

Kentucky Injury Prevention and Research Center  
Bona fide agent for Kentucky Department for Public Health  
333 Waller Avenue, Suite 242 • Lexington, KY 40504 • 859-257-5839

**REPORT#: 19KY050**

**REPORT DATE: 3-23-20**

## INCIDENT HIGHLIGHTS



**DATE:**

September 27, 2019



**TIME:**

7:07 AM



**VICTIM:**

42-year old construction worker



**INDUSTRY/NAICS CODE:**

238160



**EMPLOYER:**

Construction Contractor



**SAFETY & TRAINING:**

Written Safety Program



**SCENE:**

Public highway: Interstate



**LOCATION:**

Kentucky



**EVENT TYPE:**

Motor Vehicle Collision



## Construction Worker Dies on Kentucky Interstate in Single Vehicle Collision

### SUMMARY

On Friday, September 27, 2019, a 42-year-old male construction worker (the victim) was traveling on a major, four-lane interstate en route to an out-of-state destination to pick up supplies when he failed to notice that traffic had stopped due to an earlier collision. As a result, the victim's vehicle struck the rear of a semi-trailer.

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### CONTRIBUTING FACTORS

Key contributing factors identified in this investigation include:

- Advanced warning signage
- Fatigue related work schedule
- Failing to wear seat belt.

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### RECOMMENDATIONS

Kentucky FACE investigator concluded that, to help prevent similar occurrences, employers should:

- Warning devices should be utilized to alert motorist of slow or stopped traffic.
- Employers should consider installing driver facing cameras to monitor seat belt usage.
- Drivers should obtain adequate rest prior to operating a vehicle.
- Employers should be aware of and avoid work schedules that may contribute to worker fatigue.
- Employers should educate drivers on the dangers of driving while fatigued.

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# KENTUCKY

State **FACE** Program

**Fatality Assessment & Control Evaluation**

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## Fatality Assessment and Control Evaluation (FACE) Program

This case report was developed to draw the attention of employers and employees to a serious safety hazard and is based on preliminary data only. This publication does not represent final determinations regarding the nature of the incident, cause of the injury, or fault of employer, employee, or any party involved.

This Case report was developed by the Kentucky Fatality Assessment and Control Evaluation (FACE) Program. Kentucky FACE is a NIOSH-funded occupational fatality surveillance program with the goal of preventing fatal work injuries by studying the worker, the work environment, and the role of management, engineering, and behavioral changes in preventing future injuries. The FACE program is located in the Kentucky Injury Prevention and Research Center (KIPRC). KIPRC is a bona fide agent for the Kentucky Department for Public Health.

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## INTRODUCTION

On Friday, September 27, 2019, a construction worker was involved in a fatal, two-vehicle collision while traveling southbound on a major, four-lane interstate. On January 13, 2019, the Kentucky Labor Cabinet informed the Kentucky Fatality Assessment and Control Evaluation Program of the incident. On January 30, 2020, the Kentucky FACE investigator conducted a site visit at which time photographs of the scene were taken.

## EMPLOYER

The employer is a construction contractor founded in 1987. According to their website, they employ over 6,000 individuals in the United States and Canada.

## WRITTEN SAFETY PROGRAMS and TRAINING

The company has a written safety program in place that includes both preliminary training, on-the-job weekly training, and quarterly refresher courses. According to their website, the company has a strict substance abuse policy and has a formal safety audit program established. The company has been the recipient of multiple state and national industry safety awards from 2011-2017.

## WORKER INFORMATION

The victim was a 42-year old male who had been employed with the company for 5 years. He was married and had three children. The victim had a high school education, and had worked in the construction industry for 22 years.

## INCIDENT SCENE

The incident occurred in the right southbound lane of a major, four-lane interstate. North- and south-bound traffic is separated by a standard concrete barrier with a posted speed limit of 70 mph; however, traffic was at a standstill due to a collision that had occurred six-hours earlier, four-miles south.



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Photo 2. Google Earth image indicating the location of the crash.

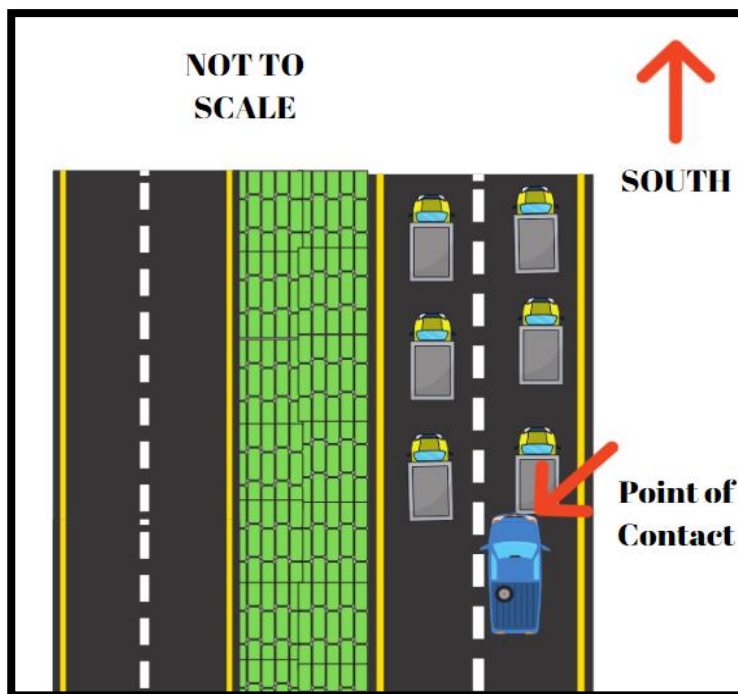


Photo 3. Animation of crash. Animation created by and property of KY FACE.

