

2016 UDOT RESEARCH PROBLEM STATEMENT

*** Problem statement deadline is March 14, 2016. Submit statements to Tom Hales at tahales@utah.gov. ***

Title: Development of Highly Modified Asphalt (HiMA)

No. (office use): 16.01.09

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UDOT Champion (suggested): Howard Anderson, Scott Andrus

Select One Subject Area

Materials/Pavements

Maintenance

Traffic Mgmt/Safety

Preconstruction

Planning

Public Transportation

1. Describe the problem to be addressed.

UDOT has been working towards using Highly Modified Asphalt Binder HiMA in HMA construction. Currently there is only one sole supplier of specialized polymer that has been successful in making HiMA. Besides, there are some technical challenges like high viscosity and elevated mixing and compaction that need to be addressed.

2. Explain why this research is important.

HiMA is the newest entrant in pavement industry and offers several advantages over conventional PMA. Research has shown that roads constructed with HiMA are very effective in; weaker subgrade, reducing pavement thickness, high traffic roads, reducing pavement distresses, making durable pavement and increasing pavement service life.

3. List the research objective(s):

1. Research different SBS polymers to make highly modified asphalt with the objective of keeping low viscosity, high softening point and Meeting M320 and M332 specifications.
2. Investigate recycled material like Ground Tire Rubber/crumb rubber, cellulose fiber and Recycled Asphalt Shingles in conjunction with SBS to make highly modified asphalt still meeting the objective of low viscosity, high softening point, M320 and M332.

4. List the major tasks:

1. Perform literature review
2. Collect material (base asphalt, polymers, recycled material, chemicals).
3. Prepare HiMA blend with best possible options.
4. Test HiMA blends for all critical parameters.
5. Data analysis and report preparation

5. List the expected results:

1. This research is expected to bring other polymers and alternate recycled materials in making highly modified asphalt.
2. This work is expected to solve some of the technical difficulties associated with the use of HiMA such as high viscosity, high mixing and compaction temp to name a few.

6. Describe how this research will be implemented.

Information from this study will help UDOT in solving some of the problems associated with the use of Highly modified asphalt in HMA construction. This work has a potential to bring recycled material in making of HiMA which can be mandated on supplier. UDOT will be the beneficiary as this will open the door for more competition.

7. Requested from UDOT: \$30,000
(or UTA for Public Transportation)

Other/Matching Funds: \$

Total Cost: \$30,000

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

Project will start upon approval of funding.

Week 1 to 4 – Literature review on different SBS polymer, alternate material and technical problems.

Week 5 & 6 - Collection of all the materials

Week 7 – Arrangement and Preparation of lab instruments

Week 8 to 20 - Laboratory testing and experimentation

Week 21 – 24 Evaluate results and prepare a report

END