



FACE

Fatality Assessment and Control Evaluation Program

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Hispanic Laborer on Roadway Construction Work Site Run Over and Killed by a Backing Flat Bed Dump Truck - North Carolina

SUMMARY

On April 26, 2004, a 26-year-old Hispanic laborer (the victim) was backed over by a flat bed dump truck while working on a roadway work site. The victim drove the truck westward through the work site, while a laborer threw brackets used to secure concrete barriers onto the ground. Once completed, the victim parked the truck and walked to the tailgate area, where he met up with the laborer. The victim and the laborer began walking eastward together, towards the rest of the crew, with the victim walking a few steps in front of the laborer.

Two other workers got into the truck to drive to another work site. Prior to leaving, the driver received a radio call that he could not understand. He placed the truck into reverse, to back towards the crew (east) to see what was needed. While walking, the laborer saw a carpenter running, waving his hands and yelling, and simultaneously he got a glimpse of the moving truck on his left side. The laborer jumped to his right and shouted a warning to the victim walking in front of him. After feeling a "thud," the driver stopped. After getting out of the truck, he found the victim lying on the ground and called 911.

Emergency Medical Services (EMS) responded and determined that the victim had multiple injuries and weak vital signs. The victim was transported by ambulance to a hospital, and was pronounced dead in the emergency room.

Fatality Assessment and Control Evaluation (FACE) Program

The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR), performs Fatality Assessment and Control Evaluation (FACE) investigations when notified by participating states (North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, and Virginia); by the Wage and Hour Division, Department of Labor; or when a request for technical assistance is received from NIOSH-funded state-level FACE programs in Alaska, California, Iowa, Kentucky, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, New York, Oklahoma, Oregon, Washington, West Virginia, and Wisconsin. The goal of FACE is to prevent fatal work injuries 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. FACE investigators evaluate information from multiple sources that may include interviews of employers, workers and other investigators; examination and measurement of the fatality site, and related equipment; and review of records such as OSHA, police, medical examiner reports, and employer safety procedures and training records. The FACE program does not seek to determine fault or place blame on companies or individual workers. Findings are summarized in narrative reports that include recommendations for preventing similar events in the future. For further information visit the FACE website www.cdc.gov/niosh/face or call toll free 1-800-35-NIOSH.



NIOSH investigators concluded that, to help prevent similar occurrences, employers should:

- *ensure that mobile construction vehicles are inspected daily and that defective equipment is reported and removed from service until needed repairs have been made*
- *develop, implement and enforce procedures that minimize exposure of workers on foot to moving vehicles and equipment*
- *ensure backing procedures are in place for the use of mobile construction vehicles and that drivers have communication with workers on foot and use a designated spotter to direct backing*
- *develop and implement specific training for mobile equipment operators and workers on foot regarding driver blind areas on equipment*
- *ensure training meets language(s) and literacy level(s) needs of all the workers*
- *consider installing after market devices (e.g., camera, radar, and sonar) on construction vehicles and equipment to help monitor the presence of workers on foot in blind areas*

Additionally,

- *Manufacturers of heavy construction vehicles, such as dump trucks, should explore the possibility of incorporating new monitoring technology (e.g., radio frequency identification (RFID) tags and tag readers) to help monitor the presence of workers on foot in blind areas*
- *The U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) and State OSHA Plans should consider a rulemaking effort to improve the safety regulations and require new safeguards for employees on roadway construction worksites*

Although the following recommendation could not have prevented this fatality, NIOSH concluded that as a matter of prudent safe operations, roadway contractors should:

- *establish work procedures that eliminate the need for workers to stand in a truck bed of a moving vehicle where they are exposed to potential fall hazards*

INTRODUCTION

On April 26, 2004, a 26-year-old Hispanic laborer (the victim) was struck and backed over by a flat bed dump truck while working on a roadway work site. On April 28, 2004, officials of the North Carolina Occupational Safety and Health Administration (NCOSHA) notified the National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR), of the incident. On September 28, 2004, a DSR safety and occupational health specialist conducted



an investigation of the incident and reviewed incident circumstances with the NCOSHA safety compliance officer assigned to the case. The NCOSHA compliance officer interviewed the project manager and several employees on the work site at the time of the incident and used an interpreter to obtain and translate statements from four Hispanic workers. Photographs of the incident site and witness statements taken by NCOSHA shortly after the incident were reviewed. The city police report was reviewed. No site visit was conducted because the job had been completed. The victim's employer was interviewed by telephone. A telephone interview was also conducted with a roads engineer from the North Carolina Department of Transportation. The medical examiner's report and death certificate were reviewed.

