

2016 UDOT RESEARCH PROBLEM STATEMENT

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

Title: High asphalt content patching

No. (office use): 16.02.06

Submitted By: Garlon Maxwell

Organization: Diamond Road

Email: GMaxwell@diamondroad.com

Phone: (801) 921-2660

UDOT Champion (suggested): Rukhsana Shana Lindsey P.E.

Select One Subject Area

Materials/Pavements

Maintenance

Traffic Mgmt/Safety

Preconstruction

Planning

1. Describe the problem to be addressed.

Pothole patching can be made more permanent. Cold patches generally do not perform as well as hot patches. Hot patches should be made with higher quality materials as the pothole area has already failed for some reason and conventional asphalt mixes were not adequate. With the large amount of labor involved in pothole patching a higher quality patch can save on time spent for repeat filling.

2. Explain why this research is important.

For small quantities of asphalt material used for patching, the increased cost of the material is insignificant to the overall patching cost. Therefore a very high quality patching material can be economical for pothole patching. Changes to the mix design that would in other circumstances make the mix cost prohibitive are desired for very high performance patching materials. Expensive changes such as increasing the oil content, increasing the crushed rock content, and increasing the polymer content of the oil become worthwhile improvements. Making an expensive high quality hot mix for patching should be economical.

3. List the research objective(s):

Test the new high performance hot patching mix with many tests such as: void content, VMA, low temperature cracking, and hamburg rutting.

4. List the major tasks:

- 1. Gather RAP from 10 or more sources. Add 20% and 30% new rock. Add oil. Test for voids. Create and test different rock and oil contents that can be used with a variety of RAP mixes.*
- 2. Place 100 hot patches on roads in Utah.*

5. List the expected results:

- 1. Create a more durable pothole patching material. Demonstrate in 100 or more patches*
- 2. Patching material will have higher oil content that should perform better in terms of raveling, cracking, and general durability.*
- 3. Patching material will be placed hot. This material should outlast cold placed patching materials.*

6. Describe how this research will be implemented.

- Create high polymer 8%, 10% and 12% oil content mixtures.*
- Test void content, low temperature thermal cracking resistance, high temperature rutting resistance.*
- Place at least 100 hot patches in potholes on roads in Utah.*
- Document materials, locations, and placement procedures*
- We will establish a guideline for rock and oil contents that can be used with a variety of RAP mixes.*
- We will create guideline specifications for testing the high performance patching.*

7. Requested from UDOT: \$30,000
Cost: \$40,000

Other/Matching Funds: \$10,000

Total

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

- Gather RAP samples
- Lab tests
- First placement tests
- Summer placement tests
- Winter placement tests.