

Semi-truck Driver Dies After Striking A Bridge Abutment

Incident Number: 08KY025



Photograph of crash scene. Photograph courtesy of private company.

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Kentucky Fatality Assessment and Control Evaluation (FACE) Program

Incident Number: 08KY025

Release Date: February 13, 2009

Subject: Semi-truck Driver Dies After Striking A Bridge Abutment

Summary

At approximately 11:45 PM on a spring night in 2008, a semi-tractor driver accompanied by a driver trainee began his route from a warehouse loading dock in Kentucky. The driver departed with a single axle day cab pulling a 28' refrigerated trailer loaded with detergent, refrigerated and frozen foods.

An hour later, the semi driver was driving in the right hand northbound lane on a four-lane interstate when he came upon a crash scene. A southbound mini-van had been struck by another vehicle, crossed the median, and had come to rest across the right hand northbound lane. To avoid striking the mini-van, the semi truck driver moved over to the left lane. A pick-up truck, traveling in front of the semi tractor-trailer in the left lane slowed as it passed the mini-van. After passing the mini-van, the pick-up truck driver was attempting to return to the right lane when the semi truck driver, noticing the pick-up truck had slowed, struck the pick-up truck on the left rear bumper then applied the brakes. This caused the semi-tractor trailer to jack knife and rollover onto its right side. The semi tractor-trailer slid along the pavement and struck a bridge abutment on the driver's side. The trailer disengaged from the semi-tractor and continued to slide along the pavement where it came to rest in the right-hand lane. The driver remained in the day cab and the driver trainee was ejected from the semi onto the embankment by the bridge. The driver trainee was found by a witness who called emergency services to the scene. Emergency services arrived, contacted the coroner who arrived and declared the semi driver dead at the scene. The driver trainee was transported to the nearest hospital and later released.

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

Recommendation No. 1: Companies should provide refresher defensive driving and safety training for company drivers and stress the Quick Clearance law and the Move Over law.

Recommendation No. 2: Stabilizer systems should be mandatory equipment on all commercial vehicles.

Recommendation No. 3: Kentucky should install median barriers along all interstate roadways in medians less than 60 feet in width.

Recommendation No. 4: Bridge abutments should be eliminated next to interstate highways.

Background

For this report, the local coroner, the Kentucky State Police, and a company representative were interviewed. The driver was employed by a private interstate trucking company in business for

over 40 years, with 130 employees and 38 drivers. The driver had 10 years of driving experience prior to being hired and had driven for the company for over 3 years when the incident occurred. The company transported fresh and frozen foods such as produce, meats, beverages, paper and cleaning products to the restaurant/cafeteria industry. Orders received at the warehouse by 3:00 PM were loaded into trailers by warehouse workers. Drivers called company dispatch each night for their route assignment. Routes were irregular; one day a driver would drive a 12 hour route, the next day a seven hour route. Company trucks are governed between 66 mph to 72 mph.

To be hired as a driver for the company, prospective drivers are required to have 18 months of prior driving experience, a clean motor vehicle driving record, and a minimum of 25 years of age.

Safety training for company drivers is unknown.

Temperatures the day of the incident ranged from 40 degrees Fahrenheit to 71 degrees Fahrenheit.

Investigation

At approximately 11:45 PM in the spring of 2008, a semi-tractor driver, accompanied by a driver trainee, began his route from a warehouse loading dock. He was driving a single axle day cab pulling a 28' refrigerated trailer loaded with detergent, refrigerated and frozen foods. Both the tractor and trailer were equipped with an anti-lock braking system. The route normally required 12 hours to complete.

At approximately 12:40 AM, the semi driver was driving behind a pickup truck in the right northbound lane of a four-lane interstate highway. It was divided by a soft grassy median and the posted speed limit was 70 miles per hour. The concrete roadway surface was dry, unlit and the weather conditions were cloudy. As the vehicles traveled northward, they came upon a crash scene that had occurred previously. A southbound mini-van had been struck in the rear by a southbound car. The minivan crossed the grassy median and came to rest across the right northbound lane. A witness to that crash called emergency medical services, parked his truck in the median of the interstate, walked across the northbound lanes, and checked on the occupants of the mini-van. After checking on the occupants of the minivan, the witness returned to his truck and retrieved flares from his vehicle. He lit the flares and was in the median walking toward the mini-van with the lit flares when he heard a semi truck brake and skid.

