A Highway Worker Dies When Struck By a Speeding Vehicle While Picking Up Cones on an Interstate Highway

SUMMARY

A 27 year-old general laborer died when a speeding vehicle struck him as he picked up traffic cones at a construction site on an interstate highway. The speed limit on this interstate highway was 70 mph. The victim was in a man-bucket attached to the rear of a staked flatbed traffic control truck. This truck was traveling in reverse in the number three lane of a four-lane highway as the victim was picking up the cones between the numbers three and four lanes and placing them on the bed of the truck. A speeding vehicle knocked down over 300 feet of traffic cones before colliding with the rear of the traffic control truck, which was equipped with flashing lights and an arrow board. There was no traffic truck with an impact attenuator between the speeding vehicle and the traffic control truck to prevent the collision. Visibility at the time of the incident was limited due to the darkness at 3:45 a.m. The traffic control plan did not require reduction of the speed limit. Therefore, traffic continued to travel at the same limit despite the fact that three of the four lanes were closed for construction. There were no law enforcement vehicles assigned to the construction site at the time of this incident.

The CA/FACE investigator determined that, in order to prevent future occurrences, employers should, as part of their Injury and Illness Prevention Program (IIPP), develop procedures with the State's Department of Transportation that will:

- **Reduce the speed limit in construction work zones on interstate highways with high speed and high volume.**
- **Require the availability of traffic trucks with impact attenuators for construction work zones on interstate highways with high speed and high volume.**
- **Ensure Highway Patrol presence when putting down and picking up traffic cones in close proximity to speeding traffic on interstate highways with high speed and high volume.**
- **Ensure artificial lighting is used to improve visibility of work crews to passing traffic for night construction work zones on interstate highways with high speed and high volume.**

INTRODUCTION

On April 21, 2000 at 3:45 a.m., a 27-year-old male general laborer died from injuries received when a speeding vehicle intruded into the highway work zone where he was working. The vehicle struck the rear of the truck in which he was working, ejecting him onto the interstate highway. The CA/FACE investigator learned of this incident through the State of California's Department of Industrial Relations, Division of Occupational Safety and Health's Legal Unit on May 2, 2000. On May 15, 2000, the CA/FACE investigator traveled to San Diego and interviewed the Department of Transportation employees involved. The victim's employer was interviewed on April 23, 2000. The California Highway Patrol incident report was also obtained. The employer of the victim was a highway construction company that had been in business for three years and at the job site for six months as a sub-contractor to the State's Department of Transportation. The company had approximately 30 employees, six of which were at the site at the time of the incident. The victim had been with this company for only one month, and worked exclusively at this

jobsite. The company stated it had a written safety program and a designated safety manager who also performed other duties. A copy of their safety program was not made available. The victim did not receive any specific job hazard training. The company stated they held scheduled monthly safety meetings on the jobsite, but these meetings were not documented.

INVESTIGATION

The site of the incident was a major interstate highway. The work zone was approximately six miles long consisting of the numbers one, two, and three lanes closed to traffic by means of orange cones with retro-reflective sleeves, barricades with illuminated beacons and signboards. The victim's employer was under contract with the State's Department of Transportation to grind the surface of the interstate highway, removing approximately ¼ inch of the road surface and replacing the raised reflective markers that separate the interstate lanes. They were working at night to minimize traffic disruption and avoid heavy traffic. The victim's shift started at 8:00 p.m. and lasted till 6:00 a.m.

When it came time to pick up the cones, the victim and two coworkers used a one-ton flatbed traffic control truck. The truck was equipped with flashing lights, an arrow board, and a man-basket attached to the rear of the bed. The victim and coworkers were all wearing orange vests with retro-reflective markings. One co-worker backed up the truck at approximately two to three miles per hour parallel to the traffic cones in the number three lane. The victim and other co- worker alternated jobs. One would stand in the man-basket and pick up cones while the other shoveled up the old reflective markers. At approximately 3:48 a.m., they had just completed picking up 2.8 miles of the 6-mile closure. The victim and co-worker switched places and the victim began to pick up the cones. The driver of the truck started backing when he noticed headlights coming at him in his left rear view mirror. When the driver looked in the right rear view mirror and did not see the headlights, he stopped the truck, honked his horn, and yelled the victim's name as loud as he could.

