January 7, 1998

Nebraska FACE Investigation 97NE041

SUBJECT:

Backhoe Bucket Crushes Worker in Trench

SUMMARY:

A 39-year-old laborer was killed when he was crushed by the bucket of a backhoe being operated by his supervisor. The victim and his supervisor (the backhoe operator) were in the process of digging a sewer line trench when the incident occurred. The victim was standing in one end of a 7 foot deep trench which was approximately 20 feet long and 30 inches wide. The backhoe was positioned at ground level at the same end of the trench where the victim was standing. The backhoe operator scooped the bucket in the trench to dig some more and when he pulled the bucket up, he noted the victim was in the bucket. He lowered the bucket and had someone immediately call 911. When rescue personnel arrived they determined the victim was deceased.

The Nebraska Department of Labor investigator concluded that to prevent future similar occurrences employers should:

* Ensure all personnel operating machinery in a trench are constantly aware of the location of personnel working in and around a trench.

* Ensure personnel are never permitted underneath loads handled by lifting or digging equipment.

* Develop, implement and enforce a comprehensive safety program that includes, but is not limited to, training in all hazard recognition and proper trenching procedures.

PROGRAM OBJECTIVE:

The goal of the Fatality Assessment and Control Evaluation (FACE) workplace investigation is to prevent work-related deaths or injuries in the future by a study of the working environment, the worker, the task the worker was performing, the tools the worker was using, and the role of management in controlling how these factors interact.

This report is generated and distributed **solely** for the purpose of providing current, relevant education to employers, their employees and the community on methods to prevent occupational fatalities and injuries.

INTRODUCTION:

On November 7, 1997, at approximately 2:55 p.m., a 39-year-old laborer was killed when he was crushed by the bucket of a backhoe. The Nebraska Department of Labor became aware of this fatality via news media on November 11, 1997. The Nebraska FACE investigator accompanied an OSHA investigator to the incident site on November 14, 1997 and conducted an interview with the employer who was also the company owner.

The employer is a plumbing and heating contractor who also does excavation work. The company employed just one other individual, the victim. The company has been in business for 30 years and had been working at this job site for two days. The company did not have a written safety/injury prevention program. This was the first fatality in the history of the company.

The victim had been employed by the company for four and one-half months. He had been on this job site for two days.

INVESTIGATION:

On the day of the incident, the victim and the backhoe operator (the victim's supervisor) were in the process of digging a trench to tap into an existing sewer line. During the morning of the incident they worked on the tractor/backhoe involved in the incident. They replaced a water pump and the machine was working fine. After repairing the machine, they took a lunch break at

noon and then returned to work at 1:00 p.m. The trench they had dug was approximately 20 feet long, 7 feet deep and 30 inches wide. The victim went down into the trench and was probing for the existing sewer line with a steel pole. The victim's job was to walk the floor of the trench with a level, drag pipe and let the backhoe operator know if he needed to dig deeper. He also used a shovel to grade the bottom of the trench smooth for laying the sewer pipe.

The coworker moved the backhoe further away from the end of the trench so he could dig it longer. The coworker's (backhoe operator) view of the end of the ditch where he was digging was blocked (see figure 1) due to the location of the backhoe. He could not see the area of the trench where he was digging. When he began to dig again after moving the backhoe he did not see the victim anywhere. He lowered the bucket in the trench to scoop out some dirt and when he brought the bucket up the victim was in it. When he saw the victim he released the pressure which was lifting the bucket and the victim fell back into the trench. He immediately got off the backhoe and looked down in the trench. He saw that the victim was not moving and went into a nearby building and had someone call 911. Upon responding, an Emergency Medical Technician (EMT) got into the trench to check out the victim. He had no pulse and his pupils were dilated. A local funeral home was called to come for his body. At the funeral home his body was examined and three tine marks, from the shovel of the backhoe, were in the center of his back. It appears the victim was standing in the trench, facing the end the backhoe was located at (see figure 1). The bucket came down and crushed him between the bucket and the end wall of the trench as the bucket was being raised. The victim was pronounced dead at the incident scene at 3:10 p.m.

CAUSE OF DEATH:

The cause of death, as stated on the Coroner's Report, was blunt trauma.

RECOMMENDATIONS/DISCUSSION:

Recommendation #1: Ensure all personnel operating machinery in a trench are constantly aware of the location of personnel working in and around a trench.

Discussion: In this case the backhoe operator and the victim were the only two individuals working on the trench. The backhoe operator knew the victim had been working in the bottom

of the trench, leveling the bottom with a shovel. The operator had visual contact with the victim prior to moving the backhoe but did not reestablish visual contact prior to beginning digging. The only "blind spot" in the trench was the area he was going to be digging in. Had the backhoe operator been constantly aware of the location of his coworker this incident could have been prevented.

Recommendation #2: Ensure personnel are never permitted underneath loads handled by lifting or digging equipment.

Discussion: The Code of Federal Regulations, Labor, 29 CFR 1926.651(e) states in part that, "No employee shall be permitted underneath loads handled by lifting or digging equipment." To ensure this safety requirement is followed, equipment operators must verify the area underneath their equipment is free of personnel. Had this been done this incident could have been prevented.

Recommendation #3: Develop, implement and enforce a comprehensive safety program that includes, but is not limited to, training in all hazard recognition and proper trenching procedures.

Discussion: A comprehensive safety program should have addressed the hazards involved with trenching operations. Another hazard, not mentioned above, was the lack of protection for personnel from a trench cave-in. The trench in this incident was seven feet deep and should have been shored or a trench box should have been used. The Federal Code of Regulations, Labor, 29 CFR 1926.652, covers the requirements for protective systems regarding trenching.

REFERENCES:

Office of the Federal Register, National Archives and Records Administration, Code of Federal Regulations, Labor, 29 CFR 1926.651(e) and 1926.652, 1996.