

MIFACE INVESTIGATION REPORT: #07MI013

SUBJECT: Construction Foreman Dies from Fall While Climbing the Tower of a Hydromobile Scaffold

Summary

On February 6, 2007, a 56-year-old male construction foreman of a masonry crew was critically injured when he fell while climbing the tower of a hydromobile scaffold system, Model #MU724J. While climbing the scaffold, he may have had a cerebral infarction (blockage of the flow of blood to the cerebrum, causing or resulting in brain tissue death). He died two days later. The scaffold's 60-foot long, 5-foot wide platform access was located 32 feet from the ground. The fixed ladder supplied by the manufacturer was not installed. Two members of the crew, Coworker #1 and Coworker #2, climbed the scaffold tower to the platform to prepare the wall and winterize the scaffold. The

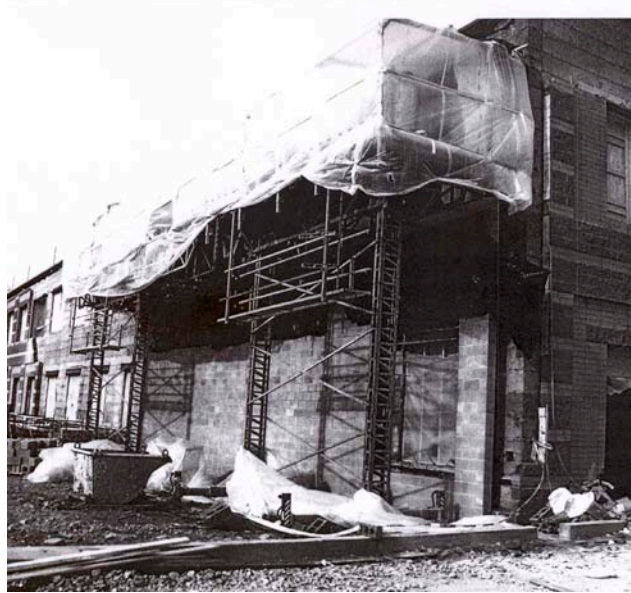


Figure 1. Incident scene

The decedent arrived and began to climb the tower to access the platform. When the decedent was approximately six to ten feet above the ground, Coworker #1 witnessed the decedent suddenly fall backwards from the scaffold to the ground and then roll to his left side. Coworker #1 descended from the scaffold to assist the decedent. The decedent was unconscious but still breathing. Coworker #2 descended to stay with the decedent while Coworker #1 ran to the general contractor's work trailer for assistance. Emergency response was called. Emergency response arrived, and after approximately one hour, the decedent was airlifted to a local hospital where he died two days later.

RECOMMENDATIONS

- Employers should ensure that scaffold safety components are provided and appropriately attached to the scaffold to provide safe access to the scaffold platform prior to use.
- Employers should develop a checklist to ensure all unattached scaffold components are included in the shipment to the site.
- Employers should periodically reevaluate their organizational commitment and leadership with respect to their safety programs.

Key Words: Fall, Construction,
Mobile scaffold

- Company management should consider developing a joint health and safety committee.
- Hydromobile scaffold manufacturers should review current ladder system design for potential ergonomic modifications to improve ease of worker ascent to/descent from the working platform.

INTRODUCTION

On February 6, 2007, a 56-year-old male construction foreman of a masonry crew was critically injured when he fell while climbing the tower of a hydromobile scaffold. He may have experienced a cerebral infarction while climbing. He died two days later from complications due to the injuries he sustained at the time of the incident. The Michigan Occupational Safety and Health Administration (MIOSHA) personnel received the fatality report on their 24-hour-a-day hotline on February 8, 2007. MIOSHA notified MIFACE personnel later that day. The MIFACE researcher interviewed the company's Vice President/Safety Director on July 17, 2007 at the company's headquarters. The Vice President/Safety Director escorted the MIFACE researcher to the storage yard where several hydromobile scaffolds were located. During the course of writing this report, the death certificate, medical examiner report, the police report, and the MIOSHA file and citations were reviewed. Pictures used in Figures 1, 2, and 3 are courtesy of the MIOSHA file. The MIFACE researcher took the picture used in Figure 4 at the time of the site visit.

The employer for whom the decedent worked was a commercial, institutional and industrial masonry contractor. The firm had been in business over 40 years. The peak summer employment was 80 to 90 individuals. The decedent was a member of the union. He worked full time, 8.5 hours a day. The decedent was one of 12 foremen and had 20 years of experience as a foreman. The decedent had been employed by the company for 20 years.

