MIFACE INVESTIGATION REPORT: #08MI009

SUBJECT: Journeyman Mason Died After Stepping Backward Off a Raised Mobile Scaffold

Summary

On the winter of 2008, a 32-year-old male journeyman mason died as a result of falling from an unguarded working surface of a Hydro Mobile 2 scaffold raised to 35 feet. The scaffold had recently been lowered and moved to its present location. The competent persons erecting the scaffold did not re-install the guardrails at the ends of the working platform nor install the proper planking prior to raising the scaffold. The scaffold was repositioned in a north-south direction and then raised to 35 feet above the ground. The decedent was installing backing rod and his coworker was caulking. The two workers worked in a south to north direction, moving backwards on the work platform. The decedent fell from the unguarded edge (Figure 1) to the concrete surface below. Emergency response was called, and the decedent was taken to a local hospital. He died in the emergency room.

Figure 1. Unguarded north work plank on raised Hydro Mobile 2 scaffold

RECOMMENDATIONS

- Employers should ensure that all required components of a scaffold are properly installed prior to employee use.
- Employers should routinely conduct scheduled and unscheduled workplace safety inspections.
- Employers should periodically evaluate their organizational commitment and leadership and employee understanding regarding their safety program
- Employers should institute a Health and Safety (H&S) Committee as part of their health and safety program.

INTRODUCTION

On February 28, 2008, a 32-year-old male journeyman mason died as a result of falling from an unguarded working surface of a Hydro Mobile 2 scaffold raised to 35 feet. On the same day, 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 MIFACE researcher interviewed the company's safety director at the company's headquarters. During the course of writing this report, the police report and pictures, death certificate, medical examiner report, and the MIOSHA file and citations were reviewed. All pictures used in this report are courtesy of the firm's safety director.

The company for whom the decedent worked was a commercial masonry contractor. The decedent had 12 years of experience as a bricklayer and had been employed by this firm for four to five years. The company employed 75 individuals but would hire additional individuals as the workload demanded. The decedent was an hourly, full-time employee and was the Union Steward (bricklayer's union) on the job. The workday usually started between 7:00 a.m. and 7:30 a.m. and ended at 3:00 p.m.

The firm had a written health and safety program, but it was not adequately implemented. There were written procedures for erecting the scaffold involved in this fatality. Both in-house personnel and an insurance-provided consultant developed the health and safety program. There was no health and safety committee at the firm. A written disciplinary procedure was in place and implemented. Every worker was empowered to "fix" a hazardous safety situation.

The safety director had 15 years of on-the-job training. He had been a safety director at another company. The safety director reported directly to the company owner. The safety director was not on site at the time of the incident.

Safety responsibilities were delegated to the project foreman, who had both on the job experience and safety class training. At the time of the incident, the project foreman conducted a weekly jobsite inspection, documenting those results. After the incident, the foreman conducted a daily jobsite inspection and completed a jobsite inspection checklist one time per week. The jobsite safety inspection included assessing the entire worksite as well as noting whether scaffolds were properly assembled, tied off, and had proper guardrails and planks. The foreman was responsible for ordering all safety equipment as required for each job and making sure it was properly installed and used. The foreman was also responsible for ensuring that weekly toolbox safety talks were held and documented. The Safety Director accompanied the foreman at least one time per month as he/she conducted the weekly safety inspection. The foreman had the option on a worksite to provide an incentive program to reward safe work practices that resulted in no injuries. This program was not implemented on this worksite.

The firm provided safety training using classroom, training videos, and on-the job training, in addition to the toolbox talks. Throughout the year, the firm had "safety days" on weekends. Trade unions, equipment manufacturers and outside safety training

consultants also provided training. Some training, such as scaffold erection training, incorporated a posttest to measure comprehension. Scaffold users were not required to attend this training, only individuals responsible for erecting the scaffolds.

The firm had a Quality Steering team that developed a best practice manual to address safety issues.

MIOSHA Construction Safety and Health Division issued the following alleged Serious and Willful/Serious citations at the conclusion of their investigation:

SERIOUS:

SCAFFOLDS AND SCAFFOLD PLATFORMS, PART 12, RULE 1210(2).
A scaffold shall not be erected, moved, dismantled, or altered, except under the supervision of a competent person.

