

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

DISCLAIMER: This material was produced under grant number SH22317-11-60-F-53 from the Occupational Safety and Health Administration, U.S. Department of Labor. It does not necessarily reflect the views or policies of the U. S. Department of Labor, nor does mention of trade names, commercial products, or organizations imply endorsement by the U. S. Government. The U.S. Government does not warrant or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed.

COPYRIGHT INFORMATION: This material is the copyrighted property of University of Washington. By federal regulation, OSHA reserves a license to use and disseminate such material for the purpose of promoting safety and health in the workplace. The University of Washington hereby authorizes employers and workplace safety and health professionals to use this material, distributed by or through OSHA, in their workplaces or practices in accordance with the guidance contained in the material.

To this end, permission is granted to use such copyrighted material solely for non-commercial, instructional, personal, or scholarly purposes. The material may be used and incorporated into other workplace safety and health programs on the condition that no fee may be charged for the subsequent use of the material. Use of the material for any other purpose, particularly commercial use, without the prior, express written permission of the copyright owner/s is prohibited. Furthermore, any modification to the material is prohibited without the prior, express written permission of the copyright owners.

CREDITS (alphabetically):

Associated General Contractors of Washington
Computer Aided Engineering Group, Civil Engineering Department, National Taiwan University
Department of Construction Management, University of Washington
Department of Environmental and Occupational Health Sciences, University of Washington

PRODUCTION TEAM:

Project director: Dr. Ken-Yu Lin
Project co-director: Dr. Giovanni Migliaccio
Project assistant: Mr. Rahman Azari
Project assistant: Mr. Cheng-Hao Lee
Project assistant: Mr. Jorge De La Llata H
Project assistant: Mr. Jacob Je-Chian Lin
Project assistant: Mr. Ta-Yu Tseng
Project assistant: Ms. Che-Wen Yang
Project assistant: Mr. Danny Caldera
Subject expert (safety): Mr. Rick Gleason
Subject expert (safety): Mrs. Amanda Kime
Subject expert (3D modeling): Dr. Shih-Chung Kang

CONTACT INFORMATION:

Please contact Dr. Ken-Yu Lin (kenyulin@uw.edu or kenyulin@live.com/ 1-206-616-1915) at the Department of Construction Management, University of Washington if you have any questions or comments about the materials.

A. Long description

(Excerpt¹ from FACE website (case 9412) with partial modifications in the scenario)

On March 23, 1994, a 37-year-old male worker (the victim) died from injuries received in a 10 foot fall from a step-ladder/porch floor on March 21, 1994.

The employer had a written safety program but the program was incomplete regarding specific guardrail requirements. The victim had been employed for 2 days prior to the incident; however, he had worked for the employer for a 2-year period about 1 year previously.

The location of the incident was at a new residence under construction at a private residential housing community.... The porch was located about 7 feet above the ground level and a 4-foot concrete block retaining wall was directly located below the porch. Work had been in progress for 6 weeks and the day of incident was to have been the last day on the job. The worker had been assigned light bulb installation work for the day.

The victim was last observed by his co-workers standing on top of a 3 foot-high fiberglass step ladder on the porch floor. The ladder had been positioned very close to the edge of the open side of the porch. The victim was using the ladder to reach the fixture in order to install the light bulb. Although the incident was unwitnessed, it is assumed the victim lost his balance and fell from the ladder... and struck his head on the concrete block retaining wall.....Guardrails around the porch floor perimeter were not present at the time of incident.

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 ladder fall fatality similar to case #3. “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)).
- 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 of the causes of the ladder fall incident and of the safe way to perform a work task near an open-sided porch of a residential project, in order to avoid falling off the open-sided porch edge.

