DATE: August 31, 1995

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

SUBJECT: MN FACE Investigation 95MN03301
Business Manager Electrocuted While Removing Flagpole Located Near 7,200 Volt Overhead Power Line

SUMMARY

A 28-year-old male business manager (victim) was electrocuted when he attempted to remove a metal flagpole from in front of his business. Removal of the flagpole was not a usual job task performed by the victim or by any of the other employees. It was a one time task for which there were no specific employee safety training needs or requirements. The flagpole was inserted inside a vertical support pipe that was secured inside a rock-filled landscape box. A 7,200 volt power line was located directly above the landscape box and flagpole. The victim stood on a wood plank adjacent to the flagpole while a coworker remained on the ground. The victim lifted the flagpole vertically to raise it out of the support pipe. As he raised the pole, the top of it neared the power line and an electrical arc occurred between the power line and the pole. A path to ground was completed through the victim as a result of his contact with the flagpole and he was electrocuted. It wasn't known whether the pole came in direct contact with the overhead power line. The victim released the pole and fell from the wood plank to the ground. The coworker immediately ran inside and called emergency medical services. Two employees of an adjacent business immediately came to the scene and began to administer cardio-pulmonary resuscitation. Emergency medical personnel arrived at the scene within a few minutes. The victim was transported to a local hospital where he was pronounced dead approximately one hour after the incident occurred. MN FACE investigators concluded that to reduce the likelihood of similar occurrences, employers should:

- contact the local electrical utility company to assist or provide guidance whenever work is performed in the vicinity of overhead power lines; and

- ensure employees follow safe work practices whenever working near overhead

power lines or with materials which may contact overhead power lines.

INTRODUCTION

On June 14, 1995, MN FACE investigators were notified of an electrocution that occurred on June 12, 1995. A copy of the county coroner's report was requested and obtained. A site investigation was conducted by MN FACE investigators on July 20, 1995. During the site investigation, information concerning the incident was provided by the owner of the business where the incident occurred.

INVESTIGATION

At approximately 9:00 a.m. on the day of the incident, the victim and a coworker attempted to remove a metal flagpole from in front of a business establishment. Removal of the flagpole was not a usual job task performed by the victim or by any of the other employees. It was a one time task for which there were no specific employee safety training needs or requirements. The flagpole was a galvanized steel pipe that was 24 feet-6 inches long and 1-5/8 inches in diameter. The flagpole was inserted inside a vertical support pipe that was 5 feet long and had an inside diameter of 1-3/4 inches. The support pipe was secured inside a rock-filled landscape box that was approximately two feet high. The flagpole extended into the ground approximately one foot below grade level. The box also contained two upright metal posts, each 15 feet long that supported two horizontal 2 inch x 12 inch wood planks. The planks were approximately nine feet above the ground (See Figure 1).

A 7,200 volt power line was located directly above the landscape box and flagpole. The power line was approximately 27 feet high. Two other power lines also ran parallel to this line; one at approximately the same height and the other five feet above the two lower lines. Environmental conditions at the time of the incident were sunny with a temperature of approximately 70 degrees fahrenheit and a relative humidity of approximately 90 percent.

The victim stood on the wood plank adjacent to the flagpole while a coworker remained on the ground. The victim began to lift the flagpole vertically to raise it out of the support pipe. As he raised the pole, the top of the pole neared the power line and an electrical arc occurred between the power line and the pole. A path to ground was completed through the victim as a result of his contact with the flagpole and he was electrocuted. It wasn't known whether the pole came in direct contact with the overhead power line. The victim released the pole and fell from the wood

plank to the ground. The coworker immediately ran inside and called emergency medical services. Two employees of an adjacent business immediately came to the scene and began to administer cardio-pulmonary resuscitation. Emergency medical personnel arrived at the scene within a few minutes. The victim was transported to a local hospital where he was pronounced dead approximately one hour after the incident occurred.