A scaffold was erected and used by employees without the supervision of a person whose actions were consistent with those of a competent person as required by PART 12.

WILLFUL/SERIOUS:

GENERAL RULES, PART 1, RULE 114(2)(c).
An accident prevention program shall, as a minimum, provide for the following:
Inspections of the construction site, tools, materials, and equipment to assure that unsafe conditions which could create a hazard are eliminated.

No effective inspection of Hydro Mobile 2 scaffold made prior to use.

WILLFUL/SERIOUS:

SCAFFOLDS AND SCAFFOLD PLATFORMS, PART 12, RULE 1213(1).
A guardrail shall be installed on any open side or end of a scaffold work platform that is 10 (3.1m) or more feet above the floor or ground, except for any of the following:

(a) A boatswain's chair
(b) A catenary scaffold
(c) A float scaffold
(d) A ladder jack scaffold
(e) A needle beam scaffold

The guardrail shall be as prescribed in R 408.42150

Guardrails were not installed on ends of the employees work platform.

WILLFUL/SERIOUS:

SCAFFOLDS AND SCAFFOLD PLATFORMS, PART 12, RULE 1217(1).
If wood planks are used for a work platform, then the planks shall be scaffold-grade lumber that has a minimum of 1,500 pounds per square inch fiber stress value. The planks shall be not less than 2 inches by 10 inches. The platform shall

consist of a minimum of 2 planks laid side by side. Each platform on all working levels of scaffolds shall be fully planked or decked between uprights where practicable. Spaces between the platform and the uprights shall not be more than 9 1/2 inches. The maximum permissible spans for 2- by 10-inch or wider planks are as follows:

	Material Full Thickness Undressed Lumber				Material Nominal Thickness Lumber			
Working load (PSF)	25	50	62	75	25	37	50	62
Permissible span (ft)	10	8	7	6	8	7	6	4

Employees work platform was not fully planked.

INVESTIGATION

The incident occurred during brick repair at a building renovation/construction site. The building wall being repaired was the exterior of a new building connected to the original building. The general contractor for the project required the decedent's employer to conduct a pre-task analysis to identify potential safety issues. Weather conditions on the date of the incident: temperature 9 degrees F, winds 3 mph from the west, cloudy with 10 miles visibility, and humidity at 68%.

The decedent's employer had been called to remove and replace some structural clips that had been previously installed which were supporting the limestone panels on the face of the building. Due to an engineering issue, there was concern that the engineered clips could not support the weight of the limestone, and if left unchecked, could potentially create a hazard for pedestrians later. The decedent's employer was also performing other work at the site unrelated to the work being performed at the time of the incident.

There were nine individuals who worked for the decedent's employer on site at the time of the incident. The decedent had been working at the site for several months, although the decedent's employer had been working at the site for almost one year. The decedent was working on the scaffold with another mason. Competent persons erected the scaffold. The competent persons had successfully completed Hydro Mobile 2 scaffold erection training given by an outside training firm.

The workers used a Hydro Mobile 2 scaffold to perform repairs. The Hydro Mobile 2 scaffold was a mechanical/hydraulically lift unit supported by two braces. The braces were attached to a ground support system comprised of additional braces and four ground levels.

The decedent's employer had just completed the section of remediation work in the area adjacent to where the incident occurred. At approximately 10:30 a.m., the competent person and crewmembers lowered the Hydro Mobile 2 scaffold and moved it approximately 13 feet to the south with a crane so they could continue their work. Prior to moving the scaffold to its new position, the competent persons lightened the scaffold

by removing scaffold planks and guardrails. All required planking and guardrails for the scaffold were present at the site but were not re-installed when the scaffold was repositioned. The working surface planks were 2 inches by 10 inches and 16 feet in length. The competent person and the crew discussed whether to reinstall the guardrails; the decision was made to not reinstall them.

Figure 2. Repositioned Hydro Mobile 2 scaffold

Once the move had been made, the Hydro Mobile 2 was fastened to the building in a north-south position and the work planks re-installed. Plastic sheeting covered the scaffolding at the top, which had been raised to 35 feet (Figure 2). The working foot planks that were attached to the outriggers did not extend the continuous length of the scaffold thus did not fully plank the scaffold work area (Figures 3 and 4). The work planks were less than six inches away from the construction wall.