Employer. The victim's employer was a subcontractor on the job site where this incident occurred. The company is in the business of installing shoulder drainage pipes and renting concrete barrier walls to contractors who perform roadway work. The company has been in business for approximately 11 years, employs 90 full-time workers, and works on several different projects throughout the State of North Carolina.

The road work contract was awarded to a general contractor by the State of North Carolina, Department of Transportation, and the work was to be completed in several phases. The second phase required the employer to perform the following duties: 1) install concrete barriers and attach anchor brackets to secure the barriers, 2) cut and remove the permanent concrete barrier in the traffic lane, and 3) remove the concrete pavement. The employer's workers had been at this site ten days preceding this incident. On the day of the incident, the company had a crew of 7 workers, including the victim, and a project manager on the jobsite; 5 of the workers were of Hispanic origin. The Hispanic workers' primary language was Spanish; however they reportedly spoke some English. The foreman usually assigned to this crew was not working on the day of the incident, and the project manager was acting as the supervisor. The project manager departed the work site briefly to attend a meeting at another work site, and was not present at the time of the incident. The project manager spoke English and limited Spanish. This was the company's first workplace fatality.

Victim. The 26-year-old male victim had moved from Mexico to the United States several years prior to the incident and had been working for the company as a laborer for 3 years. The victim's primary language was Spanish; however, he also reportedly spoke some English. The victim was wearing a Class II^a lime safety vest over a lime green hooded rain poncho, ear plugs, and work boots.

Training. The company had a comprehensive safety program that was written in English. A new employee was required to attend a one-day safety orientation prior to beginning work. A Spanish speaking translator would be contracted by the employer for this training. On-the-job safety training was provided every two weeks and on an as-needed basis by a supervisor to warn

^a A high visibility safety garment. The American National Standards Institute(ANSI) and the International Safety Equipment Association (ISEA) recommends, a Class II garment for workers who require greater visibility under inclement weather conditions, when backgrounds are complex, or when tasks divert attention from approaching vehicle traffic moving in excess of 25 miles per hour.

workers of potential worksite hazards. When on-the-job training was delivered, it was translated into Spanish by a bilingual crew foreman. All training was documented by the company. On the morning of the incident, the project manager provided training to the workers on using eye protection. Some of the safety materials used and handed out during safety training were written in Spanish.

Incident Scene. The road work site was approximately 3 miles in length and was protected from public motorist traffic by concrete barriers installed on both sides of the roadway work zone (Photo 1). The width of the work zone was approximately 21 feet, and construction vehicles and equipment were to travel only westward.



Photo 1. Photo of the roadway construction work zone. [Photograph courtesy of the NCOSHA].

Equipment. The flat bed dump truck involved in this incident was a 1994, diesel 5-ton truck with a gross vehicle weight of 22,000 pounds. The truck was purchased in used condition by the employer in 1997. Because the truck was classified as a commercial vehicle having a gross vehicle weight rating (GVWR) of more than 10,000 pounds, it was required by the U.S. Department of Transportation, Federal Motor Carrier Safety Administration (FMCSA) to have an annual federal vehicle inspection. The truck received and passed a federal inspection in May 2003. The truck

was primarily used to carry supplies to the job site, remaining at the site until most of the supplies in the bed were used. At the time of the incident, the truck bed contained a compressor, extension cords, water jug, grout, threaded rods, and anchor brackets.

The truck was equipped with dump cylinders and the bed was approximately 14 feet in length and 12 feet wide. The bed sides of the truck bed were approximately 63 inches in height and the rear tailgate of the truck was approximately 53 inches above the ground (Photo 2).



Photo 2. Photo of the flat bed dump truck. [Photograph courtesy of the NCOSHA].

