The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research NIOSH

Carpenter Falls 62 Feet to His Death While Attempting to Enter a Personnel Basket at a Bridge Construction Site in Maryland

FACE 9023

SUMMARY

A carpenter fell 62 feet to his death when he attempted to enter a stripping basket while working on a bridge construction project. The victim was spacing rebar inside a concrete form pier cap (the top part of a bridge pier which uniformly distributes the concentrated loads from the bridge over the pier). He ran out of spacers and signalled the crane operator to move the basket over to the pier he was working on. As the crane operator attempted to move the basket to the pier, the basket bumped the pier form and swung away. The victim reached out for the basket as it was moving away and lost his balance, falling 62 feet onto the concrete footing at the base of the pier. NIOSH investigators concluded that, in order to prevent similar occurrences, employers should:

- ensure that established safety procedures be followed at all times
- conduct scheduled and unscheduled safety inspections regularly at each jobsite
- conduct a thorough evaluation of accessing piers to determine the safest method.

INTRODUCTION

On January 30, 1990, officials of The Maryland Occupational Safety and Health Administration notified the Division of Safety Research (DSR) of the death of a 30-year-old male carpenter, who fell 62 feet from the top of a pier cap at a bridge construction site on January 26, 1990. The state officials requested technical assistance. On February 12 through 14, 1990, a DSR safety engineer conducted an investigation of this incident. The safety engineer reviewed the incident with company representatives and obtained witness statements, the state police report, photographs and a diagram of the incident site.

The employer, a heavy construction company that has been in operation for 87 years, employs 450 full-time employees, including a safety director and assistant safety director. The company has a comprehensive safety program and provides on-the-job training to the employees. Additionally, the company conducts monthly safety meetings that are related to the type of work being done at the job site. Some of the topics of recent safety meetings included personnel baskets, crane signals and flagman signals, housekeeping, hand injuries and fall protection. Quarterly, the company mails safety information to the employees' homes and presents safety awards to employees with good safety work records.

Before work was started at this jobsite, the company evaluated various methods of having the employees gain access to the pier forms. They had rented lift equipment such as scissors lifts and scaffolding; however, based on the existing ground conditions (marshy soils and unstable fill) and other factors, the company decided that the use of stripping baskets and cranes was the safer means of getting employees to and from the work areas.

The victim had been employed by the company as a carpenter for over 5 years. He had taken the new employee safety orientation training and participated in the monthly safety training meetings. He had also recently taken the safety training for personnel transport baskets and fall protection.

INVESTIGATION

The company had been contracted to build a bridge over a waterway. Concrete piers were being built to support the bridge deck. The piers consisted of a footing with a rectangular pillar 20 feet long by 5 1/2 feet wide, rising 26 feet (Figure). The top portion of the pillar, which was “V” shaped, rose 36 feet above the pillar and was 46 1/2 feet wide at the top. The concrete pier was reinforced with steel rebar. The form for the concrete pier was set in place and the reinforcing steel for the upper section was placed in the form. The last section of the form was then put in place. The victim was inside the form, installing spacer blocks between the reinforcing steel and the form. He had run out of spacers and needed to return to the ground to obtain more spacers. He signaled the crane operator that he needed to come down. The crane operator, who had just put a worker on another pier, swung the basket 150 feet to the pier the victim was working in. The basket, which weighed approximately 4000 pounds and was approximately 8 feet wide by 20 feet long, was designed as a stripping basket to be used in placing and removing parts on the forms. The stripping basket was also used to transport personnel. As the basket was slowing to a stop, it struck the form, causing the basket to move away from the form. An eyewitness stated that the victim, standing on the 8-inch flange on top of the form, lost his balance while reaching for the basket and fell 62 feet to the concrete footing below.

Co-workers rushed to the victim within a minute of the fall and found that he had a gash in his head and was not breathing. Calls were made to the emergency medical service (EMS) and the state police. Cardiopulmonary resuscitation (CPR) was attempted by one of the co-workers without success. The victim was transported to a regional hospital where he was pronounced dead on arrival one hour after the incident.

The companies’ written procedure required that workers stand inside the pier on the reinforcing steel. Additionally, written company policy requires that the basket be secured against movement before entering or exiting the basket. The basket had a rope on its railing that was to be used as a tie off to secure the basket to an anchor point inside the pier form during entry and exit.

At the time of the incident, the victim was wearing a safety belt and lanyard. While working inside the form, workers were not required to tie off. However, when riding in the basket, company policy required workers to secure their lanyard to the tie-off bar in the basket.

CAUSE OF DEATH

The attending physician stated the cause of death was due to head injuries.

RECOMMENDATIONS/DISCUSSION:

Recommendation #1: Employers should ensure that established safety procedures be followed at all times.

Discussion: Established company safety procedures state that a basket should be secured against movement with a tie-off before an employee enters or exits the basket when it is elevated as required by 29 CFR 1926.550(g)(6)(ii). The rope on the basket railing was provided for this purpose. Additionally, company policy requires that employees stand inside a form until the basket is secured in place to be boarded. Employers should ensure that workers are aware of established company safety procedures, and take steps to enforce their implementation.

Recommendation #2: Employers should conduct scheduled and unscheduled safety inspections regularly at each jobsite.

Discussion: Employers should conduct, or appoint safety personnel to conduct, scheduled and unscheduled safety inspections at each jobsite to ensure that established safety procedures are being followed. Conducting such safety inspections demonstrates to workers a management commitment to enforcing its safety policies and procedures.

Recommendation #3: Employers should conduct a thorough evaluation of accessing piers to determine the safest method.

Discussion: Employers should evaluate alternative methods for providing worker access to piers; such alternatives could include, loading and unloading the workers inside the concrete forms.

REFERENCE

1. 29 CFR 1926.550(g)(6)(ii) Code of Federal Regulations, Washington, D.C.: U.S. Government Printing Office, Office of the Federal Register

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