MIFACE INVESTIGATION: 05MI065

SUBJECT: Hispanic Brick Mason Electrocuted When Rerod Contacts Powerline

SUMMARY

On Friday, July 1, 2005, at approximately 12:20 p.m., a 36-year-old Hispanic brick mason was electrocuted. The decedent was attempting to insert a 20-foot 2-inch rerod down through a grouted brick wall he and his coworkers had constructed when the rerod contacted an energized, primary 4,800-volt single-phase powerline (Figure 1). Emergency personnel arrived shortly thereafter and transported the decedent to a hospital where he was pronounced dead.

Figure 1. Approximate position of mason (not to scale).

RECOMMENDATIONS

- Employers should conduct a jobsite survey during the planning phases of a construction activity to develop a written accident prevention plan, to identify and remove potential hazards and to implement appropriate control measures for the hazards.
- Employers should develop, implement and enforce comprehensive safety and safety training programs in the language of the workers that include training in hazard recognition and the avoidance of unsafe conditions.

Keywords: Hispanic, electrocution, powerlines

- Employees required to work from a scaffold should be trained by a person qualified in scaffold safety.

INTRODUCTION

On Friday, July 1, 2005, at approximately 12:20 p.m. a 36-year-old Hispanic brick mason was electrocuted. The decedent was attempting to insert a 20-foot 2-inch rerod down through a grouted brick wall he and his coworkers had constructed when the rerod contacted an energized, primary 4,800-volt single-phase powerline. Emergency personnel arrived shortly thereafter and transported the decedent to a hospital where he was pronounced dead. On July 1, 2005, MIFACE investigators were informed of the fatality by the Michigan Occupational Safety and Health Act (MIOSHA) personnel who had received a report on their 24 hour-a-day hotline that a work-related serious injury had occurred. On Tuesday, August 16, 2005, the MIFACE researcher was allowed to be present as two of the decedent's coworkers answered questions presented by the MIOSHA officer investigating the fatality at the office of the attorney who represented the owner of the company for whom the decedent had worked. The two coworkers individually described the events on the day of the fatality as they recalled them in the presence of the attorney for the company, the MIOSHA officer, and the investigator. The investigator visited the site of the fatality, but the work had been competed. During the writing of the report, the medical examiner's report, responding police report, photographs taken by the MIOSHA officer, and the MIOSHA file and citations were reviewed. Photos in the report are courtesy of the MIOSHA investigating officer.

The company had been in business for three years. It consisted of the owner, the job superintendent (the owner's son) and four masons. Spanish was the primary language of the four masons. The company owner and superintendent were fluent in Spanish. The general contractor for the job could not speak Spanish. Coworkers 1 and 2 indicated they had received no safety training including no training regarding working near powerlines and no training regarding the proper way to erect a scaffold. The employer had no safety nor safety training program.

The decedent had worked for the company for two months. He had been a mason for 15 years. Coworker 1 had worked for the company for three months. He had been a mason for seven years. Coworker 2 had worked for the company for six months. He had been a mason for ten years. The experience and time working for the company for the fourth mason is not known.

The project consisted of adding space to an existing building by erecting a brick wall. The 4-man crew had been working at the job site for three days. The superintendent was not at the site at the time of the incident. Coworker 1 was not sure who the general contractor was, but he assumed it was the man other than the superintendent who had been at the site several times. Coworker 2 recognized the man who was the general contractor, but he had never spoken to him. He had seen him at the site two or three times – once during a morning and again during an afternoon. Coworkers 1 and 2 only spoke to the superintendent who gave them their instructions in Spanish.

The MIOSHA investigation resulted in nine Serious violations being issued to the company: three violations under the GENERAL RULES; one violation under MASONRY WALL BRACING; and five violations under SCAFFOLDS AND SCAFFOLD PLATFORMS.
GENERAL RULES: no accident prevention plan; workers too close to energized primary electrical 4,800-volt lines dropping down to a secondary 2,400-volt line; no employees trained in First Aid/CPR.
MASONRY WALL BRACING: no "Danger" signs posted on ends of 35-foot long, 12-foot high masonry wall, nor for the collapsed zone.
SCAFFOLDS AND SCAFFOLD PLATFORMS: employees not properly trained in scaffold erection; employees worked from out of plumb and improperly braced scaffold; employees working from scaffold with unstable objects used in place of proper mud sills and base plates; employees working from improperly erected scaffold with intermixed components not designed to be intermixed; employees working 15 feet above ground from scaffold not fully planked.

INVESTIGATION

All four workers at the job site had set up the scaffolding for this job. The scaffold was erected improperly and was leaning. They had learned how to set up a scaffold on-the-job by helping others. They had erected it on concrete, so they felt it was secure, and they felt they did not have to level it more than they had (Figure 2). They thought they had done a good job. Apparently the superintendent and the general contractor were satisfied that it was sufficiently stable, because they had both looked at the scaffold and had not commented otherwise.

Figure 2. Example of scaffold leveling

The workers started to build the brick wall by setting 8-inch hollow bricks on top of each other with mortar placed between them. After every five foot vertical course of bricks, they poured grout down through the openings in the blocks. Next they inserted rerod down through the grout to increase the stability of the wall. Before the masons arrived to

construct the wall, a guy wire had been attached between two electrical poles on the street near the job site to stabilize them. It had been cut (Figure 3), because the wall could not have been constructed if it were left where it had been originally. The angle of the wire as it connected the poles would have carried it through the area where the wall was to be constructed. Both workers said they had not cut the guy wire, and indicated that it had been cut prior to the time they first arrived at the job site. It is not known who cut the wire, but whoever it was had little regard for safety, either of the workers or of the community. The stability of the electrical poles was compromised by this action.

