

**TO:Director, Occupational Health Surveillance Program,
Massachusetts Department of Public Health**

**FROM:Massachusetts Fatality Assessment and Control
Evaluation (MA FACE) Program Field Investigator**

**SUBJECT:Massachusetts Mason Dies in 85 Foot Fall When Tower Climbing
Work Platform Collapses - 93-MA-015-01**

DATE:October 17, 1994

SUMMARY

On September 2, 1994, a 38 year old male mason was killed and a co-worker seriously injured when the tower climbing work platform they were working from collapsed. The victim and his co-worker were removing water table stone from the facade of an eight story building's parapet. The platform collapsed when they placed an 800 pound weight on it. The victim and co-worker fell 85 feet. They were transported to regional hospitals for emergency treatment. The victim was pronounced dead one hour following the incident, while the co-worker survived the trauma. In order to prevent future similar occurrences, the MA FACE Project recommends that employers:

- and equipment rental companies ensure that employee working surfaces are capable of supporting four times the maximum intended weight
- ensure that working surfaces have structural integrity and are erected as intended by the equipment manufacturer
- consider having employees use personal fall arrest systems while on mobile platforms to protect them in the event of a work surface failure.

INTRODUCTION

On September 3, 1993, the MA FACE Project was alerted through a regional newspaper that a 38 year old male mason was fatally injured the previous day when he fell approximately 85 feet off a collapsed scaffold. An investigation was immediately initiated; however, it was not possible to interview the employer until January 19, 1994. The municipal police report, emergency medical service reports, death certificate, OSHA information regarding the incident, employer's first report of injury forms, and assorted newspaper articles were obtained in the investigation.

The employer was a masonry installation, restoration and preservation company which had been in business for approximately six months. It employed approximately fifty union workers in various masonry related occupations; thirty-five shared the victim's title. The company had been at the jobsite approximately six months, and employed twenty workers there. The company president was the designated safety officer (competent person). He devoted up to 25% of his time to safety. The company did not have either a safety and health committee or written comprehensive safety and health policies.

The victim was a 38 year old, male, journeyman mason hired out of the local bricklayer's union. He had been employed by the company for one month and 17 days. The victim's employment history was unknown; however, in order to become a journeyman mason he had completed 6,000 hours of a masonry apprenticeship.

INVESTIGATION

On September 2, 1993, a crew of three masons was removing decorative water table stone from the facade of an eight story building parapet. The building had a bay window protrusion which extended the full eight stories of the building. The three men were working off of a rented tower climbing work platform. As the men removed the stone, they placed it on the platform.

The tower climbing work platform was anchored to a flat bed trailer. It was comprised of a central work platform twenty feet long by five feet wide which mechanically scaled a vertical tower. Three additional 5 foot square, cantilevered boom extensions (or platforms) were bolted together at each end of the central platform; the entire work platform was thus fifty feet long.

Because the bay window prevented the men from reaching the building from the platform, five outriggers, each measuring nine feet and six inches in length, were fastened to the inside of the cantilevered platforms on each side of the tower. By standing on top of the outriggers, the men were able to reach the building's parapet. The outriggers were covered with eight 2 x 10 inch planks, four 4 x 8 foot sheets of 3/4 inch plywood, and two 4 x 8 foot sheets of 1/2 inch plywood.

The employer erected the entire tower climbing work platform under the direction and supervision of a representative from the rental company.

The three men were working side by side, on the same side of the tower, from different sections of the outrigger platforms. The victim was working on the outermost platform section. They cut and removed an approximately 800 pound piece of stone from the parapet facade and placed it on the victim's platform. Approximately two minutes later, one of the cantilevered outriggers beneath the victim's platform failed, and the platform collapsed. The adjacent platform, which one of the co-workers was standing on, partially collapsed. The two men on these platforms fell 85 feet to the packed dirt ground. The third worker jumped unharmed over the parapet onto the building's roof. The co-worker was transported to a regional hospital where he recovered from his injuries.

The victim was transported to another hospital where he was pronounced dead approximately one hour following the incident.

In the post-incident investigation, one of the five outriggers was found to be missing from underneath the victim's platform. The outrigger was found with a broken weld under some rubble on the ground. The outrigger's broken weld matched the broken weld on the attachment plate where the outrigger had been fastened to the steel platform. The attachment plate was still fastened to the steel platform with two bolts. An investigating engineer stated that the broken weld had previous fractures, and that only one of four sides of the square tubular outrigger appeared to have any holding capacity. The other three sides showed rust where the weld should have been.

The investigation further revealed that the equipment rental company did not make any engineering calculations to determine the estimated load capacity of the cantilevered outrigger platforms. Furthermore, the rental company had lengthened the outriggers an additional three feet beyond the manufacturer's original design, and these extensions had been tack-welded. The investigating engineers concluded that the platform was overloaded by three times its maximum weight.

CAUSE OF DEATH

The medical examiner listed the cause of death as blunt chest trauma.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Equipment rental companies and employers should ensure that employee working surfaces are capable of supporting four times the maximum intended weight.

Discussion: The OSHA standard, 29 CFR 1926.451(a)(7), specifies that "scaffolds and their components shall be capable of supporting without failure four times their maximum intended load."

In this case, neither the equipment rental company nor the employer made any calculations to ensure that the tower climbing platform was capable of supporting the weight of both the workers and the water table stone. With over 800 pounds of stone and 550 pounds of body weight, one of the outriggers failed and the platform collapsed. This incident could have been prevented had engineering calculations been made to estimate the load capacity of the platform.

Recommendation #2: Employers should ensure that working surfaces have structural integrity and are erected as intended by the equipment manufacturer.

Discussion: In the post-incident investigation, several problems were found with the construction of the mobile tower platform system. Not only had the outriggers been extended beyond their intended length, but the extensions had been tack welded. Had the platform been erected according to the manufacturer's original design, the incident could have been prevented.

The proposed OSHA Fall Protection Standard scheduled to go into effect February 1995 includes a provision, 1926.20(a)(2) (revised), requiring employers to ensure the structural integrity of walking/working surfaces before employees are permitted to be on those surfaces. Ensuring the structural integrity of working surfaces should include verifying that the working surface has been erected according to its original design. Had the employer verified that the platform was erected as originally intended, the incident may not have occurred.

Recommendation #3: Employers should consider having employees use personal fall arrest systems while on mobile platforms to protect them in the event of a work surface failure.

Discussion: Although construction employees are not required to use personal fall arrest systems when they work on mobile platforms, employers should consider implementing this supplemental safety precaution to provide the maximum fall protection. OSHA standard 29 CFR 1926.104 provides the specific criteria which must be met when personal fall arrest systems are used. (After February 1995, these requirements will be expanded and moved to section 1926.502(d).) Wearing a safety harness and lifeline tied off to an independent anchorage point could mean the difference between life and death in the event of a work surface failure.

REFERENCES:

29 CFR OSHA 1926.451(a)(7), 1926.104, revised July 1, 1993
OSHA Preamble and Final Rule for Fall Protection in the Construction Industry, 59 FR 40672, August 9, 1994.