The employer created a site-specific written accident prevention program for this project in addition to the company-specific health and safety program. The Safety Director had on the job safety experience and reported directly to the company owner. The Safety Director indicated he had visited the site two to three times per week prior to the incident. He also visited the site on the day of the incident. The decedent's employer utilized outside consultation to provide assistance in the development of sections of the program. The scaffold manufacturer helped to develop and instruct employees on the scaffold safety section of the program. Additionally, the hydromobile scaffold representative provided train-the-trainer instruction to selected company employees. The company was also a member of a local mason contractors association. The association provided an avenue to discuss common job site concerns, provided health and safety training, etc.

The decedent had received hydromobile scaffold training in 1998 and had taken a refresher course within the past two years. The hydromobile scaffold manufacturing representative provided the training. The decedent had a masonry certificate from the masonry institute and had attended the MIOSHA 30-hour training. The decedent's coworkers at the site had received hydromobile scaffold training on this particular model

in addition to training at the Laborer's Training Institute. The company sent its employees to other safety training classes provided by MIOSHA CET, trade groups, and equipment manufacturers.

The company provided two foreman meetings per year to discuss health and safety issues. The company emphasized health and safety issues identified as needing the most improvement. The Safety Director led a pre-job meeting at the site prior to beginning the work. The pre-job meeting included talking about the structure itself, discussing the scaffold to be used, wall bracing, and any other issues that might be considered unusual. The company utilized scaffold manufacturer representatives to assist in the layout of a scaffold system on a difficult project. As foreman, the decedent was responsible for implementing and enforcing the company's safety policy at the jobsite. The decedent led weekly toolbox talks developed by the Safety Director. The Safety Director ensured that the toolbox talk subject matter was pertinent to the job or surrounding conditions.

The employer had a written progressive disciplinary policy that had three steps. The first step was a verbal warning. The second step was a written warning, and the third step was time off. The firm did not have a health and safety committee.

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

SERIOUS:

SCAFFOLDS AND SCAFFOLD PLATFORMS, PART 12, RULE 1211(1):
The employer did not provide appropriate access to the scaffold platform.

OTHER-THAN-SERIOUS:

SCAFFOLDS AND SCAFFOLD PLATFORMS, PART 12, RULE 1209(1).
Actions of employees were not consistent with that of employees that have been trained in the use, erection, and access by a competent person. Employees were climbing the south tower of a motorized Hydromobile scaffold unit instead of using an affixed ladder provided by the manufacturer.

INVESTIGATION

The company was a site subcontractor for a building addition on a financial building. The employer was engaged in exterior masonry type work and had been at the site for approximately three weeks. The motorized hydromobile scaffold, Model #MU724J had been erected a week prior to the incident day. The scaffold was 60 feet long and 5 feet wide. The work platform access was located 32 feet above the ground. The manufacturer had a ladder system available but it had not been purchased by the company at the time of the incident. The scaffold had been winter protected by wrapping it in plastic. The plastic wrap also acted as a wind shield so the masonry could cure. The Safety Director indicated to the MIFACE researcher that the company inspected the scaffold on a daily basis and throughout the day.

The decedent was the foreman of a three-person crew. The decedent's coworkers, Coworker #1 and Coworker #2, arrived at the work site at 7:30 a.m. The Safety Director had visited the site and had left to observe another job. The decedent arrived at 9:00 a.m. The decedent's coworkers were preparing the wall for upcoming work and setting up plastic weather protection around the scaffold. The coworkers took their morning break and returned to the scaffold. The workers had been on the scaffold for a few minutes when the decedent arrived and attempted to communicate something to them, but they could not hear him.

The decedent began to climb the tower to access the platform. After climbing six to ten feet, he suddenly fell backwards to the ground below. It was later learned that the decedent may have had a cerebral infarction as he was climbing the tower. When he fell, his head hit the ground, and may have also struck rocks and anchor bolts (Figure 2). He was wearing a hard hat and safety glasses. After landing on the ground six to eight feet from the scaffold and within six inches of the concrete foundation, he rolled over to his left side. His

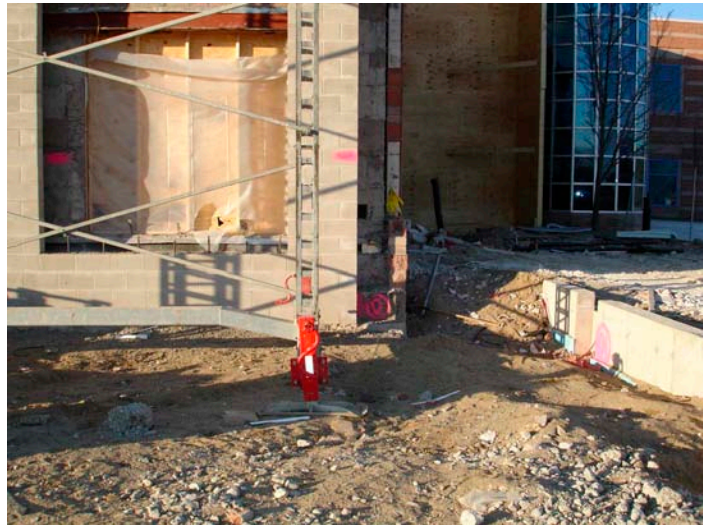


Figure 2. Surface to which the decedent fell.

