

This topic is “practice ready.” Yes No

Electrically Heated Concrete Pavement System at Des Moines International Airport

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Abstract

Airport pavement snow removal and runway de-icing operations have always been expensive components of airport operational costs. Occasionally, these operations lead to flight delays impacting travel throughout the U.S. and sometimes worldwide. Chemical de-icing of pavements can lead to environmental issues with possible contamination of groundwater and nearby bodies of water. The use of sand/chemical mixtures have the potential of creating foreign object damage (FOD) to aircraft engines and corrosion to the overall airplane

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structure. An alternative to the use of chemicals or mechanical means for removing ice and snow from the airport surfaces is the use of electrically conductive (ECON) in heated pavement systems.

This presentation covers the field demonstration of electrically heated concrete pavement systems constructed at Des Moines International Airport (DSM) in Iowa. Two ECON test slabs were constructed in the northern general aviation apron of the DSM airport. The best design approach to construct these test slabs was identified and developed. Systematic construction details (electrode installation, slab instrumentation, power supply, controlling unit, etc.) were developed and executed. The detailed design and construction procedures are presented and discussed along with other significant findings and recommendations to implement heated PCC systems for different transportation infrastructure applications (e.g., roadway pavements and bridge deck).

Keywords: Electrically Heated Pavement System — Airport — Electrically conductive concrete (ECON) — Design and construction — Winter maintenance