The co-worker was approximately six feet away from the truck when he heard what he first thought were gunshots. He turned to see what was going on and realized what he was hearing were cones being knocked over by the speeding vehicle heading directly at the traffic control truck. The co-worker stated that the traffic control truck "just disappeared upon impact". The co-worker ran over to the victim and realized he was dead. He then ran to the traffic control truck looking for the driver. He found the driver on the ground next to his truck trying to call 911 on his cellular phone. According to witnesses, the vehicle that struck the rear of the traffic control truck was traveling at speeds in excess of 70 mph, swerving erratically and hitting traffic cones for more than two miles before the impact took place The Highway Patrol responded within minutes. They collected physical evidence, took witness statements, and arrested the driver of the vehicle who caused the accident. The victim's body was taken to the coroner's office upon completion of the investigation.

CAUSE OF DEATH

The cause of death, according to the coroner's report, was multiple blunt force injuries.

RECOMMENDATIONS / DISCUSSION

Recommendation #1: Reduce the speed limit in construction work zones on interstate highways with high speed and high volume.

Discussion: In Southern California, the traffic control plans for interstate highway construction zones usually don't

specify that the speed limit should be reduced. Even when there is only one available lane, the speed limit is often kept the same as originally posted, leaving the safety of the highway workers in jeopardy. Witnesses to this incident stated they were traveling at 70 mph in the number four-lane, the only lane available to them at the time, when the incident occurred. At these speeds, it is very difficult to react to avoid an accident. If speed limits were reduced, then that would allow increased reaction time to impending situations for those people affected by the closure. Had the speed been reduced in this incident, the work crew might have had time to react.

Recommendation #2: Require the availability of traffic trucks with impact attenuators for construction work zones on interstate highways with high speed and high volume.

Discussion: Traffic trucks with impact attenuators are designed to protecthighway construction workers from impacts from vehicles that violate the work zone. These vehicles are positioned between the oncoming traffic and the workers and work vehicles, and they can absorb the impact of vehicles that intrude into the work zone. These types of vehicles must be budgeted for if needed on a job site. Cost seems to be the main obstacle for not having these vehicles readily available. When this incident occurred, there were traffic trucks with impact attenuators available, but not for the purpose of setting up or taking down the traffic cones. Had one been used on this part of the job, this fatality might have been prevented.

Recommendation #3: Ensure Highway Patrol presence when putting down and picking up traffic cones in close proximity to speeding traffic on interstate highways with high speed and high volume.

Discussion: Highway Patrol units are usually available to assist with work construction zones when sufficient notice is given and budgetary consideration is given to this added safety feature. Although the presence of law enforcement doesn't always guarantee a safe work zone, the visual effect they have can increase the consciousness of the public making them more aware of their surroundings. Had a Highway Patrol unit been assigned for this work site, the speeding vehicle might have been stopped before causing the collision.

Recommendation #4: Ensure artificial lighting is used to improve visibility of work crews to passing traffic for night construction work zones on interstate highways with high speed and high volume.

Discussion: Having sufficient light to work at night has always been a problem for highway work crews mainly because the work sites are mobile. Many times speeding vehicles will come upon work crews and only see them when their headlights illuminate their presence. Artificial lighting not only provides better visibility for the workers to see the work being performed, it also allows oncoming traffic to see the work crews in plenty of time to lower their speed and act more cautiously as they approach and pass work crews.

References:

California Code of Regulations, Vol. 9, Title 8, Sections 1597, 1598, 1599.

American Traffic Safety Services Association Standards for Work Zone Traffic Control, 1998

The California Department of Health Services, in cooperation with the California Public Health Institute, and the National Institute for Occupational Safety and Health (NIOSH), conducts investigations on work-related fatalities. The goal of this program, known as the California Fatality Assessment and Control Evaluation (CA/FACE), is to prevent fatal work injuries in the future. CA/FACE aims to achieve this goal by studying the work environment, the worker, the task the worker was performing, the tools the worker was using, the energy exchange resulting in fatal injury, and the role of management in controlling how these factors interact.

NIOSH funded state-based FACE programs include: Alaska, California, Iowa, Kentucky, Maryland, Massachusetts, Maryland, Minnesota, Missouri, Nebraska, New Jersey, Ohio, Oklahoma, Texas, Washington, West Virginia, and Wisconsin.

Additional information regarding the CA/FACE program is available from:

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