As the northbound pickup truck and semi-tractor trailer approached the mini-van resting across the right hand lane, they switched from the right lane to the left lane and observed the witness to the previous incident in the median with the lit flares. While passing the mini-van, the pick-up driver slowed and attempted to return to the right lane when the semi truck driver drove by the mini-van, noticed the pick-up truck had slowed, struck the pick-up truck on the left rear bumper and applied the brakes. The semi-tractor trailer then jackknifed; the trailer over turned onto its right side and the semi turned over on its left side and both units slid across the right lane and shoulder in a northerly direction. The semi-tractor trailer flipped over a guard rail and struck the bridge abutment while the trailer split open spilling its contents on the roadway. The trailer

disengaged from the semi-tractor and continued to slide along the pavement where it came to rest in the right-hand lane. The driver trainee was ejected from the semi onto the embankment by the bridge.

A tow-truck operator had responded to a separate call on the roadway above the interstate near the bridge crossing over the interstate. After completing the call, the tow truck operator was driving toward the bridge when he noticed lights from the interstate shining skyward in an unusual manner. He parked the tow truck on the right side of the highway at the bridge, exited the tow truck and walked down the south-side bridge embankment toward the interstate. While doing so, he contacted emergency medical services and informed them of the crash. He found the driver trainee lying on the embankment and could hear the semi driver yelling for help. The driver trainee was cognizant and informed the tow truck driver that he was not the driver of the semi and that the driver was still in the cab. The tow truck driver made his way down the embankment to the semi and attempted unsuccessfully to free the semi driver from the cab. Emergency medical services arrived and found the semi driver without a pulse. The coroner was contacted and upon his arrival at the scene, declared the semi driver dead at 1:37 AM. The driver trainee was transported to the nearest hospital and later released.

The interstate was closed until 9:00 AM. Northbound interstate traffic was detoured from the exit south of the crash site.

According to the State Police report, both the driver and the driver trainee were wearing seatbelts.

Cause of Death

The death certificate states the cause of death was due to multiple blunt force trauma to head and upper body.

Recommendations and Discussions

Recommendation No. 1: Companies should provide refresher defensive driving and safety training for company drivers and stress the Quick Clearance law and the Move Over law.

Company truck drivers should receive formal refresher defensive driving training semi-annually. This training should include defensive driving techniques, and highway incident management strategies. Training should also include education of what causes jackknives, roll-overs and prevention to avoid 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 driving during night time hours and the added risks associated with nighttime driving such as reduced visibility, alertness and fatigue. Companies provide refresher training for all drivers every six months to address driving habits including appropriate speed for driving conditions, wearing seat belts, space management, and how to deal with obstacles in the roadway.

Recommendation No. 2: Stabilizer and sensory systems should be mandatory equipment on all commercial vehicles.

The Code of Federal Regulations, 393.55 requires commercial vehicles manufactured after 1999 to be equipped with automatic braking systems. The semi-tractor and the trailer involved in this incident were manufactured in 2006 and were equipped with the automatic braking system, but not a stabilizer system. When an automatic braking system is applied by the driver prior to striking or making an avoidance maneuver, the ABS assists the semi-tractor trailer from jackknifing. If the driver of the semi does not have enough reaction time to engage the ABS, the stabilizer system can sense incorrect vehicle movement. Independent of driver input or action, the stabilizer system will override will be deployed and prevent the semi-tractor trailer from a jackknife, or roll over.

Another system available for trucks is a sensory system which uses forward sensing radar to inform the driver he/she is too close to the vehicle in front of them. Two indicators, a light on the dash board and an audio signal, alert the driver of the semis proximity to the vehicle in front and automatically slow the semi down thus expanding the semi driver's reaction time.

Recommendation No. 3: Kentucky should install median barriers along all interstate roadways in medians less than 60 feet in width.

The previous incident involving a median crossover created a dangerous situation for the semi-tractor trailer driver. Interstate medians are designed and constructed to drain water away from road surfaces, to give errant drivers space to regain control of their vehicles, to provide space for emergencies, and to help prevent crossover median crashes. To help prevent crossover median crashes, installation of barriers in medians less than 60 feet wide should be considered. The median in this incident was approximately 50 feet wide. Use of continuous median barriers such as cable or concrete should be considered in interstate medians that are less than 60 feet in width. Cable barriers are capable of preventing passenger vehicles and cargo trucks from crossing medians by stopping or deflecting the vehicle back onto the side of the interstate the vehicle was traveling. The median barriers should be installed by certified installers and installations should be inspected by state certified inspectors.

Recommendation No. 4: Bridge abutments should be eliminated next to interstate highways.

