Roofer Electrocuted and Another Severely Shocked When the Aluminum Extension Ladder He was Moving Contacted an Overhead Power Line - Massachusetts

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SUMMARY

On October 9, 2004, a 40-year-old roofer (victim) was fatally injured and a co-worker was seriously injured when the aluminum extension ladder they were unloading from a pickup truck contacted a 7,620 volt energized overhead power line. The day of the incident, a Saturday morning, the victim and the co-worker were at the incident site dropping off material and equipment for a job scheduled to start the following Tuesday. The pickup truck was parked in front of the customer's house while the victim and co-worker were lifting the extended aluminum extension ladder from the pickup truck and moving it into a vertical position. The extended aluminum extension ladder came in contact with the energized overhead power lines electrocuting the victim and seriously shocking the co-worker. The Massachusetts FACE Program concluded that to prevent similar occurrences in the future, employers should:

- **Eliminate the use of conductive ladders in proximity to energized overhead power lines;**
- **Conduct jobsite surveys prior to the start of construction projects to identify potential hazards, such as energized overhead power lines, and to implement appropriate control measures for these hazards;**
- **Ensure that loading and unloading of construction equipment and materials from vehicles are not performed beneath overhead power lines; and**
- **Develop, implement, and enforce a comprehensive safety program and provide training in language(s) and literacy level(s) of workers, which includes hazard recognition and avoidance of unsafe conditions, such as working with portable metal ladders near energized power lines.**

INTRODUCTION

On October 13, 2004, the Massachusetts FACE Program noticed in the local media that on October 9, 2004, a Brazilian roofer was electrocuted when the ladder he was moving came in contact with overhead power lines. An investigation was initiated. On January 20, 2005, the Massachusetts FACE Director, interviewed the company owner. The police report, death certificate, and Occupational Safety and Health Administration (OSHA) information were reviewed during the course of the investigation.

The employer, a small residential roofing company, had been in business four years at the time of the incident. The company's primary work was roofing, but they also performed other exterior residential work, such as installing windows and vinyl siding. The company owner worked for another roofing company prior to starting his own roofing business. The number of

workers employed by the company varied depending on the current workload. Typically, the total number of employees did not exceed five workers. The company owner was an immigrant from Dominic Republic and spoke Spanish and Portuguese.

The victim was born in Brazil and had come to the United States approximately two years prior to the incident leaving behind a wife and a child. While living in Brazil the victim had worked as a carbon miner. The victim's first job in the United States was at a fast food restaurant. His first job in the residential construction industry was the job the roofing job he was working at the time of the incident. The company owner and the victim were close friends and the victim was living with the company owner at the time of the incident. The victim's first language was Portuguese, but he also spoke Spanish.

The company did not have a written comprehensive safety program. Employees received on-the-job training, but this did not address the hazards associated with this incident. The company owner reported that he owns fall protection equipment, including harnesses, lanyards and tie off points for roofs and has this equipment readily available for his employees. The company employees, including the company owner, communicated in Spanish. The employees did not have union representation.

INVESTIGATION

The day of the incident, a Saturday, the company had just finished a job located a few minutes away from the two-family house where the incident occurred. At approximately 11:00 a.m. the company owner and two company employees went to the two-family house to drop off materials and equipment including a 32 foot aluminum extension ladder. The company had been hired to replace the roofing shingles on the two-family house. The start date for this roofing job was the upcoming Tuesday. The company was not working on Sunday and Monday was a holiday.

The workers and company owner arrived at the two-family house during late morning on the day of the incident. They parked their pickup truck in front of the house and started to unload a pallet of asphalt roofing shingles and other materials for the job. The company owner then went around to the left side of the house to talk to the home owner and a friend of the home owner.

In front of the house there were overhead electrical power lines running parallel with the street, and above the parked pickup truck. The ladder had been loaded onto the pickup truck's rack and transported to the two-family house while in the extended state. The victim and the co-worker lifted the ladder, which was still extended, off the pickup truck. When the extended extension ladder was vertical it came in contact with a 7,620 volt energized overhead power line, electrocuting the victim and seriously shocking the co-worker. The victim, the co-worker, and the ladder all fell to the ground.

