

## UTC Project Information

Project Title	Evaluation of Pavement Surface Micro- and Macro-Texture
University	The University of Texas at Austin
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Brief Description of Research Project	<p>The effect of the aggregate texture (micro-texture) and the effect of the texture of compacted hot mix asphalt (macro-texture) on the skid resistance of the highway surface are well recognized. However, there is a lack of a fundamental understanding of the individual effect that each of these two properties, micro- and macro-texture, have on the final skid properties of the road. Most research studies in this regard have been based on theory, assumptions and sound engineering judgment. However, their individual effects have not been quantified and their contribution to skid under different conditions of moisture, speed and highway conditions are not well understood. Recent developments in optics and computers have allowed the development of equipment for the collection of high definition 3-D images of the surface of the highway pavement. This technology was originally applied to detect surface distresses such as cracking and rutting. However, due to recent technological advances, it is now possible to quantify micro-and macro-texture in the field in an effective and efficient manner. This has opened the possibility to investigate and quantify the individual influence that micro and macro-texture have in the final coefficient of friction of the pavement surface and on its skid resistance properties. The characterization of the full texture spectrum of the pavement surface has the potential to identify optimal</p>

combinations of aggregate types (based on mineralogy, texture, surface hardness and durability) and hot-mix asphalt type (dense, gap-graded or open-graded mixtures) that can provide the highest skid resistance under dry and wet-weather conditions. Implementation of the results of this research has the potential to significantly affect highway safety by reducing the number of crashes and in particular, the number of wet-weather accidents.

During this study, the 3-D laser technology will be utilized to quantify the micro-texture and macro-texture of different pavement surfaces and determine their skid characteristics. Through posterior panel data analyses of the information, the relative contribution of micro- and macro-texture to skid resistance in the field will be investigated and the guidelines for aggregate and mix selection for improved long-term skid will be developed.

Describe Implementation of Research Outcomes (or why not implemented)

N/A

Place Any Photos Here

Impacts/Benefits of Implementation (actual, not anticipated)

The implementation of the findings of this research will provide state Departments of Transportation (DOTs) with a methodology and guidelines for a more efficient determination of the skid conditions of their highway network, thus, identifying potentially unsafe segments to take corrective actions thus minimizing the potential for accidents. Current methods for determining skid resistance directly are slow and inefficient.

Web Links

- Reports
- Project website

<[www.chpp.egr.msu.edu](http://www.chpp.egr.msu.edu)>