As bridges that cross over interstates are replaced, new bridges should incorporate and be built with as few abutments as possible. When abutments are necessary, they should be located outside of the Clear Zone, which is, according to the American Association of State Highway and Transportation Official Guidebook, on high speed highway, is "the unobstructed, relatively flat area provided beyond the edge of the traveled way for recovery of errant vehicles. The travel way is the portion of the roadway not including shoulders. It is desirable to provide a roadside clear of hazardous objects or conditions for a distance consistent with speed, traffic volume and geometric conditions of the site. The greater the width of the clear zone, the greater element of safety provided" and is 30 feet from the right travel lane. If bridge designs cannot place abutments outside the Clear Zone, abutments should be shielded by appropriate barriers. Also,

appropriate barriers should be installed by certified installers to deflect traffic when necessary away from abutments.

Keywords

Bridge abutment
Refresher driver training

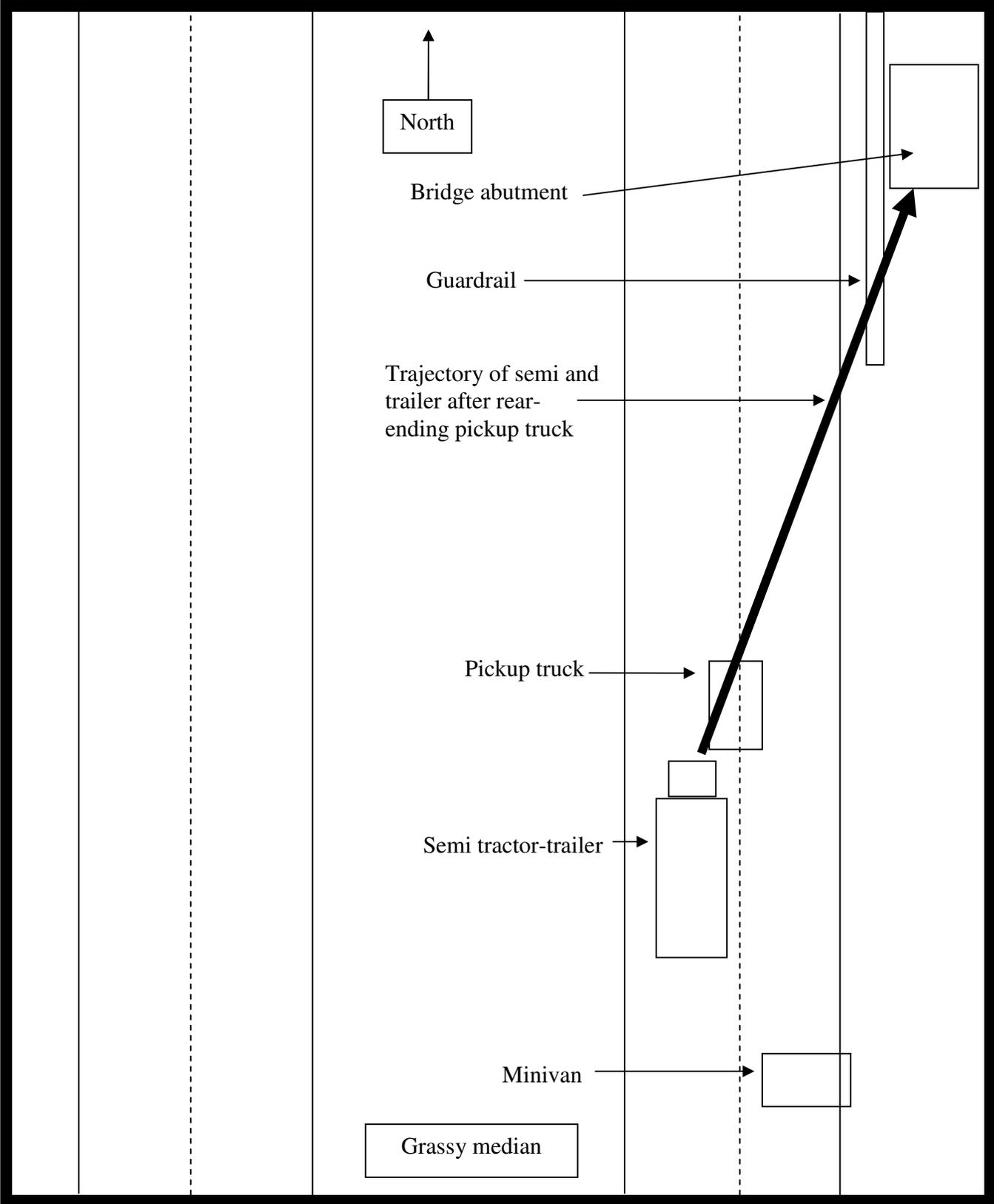
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Acknowledgements

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Schematic of crash scene; not to scale.