

Ohio Department of Transportation Friction Study



The safety of the nation's roadways has emerged as a critical national issue. In the U.S., it has been estimated that inadequate highway pavement conditions contribute to a significant percentage of annual highway fatalities, many of which occur under wet pavement conditions. To address this issue, the Ohio Department of Transportation (ODOT) set in motion a strategic initiative with a goal of reducing crash frequency by 10 percent and rear-end crashes by 25 percent by the year 2015. As part of this initiative, ODOT contracted with APTech to determine the existence of a relationship between measurable road surface characteristics (e.g., friction and texture) and the occurrence of both wet weather and total crashes in the state of Ohio. This work was seen as a precursor to the development of a proactive crash reduction program that could be used to help identify potential problem

locations where wet-pavement crashes may be likely to occur.

APTech began this research project by performing a comprehensive literature review on pavement surface characteristics to identify the most recent guidelines on correlating pavement friction data to wet-pavement crashes. In cooperation with ODOT, a field testing program was then conducted in 2007 to measure surface friction (using both smooth and ribbed tires), macrotexture, and roughness at ninety locations throughout the state representing three site categories: signalized intersections, unsignalized intersections, and congested freeways. Using pavement design data, crash data, and other related information provided by ODOT, APTech analyzed each of the specific site categories to determine if any significant relationships existed between the surface characteristics data and the associated crash data.

The results of the data analysis indicated that no single variable was sufficient for identifying sections needing a skid resistant overlay or for proactively predicting crash sites. Therefore, APTech developed preliminary recommendations to assist ODOT in more accurately identifying pavement sections with potentially higher probabilities of crashes. Those recommendations touched on all aspects of the crash reduction program, including improved friction testing procedures, the establishment of preliminary minimum and desirable friction and texture criteria, the need for ongoing friction and texture monitoring, and the potential implementation of the National Cooperative Highway Research Program's *Guide for Pavement Friction*.