

DATE: October 30, 1996

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

SUBJECT: MN FACE Investigation 96MN05901
Construction Worker Dies After Being Buried In A Trench That Caved In

SUMMARY

A 46-year-old construction worker died of injuries he sustained when the trench he was working in caved in. Workers were using the trench to make a water line connection between the well and the water supply line that extended through the concrete footings of a new house. Copper pipe was used to make this waterline connection.

On the day of the incident, the connection between the water supply line in the basement and the copper pipe was made. In order for the copper pipe to reach the well, copper pipe from a new roll had to be spliced to the original piece. A coworker of the victim was standing outside of the trench watching the victim splice the copper pipe in the trench. The coworker noticed the victim heading toward the ladder when the victim suddenly turned and headed the other way. A portion of one entire wall of the trench caved in from top to bottom and buried the victim.

The coworker ran to get a shovel from a truck located at the scene. The coworker heard some mumbling and started digging but was unable to locate the victim. The coworker then ran to the backhoe that was parked near the trench and radioed other coworkers for help. Two coworkers working at another job site arrived at the incident site approximately 5 to 8 minutes after the initial call for help was placed. Upon their arrival, the initial coworker had located the victim's shoulder. The three coworkers uncovered the victim's head and continued to try to free him. Emergency rescue personnel arrived and pronounced the victim dead before he was completely removed from the trench. After the victim was pronounced dead, the backhoe was used to further widen the trench. This was done to reduce the risk of rescue personnel being buried by another cave-in while the victim was being removed. MN FACE investigators concluded that, in order to reduce the likelihood of similar occurrences, the following guidelines should be followed:

- employers should ensure that employees working in trenches are protected

from cave-ins by an adequate protection system designed in accordance
29 CFR 1926.652;

with

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- employers should ensure that excavations are inspected by a competent person¹ prior to start of work and as needed throughout a shift to look for evidence of any situation that could result in possible cave-in; and
- employers should design, develop, and implement a comprehensive safety program.

INTRODUCTION

On August 2, 1996, MN FACE investigators were notified of a work-related fatality that occurred on August 1, 1996. The city police department was contacted and a releasable copy of their report of the incident was obtained. An investigation was conducted by a MN FACE investigator on September 20, 1996. 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 the victim worked for is a well drilling company the mainly drills residential home and small commercial business wells. They drill approximately 275 wells a year and work for approximately 55 contractors. The company also does pump repair and service and well abandonments to prevent the migration of contaminants. The company had been in business for 33 years and employed 17 people. The employer has a safety program and a safety officer who dedicates approximately 50% of his working time to safety. The victim worked for the company for 3.5 years and had previous trenching experience with another company.

INVESTIGATION

The victim was installing a water supply line between a private well and a new house. The house

¹ Competent person: One who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them.

was under construction at the time of the incident. During this type of work, a backhoe is used to dig a trench from the basement footings to a well. Prior to pouring the concrete footings and the basement floor, a water supply line was installed from the edge of the house to the point where the water meter is installed. Workers used the trench to make a water line connection between the well and the water supply line that extended through the concrete footings. Copper pipe was used to make this waterline connection.

On the day of the incident, the workers arrived and dug a trench that measured approximately 5 feet wide by 43 feet long and 6.5 feet deep. Photos of the incident site indicated that the soil that the trench was dug in was a mixture of sand and clay. The soil may have been disturbed in places as a result of excavation activities associated with construction of the house. The connection between the water supply line in the basement and the copper pipe was made and the copper pipe extended about 25 feet from the footings of the house before the roll of copper pipe was empty. In order for the copper pipe to reach the well, copper pipe from a new roll had to be spliced to the original piece. The splicing of pipe is usually done above the ground, but on this occasion the victim made the splice while inside the trench. After splicing the copper pipe running from the basement with the copper pipe from the new roll, the copper pipe would be extended another 18 feet to the well and a connection would be made there.

A coworker of the victim was standing outside of the trench watching the victim splice the copper pipe in the trench. The coworker noticed the victim heading toward the ladder when the victim suddenly turned and headed the other way. A portion of one entire wall of the trench caved in from top to bottom and buried the victim.

The coworker ran to get a shovel from a truck located at the scene. When he returned he yelled to the victim and asked him where he was. The coworker heard some mumbling and started digging but was unable to locate the victim. The coworker then ran to the backhoe that was parked near the trench and radioed other coworkers for help. He did not receive an answer so he resumed digging with the shovel. While he was digging the coworker heard someone answer the radio and he ran to the backhoe and told his coworker that he needed help. Two other workers from the company were at a job site approximately 1/4 of a mile away from the incident site when they heard the call for help and immediately proceeded to the incident site. The two coworkers arrived at the incident site approximately 5 to 8 minutes after the initial call for help was placed. Upon their arrival, the initial coworker had located the victim's shoulder. The three coworkers uncovered the victim's head and

continued to try to free him. Emergency rescue personnel arrived and pronounced the victim dead before he was completely removed from the trench. After the victim was pronounced dead, the backhoe was used to further widen the trench. This was done to reduce the risk of rescue personnel being buried by another cave-in while the victim was being removed.

CAUSE OF DEATH

The cause of death listed on the death certificate was asphyxia due to airway obstruction caused by a trench cave-in.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should ensure that employees working in trenches are protected from cave-ins by an adequate protection system designed in accordance with 29 CFR 1926.652.

Discussion: OSHA standard 29 CFR 1926.652 requires that employees working in trenches are protected from cave-ins by adequate protective systems. These systems may include either sloping techniques or support systems such as shoring. Sloping involves positioning the soil from an excavation away from the trench at an angle that would prevent the soil from caving into the trench. Shoring systems use materials such as timber products to provide support to the walls of the trench. If either sloping or shoring had been used in this incident, this fatality may have been prevented.

Recommendation #2: Employers should ensure that excavations are inspected by a competent person prior to start of work and as needed throughout a shift to look for evidence of any situation that could result in possible cave-in.

Discussion: OSHA standard CFR 1926.651(k)(1) requires that daily inspections of excavations, the adjacent areas, and protective systems be conducted by a competent person for evidence of a situation that could result in cave-ins, failure of protective systems, hazardous atmospheres, or other hazardous conditions. These inspections shall be conducted by a competent person prior to the start of work and as needed throughout the shift. Had an inspection, prior to work, been conducted by a competent person, the unsafe condition may have been identified and this fatality may have been prevented.

Recommendation #3: Employers should design, develop, and implement a comprehensive safety program.

Discussion: Employers should ensure that all employees are trained to recognize and avoid hazardous work conditions. A comprehensive safety program should address all aspects of safety related to specific tasks that employees are required to perform. OSHA Standard 1926.21(b)(2) requires employers to "instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury." Safety rules, regulations, and procedures should include the recognition and elimination of hazards associated with tasks performed by employees.

REFERENCES

1. Office of the Federal Register: Code of Federal Regulations, Labor, 29 CFR part 1926.21 (b)(2), 29 CFR part 1926.651 (k)(1) and 29 CFR part 1926.652, U.S. Department of Labor, Occupational Safety and Health Administration, Washington, D.C., July 1, 1994.