

2019 UDOT RESEARCH PROBLEM STATEMENT

*** Problem statement deadline is Feb. 6, 2019. Submit statements to UTRAC@utah.gov. ***

Title: Warm-Mix Asphalt Pavement for Utah Airports

No. (Office Use): 19.01.02

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Select ONE Subject Area Materials/Pavements Maintenance Traffic Mgmt/Safety Structures/Geotech
 Planning Perf Mgmt/Data Analytics Public Transportation Other

1. Describe the problem to be addressed:

With the increase in weight of aircraft, rutting of the airfield pavement became a problem. Is Warm-Mix Asphalt pavement a viable alternative to HMA for use on airport pavements.

2. Write the project objective (25 words or less):

WMA provides an innovative and environment-friendly asphalt pavement for airports. Goals for this project include:

1. Quantified emission benefits,
2. Determine life-cycle compared to hot mix
3. WMA Additives and possible use of RAP (25-30%) compared with similar HMA performance

3. Explain why this research is important:

(In response, consider addressing specific UDOT goals, applicability in Utah or other states, etc.)

According to TRB Record 2471:

“Warm-mix asphalt (WMA) is a current paving technology that uses various techniques for producing and constructing asphalt at lower temperatures. The benefits associated with WMA range from reduced carbon dioxide emissions to extended paving seasons.”

“This study’s findings indicate that the laboratory and predicted performance of the WMA-RAP mixture are comparable to the performance of a standard FAA P-401 mixture. The cost and environmental benefits of the WMA-RAP mixture make this type of material a viable alternative to the standard FAA P-401 mixture.”

4. List the major tasks:

1. Literature Search - PI
2. Identify Project Site(s) – PI & TAC
3. WMA Mix Design – PI & TAC
4. Field Test and Evaluation – PI
5. Deliverables (Final Report, specifications, presentation) - PI

5. List the expected deliverables (reports, manual, specification, design method, training, etc.):

1. Reports:

- | | |
|------------------------------------|----------------------------------|
| a. Environmental advantages of WMA | iii. RAP content |
| i. Energy consumption | iv. Other |
| ii. Emissions | c. Conclusion and recommendation |
| b. Paving Benefits | i. Final Report |
| i. Hauling times | ii. Specifications |
| ii. Compaction | iii. Presentation |

6. Describe how the research results will be implemented:

(In response, consider addressing UDOT leader support, process or standard improvement, etc.)

- 1) Initially, State funded airport pavement projects (\$500,000) will include WMA for environmentally friendly projects with pavement strength ratings <15000lbs.
- 2) Report to the Federal Aviation administration for possible update of the P-401 or P-403 specification.
- 3) PI is responsible for literature search, TAC meetings, field test and evaluation, and final report, specifications and presentation.

7. Requested from UDOT: \$50,000 (research) **Other/Matching Funds:** \$500,000 (design & construction)
Total Cost: \$550,000
(or UTA for Public Transportation)

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

start time - 7/1/2019
Literature Search – 9/31/2019
Project site selection, pavement design, and project advertisement – 12/31/2019
Project pavement kickoff - 4/30/2020
Project pavement completion – 6/30/2020
Deliverable – 12/15/2021