

UTC Project Information	
Project Title	Smart and Environmentally Friendly Winter Maintenance Solutions for Safe Winter Mobility
University	Washington State University
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Funding Source(s) and Amounts Provided (by each agency or organization)	University of Washington PacTrans \$45,000 Washington State University \$45,000
Total Project Cost	\$90,000
Agency ID or Contract Number	69A3551747110
Start and End Dates	September 1, 2018-August 31, 2020
Brief Description of Research Project	<p>Road users' winter safety and mobility depend on effective winter road maintenance operations that bring road surface conditions back to safety in a timely manner. Current ice and snow control operations involve heavy applications of various kinds of deicers that have undesired implications to the natural and built environments. Environmentally friendly winter maintenance solutions are needed to achieve the required level of safety and mobility yet minimize the negative effects of deicer agents on the environment. Recent advances in composite materials' technology and manufacturing make it possible to develop conductive pavement materials that offer ice and snow-melting capabilities to decrease chemical deicer applications. To this end, the specific goals of this project are:</p> <ul style="list-style-type: none"> - Identify viable low-energy road embedment components that increase electrical conductivity for ice/snow melting capabilities, - Gage the effectiveness of current solutions based on multi-factor evaluation criteria that include cost, availability, energy requirement, and compatibility with pavement materials, - Prototype durable and strong self-snow melting concrete pavement mixtures, - Develop guidelines for field implementation based on laboratory tests and numerical modeling.

<p>Describe Implementation of Research Outcomes (or why not implemented)</p> <p>Place Any Photos Here</p>	<p>Even though there have been several studies, including this study on self-deicing pavements, this topic is still in the early research and feasibility phase. A few field demonstration projects were implemented across the U.S., but more laboratory and field demonstration projects are required to mainstream the technology. We will continue our efforts in this research area and hope to continue to have PacTrans support to bring this technology closer to widespread implementation.</p>
<p>Impacts/Benefits of Implementation (actual, or anticipated)</p>	<p>As the U.S. moves towards clean and renewable energy sources, self-deicing pavements would become a greener winter maintenance practice over traditional methods of sanding and salting. Aside from electric power consumption, they show a great promise to offer significant economic, safety, and environmental advantages over conventional winter maintenance practices.</p>
<p>Web Links</p> <ul style="list-style-type: none"> • Reports • Project Website 	