The decedent and his coworker started the Hydro Mobile 2 scaffold and raised the working platform into place, approximately 35 feet above the ground. The decedent and

Figure 3. North working plank not fully planked nor guarded

Figure 4. South working plank not guarded

his coworker tore off six blocks and replaced them. They were working from south to north installing backer rod and caulking to re-anchor the block clips. The decedent was installing the backer rod ahead of his coworker who was installing the caulk.

It appears that while the decedent was bending over and walking backwards to install the backer rod, he stepped off the end of the unguarded work plank and fell 35 feet to the concrete grade below. His coworker, who had his back to the decedent, heard something. He turned around and witnessed the decedent falling from the scaffold.

His coworker ran to the north edge of the scaffold planks and saw the decedent lying face down on the concrete pavement. He yelled to a nearby contractor for help. This contractor came over and saw the condition of the decedent. This contractor yelled inside a nearby building for help and for other workers to call 911. He returned to the victim and called 911 from his cell phone. He did not move the decedent. He and other coworkers covered the decedent with their coats to keep him warm per the instructions he received from dispatch. Emergency response arrived and the decedent was transported to a local hospital where he later died.

The qualified person on site stated in the police report that it was "everybody's job to install the rails". He indicated that who ever goes up onto the scaffolding and sees that the rails are not in place has a responsibility to contact a supervisor. He indicated that the decedent knew of this process.

MIOSHA Construction Safety and Health Division had previously cited the company for whom the decedent worked for lack of fall protection concerning scaffolding.

CAUSE OF DEATH

The cause of death as listed on the death certificate was multiple injuries. Toxicological analysis was negative for alcohol and illegal drugs.

RECOMMENDATIONS/DISCUSSION

- Employers should ensure that all required components of a scaffold are properly installed prior to employee use.

Lack of appropriate guardrails on the north and south ends of the working planks of this 35-foot high scaffold was a significant factor in this incident. Had the scaffold in this incident been properly guarded, the decedent would, most likely, not have fallen to his death. Proper assembly procedures include, but are not limited to, the installation of guardrails and working foot planks. MIOSHA defines a competent person as a "person who is experienced and capable of identifying an existing or potential hazard in surroundings, or under working conditions, that are hazardous or dangerous to an employee and who has the authority and knowledge to take prompt corrective measures to eliminate hazards". The competent person would be responsible for ensuring that scaffolds are properly assembled.

Figure 5. Guardrail installed on north end of working plank after incident

Figure 6. Guardrail installed on south end of working plank after incident

Employees who perform work on a scaffold also are required to be trained by a person qualified in scaffold safety. The training must enable an employee to recognize the hazards associated with the type of scaffold being used and to understand the procedures to control or minimize the hazards. Although the employer had provided ongoing scaffold training in toolbox talks, one of which was held one month prior to the incident, the fatal incident still occurred. Continued reinforcement of the importance of safe work procedures and the expectation (including disciplinary action if necessary) that the procedures will be followed is an important element in the prevention of injuries.

- Employers should routinely conduct scheduled and unscheduled workplace safety inspections.

The competent persons who lowered and erected the scaffold and the workers who were performing work on the unguarded platform had been trained in the requirement for guardrails, yet did not insist on the reinstallation of the guardrails consistent with both their training and company policy. Workers who perform hazardous tasks can develop a cavalier attitude over time with job familiarity. This was an experienced crew, and the decedent had many years of experience.

MIFACE recommends that the Safety Director arrive at a jobsite unannounced and perform inspections with the project foreman. Best in class construction safety programs has each crew conduct safety talks daily before work starts and has management faithfully conduct unannounced safety reviews to obtain a more realistic evaluation of what takes place on a regular basis. Even though the announced and/or unannounced inspections do not guarantee the prevention of occupational injury, they may identify hazardous conditions and activities that should be rectified. Further, they demonstrate the

employer's commitment to the enforcement of the safety program and to the prevention of occupational injury.

