

# 2016 UDOT RESEARCH PROBLEM STATEMENT

\*\*\* *Problem statement deadline is March 14, 2016. Submit statements to Tom Hales at [tahales@utah.gov](mailto:tahales@utah.gov).* \*\*\*

**Title:** SemiCircular Bending Test Phase III Existing Mix Valadation

**No. (office use):** 16.01.03

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**Select One Subject Area**

Materials/Pavements

Maintenance

Traffic Mgmt/Safety

Preconstruction

Planning

Public Transportation

## 1. Describe the problem to be addressed.

UDOT is working toward a balanced mix design based on performance in the four areas of pavement distress. Rutting and stripping were addressed some years ago with the implementation of the Hamburg Wheel Tracking Device. This effort has skewed the mix toward stiff, cracking prone designs. An effort is underway by UDOT and nationally to pull mixes back toward the center where cracking issues are balanced with rutting. Previous phases of this effort have involved the investigation of both intermediate and low temperature cracking. The mix sliver BBR test has shown great success in being repeatable and has been made an AASHTO provisional standard. Work to set materials standards is underway.

Louisiana State University proposed a test using the Semi-Circular Bending configuration to address the intermediate temperature cracking issue. The test allows for an understanding of the energy required to propagate a crack through an asphalt pavement. Equipment, software and technician training has been accomplished in previous phases of this effort. Balanced mix design is being investigated under the current phase.

With the knowledge gained in these two phases and with the goal of implementing mix performance based, balanced mix design, it is important that UDOT know what is currently being produced in the state.

## 2. Explain why this research is important.

Early cracking distress in pavements is being observed in many pavements in the UDOT system. This distress has widely been attributed to low virgin binder content driven by SuperPave designs and high levels of binder replacement due to the use of Recycled Asphalt Pavement. This early distress behavior causes the road surface to open and water to penetrate. Softening of the base pushes the pavement into early failure. The superior ride that asphalt pavements are known for, suffers as does customer satisfaction.

## 3. List the research objective(s):

1. Determine the cracking characteristics of pavements being currently produced using the LSU SCB test protocol.
2. Determine the change in cracking characteristics between production and delivery to the paver.

## 4. List the major tasks:

1. Collect samples from four asphalt paving projects in the Wasatch Front area. These projects are to be selected from each of the four local producers. A sample is to be taken from the silo lift belt and from the windrow prior to the paver.
2. Collect the mix designs and mix design verification information for each of the projects.
3. Prepare SCB samples from the field samples. Test the SCB samples in the test apparatus. Report the results
4. Prepare a paper reporting the results with comparison to the LSU material standard.

## 5. List the expected results:

1. It is expected that UDOT mixes will report out low cracking resistance
2. It is expected that by measuring this characteristic, UDOT will be able to improve the performance.

**6. Describe how this research will be implemented.**

Information from this study will be used to help set minimum mix design standards. The test has the potential to supplement volumetric standards and to tie field performance to lab results.

**7. Requested from UDOT: \$60,000  
(or UTA for Public Transportation)**

**Other/Matching Funds: \$**

**Total Cost: \$60,000**

**8. Outline the proposed schedule, including start and major event dates.**

Project to begin when funding is available. Historically this is March 2017.

Samples are taken during the 2017 paving season beginning June 1, 2017 and ending August 30, 2017.

Testing of samples to begin July 1, 2017 and end September 30, 2017

Paper to begin October 1, 2017 and end December 30, 2017