panels. (panel type: corrugated metal panel; Old panel size: 3 feet by 6 feet; New panel size: 20 inches by 16 feet)
- b. **Location:** Roof deck of a church (Roof size: 80 feet by 140 feet, with a 1:12 pitch (angle=4.76 degrees))
- c. **Work expectation:** Doing a good safe job in a reasonable amount of time
- d. **Scenario:** After removing the screws that attached the old metal roof panels to the roof joists, a sheet metal mechanic stood up, stepped backward and fell 30 feet through a roof opening covered only with fiberglass insulation. The worker struck his head on the floor and died.

E. Questions

- a. Ask what unsafe action(s) caused the incident.

Items to be discussed:

- Safety issues when removing old metal roof panels and installing new ones
- Safety issues for roof openings

- b. Ask what action(s) can be taken to avoid the incident. (Which is the correct, or safe, way of performing the task? **The answer is C**)

Items to be discussed:

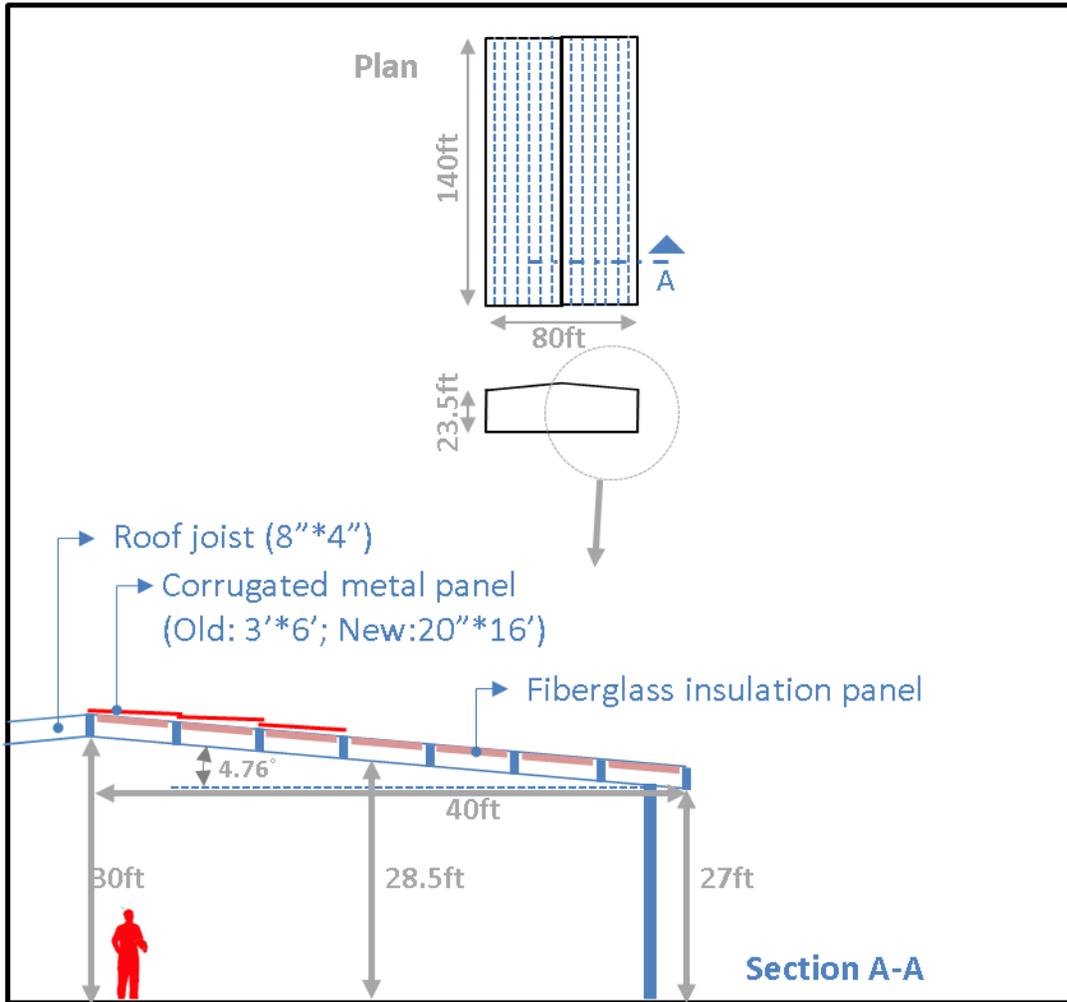
- Guardrails and its suitability - notice that slide guard is not an acceptable means of fall protection here!
- Plywood that is (1) thick enough and (2) marked with the word "HOLE" for securely covering up roof holes and openings (The plywood should have a safety factor of 2 based on OSHA standards; in Washington State, this safety factor should be 4).
- Don't sit or walk on skylights or other openings.
- Harness and life line - should be able to withstand 5,000 pounds of force.
- Make sure the harness fits and is not defective when using Personal Fall Arrest Systems (PFAS).
- Always stay connected/tied off.
- Ensure that all anchor points are safe.

