MARYLAND DIVISION OF LABOR AND INDUSTRY

MARYLAND FACE PROGRAM

CASE: 96MD03601

TO: **Project Officer, State FACE Project, Division of Safety Research**

FROM: **Maryland FACE Program, Division of Labor and Industry**

SUBJECT: **Plumber dies of injuries received from a twenty-two-foot fall, off an extension ladder, at a construction site.**

SUMMARY

A 40-year-old male plumber (the victim) died after falling approximately twenty-two feet from a forty-foot extension ladder and striking the concrete floor of a wet well. The victim and a co-worker (an apprentice plumber) were mounting four inch diameter PVC pipe to the wall of a wet well, at a sewage treatment facility under construction. Their foreman, who was concerned about others working above them, called them out of the work area. The victim and his co-worker exited the wet well. When the victim and his co-worker began to remove the forty-foot extension ladder, the ladder began to extend on them. To keep the ladder from extending, and making it difficult to handle, the victim decided to descend the ladder and tie the rungs together. As the victim started down the ladder the co-worker was approximately three feet away and not facing the ladder, when he heard the ladder rattle. He turned to see what happened and saw the victim at the bottom of the ladder lying on his side. He was conscious and breathing with difficulty. Others in the area notified the general contractor's office, whose personnel called the rescue squad. A helicopter took the victim to the nearest trauma center hospital, where he died the next morning.

The MD/FACE Field Investigator concluded that to prevent similar future occurrences, employers should:

- *Stress to employees the importance of using caution when working from extension ladders.*

- *Instruct employees on the importance of tying-off an extension ladder securely or having someone holds the ladder to keep it from moving.*

- *Assure that rung locks are properly engaged before using an extension ladder*

INTRODUCTION

On Thursday, July 4, 1996, a 40-year-old male plumber (the victim) died of injuries sustained on the previous day in a 22-foot fall from a 40-foot aluminum extension ladder. The victim had been working at a construction site for approximately three months; he had been an employee of

the company for two years. The MD/FACE Field Investigator was notified of the incident Monday, July 8, 1996, by a MOSH Preliminary Report.

Information regarding the incident was gathered, by the MD/FACE Field Investigator, from on-site interviews, conducted Monday, July 28, 1996. Present at these interviews were: the general contractor's project manager; the subcontractor's vice president, (the victim's employer); the victim's foreman; and the MOSH Inspector.

The employer was a mechanical contractor specializing in plumbing and HVAC installation. They were installing plumbing as part of an expansion project for a large metropolitan sewage treatment plant. It was a $25 million dollar, three-year expansion project. It included construction of a Pump Station Filter Building and an Administration Building. The employer was in the mechanical contracting business for 74 years. They had 35 employees, eight of whom were on this construction site.

The employer had an established safety program. Training records show the victim received regular weekly safety talks and that they trained all employees in ladder safety. The general contractor also had an established safety program and an emergency response plan.

The sub contractor had employed the victim for two years. He had been assigned to this construction site for the last three months. This was the first fatality experienced by the employer.

INVESTIGATION

The victim's shift started at 7:00 A.M. Wednesday, July 3, 1996. He and the apprentice were assigned to install mounting rods and 4" diameter PVC pipe in the south well of the Filter Building. Two wet wells are located under the Filter Building's Screen Room floor. Access to the south wet well was made through a floor opening three feet wide by seven feet long in the Screen Room. Three metal grates covered the floor opening. They removed one grate, at the north end of the opening, approximately three feet by two feet four inches, and placed a forty-foot aluminum extension ladder through the hole. The ladder was placed in the opening so that it rested against the long side of the floor opening. The wet well is twenty-six feet deep, thirty feet long and ten feet wide. The ladder was in a nearly vertical position as it entered the wet well. The victim and the apprentice entered the wet well and were using a Bosch hammer drill to anchor pipe supports to the wall.

