

RP 262 – Concrete Performance in Aggressive Salt and Deicing Environments

○ Project Description:

This project will evaluate how ITD concrete mixes perform when salts and other deicing materials are frequently used. The research will also investigate whether cost-effective changes can be made to ITD's concrete mix designs to improve their performance in aggressive salt/deicing environments.

○ Project Objectives:

The objectives of this project are to:

1. Perform testing to evaluate current ITD concrete mixtures' durability against freeze-thaw (F–T) and wetting-drying (W–D) exposure conditions (focusing on evaluating the long-term mechanical degradation due to exposure to F-T cycling, W-D cycles (mass loss, scaling), and chemical (new salt formation) properties) relative to various deicing chemicals.
2. Recommend strategies for improved durability of ITD mixtures. The study will investigate:
 - Whether the addition of certain amounts of Supplementary Cementitious Materials (SCMs) to the current concrete mixture designs is necessary to alleviate the prevalent durability issues.
 - Also, the effect of curing and potentially sealing or coating methods on reducing the permeability and hence vulnerability to durability problems will be investigated.
 - Other solutions, such as air entraining admixtures' amount and type will also be considered.
 - Finally, potential alternative winter maintenance practices in terms of salt brine, and other chemical deicer applications to reduce potential damage to concrete elements will be reviewed.

○ Estimated Completion Date: December 31, 2018

○ Budget: \$150,000

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