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

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. Using alternative tools (such as an extension tool for changing the light bulb) and proper fall protection systems (such as guardrails) are the main lessons to be addressed during the training. Moreover, the trainee should be taught why each of the improper tools should not be used to perform the task. Worker's rights to (1) having a safe and healthful work environment and (2) filing 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 will be assessed through two major questions which address: a) the cause of the ladder fall incident presented during the training, and b). the alternative safe actions that could be taken to avoid similar incidents.

D. Assumptions

- a. **Activity:** Installing a light bulb
- b. **Location:** Ceiling of a porch. Porch floor is 7 feet above the ground level. Porch floor to ceiling height is 9 feet.
- c. **Work expectation:** Doing a good safe job in a reasonable amount of time
- d. **Scenario:** When on the top of a step ladder installing the light bulb, the worker lost his balance, fell off the ladder, and dropped through the unprotected open-sided edge of the porch. The worker hit his head on the concrete block retaining wall and died.

E. Questions

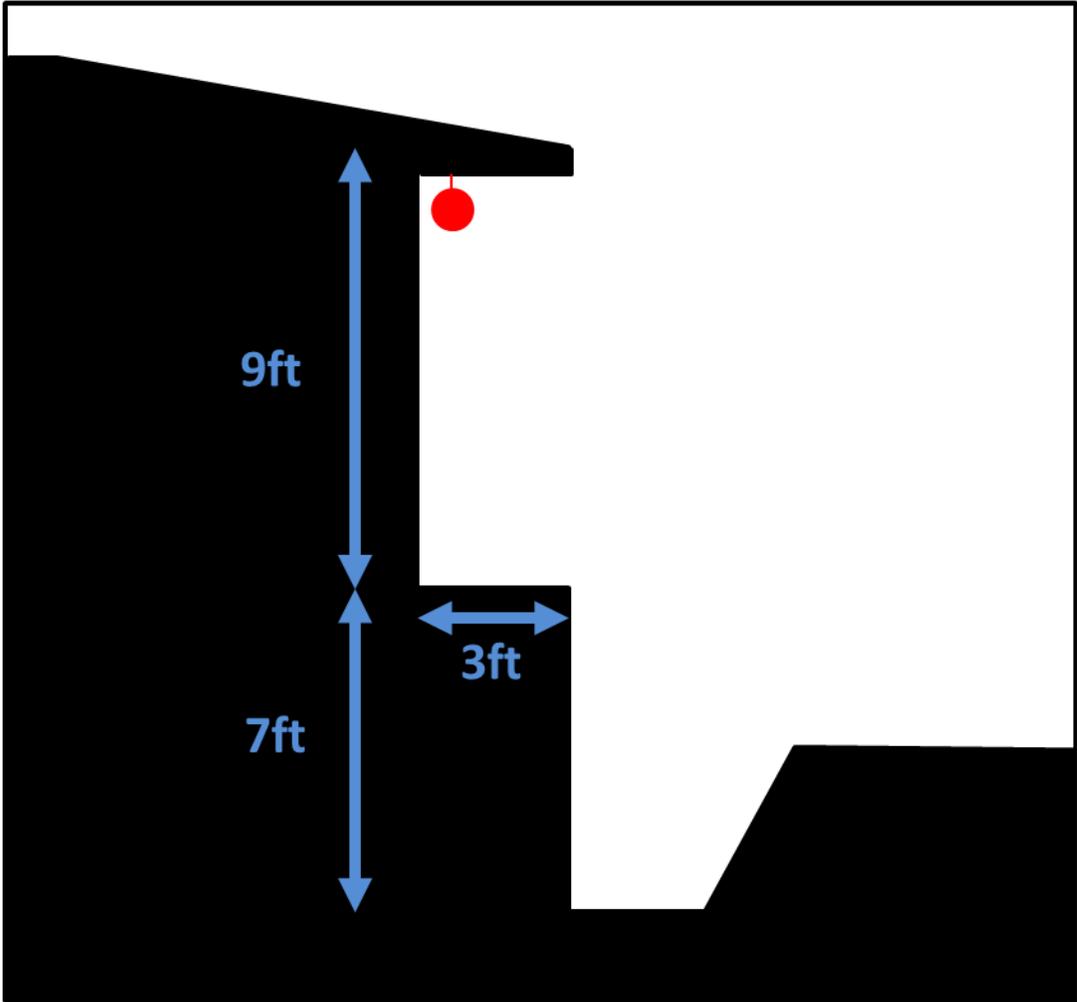
- a. Ask what unsafe action(s) caused the incident.
Items to discuss:
 - Safety of work on an open-sided porch
 - Safety issues of work on a ladder
- b. Ask what action(s) can be taken to avoid the incident. (Which is the correct, or safe, way of performing the task? **The answer is D**)
Items to discuss:
 - Guardrails
 - Ladder selection/choice and safety issues
 - Other tools to be used for performing the task

