MIFACE INVESTIGATION REPORT: #10MI006

Subject: Maintenance Supervisor Killed by Fall While Changing Light Bulb

Summary

In the winter of 2009, a 66-year-old male maintenance supervisor for a church fell down a stairway while changing a burnt-out light bulb (Figure 1). The burned out light to be changed out was at the top of unlit, L-shaped stairway (Figure 3). He placed an 8-foot step ladder (in a closed position) on the second floor landing against a 9-foot long by 42-inch high by 7- inch wide cinder block knee wall. He had an unwitnessed fall. Possible scenarios include an unintentional fall from the second floor landing or a fall from the top of the knee wall as he was attempting to unscrew the fixture's set screws. He was found by an individual walking past the first set of stairs lying on the 5- by 5-foot landing. The individual who discovered the decedent indicated the decedent was unconscious, lying on his back and appeared to be breathing. This individual ran to a nearby office to call for emergency response. Emergency response arrived and the decedent was transported to a local hospital where he was pronounced dead.

Figure 1. Standing in lobby, looking at first set of risers to landing. Arrow shows decedent's position on the stairway landing.

RECOMMENDATIONS

- Employers should review stairway lighting to identify safety issues related to maintenance and develop an approach to ensure worker safety.
- The church should develop a Health and Safety management program, which should include the formation of a Health and Safety Committee and a job hazard analysis.
- The church should identify the edge of the second floor landing/stairway.
- The church should replace existing light bulbs with bulbs that require less frequent changing.
- Building designers should consider and discuss lighting maintenance issues with the building owner during the design process.

INTRODUCTION

MIFACE investigators were informed of this work-related fatality by the Michigan Occupational Safety and Health Administration (MIOSHA) personnel, who had received a report on their 24-hour-a-day hotline. The business manager for the church agreed to be interviewed by the MIFACE investigator in April 2010. Following the interview, the business manager escorted the MIFACE investigator to the incident scene and permitted MIFACE to take incident scene pictures. During the writing of this report, the police and medical examiner reports, the death certificate and the MIOSHA investigation file were reviewed. All pictures contained in the report were taken by the MIFACE investigator at the time of the site visit.

The church complex had five buildings on 23 acres, including a church-sponsored school. The church employed approximately 75 individuals, 52 of whom worked full time. On site, there was a seminary, the church, two schools, and a bookstore. The decedent was the self-assigned maintenance supervisor. The decedent, who was an electrician by trade, worked full-time. He usually arrived at the church between 7:00-7:30 a.m. and left at approximately 3:30 p.m., but, if a project needed to be finished, he would return. He had been with the church for approximately 11 years. He was responsible for the maintenance activities for all of the church buildings.

The church had an employee handbook, but did not have a section on health and safety in the handbook, nor a health and safety management program. School personnel received training regarding some health and safety issues, such as bloodborne pathogens and hazard communication. Individuals were encouraged to bring health and safety concerns to the business manager or the senior pastor.

The business manager indicated the decedent had a medical condition that may have contributed to this fatal incident. During a hip replacement operation a nerve was damaged that caused the decedent to have “drop foot”. The business manager indicated that when the decedent wore a brace, his foot would not drop. The decedent was not wearing a brace on the day of the incident.

MIOSHA General Industry Safety and Health Division issued the following Other-than-Serious citation at the conclusion of its investigation:

- Recording And Reporting Of Occupational Injuries And Illnesses, Part Osh 11, Rule 1139(1):

  An oral report of a work-related incident resulting in a fatality or the inpatient hospitalization of three or more employees was not made within eight hours after the occurrence to the Michigan Department of Labor and Economic Growth, Michigan Occupational Safety and Health Administration, State Secondary Complex, 7150 Harris Drive, P.O. Box 30644, Lansing, Michigan 48909, phone 1-800-858-0397.

MIOSHA was alerted to the fatality during a workers' compensation injury review about 1 month after the incident.

