Roadside Responder is Struck by a Box Truck and Dies

Incident Number: 11KY006

Photograph of location where roadside responder was struck by box truck.

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Kentucky Fatality Assessment and Control Evaluation (FACE) Program
Incident Number: 11KY006
Release Date: June 27, 2012
Subject: Roadside Responder is Struck by a Box Truck and Dies

Summary

On a winter day, a 53-year-old retired fire chief was working for an environmental company to clean up a tractor trailer crash along an interstate. A semi tractor-trailer driver had fallen asleep and crashed. The environmental company had been deployed to assist in the cleanup and facilitate a lane closure. The cleanup was almost complete and there were five workers left at the incident site. They were working in the right lane loading a tag-along trailer with items from the crash when a box truck crashed into the work zone, striking the worker, and killing him.

To prevent future occurrences of similar incidents, the following recommendations have been made:

Recommendation No. 1: Companies should provide new and refresher commercial driver safety training for company drivers that addresses driver distraction and includes defensive driving techniques.

Recommendation No. 2: Companies should institute errant traffic alert procedures for roadside work zones.

Recommendation No. 3: Commercial tractor-trailer drivers should be trained to recognize signs of fatigue and when to seek appropriate rest areas.

Background

The decedent, a 53 year-old male, had been employed at an environmental clean-up company for approximately six months. He was a retired fire chief and was a volunteer with a fire department. He had Level Three hazard materials technical training, and was a state-certified rescue instructor. The decedent had completed road safety courses and lane closure courses; he had also completed confined space rescue training.

The company he was employed by had been in business for seven years and had six full-time employees, including 25 – 30 part-time on-call employees. All employees were cross-trained on all jobs. Safety training was conducted every two weeks and included certification training and mock site training. These trainings alternated every other week. Everyone was re-certified annually for hazardous material handling, confined space, road safety, and road closure training.

The average temperature on the day of the incident was 16 degrees Fahrenheit.

Investigation

The Kentucky Fatality Assessment and Control Evaluation Program was notified of an occupational fatality involving a box truck and a worker in an interstate work zone. Interviewed for this report were the company which employed the driver, and the local police department.

According to a police officer, at approximately 7:30 am in the winter of 2011, a semi tractor-trailer driver fell asleep while traveling south on a rural section of a four-lane interstate divided by a grassy median with a speed limit of 70 miles per hour. The roadway was straight and level, and the weather was clear. He was hauling a less-than-truck load of farm machinery, car parts, paper products, metal racks, and other items when he drove across the right shoulder on to the grass. The unit rolled onto its left side onto the shoulder. The driver escaped the crash without injury. Emergency responders arrived at the scene, and contacted a wrecking service at 8:00 am. The wrecking service employed an environmental cleanup company that specialized in lane closures.

The wrecking service arrived at the scene. They brought a semi tow truck, a rollback truck hauling a bobcat/ fork truck, an ambulance box truck, and a dually king cab pickup truck pulling a metal bumper pull trailer with two middle axles and a metal equipment box on the front. At 9:30 am, the environmental company arrived at the scene with five full-time employees and eight part-time employees. All were dressed in steel-toed boots, reflective coats, vests and hats, and work gloves. They formally closed the right travel lane to traffic using guidelines from the Manual on Uniform Traffic Control Devices manual. Orange cones were placed three-fourths of a mile north of the crash site to taper traffic from the right lane to the left lane and to provide a visual demarcation of the work area. A generator powered electric arrow box with a flashing left arrow was located where the cone taper began. A right-lane closure sign was located 1500 feet north of the crash site, with another lane closure sign located ½ mile north, and another generator powered "right lane closed ahead" sign one mile north of the crash site. Traffic speed was reduced to 55 mph in the left lane by the cleanup site. To further alert motorists to the work zone and to provide a buffer from errant vehicles, the ambulance box truck was parked in the right lane at the north end of the cleanup site with lights flashing.

Before the trailer could be righted and moved by the towing company, its contents had to be off-loaded. Employees from the towing and the environmental cleanup companies worked together and off-loaded the contents of the trailer. There were no environmental or hazmat issues with the contents of the trailer. Once the tractor and trailer were righted, the trailer was reloaded with most of its original contents. At approximately 12:30 pm, the work crew ate lunch. They had completed off-loading and reloading the 53' trailer.

