Research Needs for Structures/Hydraulics/Geotechnical Technical Advisory Group

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ISSUE: Determining Whether a Deck with a Microsilica or Latex Concrete Overlay in Place Can Be Overlaid Again

SUMMARY OF PROBLEM: Since the mid 1990s, the Illinois Department of Transportation's (IDOT) policy has been to place either microsilica or latex concrete overlays on bridge decks. These overlays are starting to fail. Often, the decks are still good condition but the overlay is cracked and delaminated. The decks were milled and scarified (either mechanically or using hydro demolition), so the cover over the reinforcement bars has been reduced. To hydro scarify the deck for a new overlay, all the existing concrete overlay must be removed. Otherwise, the hydro for the new overlay will not remove the bad portion of the deck because the existing overlay acts as a shield, preventing the hydro machine from penetrating the deck. The deck is milled first to remove the concrete overlay before the hydro scarification. The challenge is determining whether enough deck structure remains for a new overlay. If the reinforcement does not have enough cover, the milling machine will hit the top mat of the reinforcement and damage the bars.

DESIRED RESULTS/OUTCOMES: A non-destructive test to evaluate a deck with overlay to determine the thickness of both the concrete overlay and the deck structure and how much cover remains on the bars in the original deck. The research should also develop a set of guidelines to determine when a deck can be overlayed a second time.