F. Short description

When installing a light bulb on top of a step ladder, a worker lost his balance and fell off the ladder through the unprotected open-sided edge of a porch. He hit his head on the concrete block retaining wall across the porch and died.

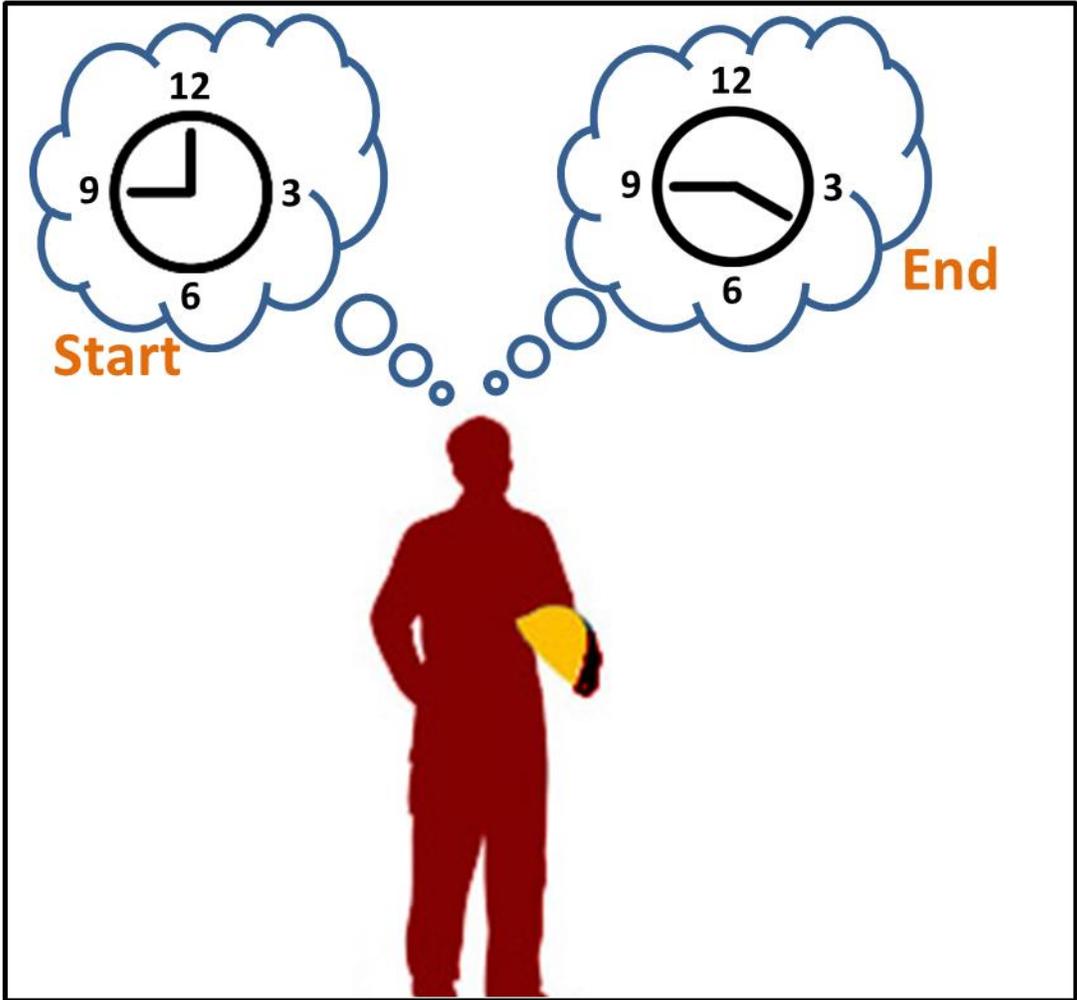
G. Pictorial Prototype

1



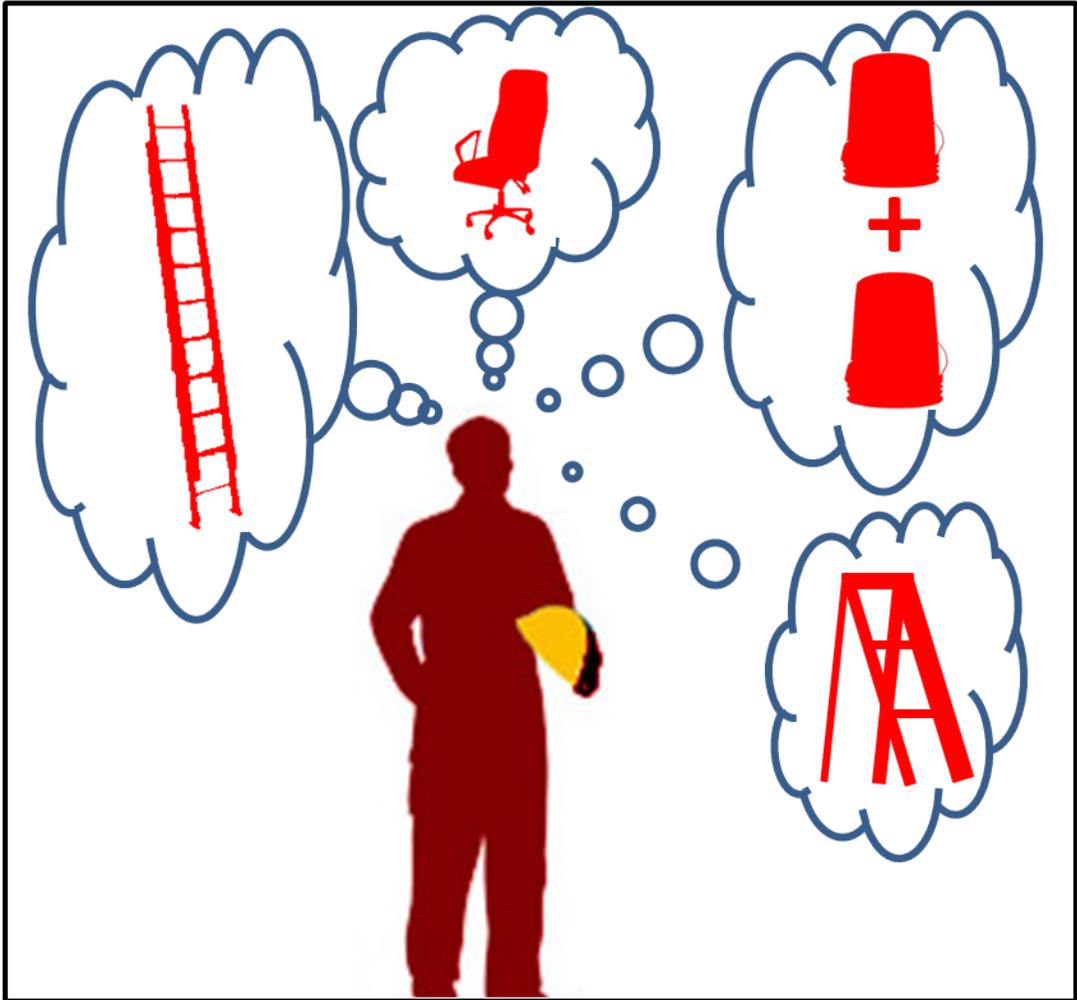
"Change light bulb in the balcony."