The truck on each side was equipped with mirrors approximately 7 inches wide and 16 inches in height and a round spot convex mirror mounted at the bottom of each mirror (Photo 3). The truck's rear window measured 59 inches in width and 16 inches in height. However, after purchasing the truck, the employer welded a steel plate in a vertical position on the bed which obstructed the rear window with the exception of a 4 inch by 12 inch opening of mesh screen. The steel plate was added to protect the rear window from being broken by the shifting of equipment and tools in the truck bed.

Following the purchase of the truck, the employer had a reverse alarm installed by a local mechanical garage. According to NCOSHA, the reverse alarm was inoperable at the time of the incident. Additionally, during NCOSHA interviews, workers at the site reported that the reverse alarm was inoperable most of the time over recent months. According to NCOSHA, these employees additionally reported that they were unaware of anyone reporting this defect to anyone in supervision or management. Following this incident, the employer developed a daily inspection



*Photo 3. Photo of the mirrors mounted on each door of the dump truck.
[Photograph courtesy of the NCOSHA].*

checklist to be completed for all construction vehicles and equipment to be used or operated at a job site. The employers checklist currently is to be completed by the operator and supervisor and requires that reverse alarms be inspected and tested.

Weather. It was daylight at the time of the incident. Conditions included drizzle with periods of heavy rain, and the temperature was in the 50's.

INVESTIGATION

In the late morning on the day of the incident, a crew of six workers and the victim arrived at the roadway construction work site. Five of the workers including the victim were Hispanic. The project manager representing their employer was already on the site. Because the work crew's regular foreman was absent, the project manager was acting as the supervisor. The work crew consisted of the following:

- Laborers (5 Hispanic workers, includes the victim)
- Skilled Laborer
- Welder/Equipment Operator



The project manager provided a safety talk to the crew on the importance of wearing eye protection, and the crew began unloading equipment and tools. At approximately 12:30 p.m., the project manager met with the crew to discuss the planned work activities. The project manager instructed the crew to place anchor brackets at each concrete barrier. This was to be done by a worker standing in the back of the truck bed while the truck was moving slowly. The worker would throw the brackets onto the ground near each concrete barrier. Following the placement of the anchor brackets, the crew was instructed to use air drills to attach the brackets to the asphalt pavement and the concrete barriers. The project manager instructed the skilled laborer and the welder/equipment operator to assist with getting the crew started, and after the anchor brackets were unloaded from the truck to retrieve a concrete cutting saw at another work site. In closing, the project manager reminded the work crew to wear safety vests, rain gear, and safety glasses. The project manager then departed to attend a meeting at another work site.

As the crew began work, the victim positioned himself as the driver of the truck while one of the laborers stood in the bed of the truck. As the victim slowly drove the truck westward through the work site, the laborer threw anchor brackets from the truck onto the ground next to each concrete barrier. The remainder of the work crew remained at the top of an incline within the work zone where an air compressor was being used for an air drill. After placing the anchor brackets, the victim put the truck in park and turned off the ignition. The truck was parked approximately 769 feet from where the air compressor and the remainder of the work crew were located.

After exiting the truck, the victim walked to the tailgate of the truck and met up with the laborer who had been riding in the bed. While they were standing at the tailgate, the skilled laborer and the welder/equipment operator walked down to the truck. Heavy rain began to fall. After arriving at the truck, the skilled laborer assumed the position as the driver and the welder/equipment operator was the passenger. Prior to leaving the work site to get the saw, both the driver and the passenger removed their rain gear as they got into the truck and rested for several minutes. At this time, the victim and the laborer began walking side by side while heading eastward back towards the location of the air compressor and the remainder of their work crew. While walking the laborer slowed his pace, so he could reposition some of the anchors lying on the ground next to the concrete barriers, as the victim continued with his stride.

As the driver was getting ready to leave the site to retrieve the saw, he received a call on the portable radio that was lying on the seat of the truck. The call was from a laborer with his crew, telling him that the hose on the air compressor ruptured. The driver did not understand the laborer, and made the decision to go see what was needed. The driver placed the truck into reverse and began backing westward through the work site. During NCOSHA interviews, the passenger in the truck stated that the mirrors were adjusted correctly and he observed the driver using the mirrors. A carpenter working for another subcontractor was positioned near the air compressor and the rest of the work crew. He observed the truck approaching the victim and the laborer walking with their backs to the truck. He began shouting "watch out and stop backing" in English and Spanish, while waving his arms and running towards the truck. According to NCOSHA, the truck at this point had already traveled in reverse through the work site for approximately 369 feet. As the truck approached the laborer, he saw the carpenter waving his hands and yelling and simultaneously



glimpsed the moving truck imminently close to his left side. As the laborer jumped to his right, he shouted a verbal warning in Spanish to the victim walking on the same side of the road and approximately 40 feet in front of him. While traveling in reverse, the driver felt a "thud" and stopped the truck.