safety glasses were under this head. After a few seconds, Coworker #1 descended from the scaffold to assist the decedent. The decedent was unconscious but still breathing. Coworker #2 then descended from the scaffold and stayed with the decedent while Coworker #1 ran to the general contractor's trailer to request assistance. After learning of the fall, an individual in the trailer (Worker A) ran outside and told a bystander to go inside the lobby of the building under construction and call 911. Worker A went to the decedent's location to make sure he was breathing. This individual and other workers at the site placed their jackets over the decedent to keep him warm until emergency assistance arrived. While awaiting emergency response, Worker A instructed the laborers present to direct medical personnel to the decedent's location and to help with activities to clear the area for emergency response (i.e., remove a section of fence) and a life flight helicopter to land.

Worker A called the decedent's employer to inform him of the incident. The Safety Director, who had left 40 minutes earlier, returned to the site. After emergency response arrived, the decedent was treated and moved to the ambulance to be driven to the area where a life flight helicopter could land and transport him to the hospital.

Neither the hydromobile ladder nor an extension ladder was available at the worksite at the time of the incident. The crew had been accessing the platform by climbing the towers. After the incident, an extension ladder (Figure 3) was brought to the site and appropriately affixed to the scaffold.



Figure 3. Extension ladder used to gain access to platform after the incident.

ABATEMENT

After the incident, the company initiated several preventative measures to address several factors in this incident:

- After meeting with employees, the company determined that the employees were uncomfortable using 40-foot extension ladders as a routine method to access the raised platform so the manufacturer's ladder system was purchased.
- Until such time that the scaffold system ladder was installed, the company required that an extension ladder be used to provide access to and egress from the platform area of the hydromobile scaffold.
- Refresher training on safe scaffold erection and use was provided to all employees.
- The company permanently affixed one section of the ladder to each scaffold system (Figure 4).



Figure 4. Ladder permanently affixed to the scaffold system.

CAUSE OF DEATH

The death certificate listed the cause of death as multiple injuries and cerebral infarction due to or as a consequence of a left carotid artery thrombosis. Toxicological tests were negative for alcohol and illicit drugs.

RECOMMENDATIONS/DISCUSSION

- Employers should ensure that scaffold safety components are provided and appropriately attached to the scaffold to provide safe access to the scaffold platform prior to use.

Although some hydromobile scaffolds are designed to permit climbing of the towers, the scaffold involved in this incident was not designed to permit tower climbing because of the diagonal braces in the towers. The scaffold manufacturer had designed a ladder/guard rail system to overcome this situation. Ladder sections, like the towers, came in 60-inch sections, which could be attached/detached by the scaffold erector as the scaffold was raised/lowered. Alternatively, an employer could provide platform access by meeting the following requirements of Rule 1211(1) of the MIOSHA Construction Safety Standard Part 12, Scaffolds and Scaffold Platforms:

- (a) A ladder that conforms to R 408.41101 et seq.
 - (b) Hook-on or attachable metal ladders that are specifically designed for use in construction with manufactured types of scaffolds. If hook-on or attachable metal ladders are used as access to, or egress from, a work platform that is more than 35 feet above the ground or floor level, then a ladder safety device shall be installed or the ladders shall be offset with landing platforms and guardrails that are installed at not more than 35 foot intervals.
 - (c) Step or hook-on, stair-type accessories that are specifically designed for use with appropriate types of scaffolds.
 - (d) Direct access from an adjacent scaffold, the structure, or personnel hoist. The direct access to or from another surface shall be used only when the scaffold is not more than 14 inches (36 cm) horizontally and not more than 24 inches (61 cm) vertically from the other surface.
 - (e) A ramp, runway, or stairway that conforms to R 408.42121 et seq.
- Employers should develop a checklist to ensure all unattached scaffold components are included in the shipment to the site.

The company transported the scaffold system from the staging yard to the construction site by tractor-trailer in addition to tools and other items needed at the site. A checklist provides employees an “at a glance” list of the necessary equipment to be loaded on the trailer for a particular construction site. The checklist can also serve as a reminder of equipment that is needed at the job site and was not delivered.

- Employers should periodically reevaluate their organizational commitment and leadership with respect to their safety programs.