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## WEATHER

The temperature was approximately 58°F at the time of the incident. The humidity was 60% with a southeast wind at 7 mph<sup>2</sup>. There was no precipitation and the roadway was dry. The weather was not considered to be a contributing factor in the accident.

## INVESTIGATION

On Thursday, September 26<sup>th</sup>, 2019 at approximately 8:00 PM, the involved company notified the victim of a job assignment that would need to be completed the next day. His task was to travel to an out-of-state location to obtain building materials for an in-state job site. To complete the job in a timely manner, the victim would have to depart his home by 2:00 AM the next morning. After receiving the assignment, the victim and his spouse departed a local sporting event at approximately 8:45 PM in hopes of obtaining as much sleep as possible. After arriving home, the victim's spouse stated he made preparations for the trip and went to bed at 10:00 PM. According to the spouse, she woke the victim up at 1:30 AM on Friday, September 27<sup>th</sup> and he departed shortly after at 2:00 AM in a company owned, 2013 Chevrolet Silverado. Approximately five hours into the trip, just before sunrise at 7:07 AM traffic on the interstate was at complete stop due to a six-vehicle, fatality collision had occurred nearly six-hours earlier. Although this section of highway was straight, for unknown reasons the victim failed to observe the stopped vehicles. As a result, the pickup truck driven by the victim struck the rear, left bumper of a semi-trailer at an estimated speed of 70 mph. The force of the impact severely damaged the driver's portion of the cab. According to police reports, the victim was not wearing a seat belt at the time of the collision. No decelerating scuffs or skid marks were present at the scene which suggest the victim did not attempt to brake prior to the impact.

## CAUSE OF DEATH

According to the death certificate, the cause of death was multiple blunt force trauma sustained in a motor vehicle collision.

## CONTRIBUTING FACTORS

Occupational injuries and fatalities are often the result of one or more contributing factors or key events in a larger sequence of events that ultimately result in the injury or fatality. Kentucky FACE investigator identified the following unrecognized hazards as key contributing factors in this incident:

- Advanced warning signage
- Fatigue related work schedule
- Failing to wear seat belt.

## RECOMMENDATIONS/DISCUSSION

### ***Recommendation #1: Warning devices should be utilized to alert motorist of slow or stopped traffic.***

Discussion: This crash was a secondary collision. Traffic was at a complete stop due to the initial collision which occurred six hours earlier. Although it is unclear whether or not warning devices were utilized, the Federal Emergency Management Agency (FEMA), states that lack of advanced warning devices is a key contributing factor to the occurrence of most secondary collisions. Changeable message signs (CMS) continue to be one of the most effective measures in preventing secondary collisions. They provide a versatile means of communicating information to drivers and can be invaluable in alerting oncoming traffic to an emergency incident. According to FEMA, For CMS to be useful, the message must be concise and clear. CMS used on roadways with speed limits of 55 miles per hour (mph) or higher should be visible from one-half mile under both day and night conditions. The message should be designed to be legible from a minimum distance of 600 feet for nighttime conditions and 800 feet for normal daylight conditions. When environmental conditions that reduce visibility and legibility are present, or when the legibility distances stated in the previous sentences in this paragraph cannot be practically achieved, messages composed of fewer units of information should be used and consideration should be given to limiting the message to a single phase.

Each message shall consist of no more than two phases. Each phase shall consist of no more than three lines of text. The minimum time that an individual phase is displayed should be based on 1 second per word or 2 seconds per unit of information, whichever produces a lesser value. The display time for a phase should never be less than 2 seconds. The maximum cycle time of a two-phase message should be 8 seconds.

Messages should be concise, clear, and provide relevant information. All messages are printed in capital letters. The average driver traveling at a high rate of speed can handle eight-word messages of four to eight characters per word at 2 to 4 seconds per message. The message should consist of at least the problem and action and may contain an effect. For example, let's say the problem is an accident two miles ahead in the right lane. Drivers should expect delays and merge left. A two-pane CMS might read:

#### **Panel 1: ACCIDENT AHEAD TWO MILES**

A one-panel might read: **ACCIDENT TWO MILES MERGE LEFT**

Portable CMS should be visible from one-half mile under both day and night conditions. Letter height should be a minimum of 18 inches and legible from at least 650 feet if the sign is mounted on a trailer or large truck. If mounted on service patrol trucks, letter height should be a minimum of 10 inches and visible from at least 330 feet<sup>3</sup>.

