Maintenance Engineer Dies After Falling 25 Feet From A Collapsing Scaffold

DATE: December 20, 1991

SUMMARY

On September 5, 1991, a 57 year-old maintenance engineer was fatally injured after a 25 foot fall from a collapsing scaffold. The incident occurred at a correctional facility after the victim climbed a scaffold in order to fix a separation in the scaffold's sections. As he was lowering the scaffold planks to the ground, the scaffold collapsed and the victim fell to a concrete gutter. NJDOH FACE investigators concluded that, in order to prevent similar incidents in the future, the following safety guidelines should be followed:

- ***Employers must insure that scaffolds are properly erected and maintained before use.***
- ***Employers should develop, implement, and enforce a comprehensive safety program that includes training workers in the proper methods of erecting and working from scaffolds.***
- ***Employers should conduct regularly scheduled and unscheduled safety inspections at each jobsite.***
- ***Employers should insure that safety representatives are properly qualified and trained to recognize safety hazards.***

INTRODUCTION

On September 9, 1991, NJDOH FACE personnel were notified by a DOH staff person of a work-related fatal fall that occurred four days earlier. On the same day, FACE investigators visited the site to interview the employer representative and photograph the scene. Other information on the incident was obtained from witnesses, the correctional facility's investigation report, the New Jersey Department of Labor (NJDOL) Public Employees Occupational Safety and Health (PEOSH) Program, and the state police and the medical examiner's reports.

The employer was a large, state-operated correctional facility located in a relatively rural area. The facility employed 21 maintenance workers at the time of the incident. Although there were no written safety procedures, the facility supported a safety committee and had a person (a psychiatrist) responsible for safety related issues. The victim was a 57 year-old maintenance engineer who had been employed at the facility for 18 years. He had worked as a supervisor for over 2½ years and was responsible for supervising the painters, carpenters, and other maintenance workers.

INVESTIGATION

The incident occurred outdoors in a courtyard surrounded on three sides by inmate dormitories. The dormitories are four-story brick structures with windows that are fitted with bars and covered with heavy security screens. The perimeter of the buildings are bordered with a concrete drainage ditch. For the previous two to three months, the maintenance workers (assisted by facility inmates) were involved in painting the windows of the dormitories. To reach the windows, they used a mobile (moveable) welded tubular steel scaffold. The scaffold was built 5 sections high, with each section measuring approximately 6 feet long by 5 feet wide by 6½ feet high, for a total height of almost 33 feet. The scaffold was equipped with four metal and wood deck planks. To move the scaffold, the workers placed sheets of plywood beneath the wheels and pushed it across the plywood into place. The wheels were then locked and the security screens removed from the windows. The scaffold would then be tied off to the bars before painting the windows.

The weather was clear on the day of the incident. At approximately 1:30 p.m., employee #1, a painter, assembled a work crew of three inmates and entered the courtyard to paint the windows. The work crew began the job by moving the plywood and pushing the scaffold to the next window. As it was being moved, the top of the scaffold caught on an overhanging roof eave. The workers freed the scaffold by pushing it away from the building, but in doing so two of the four "legs" that connected the sections separated. The separation occurred between the second and third sections from the bottom, with one of the two loose legs coming to rest against the scaffold frame (see diagram). Employee #1 recognized this as a hazard and told the inmates to stay away while he requested help. A second employee, also a painter, came to assist accompanied by another inmate. With the assistance of an inmate, employee #2 tried to rejoin the separation by lifting the upper three sections of the scaffold from the bottom, but was unable to lift the weight of the sections.

As the employees were trying to decide how to fix the scaffold, employee #1 saw the victim watching nearby and asked him if he saw what the problem was. The victim, who was a maintenance supervisor, replied "Yes, the only way you can fix this is to go up and take the scaffold down". As the victim entered the courtyard to examine the scaffold, employee #1 warned him against climbing it, to which he replied, "It's a job, it has to be done". The victim then had the workers pull the scaffold about 12 inches away from the building, shook it, and climbed up the cross braces on the side that was still connected. After he reached the top and looked at the scaffold, the victim told the employees that if they placed the planks on the bottom, four men could stand on them and lift the upper sections back into place. He then started to move the planks to the ground. While moving the second plank, the scaffold collapsed at the separation and the victim fell approximately 25 feet to the concrete drainage gutter running alongside the building. First aid was administered by the facility nursing staff and the victim was transported by helicopter to the regional trauma center. He died at the trauma unit at 4:52 p.m.

An inspection of the incident scene by the NJDOL PEOSH Program found that the sections of the scaffold above the second level had not been secured together with pins and that the handrails at the top were also not secured. The support timbers placed beneath the plywood where it crossed the depression of the drainage ditch were too short to support the full length of the plywood footing.

CAUSE OF DEATH

The cause of death was attributed to multiple internal injuries secondary to an accidental fall.

RECOMMENDATIONS AND DISCUSSION

Recommendation #1: Employers must insure that scaffolds are properly erected and maintained before use.

Discussion: The direct cause of the scaffold collapse was due to improper securing of the individual sections which allowed them to come apart when the scaffold was moved. Although not directly related to the incident, the improperly supported footing and handrails also created significant safety hazards. The OSHA standard 29 CFR 1910.28(a)(5) requires that scaffolds must be maintained in a safe condition. Scaffolding should be properly erected by trained personnel and maintained to insure its structural integrity.

Recommendation #2: Employers should develop, implement, and enforce a comprehensive safety program that includes training workers in the proper methods of erecting and working from scaffolds.

Discussion: In attempting to repair the damaged scaffold, the employees first placed themselves at risk of the scaffold collapsing on top of them by trying to lift it from the bottom. The victim then climbed the damaged and unstable scaffold, leading to it's collapse. It is imperative that employees are properly trained in erecting and disassembling scaffolds before attempting to maintain or repair them. Employees who use but do not erect scaffolds must also be trained to detect unsafe conditions and notify qualified personnel to correct the problem.

Recommendation #3: Employers should conduct regularly scheduled and unscheduled safety inspections at each jobsite.

Discussion: In this case, the pins that secured the scaffold's sections were not discovered to be missing until after the incident. It is recommended that a person qualified to erect scaffolding should periodically conduct a safety inspection of the scaffold and it's placement. It is also recommended that the scaffold should be inspected by the workers before each use to ensure that all supporting members are in place and in good condition.

Recommendation #4: Employers should insure that safety representatives are properly qualified and trained to recognize safety hazards.

Discussion: It was noted that the person in charge of safety was the facility psychiatrist. Although the qualifications of this person were not evaluated, it is recommended that persons in charge of safety should have the proper training, background, and opportunity to recognize potential safety hazards in the workplace. This should include having close ties with the facility safety committee and a working knowledge of occupational safety and health standards.

REFERENCES

1. Code of Federal Regulations 29 CFR 1910, 1990 edition. U.S. Government Printing Office, Office of the Federal Register, Washington DC. pg 117
2. Scaffold Safety Regulations and Inspection Check List. Safway Steel Products, Milwaukee WI.

To contact New Jersey State FACE program personnel regarding State-based FACE reports, please use information listed on the Contact Sheet on the NIOSH FACE web site. Please contact In-house FACE program personnel regarding In-house FACE reports and to gain assistance when State-FACE program personnel cannot be reached.