

# 2020 UDOT RESEARCH PROBLEM STATEMENT

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

*All submitted problem statements become the property of UDOT and authors are not guaranteed a contract for related work.*

**Title:** Field Testing of a Precast Panel pavement section with Embedded Electrical Charging **No. (Office Use):** 20.01.07

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

## 1. Write a brief research project objective:

One impediment to adoption of wireless power transfer technology is the question of durability and constructability of the embedded power electronics in full scale precast concrete panel sections subject to actual traffic loads and environmental loads. The objective of this project is to field verify precast panel durability and constructability under full scale truck traffic loading as well as actual environmental conditions.

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

UDOT's mission is "Innovating transportation solutions that strengthen Utah's economy and enhance quality of life." Transportation electrification is critical to the stated UDOT mission.

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

The State of Utah is moving rapidly toward electrification. This project will move UDOT to the forefront of electrified infrastructure.

## 4. List the major research tasks:

1. Literature review and study of current state of the practice both nationally and internationally.
2. Work closely with UDOT maintenance division to select an appropriate site for locating this field test.
3. Design prototype panels that are reasonably constructible in a pre-casting yard.
4. Design an appropriate monitoring system to learn about traffic loads, environmental loads and structural behavior.
5. Cast and transport panels to selected site.
6. Install Panels
7. Collect data over a minimum 12 month period.
8. Provide final report documenting the design, construction issues, and performance of these panels.

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

1. Provide an interim report detailing design, construction and installation of panels
2. Provide a final report detailing the long term behavior and performance of the installed panels.
3. Potential designs for moving forward into a pilot project.

**6. Requested from UDOT:** \$50,000.

**Other/Matching Funds:** \$50,000.

**Total**

**Cost:** \$100,000

**Briefly explain funding sources:** matching funding is very firm from the Mountain Plains Consortium (MPC)

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

Tasks outlined in (4) above. Estimated times for each task here.

Task 1: 2 months

Task 2: 1 month

Task 3: 3 months

Task 4: 3 months

Task 5: 3 months

Task 6: 1 month

Task 7: 12 months

Task 8: 3 months

Total time: 18 months