

DATE: September 24, 1997

FROM: Minnesota Fatality Assessment and Control Evaluation (MN FACE) Program
Minnesota Department of Health

SUBJECT: MN FACE Investigation 97MN019
Excavation Laborer Dies After Being Run Over By A Caterpillar

SUMMARY

A 30-year-old excavation laborer (victim) died after he was run over by a caterpillar at a construction site. The victim and two coworkers were removing soil and clay from the site and had nearly completed the excavation process. The victim used a measuring stick to check the grade along the site to ensure that it was excavated to the proper depth. A few moments before the incident, the caterpillar operator drove to the west end of the excavation area and the victim walked to a position about fifty feet behind the caterpillar. While the victim checked the grade of the area, the operator shifted the caterpillar into reverse and began backing it across the construction site. The operator did not see the victim and continued backing until he saw the victim laying in front of the caterpillar. A call was immediately made to emergency personnel. They arrived shortly after being notified and pronounced the victim dead at the scene. MN FACE investigators concluded that to reduce the likelihood of similar occurrences, the following guidelines should be followed:

- mobile equipment should be equipped with sensing units to detect pedestrian workers in the blind spots of the equipment.

INTRODUCTION

On May 15, 1997, MN FACE investigators were notified of a work-related construction fatality that occurred on May 14, 1997. The county sheriff's department was contacted and releasable information obtained. Information obtained included a copy of their report of the incident and copies of their photos of the incident site and the equipment involved in the incident. A site investigation was conducted by a MN FACE investigator on June 26, 1997. During MN FACE investigations, incident information is obtained from a variety of sources such as law enforcement agencies, county coroners and medical examiners, employers, coworkers and family members.

The employer in this incident was an excavating company that had been in business since 1979. The company's business consisted primarily of residential and commercial building site excavation and parking lot and driveway excavation. The company had between 30-35 employees during spring, summer and fall but only 8-10 employees during the winter months. The company had a safety officer who dedicated part of her time to the company safety program and to ensuring that the company was in compliance with existing occupational safety standards, rules and regulations. The company conducted an annual one day safety meeting each spring that all non-office personnel were required to attend. The company also conducted an annual operators safety meeting each spring for heavy equipment operators. During this meeting, unique safety issues associated with each piece of equipment were discussed and reviewed with the equipment operators. The victim had worked for the company for one year as a general laborer and would only occasionally operate some of the smaller equipment such as skid-steer loaders. This was the first work-related fatality experienced by the company.

INVESTIGATION

On the day of the incident, the victim and two coworkers were excavating a level area for a bank parking lot and driveway. Equipment at the site consisted of a 1995 caterpillar equipped with a push blade, a payloader equipped with a general purpose bucket and a skid-steer loader equipped with a bucket. The caterpillar was purchased new by the employer in 1996. It was equipped with an audible backup alarm that was working at the time of the incident. The work being done at the site (Figure 1.) consisted of removing 14 inches of topsoil and clay from a rectangular area (planned parking lot) near a bank and an adjoining area (planned driveway) that extended to a public street. The push blade of the caterpillar was used to cut layers of soil and clay and push it to the edge of the street at the west end of the driveway. After the caterpillar operator completed each cut moving to the west end of the driveway, he backed the caterpillar toward the east end of the site to begin another cut. The payloader was used to load the excavated soil into dump trucks for removal from the site.

The workers began removing soil and clay from the site on the morning of the incident. They had nearly completed the excavation process and were removing small amounts of clay along the driveway area. The victim used a measuring stick to check the grade along the driveway to ensure that it was excavated to the proper depth. A few moments before the incident, the caterpillar operator drove to the west end of the driveway and the victim walked to a position in the center of the driveway about fifty feet behind the caterpillar. While the victim checked the grade of the area, the operator shifted the

caterpillar into reverse and began backing it toward the east end of the site. The operator did not see the victim and continued backing until he saw the victim laying in front of the caterpillar. Since no one saw the victim get run over, it could not be determined whether he was struck by the caterpillar and got knocked to the ground before being run over or whether he stumbled and fell in an effort to move away from the caterpillar. A call was immediately made to emergency personnel. They arrived shortly after being notified and pronounced the victim dead at the scene.