INVESTIGATION

The carpeted L-shaped stairway where the incident occurred provided one of the access/egress points to the sanctuary. The two sets of risers were separated by a 5- by 5-foot landing. The first stairway had 8 risers, measuring approximately 5 feet wide, 11 inches deep and 7 inches high. The tread area extended approximately 1/2-inch beyond the riser. The second set of 13 steps leading to the second floor landing were approximately 57 inches wide, 11 inches deep and 7 inches high, with the tread area extended approximately 1/2-inch beyond the riser (Figure 2). At the top of the second floor was a cinder block knee wall, that measured 9 feet long, 42 inches high, and 7 inches wide. The knee wall provided a 4-foot wide access corridor that led to the sanctuary function room (Figure 3).

Figure 2. Standing on second floor landing, looking down 13 steps to the landing

Three lights lit the stairway. A suspended light illuminated the first floor landing and two ceiling lights lit the 13 step stairway to the second floor landing. The On-Off switches were located at the base and the top of the stairway. Natural light from the lobby somewhat lit the bottom eight steps (Figure 1). The light bulb closest to the second story landing (stairway light #2) was burned out. This light was located approximately three feet from the knee wall (Figure 3). Set screws held the removable base clear cover of the light to the fixture (Figure 4).

Figure 3. Standing on second floor landing, knee wall and burned out light

On the day of the incident, the decedent performed his initial rounds. One church employee talked with him on a matter unrelated to the incident at approximately 9:00 a.m. in the church gym. Another church volunteer saw the decedent walking with an 8-foot step ladder at approximately 9:30 a.m. The decedent informed this volunteer that he was going to change a

burned out light bulb, but did not say in which building location this activity was to occur. The decedent did not ask this volunteer for help. The decedent carried the ladder to the second floor and leaned it against the knee wall, approximately in the middle of the knee wall. The ladder was closed.

A church employee entering the sanctuary lobby at approximately 10:30 a.m. observed something in the shadow of the landing. The stairway was dark and when he activated the light switch he found the decedent lying on his back, with his left foot on the second stair of the 13-step stairway leading to the second floor and his right foot on the first step (Figure 1).

The individual did not have his cell phone with him, so he ran to his office and called for emergency response. Hanging up the phone, he ran back to the incident scene. The emergency responders transported the decedent to a local hospital where he was declared deceased.

The business manager came to the scene after being notified by the person who found the decedent. The business manager noted that the stairway light (#2) from the east, was burnt out. He ascended the stairs to the second floor landing and discovered the stepladder leaning on the knee wall approximately five feet to the east of the extinguished light.

Figure 4. Burned out light in incident

The business manager indicated an articulating ladder (unknown height) was available for use to change the bulb. The business manager also indicated that a replacement light bulb was found at a later date in the decedent's back pants pocket.

The event was unwitnessed. Possible incident scenarios include:

- The decedent misjudged the location of the top edge of the stairs because the stairway was dark.
- The decedent tripped at the top of the stairs due to his medical condition.
- The decedent climbed on top of cinderblock wall and leaned over to try to unscrew the set screw.

CAUSE OF DEATH

The cause of death as stated on the death certificate was craniocerebral injuries. Toxicology tests were negative for alcohol, prescription and illegal drugs.

RECOMMENDATIONS/DISCUSSION

- Employers should review stairway lighting to identify safety issues related to maintenance and develop an approach to ensure worker safety.

The stairwell lights illuminating the stairway to the second floor were high above the stairway and extremely difficult to access. To safely access the set screws to remove the clear base and change the lights illuminating the stairway, the use of a properly sized articulating ladder or a scaffold designed to be used on stairs was necessary. Both the ladder and scaffold require the individual to receive specialized training. In the case of the scaffold, the training must include proper erection and disassembly of the scaffold. Additional approaches could include contacting the building designer to investigate other lighting options, such as accessible wall sconces; lights that could be raised and lowered to permit ease of bulb maintenance, or hiring a bonded and insured outside contractor to provide fixture maintenance.

- The church should develop a Health and Safety management program, which should include the formation of a Health and Safety Committee and a job hazard analysis.

Currently, the church staff relies on the pre-existing safety knowledge of its volunteers, especially those volunteers performing in a "skilled trade" type task. The difficulty in relying on the experience a worker brings to a task is that experienced workers could have developed unsafe work practices, become comfortable or complacent on using unsafe work practices, or be using their work skills in a new setting where they are unfamiliar with new hazards. MIFACE recommends that the church develop a comprehensive safety and health management system that includes forming a Health and Safety Committee and conducting a job hazard analysis (hazard assessment).