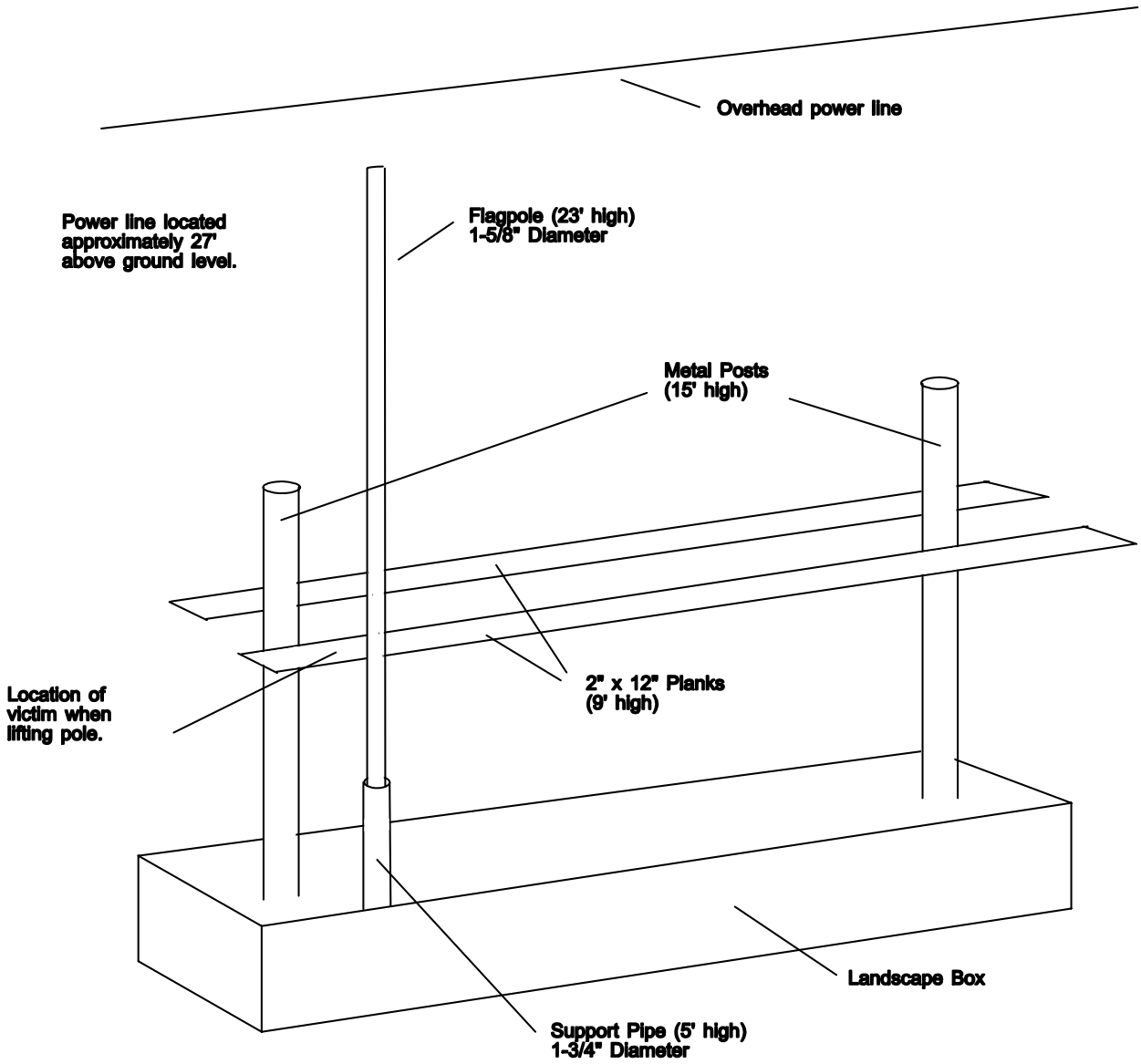

Figure 1. Flagpole and landscape box. Not to Scale

1

CAUSE OF DEATH

The cause of death stated on the death certificate was high voltage electrocution.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Contact the local electrical utility to assist or provide guidance whenever

work is performed in the vicinity of overhead power lines.

Discussion: Whenever work involving large pieces of conductive materials, scaffolds, ladders, long-handled tools, or boomed vehicles is done near energized overhead power lines, the local electrical utility company should be notified. Utility companies can de-energize power lines, insulate lines with insulating blankets or hoses or temporarily removing power lines during the duration of work. Electrical utility companies can provide assistance and guidance for safe work practices near overhead power lines. Through the joint cooperation of businesses and their local electrical utilities, actions can be taken to reduce or eliminate the risk of electrocution due to accidental contact with overhead power lines.

Recommendation #2: Ensure employees follow safe work practices whenever working near overhead power lines or with materials which may contact overhead power lines.

Discussion: The dangers associated with overhead power lines continue to result in the occurrence of occupational electrocutions. All tasks performed by workers, including non-routine tasks and tasks not specifically identified as requirements of a workers job, should be evaluated and the associated job hazards identified. Safe work practices and procedures should then be established to ensure that workers can safely complete all routine and non-routine tasks. In the vicinity of overhead power lines, safe work practices should include maintaining a minimum distance of 10 feet between conductive materials and power lines of 50,000 volts or less.

REFERENCES

1. Office of the Federal Register: Code of Federal Regulations, Labor, 29 CFR Part 1926.550 (a)(15), U.S. Department of Labor, Occupational Safety and Health Administration, Washington, D.C., July 1, 1992.

George Wahl, M.S.
Safety Investigator
MN FACE

David L. Parker, M.D., M.P.H.
Principal Investigator
MN FACE

Debora Boyle, D.V.M., Ph.D.
Epidemiologist Principal
MN FACE