F. Short description

The workers were assigned a job to remove the old metal panels of a church roof and replace them with new ones. The victim, a sheet metal mechanic, removed the screws that attached an old metal roof panel to the roof joists. The worker then stood up and stepped backward into a roof opening which was covered only with fiberglass insulation. The worker fell 30 feet to the hardwood floor inside the church and died.

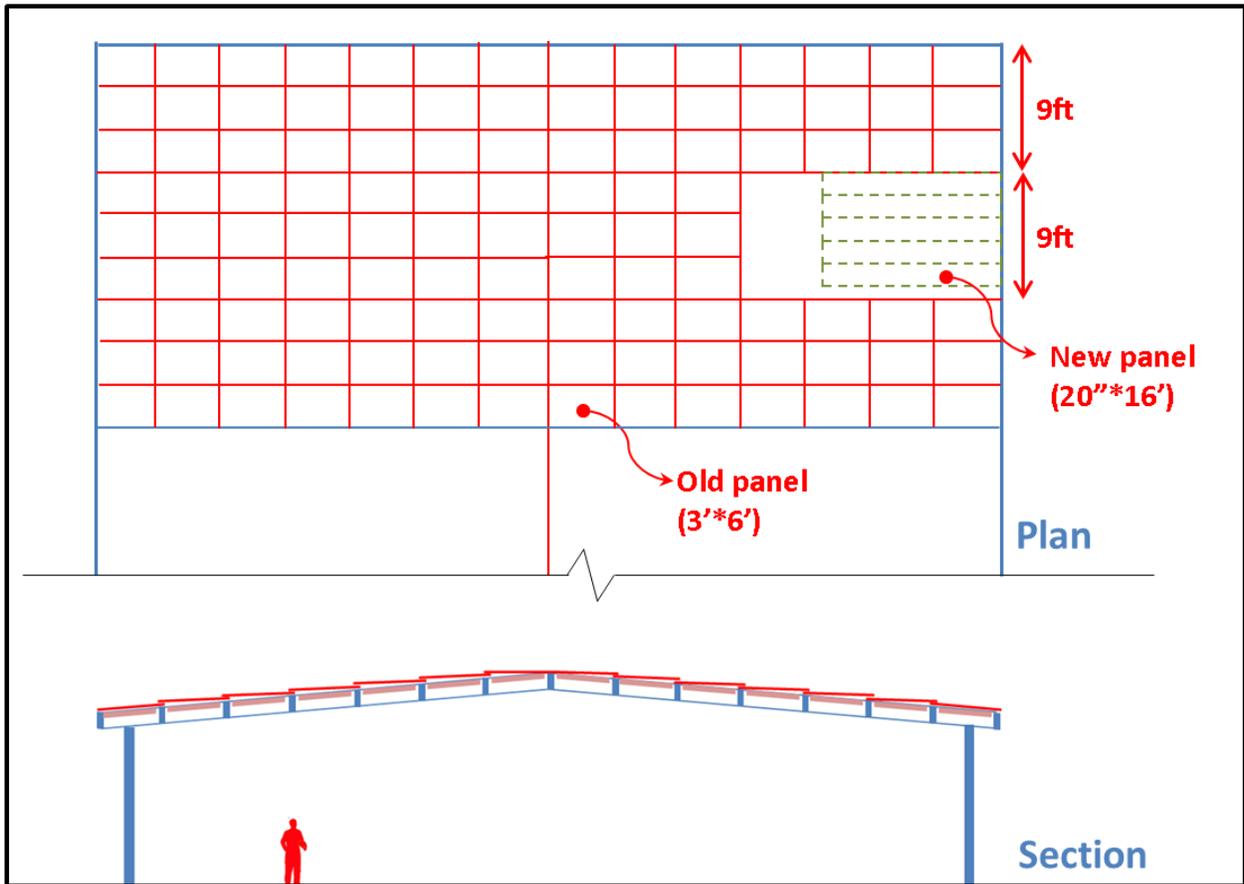
G. Pictorial Prototype

1



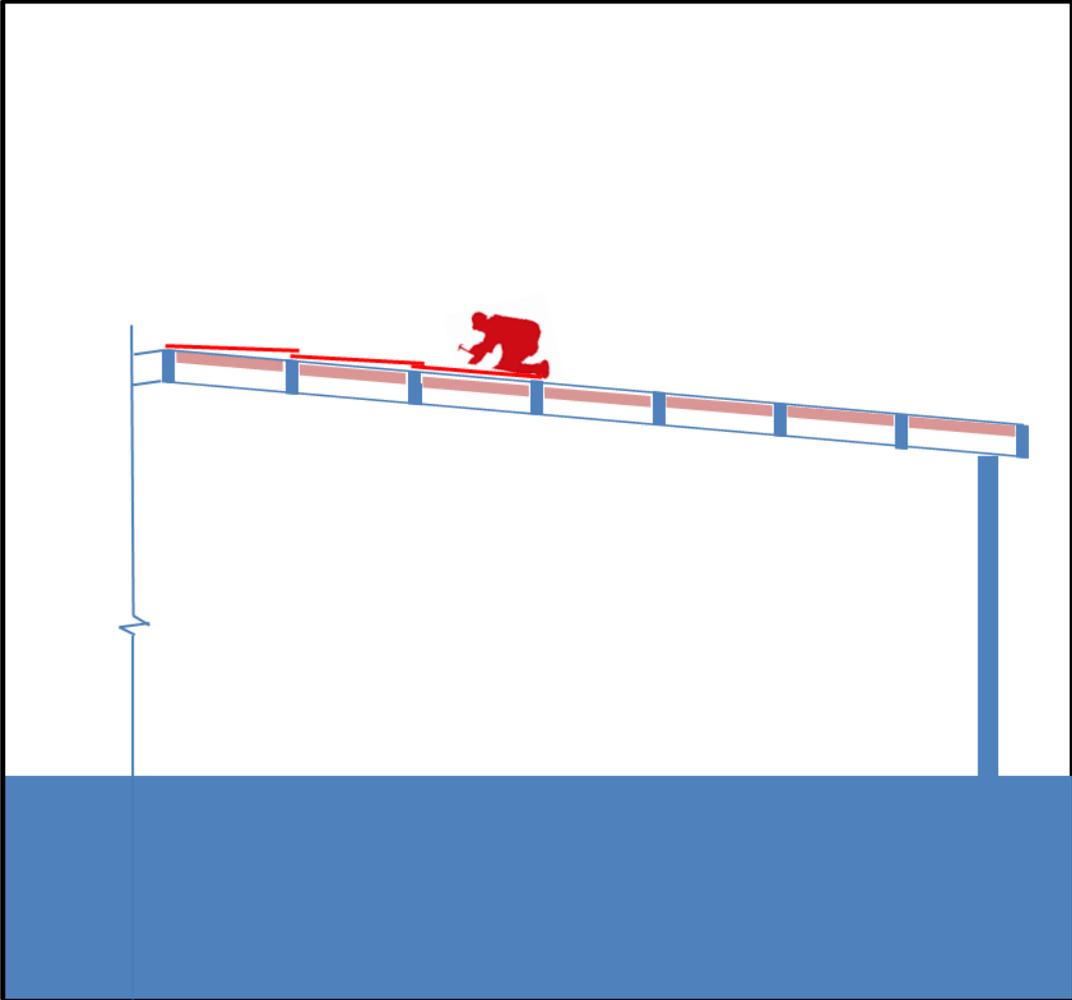
“Remove screws of roof metal panels.” (Old panels: corrugated metal panels of 3'×6')

