

DATE: March 16, 1993

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

SUBJECT: MN FACE Investigation 92MN02201
Cement Finisher Dies After Falling From the Wing-Wall of a Highway Bridge

SUMMARY

A 45-year-old male cement finisher (victim) died of complications from injuries he received after falling from the wing-wall of a highway bridge. The project he was working on involved expansion joint removal and replacement on several bridges spanning a section of highway. The incident occurred at approximately 7:00 p.m.; he was working alone and using a trowel to finish the concrete near the joint replacement after the formwork had been pulled. He was standing at the top of the wing-wall when he fell approximately six feet onto some concrete construction rubble at the base of the wall. He was not using any type of fall protection at the time of the incident. He was found lying face down in the rubble, conscious and breathing, by employees who had been working on another bridge. Later, in the hospital, he remembered slipping from the wall but was unable to remember any other details of the incident. Surgery for neck and spinal cord injuries was performed three days after the incident; the victim died approximately three weeks later from resulting complications. MN FACE investigators concluded that, in order to prevent similar occurrences, the following guidelines should be followed:

- > use fall protection at any height when performing tasks which require reaching over empty space and present a fall hazard.

INTRODUCTION

On November 12, 1992, MN FACE was notified of a work-related fall fatality by MN OSHA. The incident occurred on September 21, 1992. Information from MN OSHA and the county coroner's office was obtained. The victim's employer was contacted, but because of legal concerns, refused participation in the MN FACE study. A site investigation was not conducted.

The victim had worked as a cement finisher for the construction company for 15 years. It employs a full-time safety officer and has a working safety program, including weekly safety meetings and written rules and procedures for tasks performed by workers.

INVESTIGATION

A construction company was working on a project, which involved the removal and replacement of expansion joints on a series of seven bridges along a section of highway. Joints are positioned between the bridge deck and roadway that continues on the ground. The sides of bridges are connected to vertical concrete support structures (pier caps) at the joint area. Pier caps, in turn, help to connect bridges to the wing-wall area. A wing-wall is the concrete support wall, which extends perpendicularly from beneath the ends of a bridge at the point where it meets the ground. A wing-wall, approximately 16-inches wide, supports the bridge and holds the ground back from the open area under a bridge. Figure 1 depicts, from a distance, a wing-wall area (including the pier cap and wall) between the end of a bridge (with black guard rail on top) and the railing running along the ground roadway (hatched area). Figure 2 is an enlargement of the circled wing-wall area in Figure 1. It depicts a view from near the top of the wing-wall and pier cap looking across the bridge with the road running behind it.

The victim was a cement finisher. He was assigned, after the formwork had been pulled, to hand-finish the outer side of the bridge support and the area on the outer side of the bridge where the joint had been replaced. He was working alone on the bridge, which was a customary work practice, but still within verbal distance of workers at other bridges. The foreman of the project also circulated between bridges during work hours. It was approximately 7:00 p.m., still daylight, at the time of the incident. The ground behind the wing-wall of the bridge the victim was working on reached the top of the wing-wall; he was standing at this level. There was open space on the opposite side of the wall, and he fell approximately 7 feet to the ground descending below it towards the lower roadway.

According to the OSHA report, from the victim's probable position on top of the wall this finishing job required a maximum reach distance of 16 inches beyond the wing wall. He had been working on this finishing operation for approximately one hour. The victim was using no fall protection at the time of the incident. Because of the rubble at the base of the wall (about 12" deep), it was estimated that he fell less than six feet. He probably landed on his head, however, and suffered neck and spinal cord injuries.

Two coworkers working on another bridge saw the victim lying face down in the rubble at the base of the wall. The victim was conscious and breathing when the coworkers reached him. He stated,

however, that he was unable to feel anything when his legs and arms were touched by the coworkers. The victim laid still in the position he was found in until a county ambulance arrived.

He was transported to a hospital, and neck surgery was performed three days later. The victim was unable to remember the details of the incident during his hospital stay. After surgery he appeared to be improving but, due to complications which arose while he was immobilized, the victim died about three weeks later.

CAUSE OF DEATH

The death certificate listed the cause of death as pulmonary embolus due to immobilization following neck and spinal cord injury due to a fall.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Use fall protection at any height when performing tasks which require reaching over empty space and present a fall hazard.

Discussion: Fatalities can occur from the fall hazards, which exist at any height, as evidenced by this incident. Before performing work, even on levels lower than those for which standards and regulations exist, tying off to a substantial structure with an approved safety belt and lanyard or providing guard railing is a safe and effective work practice which employers should encourage and support. If safety belts and lanyards are used, they should be rigged to allow the movement of employees only as far as the structure edge.