2



How much time do I have to do the task?

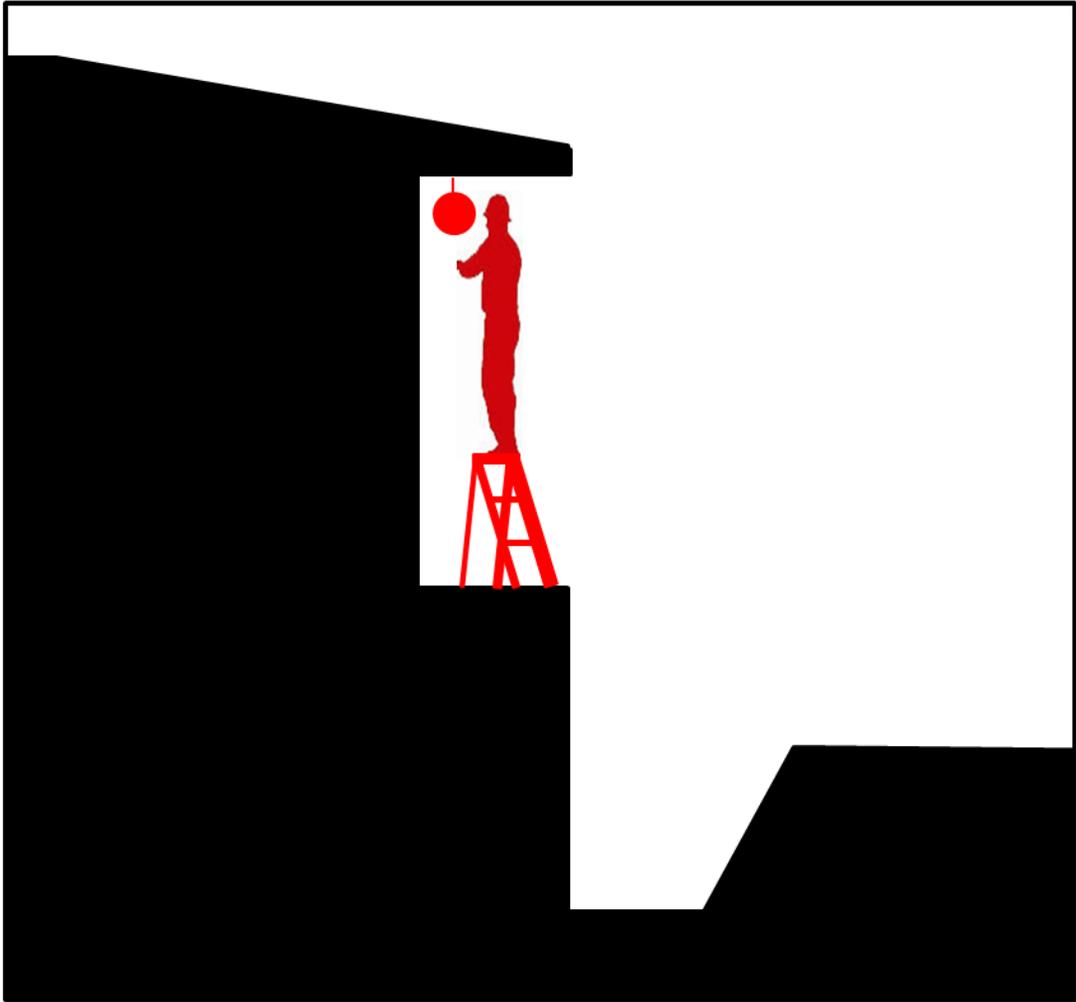
3



What should I use to reach the light bulb? (Extension ladder, swivel chair, Stacked buckets, step ladder)

