

# 2020 UDOT RESEARCH PROBLEM STATEMENT

**Problem Statement deadline is March 16, 2020. Submit statements to [UTRAC@utah.gov](mailto:UTRAC@utah.gov)**

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**Title:** Field Evaluation of Geogrid-reinforced Pavement Systems on Soft Subgrades

**No. (Office Use):** 20.01.09

**Written By:** Evert Lawton    **Organization:** University of Utah    **Email:** Lawton@civil.utah.edu    **Phone:** 801-585-3947

**Submitted By UDOT Employee:** Jason Simmons    **Email:** jasonsimmmons@utah.gov    **Phone:** 801-641-6599

**UDOT Champion (if different):**    **Email:**    **Phone:**

Select **ONE** Subject Group     Materials/Pavements     Maintenance     Traffic Mgmt/Safety     Structures/Geotech  
 Planning     Aeronautics     Public Transportation     Other

**1. Write a brief research project objective:**

The primary objectives are to compare the performance of pavement systems on soft subgrades: (a) designed without and with geogrid to determine if the designs are comparable, (b) with the geogrid location at different depths within the Untreated Base Course (UTBC) to determine the location that will provide the maximum reinforcing benefit, and (c) without and with a geotextile filter/seperator at the bottom of the granular base to determine the effectiveness of the geotextile.

**2. Explain the problem and why this research is important: (*Importance reflects 50% of the statement score*)**

The inclusion of geogrid reinforcement and geotextile filtration/separation within pavement systems bearing on soft subgrades can provide significant reductions in the thickness of the UTBC and the Granular Base (GB), thereby substantially reducing the cost of the pavement system and improving the long-term performance. UDOT participated in the development of Guide for Geosynthetics for Subgrade Improvement, which gives guidance on how to design with Geogrid. However, our current knowledge is insufficient to know with certainty that these procedures and guidelines produce the most efficient design.

**3. Describe how the research results will be implemented and benefit Utah: (*Implementation reflects 50% of the statement score*)**

The results of this research will be used to modify the design of geosynthetic-reinforced pavement systems within Utah and verify the design pavement design inputs when using geosynthetic-reinforced pavement systems. The benefit will be more economical pavement systems with enhanced long-term performance. The results will also provide valuable data for other states with respect to the design and analysis of their geosynthetic-reinforced pavement systems.

**4. List the major research tasks:**

Test sections will be constructed and instrumented within pavement systems bearing on soft subgrades during construction of a new roadway. If funded, it is anticipated that these test sections will be incorporated within the West Davis Corridor project. The major tasks will be: (a) Review geotechnical data for the project to determine appropriate locations for the test sections that will have comparable subgrade conditions; (b) install instrumentation within each test section and monitor the performance of the pavement system, including the geosynthetics; (c) analyze performance data and compare performance of each component of the pavement system within each test section; (d) determine final conclusions and recommendations from the analyses; and (e) write interim and final reports.

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

Interim and final reports; changes to the design methodologies and guidelines for geosynthetic-reinforced pavement systems.

**6. Requested from UDOT:** \$50K

**Other/Matching Funds:** \$60K

**Total Cost:** \$110K

**Briefly explain funding sources:** Mountain Plains Consortium (\$40K), Tensar (\$20K)

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

The project will start once the selected roadway is nearing the initiation of construction and will last 12 months. Anticipated scheduling of the major tasks are as follows, using the lettering for the tasks defined in Part 4:

(a) Month 1, (b) Months 2-10, (c) Months 3-11, (d) Month 11, (e) Month 6 (Interim Report) and Month 12 (Final Report)