MIOSHA has published the Safety and Health Management System Evaluation Form utilized by the compliance officers and consultative staff to evaluate a firm's safety and health management system. The form can be found on the MIOSHA website at: http://www.michigan.gov/lara/0,1607,7-154-11407_30453---,00.html. The elements of a safety and health management system include management commitment and planning, employee involvement, safety and health training, worksite analysis and hazard prevention and control. Employee involvement includes employee participation in safety and health decision making, training, and on-site walk-arounds to identify and correct hazards. The MIOSHA Safety and Health Toolbox contains materials that focus on the major components of a health and safety system and can be accessed via http://www.michigan.gov/lara/0,1607,7-154-11407_15317-124535--,00.html found at the homepage of MIOSHA Consultation, Education and Training (CET) Division (http://www.michigan.gov/lara/0,1607,7-154-11407_15317---,00.html). MIOSHA CET can also be contacted by telephone: (517) 322-1809.

A Health and Safety Committee comprised of management, employees and volunteers provides a forum to regularly discuss health and safety issues in the workplace. A Committee is an important way for employees/volunteers to help manage their own health and safety and assist the employer in providing a safer, healthier workplace. The formation of the Committee provides a process for open communication on health and safety issues and enhances the ability of employees and management to resolve safety and health concerns reasonably and cooperatively. MIOSHA has several resources that can be accessed on the Internet to assist an employer in the development of an effective H&S Committee.

The MIOSHA brochure *Good Safety and Health Programs are Built with Good Safety Committees* (www.michigan.gov/documents/cis_wsh_cet0140_103132_7.pdf) details the advantages of having an effective Health and Safety Committee.

The job safety analysis or hazard assessment will provide information to develop hazard prevention and control strategies and volunteer (and paid staff if indicated) safety and health training and education. Church staff, with the assistance of all workers (paid and volunteer) should evaluate tasks performed, identify all potential hazards, and then develop, implement, and enforce safe work procedures, conduct necessary training, and periodically evaluate the effectiveness of the hazard mitigation addressed by the procedures.

Church staff should include safety as a standing item on the staff and council meeting agendas. The inclusion of safety topics at meetings will show the church's commitment to providing a safe workplace for all individuals the volunteers, as well as provide an opportunity for input from volunteers on issues that impact their safety. Minutes should be maintained that document the discussion and follow-up action(s) to be taken to address the safety issue.

MIOSHA health and safety standards as well as best industry practices can be utilized to support this effort. MIOSHA Consultation, Education and Training Division has many resources that an organization can use and adapt to their needs. The Non-Profit Risk Management Center has an online tutorial and an online safety and health toolkit to assist non-profit organizations in the development and implementation of a health and safety program.

- The church should identify the edge of the second floor landing/stairway.

If all of the stairway lights are "On", then the land/stair edge is plainly visible. If the stairway lights are off, the stairway is dark and it is difficult to see the edge of the second floor landing. MIFACE recommends that the church mark the stair edge using a recessed step or wall light or yellow marking tape.

- The church should replace existing light bulbs with bulbs that require less frequent changing.

Although the use of longer duration bulbs such as compact fluorescent bulbs does not eliminate the risk, the use of these bulbs would reduce the frequency of performing this task and accordingly reduce overall risk to employees.

- Building designers should consider and discuss lighting maintenance issues with the building owner during the design process.

The placement and design of the lights for the stairway made it difficult for the church (or any contractor) to perform maintenance. Building designers should keep these ergonomic and safety issues in mind during the design phase. In addition, if a design meets building standards but poses potential safety concerns, the designer should discuss these concerns with the building owner to determine if the building owner agrees to the design.

REFERENCES

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

- Recording And Reporting Of Occupational Injuries And Illnesses, Part OSH 11, Rule 1139(1)
- MIOSHA General Industry Safety Standard, Part 5, Scaffolding
- Non-Profit Risk Management Center. Workplace Safety Is No Accident, An Employer's Online Toolkit to Protect Employees and Volunteers. http://nonprofitrisk.org/tools/workplace-safety/workplace-safety.shtml

Key Words: Church, Fall, Stairway

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