The company owner, the house owner, and the house owner's friend all heard a loud noise and went to the front of the house to see what it was. They found the victim and the co-worker on

the ground convulsing. A neighbor had also heard the noise of the ladder falling and went to the incident scene to help the victims.

Multiple calls were placed for Emergency Medical Services (EMS). After arrival of EMS both the victim and the co-worker were transported to a local hospital. The victim was pronounced dead at the local hospital. The co-worker was then transported to a larger hospital by helicopter.

CAUSE OF DEATH

The medical examiner listed the cause of death as electrocution.

Recommendation #1: Employers should eliminate the use of conductive ladders in proximity to energized overhead power lines.

Discussion: Energized overhead power lines in proximity to work areas constitute a significant safety hazard. Extreme caution, such as only using nonconductive ladders, must be exercised when ever working near energized power lines. Nonconductive ladders include fiberglass and dry wooden ladders. In addition, the use of nonconductive ladders at all times by roofing contractors would reduce the hazard associated in this incident.

Recommendation #2: Employers should conduct jobsite surveys prior to the start of construction projects to identify potential hazards, such as energized overhead power lines, and to implement appropriate control measures for these hazards.

Discussion: Before beginning work at any jobsite, including unloading equipment from vehicles, a competent person should evaluate the site to identify potential hazards. When power lines are observed on the jobsite during the initial survey it should always be assumed that the power lines are energized. Once hazards are identified, this information should trigger the implementation of appropriate control measures before work begins, such as only using only nonconductive ladders and contacting the local electric company if work will require employees to get closer than 10 feet to energized power lines (for high voltage levels, over 50 kv, distances greater than 10 feet are required). It should be ensured that the information about identified hazards are communicated with employees. The employer should ensure that all control measures remain in place until the job is complete.

Recommendation #3: Employers should ensure that loading and unloading of construction equipment and materials from vehicles are not performed beneath overhead power lines.

Discussion: Once all overhead power lines have been identified during the jobsite survey (Recommendation #2), the area below the overhead power lines should be marked off. This area

should not be used as a storage area for the construction equipment and materials or an area where equipment will be loaded and unloaded from vehicles. In this case the truck was parked beneath the overhead power lines while employees were unloading equipment, which included a metal extension ladder. If the area beneath the power lines was marked off the employees might not have unloaded the truck in this location minimizing the electrocution hazard.

Recommendation #4: Employers should develop, implement, and enforce a comprehensive safety program and provide training in language(s) and literacy level(s) of workers, which includes hazard recognition and avoidance of unsafe conditions, such as working with portable metal ladders near energized power lines.

Discussion: A comprehensive safety program that includes training on hazard recognition and the avoidance of unsafe conditions should be developed, implemented, and enforced by employers. As part of the development of this program, employers should evaluate tasks performed by employees for all potential hazards, such as using portable metal ladders near energized power lines, and incorporate information about these identified hazards and their controls into hazard recognition training. Companies should identify the languages spoken by their employees and ensure that their comprehensive written safety program is multi-lingual. To the extent feasible, the comprehensive safety program should be developed at a literacy level that corresponds with the literacy level of the company's employees. Companies may need to consider providing special safety training for workers with low literacy to meet their safety responsibilities.

Employers should document all trainings. Documentation should include: who provided the training and their qualifications, the content of the training, workers who were trained, and any assessments of workers' comprehension of the training. As a reference, a summary of the Occupational Safety and Health Administration's (OSHA) draft proposed safety and health program rule, which discusses employee training, has been included at the end of this report.

In this case, the victim and a co-worker were moving an extended 32 foot aluminum extension ladder from a horizontal position into a vertical position with energized overhead power lines directly above them. Avoidance of unsafe condition training could have included the electrocution hazards of using a conductive ladder near energized power lines and that a distance of 10 feet should always be kept between ladders, tools, workers and overhead power lines. In addition, this training could address extension ladder use and the requirement to lower extension ladders prior to repositioning/moving them.

REFERENCES

Code of Federal Regulations, 29 CFR 1926.951 Tools and protective equipment. Washington D.C.: U.S. Printing Office, Office of the Federal Register.

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DOL. OSHA Construction eTool: Electrical Incidents. http://www.osha.gov/SLTC/etools/construction/electrical_incidents/powerlines.html. Date accessed: February 9, 2006.

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