There were four metal racks and two pallets of items that did not fit back into the trailer. To remove these items from the scene, the cleanup crew utilized the metal bumper-pull trailer hitched to the dually pickup truck. It was parked headed south in the right lane behind (north of) the semi tractor-trailer.

By 2:30 pm, two skids of product had been shrink-wrapped and four metal racks that did not fit into the trailer were left to be removed from the scene. The two skids had been rewrapped in plastic then placed at the right edge of the shoulder where they waited to be loaded onto the metal trailer. Cleanup was almost complete and there were five workers left to finish removing the metal racks and the skids of product from the scene. Two of the five workers (W1 and W2) were employed by the towing company and three workers (W3, W4, W5) were employed by the environmental cleanup company.

The metal racks were large and heavy, and required all five workers to load them onto the small metal trailer. W1 operated the bobcat/ forklift to transfer one metal rack at a time onto the back of the trailer. As W1 lifted each rack above the trailer, W2 stood on the east side of the trailer and guided the racks onto the trailer. W3 stood on the west side of the trailer next to the bobcat/ forklift and W4 stood to his right. They helped guide the racks to the front of the trailer. W5 was located by the hitch between the front of the trailer and back of the dually pickup to place the racks onto the trailer where they would be secured before being transported.

As the crew worked to place the fourth rack onto the trailer, a pickup truck pulling a car dolly approached the work area and slowed down. As the pickup driver slowed, he saw in the rearview mirror a 1998 box truck hauling floor tile and grout bearing down on him. In an effort to avoid being struck, the pickup driver tried to move left into the median. However, the box truck hit the front right bumper of the pickup truck then veered to the right toward the workers. W5 heard an odd sound then saw the box truck coming towards them and yelled. W1 was on the bobcat/ forklift, saw the box truck coming at them, and backed away from the trailer. W2 tried to get out of the way, W3 pushed W4 away from the trailer, and W5 jumped onto the front of the trailer to avoid being pinned between the trailer and dually pickup truck. The box truck drove the front axle of the box truck onto the trailer with the racks, dislodging the trailer from the hitch attached to the dually pickup truck. With the box truck and W5 on the front end of the small trailer it slid southward, striking the dually pickup truck and causing it to spin 180 degrees, then continued in a southward direction where the box truck hit the left side of the cab of the rollback truck where it came to rest. W3 was struck by the straight truck and thrown to the pavement where he struck his head; W4 was found on the ground and conscious, and W5 was unconscious on the trailer.

Emergency medical services were called to the scene. Upon their arrival they transported W3, W4, and W5 to a local hospital where W3 was pronounced dead; W4 and W5 were treated for injuries and released.

According to the police report, speed was not a factor, and inattention was listed as the primary human factor. The 59-year-old driver did not make any avoidance maneuvers. He was a company driver who drove for an out-of-state transportation company that employed 28 drivers and had 19 power units that hauled general freight.

Cause of Death

The cause of death was due to blunt force trauma.

Recommendations and Discussions

Recommendation No. 1: Companies should provide new and refresher commercial driver safety training for company drivers that addresses driver distraction and includes defensive driving techniques.

Company truck drivers should receive new and refresher commercial driver training semi-annually. This training should include defensive driving techniques and highway incident management strategies. Training should also include education on the prevention of jackknife, roll-overs and the causes of such occurrences. According to two truck driver training schools, defensive driving techniques should include looking eight to ten seconds ahead of the truck and how to deal with obstacles in the roadway (05KY089). Training should also include aids to help drivers stay focused on driving and not become distracted. Companies should provide refresher training for all drivers every six months to address driving habits including appropriate speed for driving conditions, wearing safety belts, space management, and how to avoid becoming distracted while driving and fatigued.

Recommendation No. 2: Companies should institute errant traffic alert procedures for roadside work zones.

Immediately after this incident occurred, the company the decedent worked for instituted an alert procedure for roadside work zones. A spotter with a bullhorn is located approximately ½ mile before the work zone begins. When the spotter observes a driver acting dangerously (driving too close, weaving, speeding) a bullhorn is sounded to alert workers that an unsafe driver is headed in their direction. Two-way radios could also be used as an alternative to using a bullhorn.