Figure 3. Photo showing cut guy wire

The masons' instructions regarding the electrical wires consisted of the superintendent telling Coworker 2 that the high wires were live, but that the "dark" wire was not live. and Coworker 1 overhearing the man whose identity he was not sure of tell the superintendent that the lower "dark" wires were telephone or cable wires and were not live. Coworker 1 said he warned the decedent to be careful about the electrical wires above and nearby, because he assumed they were "electrified". The decedent responded to Coworker 1 indicating that he would be careful. Coworker 2, who was on the ground, said he personally didn't worry about the wires, because they were "so high in the air". The primary 4,800-volt lines were the ones "so high in the air", not the "dark" one. During the wall construction, the workers were instructed to cut one of the wires and secure it, so that it would not interfere with the wall, which they did.

On the day of the incident the decedent and Coworker 1 were working together from the top of the scaffolding. Coworker 2 and another mason were working on the ground handing materials and equipment up to the decedent and Coworker 1 on the scaffold. The masons on the scaffold were pouring grout into the bricks after which the decedent would insert a 20-foot 2-inch rerod down through the grout in the bricks. The wall they were working on at the time was approximately 20-feet high. Coworker 1 was assisting him by handing him material. The rerod that the decedent was inserting into the grout was closer to the electrified powerline than the required 10 foot distance [MIOSHA Part 1. General Rules, Rule 115(4)].

According to Coworker 1, when the rerod the decedent was lifting to insert through the bricks contacted the 4,800-volt primary electrical line, the decedent uttered something and fell to the planks. Coworker 1 tried to help the decedent, but he was shocked, and he pulled away. When the decedent lost consciousness, he became disengaged from the rerod and fell to the next lower set of planks. Coworker 1 tried to help him while he was still on the lower set of planks on the scaffold, but did not know First Aid or CPR. Coworker 2 said he could not see what was happening on the scaffold from where he was on the ground, so could not see what had happened when the rerod the decedent was handling contacted the energized wire. He said he just heard him scream.

Because none of the coworkers were trained in CPR or First Aid, the decedent received no help until emergency personnel arrived. Emergency personnel transported the decedent to a hospital where he was pronounced dead. The rerod was later removed from the powerline by the electrical company.

CAUSE OF DEATH

The cause of death as listed on the medical examiner's report was electrocution. Toxicology tests for drugs and alcohol were all negative.

RECOMMENDATIONS/DISCUSSION

- Employers should conduct a jobsite survey during the planning phases of any construction activity to develop a written accident prevention plan to identify and remove potential hazards and to implement appropriate control measures for these hazards.

Before beginning work at a construction site, a competent person should evaluate the site to identify any potential hazards and ensure appropriate control measures are implemented. A competent person is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees, and who has the authority to take prompt corrective measures to eliminate them. A competent person had not conducted a job site survey before the work was started.

The jobsite had an identifiable hazard, i.e., energized primary electrical lines of 4,800 volts and secondary lines at 2,400 volts that a jobsite survey conducted by a competent person would have identified. The improperly erected scaffold was erected too close to the powerlines, so that the employees were working too close to the energized powerlines (approximately 9.5 feet). The MIOSHA standard General Rules, Part 1, requires a distance of not less than 10 feet between powerlines and work materials. Having to raise a 20-foot rerod to insert it into the grout in the bricks further exacerbated the problem. MIOSHA standard Scaffolds and Scaffold Platforms, Part 12, also addresses electrical safety when working on a scaffold. Because a safe distance could not be maintained between the materials and the energized powerlines, the electrical company should have been notified and appropriate action taken to eliminate the electrocution hazard.

- Employers should develop, implement and enforce comprehensive safety and safety training programs in the language of the workers that include training in hazard recognition and the avoidance of unsafe conditions.

This employer did not have a safety or safety training program. A comprehensive safety and training program should identify required safety training, e.g., working around electricity and overhead powerlines, work site and scaffold erection. Even though the supervisor spoke the language of the employees fluently, they were not provided with safety training. The safety program, in addition to being multilingual, should be presented by a competent person who can explain worker rights to protection in the workplace, safe work practices workers are expected to adhere to, specific safety protection for all tasks performed, ways to identify and avoid hazards, and who to contact when safety and health issues or questions arise.

- Employees required to work from a scaffold should be trained by a person qualified in scaffold safety.

These workers were not trained to erect a scaffold properly, but perhaps the more important part of the training would have been that regarding recognizing the nature of and the correct procedures for dealing with energized powerlines.

The workers believed they had erected the scaffold safely, because it was erected on concrete, and they thought it did not tilt. They had erected it the way they had been taught to do so by others with whom they had worked. Although the faulty scaffold erection did not directly contribute to the electrocution, other than that it was erected too close to the powerlines, it was indicative of the inadequate training and understanding of safe work practices of the employees at the jobsite.

REFERENCES

1. MIOSHA standards cited in this report may be found at and downloaded from the MIOSHA, Michigan Department of Labor and Economic Growth (DLEG) website at: www.michigan.gov/mioshastandards. MIOSHA standards are available for a fee by writing to: Michigan Department of Labor and Economic Growth, MIOSHA Standards Section, P.O. Box 30643, Lansing, Michigan 48909-8143 or calling (517) 322-1845.

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Investigation Report #05 MI 065
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