

Peer Exchange Topic: Surface Prep of Concrete

Date/Time: 8/23/23, Part 1 of 2

Moderator:

Note Taker: Levi Byers, NHDOT

Discussion:

- In attendance: Agency 1/3, Vendor 1/3, Consultant 1/3
- Types of overlays - LMC, Dense, Polymer, UHPC, Epoxy, PPC,
 - No one familiar with Dense concrete, used in Texas
- Surface prep
 - Milling first and then hydrodemo
 - Shotblast and grinding, liquid solution etching
 - Profile is important for the overlay to bond and adhere
 - Profile of 3 needed in most states?
 - Latex Concrete - used on new decks, no hydrodemo needed in those cases, but shotblasting. Rehab projects would have milling, hydrodemo, then latex concrete. Bond is number one thing with overlays. With latex you don't have to go below steel because of bond, but some states want to still go lower to get rid of chlorides
- Thickness
 - Latex 1.25" min thickness
 - Texas - 2" latex,
- Deck issues
 - You have to overlay on sound concrete and clean
- Bond
 - Wetted, saturated, surface for concrete overlay. Saturation is very critical, no puddles, but very wet. Sprinkle for 10-12 hours, not just 1 that the spec says.
 - Chemical overlays are typical dry
 - Epoxy overlays don't have to be completely dry, but dry is better
- Curing
 - LMC - 3 hour wet cure, 2500 psi, traffic ready, but depends on the cement type
 - Sawcut grooving has made a big difference verses tine raking
 - UHPC - curing compound, no burpal, wet cure. Compound applied 15-20 min after. Traffic ready 1-2 days later.
- Finish
 - Diamond grinding, helps with surface profiling. NCDOT has a rideability spec.
- Other notes
 - Overlay is only as good as what you put it on
 - Jackhammering - 15lb chipping hammer limits on difficult to access areas like armoring, scuppers, etc.
 - Negative moment considerations? Extra steel can be put in to help with cracking
 - 2" UHPC overlay, 2 mile long overlay project in PA. 120 CY/day for UHPC.
- Hydrodemo
 - Collect water, test, treat, dispose, varies by state. You have to submit a water control plan with hydrodemo for approval in most states.

- Have to keep the water below a 12.5 pH or else it is hazardous.
- Equipment loads considerations/concerns
 - No major comments.
- Product Suppliers
 - Etching compound - not a degreaser, solution that attacks the lime in the concrete, CSP of 3, after 20 minutes. Marine life safe, can be hosed off into drainage system. Seattle, WA approved environmentally. Leaves a comparable surface to shotblasting. Makes surface like 100 grit sandpaper.
 - Epoxy - 1/8" thick overlay, could be a multi-layer for deck restoration. The layers depend on the aggregate that goes into it. Curing takes 4-8 hours, temp dependent. Below 50 degrees, epoxy don't set up. Some states apply a healer sealer first, then the overlay.