2



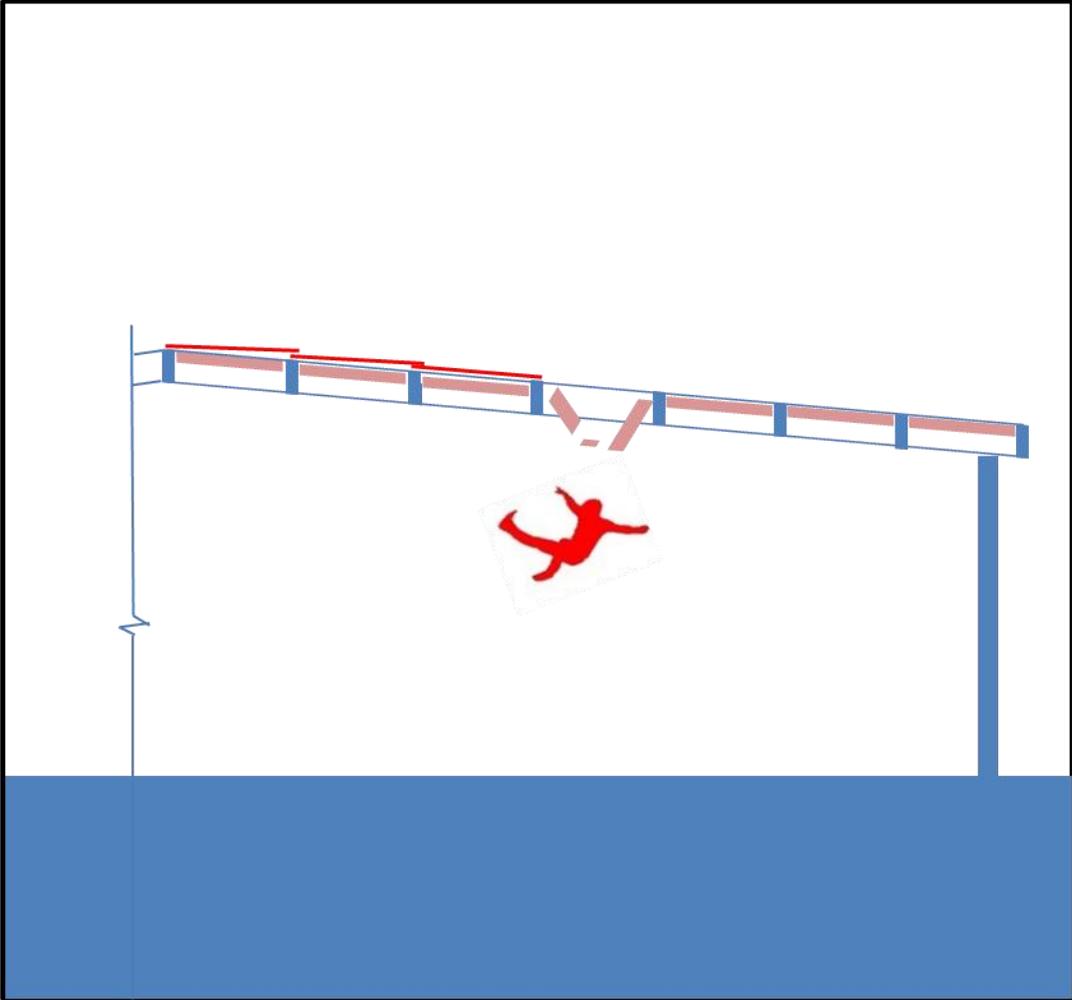
“Remove screws of roof metal panels.” (Old panels: corrugated metal panels of 3’*6’)

3



“Let’s get started.”