Recommendation No. 3: Semi tractor-trailer drivers should be trained to recognize signs of fatigue and when to seek appropriate rest areas.

Fatigue is one of the main occupational hazards commercial drivers face. Commercial drivers should be educated to recognize signs of fatigue while driving. According to an article, "Driver Fatigue: The Dangers of Driving Sleepy", signs of driver fatigue include daydreaming, straying out of the lane, excessive yawning, feeling impatient and/or stiff, heavy eyes, and reacting slowly. Methods to avoid driver fatigue include being well rested, getting enough sleep, taking breaks every two hours where the driver may take a nap, eating a snack, avoiding consumption of alcohol, having a driving plan, and staying hydrated. Companies should assist drivers in fighting fatigue by establishing polices requiring drivers to stop every 100 miles driven or every two hours driven for a rest break. When hauling hazardous materials, company policy should require rest breaks more frequently. Also to help fight fatigue, companies should consider varying drivers' routes to keep drivers from becoming inured to routine.

Every driver should have a route plan that incorporates appropriate rest areas to give the driver access to meals, a safe quiet place to nap, and to be able to stretch or walk to stimulate circulation. In case a driver becomes fatigues while driving, companies should provide drivers

with maps with designated rest areas for semi-truck drivers along the route. The plan should also provide information on roadside assistance if needed.

Keywords

Distraction
Fatigue
Inattention
Truck

References

1. http://www.sleep-deprivation.com/articles/causes-of-sleep-deprivation/driver-fatigue.php

2. http://www.rta.nsw.gov.au/roadsafety/fatigue/index.html

3. Accident Analysis and Prevention 38 (2006) 1127-1136, "The development of a naturalistic data collection system to perform critical incident analysis: An investigation of safety and fatigue issues in long-haul trucking"

4. Code of Federal Regulations, Department of Transportation, Federal Motor Carrier Safety Administration, Part 393: Parts and Accessories Necessary for Safe Operation, Subpart C, 393.55 Antilock brake systems, http://www.fmcsa.dot.gov/rules-regulations/administration/fmcsr/fmcsrruletext.asp?section=393.55