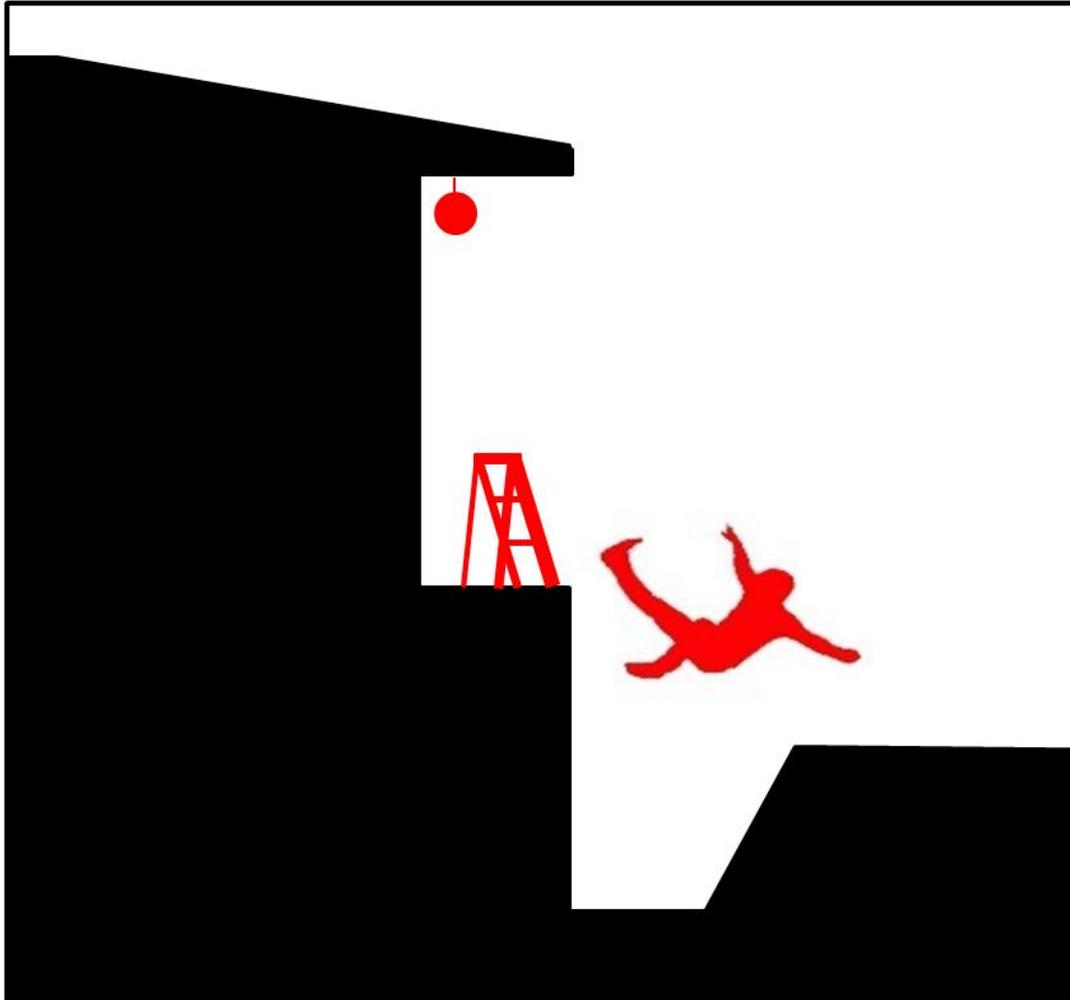
Where should I put the tool? (ditch, balcony floor)

4



Let's get started. (The worker decided to use the 3-foot step ladder and put it on the unprotected balcony floor.)

