

The background features a dark blue gradient with a subtle, repeating pattern of light blue spheres connected by thin lines, creating a grid-like structure that recedes into the distance.

NYSDOT'S DECK PRESERVATION PROGRAM

DO WE HAVE A PROGRAM?

- New Construction
 - Pozzolans
 - Coated bars
 - both mats
 - Silane
- Rehabs
 - Pozzolans
- Existing
 - 75 % area concrete
 - 63M sq ft.



MAINTENANCE ACTIONS

- Washing
- Sealing
- Treatments
 - Healer/Sealer
 - Crack filling
- Overlays
 - Bituminous
 - Polymer



WASHING



SEALING

● SILANE

- 5 year cycle
- All decent decks



MAINTENANCE ACTIONS

- Healer/Sealer
 - No cycle
 - Map cracked decks
 - New decks if nec.



THIN POLYMER OVERLAYS

- Thin Polymer Overlays
 - Waterproofing



BITUMINOUS OVERLAYS

- Most common
 - Sheet membranes
 - Pavement preservation materials
 - Nova Chip
 - RAST



DECK TREATMENT OPTIONS

Completed: GUIDELINES FOR SELECTION OF BRIDGE DECK OVERLAYS, SEALERS & TREATMENTS (NCHRP 20-7 Task 234)

Proposed: Waterproofing Membranes for Concrete Bridge Decks (NCHRP 20-5 Topic 42-07)

Best Practice: Michigan DOT



Bridge Maintenance News



Testing Waterproofing Membranes

Inside this issue:

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Bridge Maintenance & Tech Services have been buying experimental moisture sensors in existing bridge decks prior to placing membranes to determine if the membranes are truly waterproof.

The services, called the Hydro-Trucker, developed by Don Geisel, a Capital District resident, is a patent pending device:

1. Conduct laboratory testing of test specimens to develop calibration curves to report actual percentage by weight of moisture;
2. Make design improvements and produce 2 pre-production or beta units (scanners) for loan to DOT;
3. Conduct approximately 10 actual bridge studies using the new beta units;
4. Provide a beta unit to the Turner Fairbanks (FHWA) labs for evaluation;
5. Market the technology to other DOTs. Items 1 and 2 are complete; items 3, 4 and 5 are in progress.

for measuring sub-surface moisture at precise depths beneath the surface. The technology uses wireless sensor technology capable of reporting moisture levels in the materials it contacts. A surface unit scans the imbed and reports the degree of sub-surface moisture.

The project is funded through NYSERDA and NYSDOT. The funding supports a multi-phase effort:

1. Conduct laboratory testing of test specimens to develop calibration curves to report actual percentage by weight of moisture;
2. Make design improvements and produce 2 pre-production or beta units (scanners) for loan to DOT;
3. Conduct approximately 10 actual bridge studies using the new beta units;
4. Provide a beta unit to the Turner Fairbanks (FHWA) labs for evaluation;
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Calibration of the repair materials used to imbed the sensors is done in the lab. To date, sensors have been placed on a total of five (5) structures under four different membranes. "Baseline" sensor readings and a GRP survey is taken at each site. Additional readings and surveys will be taken at periodic intervals in the future.

Before we can report on the effectiveness of waterproofing membranes, we will need to determine if the sensors are providing accurate data. We have not collected enough data to determine if the sensors are working properly.

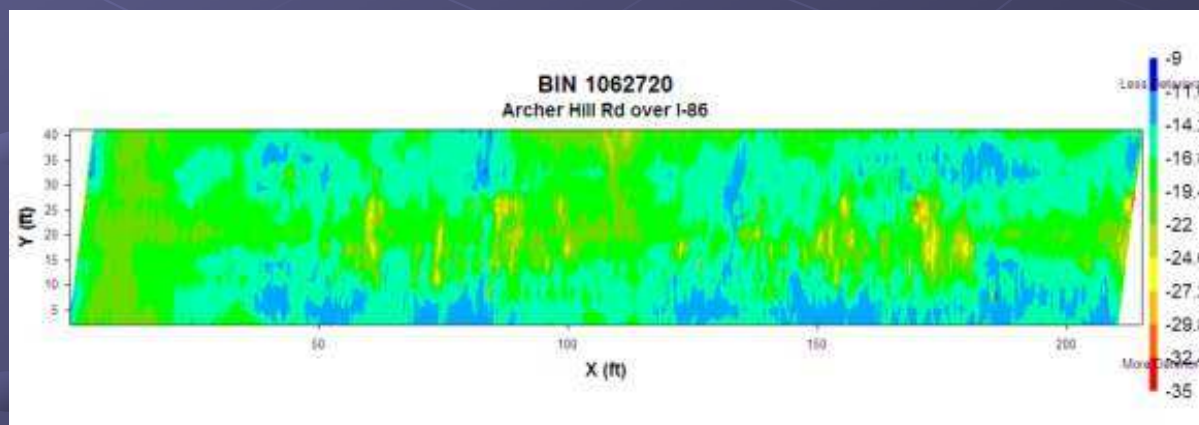
Sensors have been placed under Roofmalt (Royco), Flexogrid (Polycarb), Mark 155 (Polycarb), and PFSO with aggregate (Liquid Concrete). Additional membrane types, including bituminous sheet membranes and silane sealers will be tested.



CANDIDATE SELECTION

● Assessment

- Visual
- Sounding
- ½ Cell Potentials
- Radar
 - Rapid
 - Good accuracy





Concrete & Expansion Joint RAPID REPAIR

NEXT GENERATION?

Features

- Low viscosity modified poly-urethane-
pumped over aggregate.
- Bonds Without Primer-No priming is required for bonding to concrete, asphalt-concrete, steel or wood
- Fast Repair and Cure-Solidifies in less than 1 minute. *Traffic Ready in 20 minutes.*
- Year Round Use-Successful repairs in freezing weather or in the heat of summer.
- Seals and Protects-Creates semi-flexible waterproof membrane that protects substrate from freeze-thaw spalling.

URETHANE

Concerns

- Part A contains an Iso-Cyanate must handle carefully at drum, testing showed tolerable exposure.
- Moisture sensitive : bubbles up if wet, has not been an issue in NY
- Shipping—is manufactured on the west coast.
- Aggregate — difficult to find 3/8" gap-graded, washed , dried, & bagged aggregate in the northeast.

RAPID REPAID POLYMER

Expansion Joint Reconstruction

- All failing and unsound pavement is removed from the repair area.
- Substrate is prepped for repair using mechanical abrasion techniques. i.e. Sandblast, Needle Scaling
- Exposed Joint opening is dammed to prevent overflow of low-viscosity polymer



- Repair area is filled to grade with clean, dry, crushed 3/8" aggregate
- Low-viscosity polymer saturates the aggregate and creates a resilient polymer concrete and is Traffic Ready in minutes.



Expansion Joint



PRODUCT DEMO 2005