5



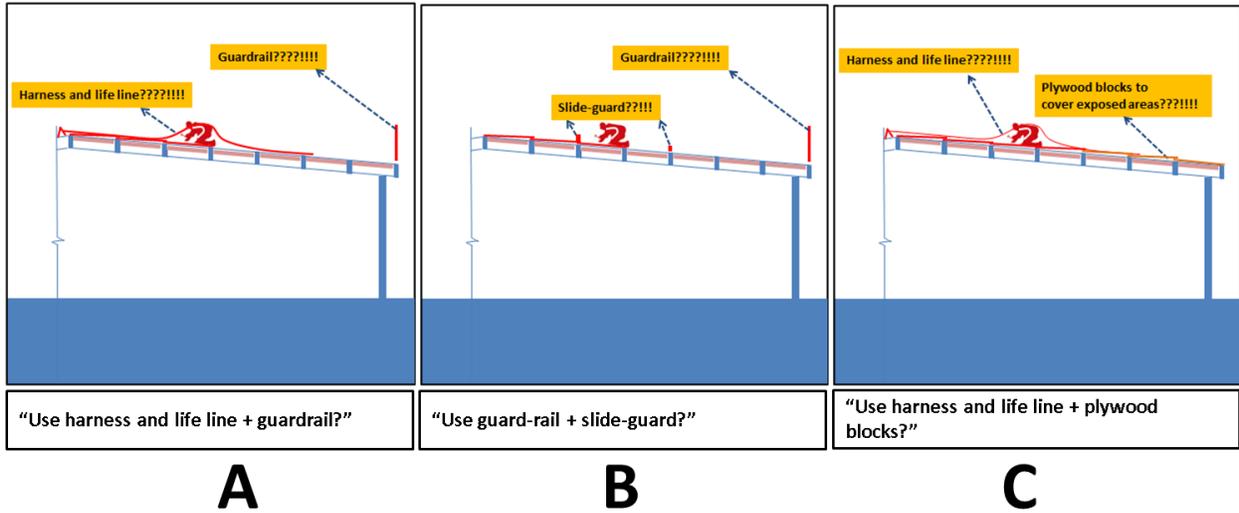
“Auuuuuuuuuuuu!”

6



What could I have done differently before my death?

1. Why was the method used to perform the task in this example unsafe?
2. What is the safest way of performing the task?



You have the **RIGHT** to:

1. Ask OSHA to inspect your workplace. (1-800-321-OSHA)
2. Exercise your rights under the law without retaliation and discrimination.
3. Receive information and training about hazards, methods to prevent the harm, and OSHA standards that apply to your workplace. The training must be in a language you can understand.
4. Get copies of test results done to find hazards in your workplace.
5. Review records of work-related injuries and illnesses.
6. Get copies of your medical records.

U. S. Department of Labor
Occupational Safety and Health Administration

Notice of Alleged Safety or Health Hazards

For the General Public:

This form is provided for the assistance of any complainant and is not intended to constitute the exclusive means by which a complaint may be registered with the U.S. Department of Labor.

Sec 8(f)(1) of the Williams-Steiger Occupational Safety and Health Act, 29 U.S.C. 651, provides as follows: Any employees or representative of employees who believe that a violation of a safety or health standard exists that threatens physical harm, or that an imminent danger exists, may request an inspection by giving notice to the Secretary or his authorized representative of such violation or danger. Any such notice shall be reduced to writing, shall set forth with reasonable particularity the grounds for the notice, and shall be signed by the employee or representative of employees, and a copy shall be provided the employer or his agent no later than at the time of inspection, except that, upon request of the person giving such notice, his name and the names of individual employees referred to therein shall not appear in such copy or on any record published, released, or made available pursuant to subsection (g) of this section. If upon receipt of such notification the Secretary determines there are reasonable grounds to believe that such violation or danger exists, he shall make a special inspection in accordance with the provisions of this section as soon as practicable to determine if such violation or danger exists. If the Secretary determines there are no reasonable grounds to believe that a violation or danger exists, he shall notify the employees or representative of the employees in writing of such determination.

NOTE: Section 11(c) of the Act provides explicit protection for employees exercising their rights, including making safety and health complaints.

For Federal Employees:

This report format is provided to assist Federal employees or authorized representatives in registering a report of unsafe or unhealthful working conditions with the U.S. Department of Labor.

