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RESEARCH UPDATE

Update U97-5

ELIMINATOR BRIDGE DECK MEMBRANE SYSTEM

HISTORY:

Bridge deck protective systems have been used throughout Vermont for the past twenty five years. Almost all of these systems have used a combination of a preformed sheet and liquid polyurethane membranes, such as the currently approved Royston 10AN and Bituthene 5000 systems. To further explore the feasibility of using different types of bridge deck protective systems, maintenance forces chose the Eliminator membrane system for application on Bridge 42C on US 302.

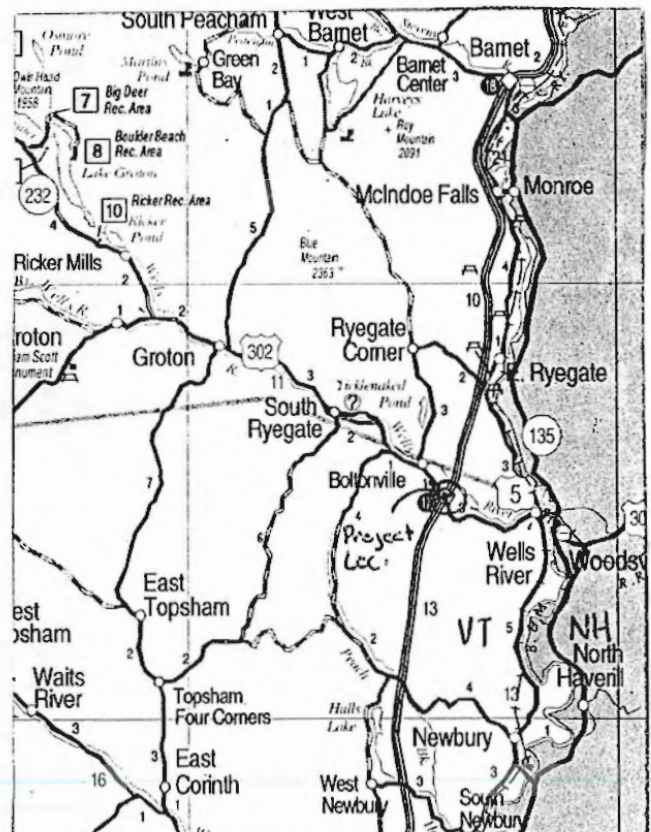
PRODUCT:

Eliminator Bridge Deck Membrane, which is manufactured by Stirling Lloyd Products Inc. of North Haven, CT. The system consists of a primer, two layers of methylmethacrylate resin membrane, and a tack coat to facilitate a good bond with the bituminous concrete layer. It is a spray applied system, with each layer of membrane approximately 60 mils in thickness.

INSTALLATION:

Bridge 42C on US 302, over Interstate 91, in Newbury was chosen as the installation site. This concrete deck had been repaired and a new sheet membrane system was applied when the bridge was rehabilitated in 1992. By early spring of 1997, due to the large amount of truck traffic which routinely travels over the bridge, the membrane and pavement on the east bound (EB) lane of the bridge experienced areas of shoving. It was determined by the Vermont Agency of Transportation's Maintenance Section that this EB lane of the bridge was in need of repair.

In May 1997, VAOT personnel stripped the old pavement and membrane from the east bound lane of the bridge, and repaired all areas of concrete delamination. On June 17, 1997, the contractor, Centurion of Suffield CT, arrived at the project site, and started to clean off one lane with a buffer device to remove the last remaining portions of the old sheet membrane. The primer material was then applied to this section, but operations had to be curtailed when rain started falling. The work was started again late on June



Project Location

18, when the entire travel lane of the bridge deck was primed. The membrane was applied the next day (June 19) on the same section while the rest of the bridge was primed. Ideally, the spray membrane should be applied in two 60 mil lifts but it was found that in some areas the layers were 80 and 40 mils. Aggregate was added to help facilitate traction when the deck was opened up to traffic at the end of the day. By 9:30 AM on June 20, the entire bridge was covered with membrane. The deck was paved the afternoon of June 20, and then was opened back up to traffic.

FOLLOW UP

This bridge membrane system will continue to be surveyed and evaluated, and reports will be issued as significant data are collected.



Figure 1.

Application of intermediate layer over primer (Note completed membrane) June 19, 1997



Figure 2.

Finished Membrane Surface June 20, 1997