

Introduction to Experimental Features

This Research Section activity is used to evaluate experimental features and products on VTrans projects and installations. This includes installation or application, field monitoring and data collection, testing, photographic analysis and preparation of interim and final reports on the methods chosen. Publication or transmittal of experimental results will be sent to interested and participating Federal and State Agency units.

2017 Active Experimental Features

- Randolph Park & Ride Porous Asphalt Study
- Pavement Marking Tape Study
- Liquid Pavement Marking Study
- Assessment of Reclaimed Asphalt Shingles (RAS) in Pavement Mixtures
- Assessment of Ground Penetrating Radar (GPR) to Verify Concrete Elements and Backfill Void Conditions
- Fiber Reinforced Polymer (FRP) Strips
- Shredded Tires for Underdrains
- HAWK Traffic System
- Jahn Permeable Mortar System
- Bridge in a Backpack
- SuperSlab
- Sterling Lloyd Eliminator Waterproofing Bridge Membrane System
- Poly-Carb Flexogrid Bridge Deck Overlay System
- Bridge Preservation BDM Waterproofing Membrane System

Utilization of Ground Penetrating Radar (GPR) Experimental Feature Overview



Bridge deck core, determining the location of the rebar meshes

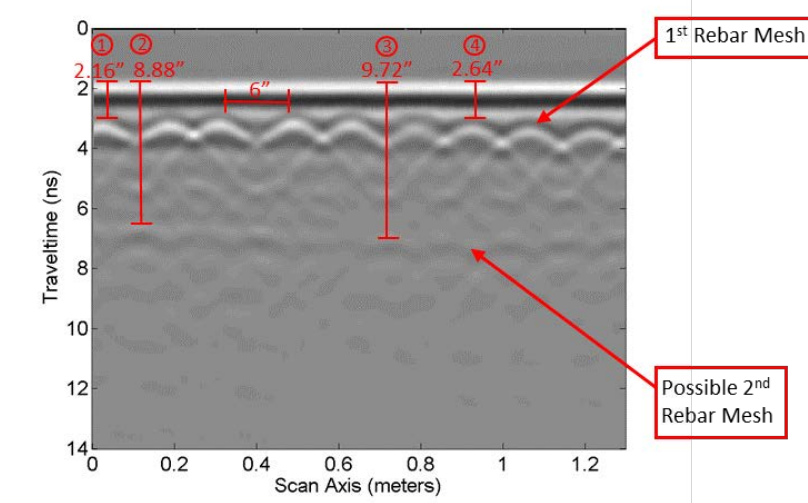
This study hopes to verify and utilize Ground Penetrating Radar (GPR) as a reliable non-destructive testing and evaluation method during construction or within inspection cycles without compromising the quality of the materials or elements used in transportation systems.

Recent Findings

In the past few construction seasons, GPR was utilized by the Materials and Geotechnical Sections to locate bridge deck rebar meshes and shear studs, respectfully. These current field studies show the potential and effectiveness of GPR for locating subsurface elements such as rebar, air voids and material boundary layers.



Research Sections Ground Penetrating Radar (GPR) unit



GPR image detailing the locations of the bridge deck rebar meshes

Fiber Reinforced Polymer (FRP) Strips Experimental Feature Overview



Fiber Reinforced Polymer (FRP) strips on the underside of a bent on bridge 98 on I-89 in Swanton

The purpose of this study is to examine and evaluate the constructability, overall performance and cost effectiveness of using Fiber Reinforced Polymer (FRP) strips for bridge rehabilitation. The FRP strips are a low-cost rehabilitation method that extends the life of a particular bridge and increases the structural and traffic bearing capabilities.

Recent Findings

The FRP strips, on bridge 98 over I-89 in Swanton, have been monitored by Research personnel on an annual basis since their installation in the spring of 2014. Field visits to the site have rendered concerns on the installation methods of the FRP strips to the bridge bents. The data gathered from the site visits will be used to write a final report on the study.



Close-up of the FRP strips on the underside of a bent on bridge 98 on I-89 in Swanton

Bridge Deck Waterproofing Membrane Systems Experimental Feature Overview



BDM system, Bridge 165 on Route 100 in Warren



Close-up of Bridge 165 bridge deck showing evidence of BDM system

Waterproofing membranes extend the life of the bridge decks by preventing the penetration of chlorides and other corrosive elements that deteriorate concrete and the reinforcing steel. The Research Section has been monitoring the effectiveness of three different bridge deck membranes; Sterling Lloyd's Eliminator, Bridge Preservation's BDM bridge membranes and Poly-Carb's Mark 163 Flexogrid overlay system.



Poly-Carb Flexogrid, Bridge 8 over I-93 in Waterford



Eliminator membrane installation, Bridge 11R on VT 121 in Saxton's River

Recent Findings

From recent site visits, all three bridge deck membrane systems are performing very well. The concrete bridge decks show no signs of new cracks or leaking meaning that the membranes are performing very well and sustaining a waterproof barrier to mitigate deterioration.

Assessment of Liquid and Tape Pavement Markings Experimental Feature Overview



Pavement marking tape study (long lines, symbols and bike lanes) in Berlin

Pavement markings are a critical safety feature for local roads and interstates. The VTrans Research Section is currently studying the durability, constructability and retroreflective capabilities of pavement marking tapes in Berlin and liquid paints on I-89 between Brookfield and Montpelier.



Pavement marking liquid paint study on I-89 between Brookfield and Montpelier

Recent Findings

The Berlin pavement marking tape study incorporates different types of high performance, permanent, and intersection tapes as well as green bike lanes. The I-89 study incorporates four different types of liquid pavement paints; Polyurea, Epoxy, Methyl Methacrylate (MMA) and Thermoplastic. The field study on this project has concluded with data being analyzed and a report being written. The pavement marking tape on the Berlin project has only been installed for a year and further monitoring is expected before a conclusion has been reached. Data from these projects has been shared with the Pavement Marking Committee and is being used to create a Pavement Marking Acceptance Chart in conjunction with the Pavement Design Section.