RESEARCH NEEDS FOR STRUCTURES TAG

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ISSUE

Concrete bridge decks typically experience cracking shortly after construction. These cracks provide a route of entry for water and deicing chemicals. Water and deicing chemicals in combination with freezing and thawing can prematurely deteriorate bridge deck concrete.

SUMMARY OF PROBLEM

IDOT needs a way to mitigate bridge deck cracking after the cracks have formed. Currently IDOT utilizes penetrating sealers and laminates to address the ingress of water and chlorides into bridge deck concrete. Typically, the penetrating sealers are not effective in larger than hair-line cracks. There are many products on the market that indicate they can be used to heal and or seal cracks effectively. IDOT would like to evaluate the effectiveness of concrete healer/sealer products. Ultimately, a combination of penetrating sealer for the intact concrete surface and a healer/sealer product to address the larger cracks should be evaluated.

DESIRED RESULTS/OUTCOME

It is hoped the study would accomplish these objectives:

- Study available concrete healer/sealer products in a laboratory setting to evaluate the performance of products under a variety of controlled conditions.
- Study the products found to be successful in lab testing on concrete bridge decks in Illinois subjected to the climate conditions found throughout the state. Develop a protocol for performance measurement under field conditions.
- Quantify healer/sealer effectiveness: What product criteria indicate a successful healer/sealer?
- Develop a specification for healer/sealers that IDOT could use to evaluate new products submitted for use in Illinois.
- Develop a policy for healer/sealer use.
- Develop a maintenance guide for strategies to use for bridge deck concrete maintenance utilizing penetrating sealer and healer/sealers.