5. Manual on Uniform Traffic Control Devices manual http://mutcd.fhwa.dot.gov/

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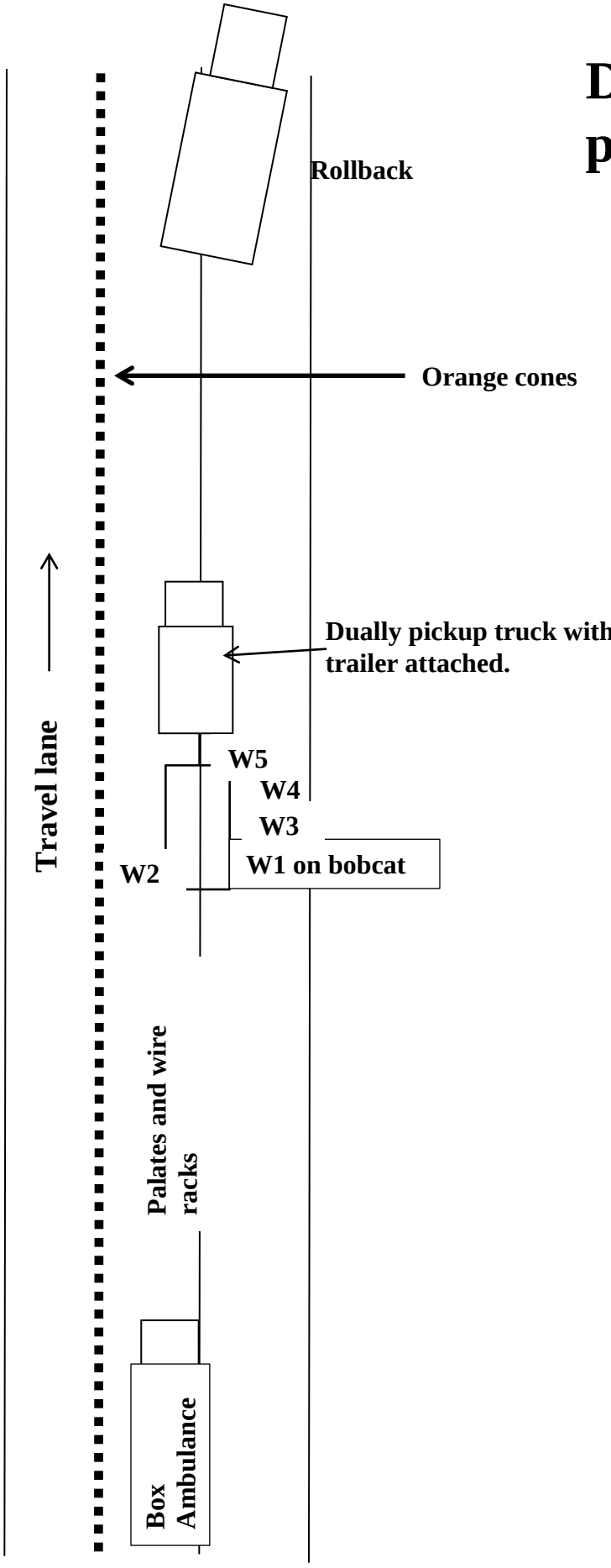
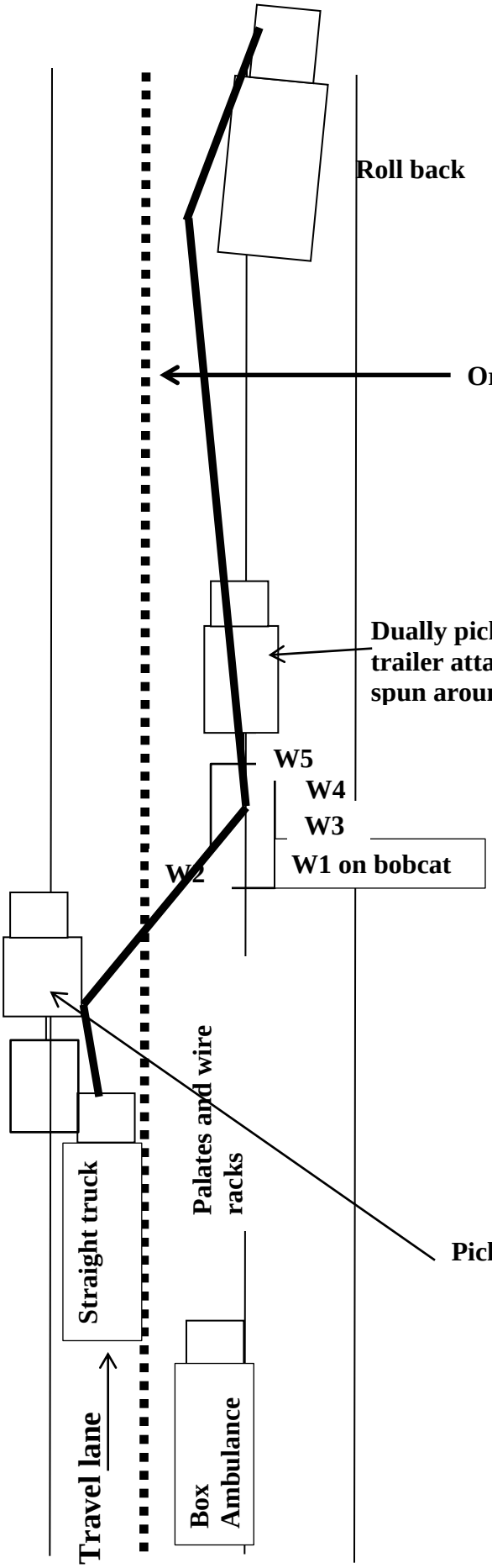
Diagram of work site previous to crash



North

Diagram not to scale

Diagram of straight truck's trajectory



W5 yelled for workers to get out of the way and jumps onto front of trailer. W1 backs bobcat away from trailer, W2 jumps away, W3 pushes W4 away, W3 is struck, falls and hits his head on the pavement

Straight truck rides up onto trailer, disengages it from the pickup truck; then trailer, W5, and straight truck proceed southward, strike rollback and comes to rest.

North

Diagram not to scale