



Human Factors in Roadway Design Cases: Positive Guidance and Expectancy

In roadway design cases, human factors experts analyze the impact of the design and condition of a roadway environment on a driver's performance. This includes determining whether the traffic control devices, pavement markings, or signs were visible, whether they were consistent with a driver's expectations, whether they caused the driver to take a particular action, and whether they were sufficient to prevent a collision. To evaluate the adequacy of traffic control devices and the roadway design, human factors experts apply the concepts of positive guidance and expectancy.

To ensure that drivers have sufficient visual information to safely navigate roadways, two human factors concepts are employed when designing roadways in the United States—positive guidance and driver expectancy. Positive guidance is the concept that drivers can safely avoid hazards when the roadway environment provides sufficient information where/when it is needed and in a form that is easy to understand. (1) Positive guidance is provided to drivers through traffic signs, pavement markings, traffic control devices, and perhaps most importantly, by the view of the road ahead.

Expectancy relates to a driver's readiness and ability to respond to situations, vehicles, and information that they encounter on the roadway in predictable and successful ways. (2) This includes a driver expecting traffic control devices and other drivers to operate in accordance with established conventions so they can respond safely and appropriately. When drivers' expectancies are violated or when positive guidance is not provided, drivers may respond more slowly, incorrectly, or not at all.

When analyzing driver actions on cases where the roadway design or condition may have been a factor, human factors experts investigate whether there was sufficient information available to the driver on the roadway to avoid the collision, whether that information was available in sufficient time to avoid the collision, and/or whether additional signage or traffic control devices would have prevented the collision. In other words, human factors experts evaluate whether there was sufficient positive guidance available for a driver to safely navigate and whether the roadway design, environment, or condition violated their expectancy in a manner that contributed to the collision.

If your case involves a driver's response to roadway design issues, contact Dr. Nancy Grugle to discuss how positive guidance and expectancy may have played a role in the collision.

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References:

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2. "Driver Expectancy in Highway Design and Traffic Operations," Report No. FHWA-TO-S6-1, May 1986.