- Employers should periodically evaluate their organizational commitment and leadership and employee understanding regarding their safety program.

The components of an effective safety program were written, but the incident occurred despite the requirements of the safety program. The employer should design, develop, and implement a verbal and/or written post-training examination to reinforce and to evaluate the effectiveness of the safety training program. The importance of scaffold safety was acknowledged and highlighted in both a Safety Training Pamphlet given to all employees and also in the health and safety program Safety Rules section under Scaffolding. The firm acknowledged in the Safety Training Pamphlet that "It seems we do really well maintaining mid rails and forget to bother with end rails. End rails require a little more work, be prepared." The Scaffolding section in the health and safety program stated, "Scaffolding must meet or exceed OSHA/MIOSHA and OSHA requirements."

Safety starts at the top of an organization. Organizational commitment, management commitment and leadership, and employee motivation and buy-in are necessary to make a safety program effective. In order to have a great safety culture, **every** meeting held by the President down to the foreman should start with a sincere safety first position. "If we can't do the task safely, then we will not do the task until we determine how it can be done safely." Top management must hold middle management, project foreman, and supervisors accountable for safety.

MIFACE recommends that employers audit themselves on their management commitment to safety. There are several examples of management safety audit systems on the Internet that can be modified for use by any employer:

—International Organization of Oil and Gas Producers: "Checklist for an audit of safety management" http://www.ogp.org.uk/pubs/160.pdf

—United Kingdom, Health and Safety Commission, Health and Safety Executive: Textile Safety Management System Audit, Parts 1-4
www.hse.gov.uk/textiles/audit/part1.htm
www.hse.gov.uk/textiles/audit/part2.htm
www.hse.gov.uk/textiles/audit/part3.htm
www.hse.gov.uk/textiles/audit/part4.htm

—OHSAS 18001: OHSAS 18000 is an international occupational health and safety management system specification. It comprises two parts, 18001 and 18002 and embraces BS8800 and a number of other publications.
www.ohsas-18001-occupational-health-and-safety.com/index.htm

- Employers should institute a Health and Safety (H&S) Committee as part of their health and safety program.

An H&S Committee, comprised of both management and hourly employees provides a forum for management and employees to regularly discuss health and safety issues in the workplace. An H&S Committee is an important way for employees 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. Conducted appropriately, it reinforces management's commitment to a safe and healthy work environment and provides employees with a platform to voice their concerns regarding consistent enforcement of company health and safety policies.

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 *Good Safety and Health Programs are Built with Good Safety Committees* brochure (www.michigan.gov/documents/cis_wsh_cet0140_103132_7.pdf) details the advantages of having an effective H&S Committee. The MIOSHA Safety and Health Toolbox, which can be found at the homepage of MIOSHA Consultation, Education and Training Division, contains materials that focus on the major components of a health and safety system. Module 2 of the Toolbox focuses on employee involvement and contains several resources for Health and Safety Committee development. The MIOSHA CET Division website can be accessed through the Michigan Department of Energy, Labor & Economic Growth website at http://michigan.gov/dleg. Click on the MIOSHA link located in the box on the left side of the web page, then click on the Consultation, Education, and Training link. MIOSHA CET can also be contacted by telephone: (517) 322-1809.

The State of Wisconsin "Guidelines for Developing an Effective Health and Safety Committee" (www.doa.state.wi.us/docs_view2.asp?docid=665) and the Canadian Centre for Occupational Health and Safety, Occupational Safety and Health Answers: Health and Safety Committees (www.ccohs.ca/oshanswers/hsprograms/hscommittees/) both provide valuable resources and a framework for selection of H&S Committee membership, purpose, function, and activities.

REFERENCES

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

- MIOSHA Constructions Safety and Health Division, Scaffolds and Scaffold Platforms, Part 12.
- Painter Dies After 35-Foot Fall From Scaffold--Tennessee FACE 9506. http://www.cdc.gov/niosh/face/In-house/full9506.html
- Weather.com. http://www.weather.com
- Massachusetts Mason Dies in Fall From Construction Site Scaffolding MASSACHUSETTS FACE 94-MA-01. http://www.cdc.gov/niosh/face/stateface/ma/94ma001.html

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