5



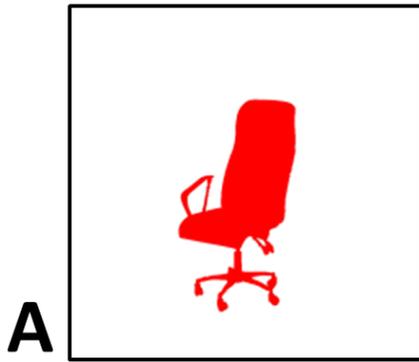
Oops! (He fell off the ladder into the ditch and got injured.)

6

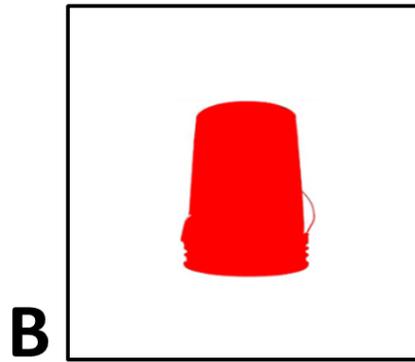


What could I have done differently before my death?

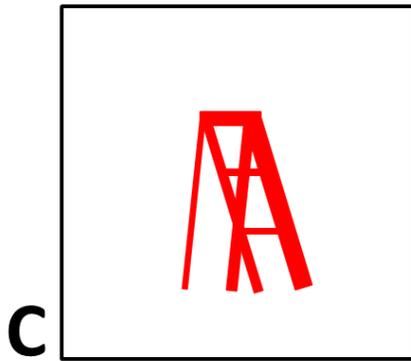
1. Why were the methods available to perform the task in this example unsafe?



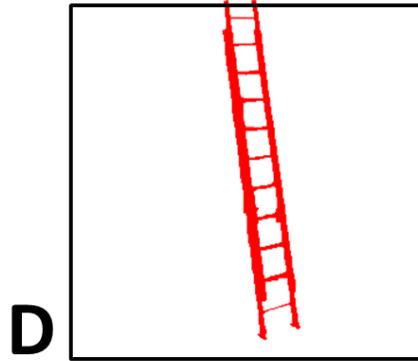
Use a swivel chair.



Use a bucket.

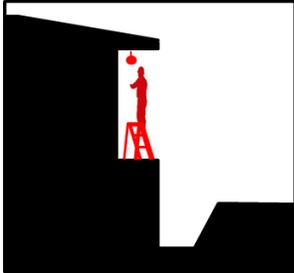


Use a stepladder.



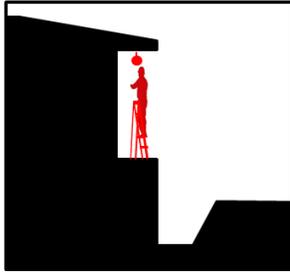
Use the extension ladder.

2. Which is the correct, or safe, way of performing the task?



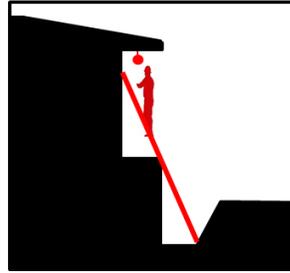
Use a shorter ladder?

A



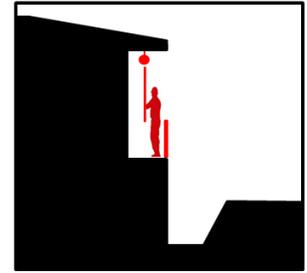
Use a longer ladder
and rotate it?

B



Use an extension ladder?

C



Protect the open edge
and use an extension
pole?

D

3. You can avoid the hazards identified in the scenario by making sure you follow the safeguards listed below:

- Stay behind a guardrail,
- Find the right tool to do 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](#).

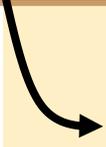
75%

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 3"