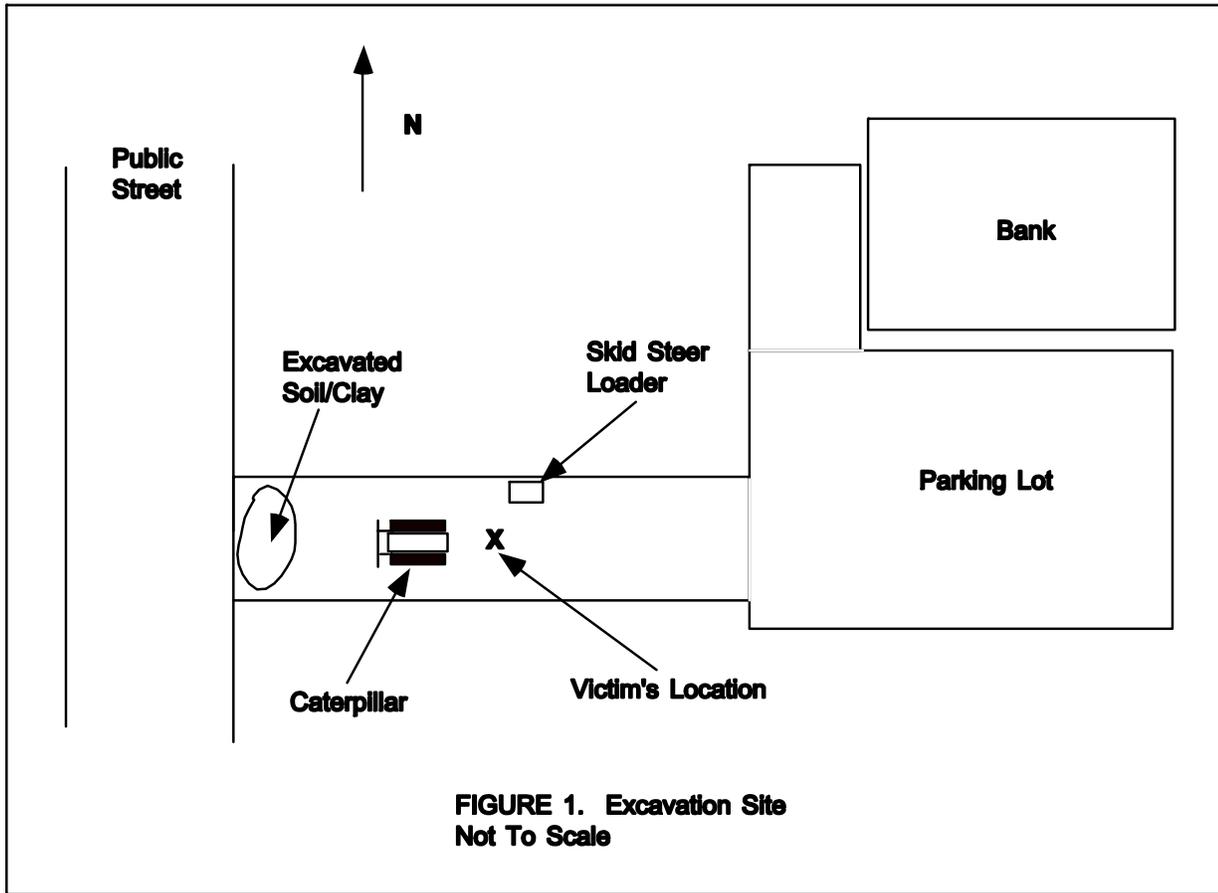
CAUSE OF DEATH

The cause of death listed on the death certificate was crush injury-run over by bulldozer.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Mobile equipment should be equipped with sensing units to detect pedestrian workers in the blind spots of the equipment.

Discussion: The caterpillar involved in this incident was equipped with a functioning audible alarm to warn pedestrian workers when it was moving in reverse. While this type of warning device can prevent injury by notifying workers to move out of the way, it is unable to alert equipment operators of the presence of pedestrian workers. In addition, pedestrian workers



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may become de-sensitized to audible back-up alarms because they sound whenever the equipment is moving in reverse. In this incident, it is possible that the victim heard the back-up alarm but may not have realized how close the caterpillar was to him until it was too late for him to move to a safe location. Equipping mobile equipment and vehicles with sensing units such as radar activated back-up alarms to detect the presence of pedestrian workers in the blind spots of equipment and warn both the operator and the pedestrian would provide an additional margin of safety.

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