Typically, the highway department would deploy such signs in hopes of preventing a secondary collision occurring. In this particular situation, the secondary collision occurred nearly 6-hours after the preliminary

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collision which provided ample opportunity for such warning devices to be deployed. To protect and warn the motoring public, warning devices such as CMS should be deployed.



Photo 4. Photo of Changing message sign (CMS)<sup>3</sup>.

**Recommendation #2: Employers should be aware of and avoid work schedules that may contribute to worker fatigue.**

The company contacted the victim at approximately 8:00 PM the night before the incident, only six hours prior to the 2:00 AM departure time that the employee would have to leave by in order to complete the task in the time-frame requested by the employer. According to Federal Motor Carrier Safety Administration, fatigue is the result of physical or mental exertion that impairs performance<sup>4</sup>. Driver fatigue may be due to a lack of adequate sleep, extended work hours, strenuous work or non-work activities, or a combination of other factors. The Large Truck Crash Causation Study (LTCCS) reported that 13 percent of commercial motor vehicle (CMV) drivers were considered to have been fatigued at the time of their crash. The FMCSA further states that if possible, a commercial driver should not drive while the body is naturally drowsy: between the hours of 12 a.m. to 6 a.m. and 2 p.m. to 4 p.m. Drowsiness may impair a driver's response time to potential hazards, increasing the chances of being in a crash<sup>4</sup>. The combination of the victim failing to obtain adequate rest and

beginning work at a time when the body is naturally drowsy likely contributed to his inability to recognize stopped traffic. Companies should be aware of, and avoid, scheduling drivers to work during these high-risk time periods when fatigue is most likely.

**Recommendation #3: Employers should assure workers obtain adequate rest and educate workers on the dangers of operating vehicles while fatigued.**

Discussion: According to the victim's spouse, he only obtained 3.5 hours of sleep prior to beginning work the next morning. According to the article, "How Much Sleep Do You Need?" published by WebMD, people do not adapt to getting less sleep than they need. Although a person may be able to proceed, their judgement, reaction time and other functions will likely be off. The article states that common side effects of sleep deprivation include memory problems, depression, inability to focus, and poor decision-making. Additionally, most adults need seven to nine hours of sleep, although some people may need as few as six hours or as many as ten. WebMD studies have proven that sleep deprivation is extremely dangerous. People who failed to obtain adequate sleep before getting into a driving simulator or doing hand-eye coordination task perform as badly as or worse than people who had been under the influence of alcohol<sup>5</sup>. According to a study by the Centers for Disease Control and Prevention (CDC), 1 in 25 adults report they have fallen asleep while driving within the last 30 days<sup>6</sup>. In 2014, the National Highway Traffic Safety Administration (NHTSA), stated there were 846 fatality collisions due to drivers falling asleep behind the wheel, equating to 2.6% of all fatality collisions during that year. In addition to the fatal collisions, falling asleep while driving was determined to be the contributing factor that led to an additional 37,000 injury collisions and 45,000 property damage collisions<sup>7</sup>. Much of driving is repetitive in nature, which can lead to a lack of awareness of even the most obvious warning signs of fatigue. Based on the accident investigation, the lack of skid marks, and no evidence of crash evasion maneuvers, fatigue was likely a contributing factor to the crash.

As a best practice, companies who operate company vehicles or require employees to drive should assure workers obtain adequate rest by offering flexible work schedules. Additionally, employers should conduct frequent awareness training focused on the dangers associated with driving while fatigued. Drivers should be educated on the warning signs of fatigue, how to recognize them, and provided strategies to combat fatigue.

**Recommendation #4: Employers should consider installing driver facing cameras to monitor seat belt usage.**

Discussion: According to the death certificate, the victim was not wearing a seat belt at the time of the crash. The company does have a strict, zero tolerance seat belt policy that applies to not only the driver, but all occupants in the company vehicle as well; however, this policy is unenforceable, as workers are often alone in the vehicle with no way to know if they are abiding. Employers should consider installing driver facing cameras in all company vehicles to monitor seat belt usage. According to SmartDrive, a vehicle safety and transportation intelligence provider, installing driver facing cameras allow companies to identify and eliminate



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risky driving behaviors, such as failing to wear seat belt. Identifying a risky behavior proactively presents the opportunity for drivers to be coached on the undesired behavior. SmartDrive states that some fleets have experienced safety improvements of up to 84%<sup>8</sup>.

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### PROGRAM FUNDING

The Kentucky Fatality Assessment & Control Evaluation Program (FACE) is funded by grant 5U6o0H008483-15 from the National Institute for Occupational Safety and Health (NIOSH)

### REFERENCES

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### INVESTIGATOR INFORMATION

This investigation was conducted by Beau Mosley, Fatality Investigator, Fatality Assessment and Control Evaluation, Kentucky Injury Prevention and Research Center, University of Kentucky, College of Public Health.

### ACKNOWLEDGEMENTS

The Kentucky FACE Program would like to thank the county coroner and the victim's spouse for their assistance with completion of this report.