As the driver put the truck into park, he heard some shouting and thought he had run over the air compressor. In this position, the truck would have still needed to travel in reverse for an additional 400 feet before reaching the air compressor and the rest of the crew. According to NCOSHA, no one working at the scene of the incident recalls hearing any type of warning reverse alarm. Following the incident, the NCOSHA compliance officer inspected the truck and determined that the warning reverse alarm was inoperative.

When the carpenter arrived at the truck, he observed the victim lying on the ground. He checked the victim and found him to have weak vital signs. The driver called 911 and the project manager to report the incident. At 1:01 p.m., Emergency Medical Services (EMS) and city police were dispatched to the incident scene. The project manager drove directly to the hospital. After arrival on the scene, EMS assessed the victim and found he had multiple injuries and weak vital signs. The victim was transported via ambulance to an area hospital, where he was pronounced dead at 2:04 p.m. in the emergency room.

CAUSE OF DEATH

The medical examiner's report stated that the cause of death was multiple injuries.

RECOMMENDATIONS /DISCUSSION

Recommendation #1: Employers should ensure that mobile construction vehicles are inspected daily and that defective equipment is reported and removed from service until needed repairs have been made.

Discussion: The dump truck in this incident was equipped with an audible reverse alarm, designed to activate when the vehicle was shifted into reverse. According to the investigating NCOSHA compliance officer, the alarm was not functioning correctly when tested after the incident. The federal OSHA rule 1926.601 (b) (4) states, "any construction vehicle with an obstructed rear view must have a reverse signal alarm audible above the surrounding noise level, or the vehicle is backed up only when an observer signals that it is safe to do so."¹ Additionally, all vehicles in use are required by OSHA 1926. 601 (b) (14) to be checked at the beginning of each shift.² During interviews with the NCOSHA compliance officer, workers reported that they had knowledge that the reverse alarm was not working most of the time, and that the employer did not require that mobile equipment be inspected prior to each shift. Following this incident, the employer developed a daily equipment inspection checklist, required to be completed by the operator and supervisor.

Employers should designate a supervisor and/or a competent person to be responsible for daily pre-shift equipment checks and for verifying that any problems are corrected. Although equipment may also be inspected by other workers, for example the operator, the supervisor must be responsible for ensuring that inspections are performed daily, that necessary repairs are made, that scheduled



maintenance is performed, and that records of all inspections are maintained. Equipment should be removed from service until repairs are made.

Recommendation #2: Employers should develop, implement and enforce procedures that minimize exposure of workers on foot to moving vehicles and equipment.

Discussion: According to a December 2004 article in the Bureau of Labor Statistics Monthly Labor Review, of the 844 fatal workplace injuries on road construction sites identified by the Census of Fatal Occupational Injuries (CFOI) from 1995 to 2002, about 60 percent were the result of a worker being struck by a vehicle or some kind of mobile equipment. Two-hundred and seventy-four workers were struck by trucks (including 100 dump trucks), 172 were struck by automobiles or other vehicles, and 63 workers were struck by machinery.³ It is critical that employers develop procedures to minimize exposure of workers on foot to moving vehicles and equipment in the tight confines of roadway construction work zones. Policies and procedures at the incident site required travel in only one direction which would minimize workers on foot being exposed to backing vehicles and equipment. However, at least in this incident, these procedures were not enforced and maintained. Supervisors and managers should be diligent about ensuring that safe procedures are continuously followed, correcting deviations when observed, and reinforcing that the procedures are required to ensure worker safety.