As they were working, the foreman observed that the extension ladder was not set up for egress from the wet well. He instructed them to set up the ladder and to exit the area in which they were working. He helped them position the ladder and held it from the top of the floor opening, as they came up the ladder. The foreman told them that others will be working in the area above them. He stated that he did not like the fact that no one was at the top of the opening to help them if there were an emergency. The foreman then left the area.

As the apprentice and the victim attempted to pull the ladder out of the wet well, the ladder

began to extend. To keep the ladder from extending the victim descended the ladder and was going to use the ladder's rope to tie the rungs together. The apprentice turned away from the ladder and was two to three feet from the ladder when he heard the noise of the ladder shaking. He then heard the victim strike the concrete floor of the wet well. He did not see him fall but saw the victim lying on his side near the base of the ladder.

The ladder involved in this incident was manufactured by the Louisville Ladder Corporation, model # AE2240, 40' aluminum extension ladder, type 1A, 300 lbs., manufactured in 1995. The ladder had no defects or damage. However, according to the Project Manager the ladder was found askew in the opening, with one of its feet off the bottom of the wet well and one rung lock not positioned properly.

The general contractor's construction site office was notified by phone at approximately 11:40 A.M. by call from an employee of the municiple sewage treatment plant and by radio from the concrete company working in the area. A call was immediately place to 911. The Project Manager responded to the area. He placed a second ladder through the floor opening into the wet well and treated the victim for shock. The victim was alert, but in great pain and having trouble breathing.

The rescue squad arrived within fifteen (15) minutes, prepared the victim to be lifted out of the wet well and transported by helicopter to the local trauma center. He died in the hospital at approximately 10:37 A.M. Thursday, July 4, 1996 as a result of injuries suffered in the fall.

CAUSE OF DEATH

The attending physician determined that the cause of death was the result of internal injuries.

RECOMMENDATIONS/DISCUSSIONS

Recommendation #1: Employers should stress to all employees the importance of exercising caution when working on or with ladders.

Discussion: The event was not witnessed but evidence suggests that the ladder was not tied-off and may have slid to one side of the opening, possibly due to a rung hook not properly engaged. In this incident, the ladder was clean and free of defects that might contribute to the fall. Employers should constantly stress to employees the importance of exercising caution when climbing or working from portable metal ladders, and should ensure that employees follow 29 CFR 1926.1053, which regulates the proper use of extension ladders.

Recommendation #2: instruct employees on the importance of tying off an extension ladder or having someone hold the ladder to keep it from moving.

Discussion: Employers should instruct each employee in the recognition and avoidance of unsafe conditions and regulations applicable to the work area, in particular the training requirements of 29 CFR 1926.1060.

Recommendation #3: Employers should instruct their employees that rung locks are properly engaged and that the ladder is secure prior to ascending or descending.

Discussion: Adjustments to extension ladders should only be made by the user when standing at the base of the ladder, so that the user may observe when the locks are properly engaged. In this incident when they set the ladder to exit the wet well, they should have tied the rungs together as they came out of the wet well.

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FATALITY ASSESSMENT AND CONTROL EVALUATION

The Maryland Division of Labor and Industry administers the Fatality Assessment and Control Evaluation (FACE) Program under a cooperative agreement with the National Institute for Occupational Safety and Health, Division of Safety Research (NIOSH/DSR). The Maryland FACE Program performs Investigations of selected occupational fatalities, prepares summary reports, and engages in prevention activities. The goal of our program is to prevent fatal work injuries in the future by studying the working environment, the worker, the task being performed, the tools employed, the energy exchange resulting in fatal injury, and the role of management in controlling how these factors interact.

NIOSH/DSR developed the FACE research protocol in the early 1980's and continues to perform FACE investigations. To increase the research and prevention activities of NIOSH/DSR, states across the nation have been invited to participate in the State FACE Project. Maryland and thirteen states listed below currently participate in the State Based FACE Project: Alaska, California, Colorado, Iowa, Indiana, Kentucky, Massachusetts, Minnesota, Missouri, Nebraska, New Jersey, Wisconsin, and Wyoming.

Additional information regarding this report or the Maryland FACE Program is available from:

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