The scaffold had been erected for at least one week. The Safety Director had been to the site and most likely observed the erected scaffold without the attached fixed ladder or extension ladder. Because no access was provided, the employees climbed the tower to access the platform. The employer gave tacit approval to the improper use of the erected scaffold by not mandating that an appropriate platform access be available. One of the objectives of a safety program is to reduce employee exposure to hazards in their workplace. Organizational commitment, management commitment and leadership, and employee motivation and buy-in are necessary to make a safety program effective. The management, by not requiring an approved access to the platform be erected, contributed to lax safety work habits by the employees. MIFACE recommends that employers audit themselves on their management commitment to safety.

- Company management should consider developing a joint health and safety committee.

A health and safety (H&S) committee that includes representatives from both management and labor can help to encourage and heighten employee involvement in the company safety program. Employee input is a critical part of a successful safety program; management can become more aware of potential recurring safety and health hazards in the field and employees can participate in developing safe and healthful work procedures. The level of involvement by employees and degree of management commitment will determine if a H&S Committee is successful.

H&S committees have many benefits. They identify employee training needs, safety and health concerns that workers/management consider most critical, help find creative solutions, and show a good faith effort toward health and safety regulations. They boost worker loyalty, morale and enthusiasm by involving them in issues important to everyone. If new safety rules are needed, a H&S Committee can help make sure employees accept and follow them.

Some resources an employer may consult for more information are:

- Canadian Centre for Occupational Health and Safety (COOHS): COOHS website: <http://www.ccohs.ca/oshanswers/hsprograms/hscommittees/>
- Industrial Accident Prevention Association (IAPA). Free downloads of health and safety information. Internet website: www.iapa.ca/resources/resources_downloads.asp
- Hydromobile scaffold manufacturers should review current ladder system design for potential ergonomic modifications to improve ease of worker ascent to/descent from the working platform.

The Safety Director indicated that the ladder rungs and side rails became slippery during wet conditions. The slippery conditions can affect employee comfort and perception of safety during ascent and descent, especially in cold environments when wearing bulky clothing and heavy winter boots. MIFACE recommends that manufacturers consider ergonomic modifications. These modifications could include a change in rung/side rail design or the application of anti-slip coatings, increased climbing rung diameter, and/or a ladder safety/fall arrest system.

REFERENCES

MIOSHA Standards cited in this report can be directly accessed from the Michigan Department of Labor and Economic Growth, MIOSHA website www.michigan.gov/mioshastandards. The Standards may also be obtained for a fee by writing to the following address: Michigan Department of Labor and Economic Growth, MIOSHA, MIOSHA Standards Section, P.O. Box 30643, Lansing, Michigan, 48909-8143. MIOSHA Standard Section phone number is (517) 322-1845.

- MIOSHA Construction Safety Standard, Part 12, Scaffolds and Scaffold Platforms.
- MIFACE Investigation Report #05MI066: Quality Control Operator Dies After Falling Into Cherry Processing Brine Tank.
Internet Address: <http://www.oem.msu.edu/MiFace/05MI066.pdf>
- Canadian Centre for Occupational Health and Safety (COOHS).
Internet Address: <http://www.ccohs.ca/oshanswers/hsprograms/hscommittees/>
- Industrial Accident Prevention Association (IAPA). Free downloads of health and safety information.
Internet website: www.iapa.ca/resources/resources_downloads.asp

MIFACE (Michigan Fatality Assessment and Control Evaluation), Michigan State University (MSU) Occupational & Environmental Medicine, 117 West Fee Hall, East Lansing, Michigan 48824-1315; <http://www.oem.msu.edu>. This information is for educational purposes only. This MIFACE report becomes public property upon publication and may be printed verbatim with credit to MSU. Reprinting cannot be used to endorse or advertise a commercial product or company. All rights reserved. MSU is an affirmative-action, equal opportunity employer. 12/13/07

MIFACE Investigation Report #07 MI 013 Evaluation

To improve the quality of the MIFACE program and our investigation reports, we would like to ask you a few questions about this report:

Please rate the report using a scale of:

Excellent	Good	Fair	Poor
1	2	3	4

What was your general impression of this MIFACE investigation report?

Excellent	Good	Fair	Poor
1	2	3	4

<i>Was the report...</i>	Excellent	Good	Fair	Poor
Objective?	1	2	3	4
Clearly written?	1	2	3	4
Useful?	1	2	3	4

<i>Were the recommendations ...</i>	Excellent	Good	Fair	Poor
Clearly written?	1	2	3	4
Practical?	1	2	3	4
Useful?	1	2	3	4

How will you use this report? (Check all that apply)

- Distribute to employees
- Post on bulletin board
- Use in employee training
- File for future reference
- Will not use it
- Other (specify) _____

Thank You!

Please Return To:

MIFACE
Michigan State University
117 West Fee Hall
East Lansing, MI 48824
FAX: 517-432-3606

Comments:
