

SERVICES

Durability Assessment
 Durability Testing
 Evaluation of Materials
 Ready-mix Concrete Truck Inside Laboratory
 Collaborative Research

KEY PERSONNEL

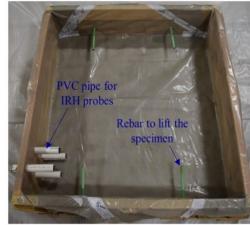
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 Abul Fazal Mazumder, Graduate RA, WMU

REFERENCE

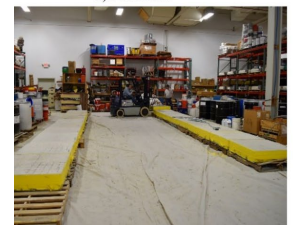
John Belcher, Project Manager, MDOT



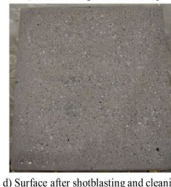
a) Formwork



b) Moist curing with wet burlap



c) Specimen arrangement for shotblasting



d) Surface after shotblasting and cleaning



e) First coat of epoxy application



f) Specimen after two coats of epoxy application

Slab specimen fabrication and preparation procedures.

Cracks can form in bridge deck repair concrete due to several causes. To improve bridge deck repair condition and extend service life, MDOT applies a flood coating of either a thin epoxy overlay or a healer sealer to freshly patched or repaired concrete. Before this research, 28-day cure times were required before applying any flood coating.

This research project produced 34 large slabs (40-in x 40-in x 9-in) from ready-mix concrete representative of two of the most common mixtures used by MDOT. The slabs were finished and shotblasted according to MDOT procedures.

Additional specimens were produced for strength, restrained shrinkage, porosity and conductivity as a function of time as well as chloride ingress (slabs and smaller specimens) and corrosion performance.

The slabs were moved to an outdoor exposure site and exposed to nearly 100 freeze-thaw cycles and chloride ponding; and then summer temperatures of 91 °F. There was no freezing and thawing damage, and chloride ingress was reduced by the coatings.

As a result of this study MDOT will be able to reduce cure times at a significant cost savings.

Key parameters as to when the coatings could be applied as well as demonstration of the coating performance in reducing chloride ingress and corrosion were investigated. MDOT will use these findings to save 8 to 10 days of curing time per pour at a savings of more than \$84,000 per day on average.