Internal traffic control plans (ITCP), are a promising tool for protecting workers on foot from moving vehicles and equipment.^{4, 5} ITCPs are site-specific plans that coordinate the flow of construction vehicles, equipment, and workers on foot. ITCPs identify directions and pathways for moving vehicles and equipment, and should be developed to minimize the backing of vehicles and equipment. ITCPs may include designated walkways for workers that are clear of operating construction vehicles and equipment, and designated areas of a work zone that are prohibited for workers on foot.

Additional information and recommendations for protecting roadway construction workers can be obtained from the NIOSH document entitled “Building Safer Roadway Work Zones: Measures to Prevent Worker Injuries from Vehicles and Equipment,”⁴ and the Roadway Work Zone Safety and Health Coalition Alliance document entitled “Internal Traffic Control Plans.”⁵

Recommendation #3: Employers should ensure backing procedures are in place for the use of mobile construction vehicles and that drivers have communication with workers on foot and use a designated spotter to direct backing.

Discussion: Employers should not rely on reverse alarms to protect workers on foot. Roadway construction work zones can be very noisy places. Not only are there many construction vehicles operating at once, but there is the possibility of heavy traffic passing nearby, making it difficult for workers on foot to hear reverse alarms.

Backing procedures should be developed and implemented for each roadway construction project. Backing protocols should include, but not be limited to, an assigned backing spotter, and policies

that backing will not begin without an understandable signal from the spotter that it is safe to start backing.⁴ In addition, operators of construction vehicles and equipment must come to a complete stop if contact with a spotter is lost and backing should not resume until contact is re-established. All equipment operators and truck drivers, upon entering the construction site, should be aware of who the spotters are, and the established backing protocol.

Communication among all workers on a construction roadway work zone site regarding current work plans and any potential changes to scheduled tasks is critical, especially between mobile equipment operators and workers on foot. This can be accomplished by personal one-on-one communication, hand signaling or with two-way radios. Communication used in combination with an internal traffic control plan (ITCP) and a site-specific backing protocol could reduce the likelihood of workers on foot being struck by backing vehicles.

Recommendation #4: Employers should develop and implement specific training for mobile equipment operators and workers on foot regarding driver blind areas on equipment.

Discussion: OSHA regulations require employers to train workers to recognize and avoid unsafe conditions that may be present in their work environments and to provide training on the regulations applicable to their work.⁶ Training should be a vital part of a roadway construction company's safety program and should address, at a minimum, all known and anticipated hazards. Roadway construction workers should be made aware that blind areas exist around construction vehicles and they should receive specific training in the identification of these blind areas. A blind area (or blind spot) is the area around a vehicle or piece of construction equipment that is not visible to the operator, either by direct line-of-sight or indirectly by the use of internal and external mirrors. Training on equipment blind areas is important for both equipment operators and workers on foot in proximity to vehicles and equipment. As part of a research project evaluating different strategies to prevent worker injuries in construction work zones, NIOSH contracted with Caterpillar to provide blind area diagrams for 38 different vehicles or machines used in the construction industry.^{7, 8} These diagrams may be useful in worker training.

Recommendation #5: Employers should ensure training meets language(s) and literacy level(s) needs of all the workers.

Discussion: Overcoming language and literacy barriers is crucial to providing a safe work environment for a multilingual workforce. Companies that employ workers who do not understand English should identify the languages spoken by their employees, and design, implement, and enforce a multilingual safety program. The safety program and training should be developed at a literacy level that corresponds with the literacy level appropriate for the company's workforce. Employers should ensure that employees who do not speak English or have limited use of English are always afforded an interpreter who can clearly convey instructions, and ensure that employees clearly understand the instructions given. A method to ensure comprehension could include testing to ensure that the information conveyed was understood. In this incident, the victim was given a multilingual safety orientation and an interpreter was provided to translate and to explain the various types of hazards. Onsite training was provided at least every two weeks and on an as-



needed basis by a supervisor to warn the workers of potential worksite hazards. However, when the onsite training was delivered, it was inconsistently translated into Spanish by a bilingual crew foreman.

OSHA has developed compliance assistance materials in Spanish that may be useful to employers developing or improving safety and health training programs for workers. The resources include:

- [The Hispanic Outreach Module of the Compliance Assistance Quick Start](#)
- [The Hispanic Employers and Workers Compliance Assistance Web page, and](#)
- [OSHA en Español](#), a Spanish version of the Agency's Web site.

