

Using Scientific Testing to Reveal the Facts of a Case

Case Study:

Can a child be sucked under a passing truck?



Mounting miniature video cameras on driver's side mirror.



The tire tape switch records the position and speed of the passing vehicle.



The scale ensures that the mannequin's static balance is the same as the child's.

A child and witnesses testified that a passing utility truck sucked the child under the rear tires causing a fracture to one knee. Ruhl Forensic was asked to determine if such a scenario was possible.

The Question

An extensive literature search revealed no similar cases, research studies nor test data that could be applied to answer the question posed. Inquiries to our European partners peaked their curiosity, but revealed no answers. Since this was a pivotal point in the case, Dr. Mark Strauss and Mr. Louis Inendino were authorized to conduct the necessary scientific tests in order to determine the legitimacy of the claim. The question was simple: *How fast and how close does the subject truck have to pass by a surrogate child in order to blow him over?*

Testing Procedure

Dr. Strauss developed a detailed protocol which utilized a mannequin that was custom fabricated to the same height and weight as the injured child with its mass properly distributed amongst its limbs and torso. Using scales, the feet of the mannequin were carefully shimmed to ensure that the static balance of the free-standing mannequin was the same as that of the child.

Multiple video cameras were mounted in, on and pointed at the moving subject truck to document the truck speed, the distance between the mannequin and the passing truck, and the motion of the mannequin as the truck drove by it. The magnitude of the air turbulence produced by the passing truck was measured with an air speed sensor while the position and speed of the vehicle were recorded electronically.

With the mannequin standing on a quarter mile runway, the truck was driven at speeds



The air speed sensor measures the magnitude of the air turbulence produced by the passing truck.

of 20, 30 and 40 mph and at distances of 24, 36 and 48 inches from the mannequin, encompassing all estimates by the witnesses.

Testing Results

The test results conclusively answered the question posed. In all tests conducted, the mannequin never moved when the truck drove by. Obviously, the child's injuries were not caused by being "sucked" under the truck's rear tires.

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"Almost anything can be measured and any scenario tested."

How the Injury Really Occurred

Ruhl Forensic, Inc.'s staff provide expertise in mechanical and electrical engineering, collision investigation and vehicle dynamics, biomechanics and human factors, heavy vehicle driving and mechanical systems, federal regulations and compliance, fleet safety, traffic engineering, construction accident investigation, OSHA regulations, graphic visualization, and other areas.

Our experts provide a continuum of services from initial on-site investigation through research, testing and reconstruction to courtroom testimony and presentation graphics and visualizations.

We offer a quick response to your investigation needs 24 hours a day. Contact us by calling 1-800-355-7800, 1-800-235-2808, or 1-800-278-4095.

Please feel free to call us with any questions you may have and we will direct you to the appropriate individual within our firm.



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Inspection of the truck and the child's x-ray films showed that the level of his leg fracture and laceration were at the same height as the corner of a utility cabinet located on the side of the truck. This supported the conclusion that the child ran into the side of the truck as he attempted to cross the street, as the child said he never saw the truck. The testing results and these observations contributed to the successful conclusion of this case.

Continued Research

Because of the lack of published data on this subject matter, Dr. Strauss and Mr. Inendino are continuing their testing using a variety of other vehicles, including cars, vans, and tractor-trailer combinations, in order to obtain an understanding of how the transient air turbulence from these vehicles affects nearby pedestrians. The results will be published in peer reviewed engineering journals.

Almost anything can be measured and any scenario tested. Call Dr. Mark Strauss at (800) 355-7800 to discuss how testing can assist you and the trier of fact in your case.



An X-ray superimposed over the mannequin's leg shows that the corner of the truck is directly in line with the area of injury. This supported the conclusion that the child ran into the side of the truck as he attempted to cross the street.