

Police Accident Reconstruction

Accident Reconstruction



California Crash and the Study that Helped Police Investigators Crack the Case

On July 16, 2005, three University of California-Berkeley graduate students died in a fiery freeway car accident.² The police suspected that two other motorists drove recklessly while racing and sideswiped a big rig, that the rig lost control and crashed through the center divider, bursting into flames.³ After, the car containing the three students collided with the truck.⁴ California Highway Patrol spokesman Officer Trenton Cross spoke at a news conference in August 2005, stating that some of the pieces of the accident were still missing.⁵ Three years later (2008), the missing pieces surfaced when researches at “UC Berkeley were studying traffic density on the same freeway where Boussett’s accident occurred. The magnetic sensors used in the UC Berkeley study happened to capture the speed of the two vehicles at the time of the 2005 crash,” stated Katie Kennedy in her article in the Baton Rouge Advocate in 2010. The sensors picked up that the drivers were traveling at least 100mph; the police—back in 2005—had thought the drivers were racing at the time of the accident, but lacked evidence to prove it.⁶

Ms. Kennedy’s article from 2010 stated that one of the two drivers who caused the accident was sentenced to 8½ years in prison.⁷ Most traffic investigations do not have such assistance, rather, accident reconstructionists survey the accident location to figure out what

¹ “Time is Critical in Truck Accidents” <http://www.jpremijas.com/Truck-Accident-Overview/Why-is-Time-So-Critical-in-a-Truck-Accident.shtml>.

² Katie Kennedy, “Accident reconstruction key to 2 Calif. Convictions: LSU graduate with a perfect 4.0 GPA and two other UC Berkeley graduate students died in a fiery freeway crash” THE BATON ROUGE ADVOCATE (Jan. 08, 2010) at <http://www.policeone.com/police-products/accident-reconstruction/articles/1987499-Accident-reconstruction-key-to-2-Calif-convictions/>.

³ *Id.*

⁴ *Id.*

⁵ *Id.*

⁶ *Id.*

⁷ Katie Kennedy, “Accident reconstruction key to 2 Calif. Convictions: LSU graduate with a perfect 4.0 GPA and two other UC Berkeley graduate students died in a fiery freeway crash” THE BATON ROUGE ADVOCATE (Jan. 08, 2010) at <http://www.policeone.com/police-products/accident-reconstruction/articles/1987499-Accident-reconstruction-key-to-2-Calif-convictions/>.

occurred.⁸ Some accident reconstructionists use software programs to reproduce diagrams of the scene for investigators to study.⁹

Police Accident Reconstruction

Event Data Recorders (EDR) are recording devices.¹⁰ EDRs help with driving safety, by collecting data to figure out road safety issues. EDRs aid in law enforcement to better understand the specific aspects of car accidents.¹¹

In 1997, according to www.accidentreconstruction.com, the National Transportation Safety Board (NTSB) issued recommendations to gather accident information using EDRs.¹² The following year, the National Highway Traffic Safety Administration's (NHTSA) Office of Research and Development began to form a working group of industry, academia, and other government organizations to facilitate the collection and utilization of EDRs.¹³ In 2000, NHTSA started a group associated with trucks, motor coaches, and school buses, based on safety recommendations of the NTSB.¹⁴

Experts reconstruct accidents of fatal crashes to determine the most probable scenario that led to the car accident. Operator or operational factors are the cause of ninety percent of automobile accidents.¹⁵ Physical evidence in the form of measurements and photographs of the scene of the accident are the most important evidence collected by police investigators.¹⁶ A diagram can then be constructed to show the force and impact of the accident.¹⁷

Example photograph taken at the scene of an automobile accident.¹⁸



⁸ *Id.*

⁹ *Id.*

¹⁰ "Event Data Record" at <http://www.accidentreconstruction.com/research/edr/index.asp>.