These materials are available at: http://www.osha.gov/dcsp/compliance_assistance/index_hispanic.html or can be obtained by contacting an OSHA area office.

Following this incident, the employer began developing a comprehensive safety program and training written in Spanish and worked on ensuring that when any onsite training is delivered, there is a bilingual translator available.

Recommendation #6: Employers should consider installing after market devices (e.g., camera, radar, and sonar) on construction vehicles and equipment to help monitor the presence of workers on foot in blind areas.

Rear-view cameras and sensors based on radar, sonar, and infrared technology are available to help monitor equipment blind spots.^{9, 10} Although improvements may be needed to make this technology more durable in the rough physical environment of a construction site, this equipment shows promise as a tool for worker safety. A camera mounted on the rear of the equipment provides a view of the obstructed area on a video monitor in the cab. Sensor systems provide an alarm in the cab when a person or other obstacle is detected at the rear of the equipment. A combination of a camera and a sensor system may offer the best protection, especially in congested work areas like roadway construction.

Recommendation #7: Manufacturers of heavy construction vehicles, such as dump trucks, should explore the possibility of incorporating new monitoring technology (e.g., radio frequency identification (RFID) tags and tag readers) on their equipment to help monitor the presence of workers on foot in blind areas.

Discussion: In this incident, the police reported that the driver stated he did not see the victim behind the truck. Emerging technology, such as sensor based systems, rear-view cameras, and radio frequency identification (RFID) tags and tag readers are becoming available for construction equipment, though testing and demonstration at construction projects are still needed.^{4,9,10} Collision occurrences have been attributed in part to limited visibility around the equipment. As new or existing monitoring technologies are proven to be effective on work sites, equipment manufacturers should offer these systems on new equipment.

Recommendation #8: The U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) and State OSHA Plans should consider a rulemaking effort to improve the safety regulations and require new safeguards for employees on roadway construction worksites.

Discussion: The State of Washington is the first jurisdiction in the United States to enact specific legislation to protect roadway construction workers. Between 1998 and 2003 there were seventeen fatalities in roadway construction work zones in Washington. “Of the seventeen fatalities, dump trucks were involved in eight of the fatalities and of those eight, six were the result of an employee being backed over by the dump truck. In each of the fatalities involving a dump truck backing over an employee, the dump truck was equipped with an operating reverse alarm.”¹¹

The State of Washington, with input from stakeholders, adopted an emergency rule in May 2004. The rule imposed significant new requirements for dump truck drivers backing their vehicles inside roadway worksites. This rule, Washington Administrative Code (WAC) 296-155-610 (2)(f), was permanently adopted in December 2004, and became effective in January 2005.¹² It affects all construction companies that operate dump trucks in reverse while on the jobsite. The Washington rule states that if you operate a dump truck^b in reverse within 50 feet of workers on the jobsite, that in addition to an audible warning device, the driver must use an observer to signal that it is safe to back up. If an observer is not used, the truck must have an operable mechanical device that provides a full view behind the truck, such as a video camera. More information about the Washington State regulation is available at: <http://www.lni.wa.gov/wisha/rules/construction/HTML/296-155m.htm#WAC296-155-610>.

Since adoption of this rule, there have been no workers killed by being backed over by dump trucks, while working on roadway construction work zones in Washington State.¹³

Although the following recommendation could not have prevented this fatality. NIOSH concluded that as a matter of prudent safe operations,

Recommendation #9: Roadway contractors should establish work procedures that eliminate the need for workers to stand in a truck bed of a moving vehicle where they are exposed to potential fall hazards.

Discussion: On the site where this incident occurred, a worker stood in the truck bed, to position materials along the work zone, as the victim drove the slow moving truck. While standing in the bed of a truck, workers are exposed to potential fall hazards. Employers should develop and establish work procedures that would eliminate the practice of workers standing in the truck bed of a moving vehicle. Other methods or alternatives should be developed, evaluated, implemented and enforced.

b

The term “dump truck” includes both belly and rear dump trucks with a minimum pay load of four yards.



Additional Information on protecting workers in highway workers is available from the NIOSH Safety and Health Topic Page on Roadway Work Zones at: <http://www.cdc.gov/niosh/injury/traumazone.html>.

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INVESTIGATOR INFORMATION

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