The Secretary of Labor may conduct unannounced inspection of agency workplaces when deemed necessary if an agency does not have occupational safety and health committees established in accordance with Subpart F, 29 CFR 1960; or in response to the reports of unsafe or unhealthful working conditions upon request of such agency committees under Sec. 1-3, Executive Order 12196; or in the case of a report of imminent danger when such a committee has not responded to the report as required in Sec. 1-201(h).

INSTRUCTIONS:

Open the form and complete the front page as accurately and completely as possible. Describe each hazard you think exists in as much detail as you can. If the hazards described in your complaint are not all in the same area, please identify where each hazard can be found at the worksite. If there is any particular evidence that supports your suspicion that a hazard exists (for instance, a recent accident or physical symptoms of employees at your site) include the information in your description. If you need more space than is provided on the form, continue on any other sheet of paper.

After you have completed the form, return it to your local OSHA office.

NOTE: It is unlawful to make any false statement, representation or certification in any document filed pursuant to the Occupational Safety and Health Act of 1970. Violations can be punished by a fine of not more than \$10,000, or by imprisonment of not more than six months, or by both. (Section 17(g))

Public reporting burden for this voluntary collection of information is estimated to vary from 15 to 25 minutes per response with an average of 17 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An Agency may not conduct or sponsor, and persons are not required to respond to the collection of information unless it displays a valid OMB Control Number. Send comment regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to the Directorate of Enforcement Programs, Department of Labor, Room N-3119, 200 Constitution Ave., NW, Washington, DC; 20210.

OMB Approval# 1218-0064; Expires: 05-31-2014

Do not send the completed form to this Office.

1. Click on the link below or copy/paste it onto your browser:

<http://cm.be.washington.edu/Research/SHARE/2011OSHA/>

SHARE LAB University of Washington
Laboratory for Safety and Health Advancement through
Research and Education in Construction Management [En Español](#)

FALLS FROM LADDERS, SCAFFOLDS AND ROOFS CAN BE PREVENTED!

Construction has been one of the most dangerous industries, with fall being the most common type of hazards.

In 2011, the Department of Construction Management at the University of Washington received a Susan Harwood Grant from OSHA to develop six 3D visualized and scenario-based training cases on the topic of fall protection. The cases use minimum amount of text descriptions and intend to maximize the benefits of visualization. We hope our 3D simulated training scenarios will reduce the language and literacy barriers for potential trainees, and increase trainees understanding as well as learning interests on the topic of fall protection.

The suite is not intended for self-guided learning and will work the best with experienced and knowledgeable trainers who can interact and guide the trainees to explore the case scenarios presented in the training suite.

If you have any comments or questions, please contact the project supervisor: **Dr. Ken-Yu Lin** (☎ 206-616-1915 or kenvulin@uw.edu).

Click the links below to access the training documentation and 3D suite online!

Disclaimer, copyright and other important information...

Trainer's manual
(All Cases in ZIP format: MS Word / PDF) (Case 1: MS Word / PDF) (Case 2: MS Word / PDF) (Case 3: MS Word / PDF) (Case 4: MS Word / PDF) (Case 5: MS Word / PDF) (Case 6: MS Word / PDF)

Trainee's handouts
(All Cases in ZIP format: MS Powerpoint / PDF) (OSHA Rights: PDF)

Post-training assessment tool
(MS Powerpoint / PDF: The MS Powerpoint version has been pre-configured to work nicely with TurningPoint clickers. The MS Powerpoint slides will still work even without the use of clickers.)

3D training suite
The training suite was developed on the Unity platform. When you access the suite for the first time, the web browser will ask you to download a software component from Unity before the suite can be correctly displayed on your screen. Please follow the browser's recommendation. To access the online training suite, please click [here](#).

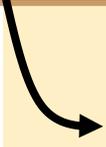
75%

2. Click on "here"

FALLS FROM LADDERS, SCAFFOLDS AND ROOFS CAN BE PREVENTED!
Fall Protection Safety Training Suite
Department of Construction Management, University of Washington



3. Make sure that "English" is selected (in bold)



English Español

About

4. Click on "Case 2"



« created with Unity »