¹¹ *Id.*

¹² *Id.*

¹³ *Id.*

¹⁴ *Id.*

¹⁵ "Accident Reconstruction" at http://www.car-accidents.com/pages/accident_reconstruction.html

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ *Id.*

Reconstruction Analysis

Point of Impact Analysis

Different evidence will be used by investigators, including a “point of impact” analysis which includes pre-impact and post-impact tire marks; photographs establishing the layout and perspective of a scene; damaged vehicles; and eyewitness testimony which is examined for its corroborative value and weighed against physical evidence.¹⁹

Roadway Factors

An analysis of roadway factors (the road operating environment) is taken into consideration. Roadway factors include the roadside design, frictional properties,²⁰ construction materials, wear, width, average daily traffic, cross-slope, maintenance, designed use, ride quality, super-elevation, horizontal and vertical curvature, and structural integrity of the road.²¹ All of these factors are documented as the roadway itself is a contributing factor in the collision.²²

Pavement and Shoulder Conditions

Pavement and shoulder conditions are important, as evidence of poor conditions of pavement or shoulders play a role in the occurrence of an accident.²³ Poor conditions include bumps, pavement roughness, potholes, and pavement edge drop-off—all of which can cause difficulty for drivers.²⁴ Departments must abide by roadway maintenance practices to ensure safe operating environments.²⁵

Weather and Lighting Conditions

Weather conditions are considered to establish whether the roads were slippery and/or wet and if these affected the accident.²⁶ Road conditions aid in establishing the drag and speed at the time of an accident. Furthermore, lighting conditions are important for accidents that

¹⁹ *Id.*

²⁰ “Accident Reconstruction” at http://www.car-accidents.com/pages/accident_reconstruction.html. Friction is the resisting force of motion between two surfaces when they are in contact. Friction converts kinetic energy to heat, noise, and deformation and damage of materials. Friction analysis can determine the speed of a car. There is friction between the roadway and the tire, metal and pavement, and metal and soil.

²¹ *Id.*

²² *Id.*

²³ *Id.*

²⁴ *Id.*

²⁵ “Accident Reconstruction” at http://www.car-accidents.com/pages/accident_reconstruction.html.

²⁶ *Id.*

occurred at night.²⁷ People overestimate their seeing ability at night, headlights may be insufficient tools, materials used in construction of roadway surfaces may reflect light in different ways, and the road surface affects objects and vehicles on the road.²⁸ Pedestrians are often hit at night rather than during the day, especially if wearing dark clothing and pedestrians often see the car before being hit whereas the car may not see the pedestrian until it is too late.²⁹ Additionally, driver histories aid in determining liability and skill of the driver(s) involved.³⁰

Driver History, Traffic Signals and Signs

Traffic signals and signs are considered because they may be ignored by driver(s) or their view may be obstructed by other mediums.³¹ Reconstructionists also look to the design of crash cushion, guard rail systems, median barrier systems, and break-away roadside objects.³²

Two Examples of Accidents

Two Cars at an Intersection

In this instance, both vehicles are examined for damage and contact match points (where the vehicles made contact) are established.³³ These examinations reveal how the vehicles made contact and establish the angle that existed between the two cars at the time of the collision.³⁴ The angle is used to determine the speed of each car at impact.³⁵

Pedestrian Accidents

To determine the vehicle's speed and stopping distance, investigators look to skid marks at the scene of the accident.³⁶ The total distance the pedestrian traveled after being hit also helps determine speed.³⁷

²⁷ *Id.*

²⁸ *Id.*

²⁹ *Id.*

³⁰ "Accident Reconstruction" at http://www.car-accidents.com/pages/accident_reconstruction.html.

³¹ *Id.*

³² *Id.*

³³ *Id.*

³⁴ *Id.*

³⁵ "Accident Reconstruction" at http://www.car-accidents.com/pages/accident_reconstruction.html.

³⁶ *Id.*

³⁷ *Id.*

- It is important to take immediate action because trucking companies often have investigation teams who arrive at the scene as soon as possible in order to reduce their potential liability for personal injuries. Often, the injured party is still recovering while the truck company is dealing with their attorney. Failure to preserve crash site evidence is critical to winning (or losing) the case.