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Experimental Construction 95-02 : Reflective Cracking Control, Interim Report - Fourth Year, July 1999

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EXPERIMENTAL CONSTRUCTION 95-02

REFLECTIVE CRACKING CONTROL

Interim Report -Fourth Year

INTRODUCTION

Reflective cracking has long been considered a major problem associated with asphalt pavements. Several methods including milling, crack sealing and fabric membranes have been used in an attempt to eliminate or delay the reflective cracking process. These methods represent a significant cost and have produced various levels of success.

In a continuing effort to alleviate this problem, the Maine Department of Transportation (MDOT) implemented, on an experimental basis, the use of two commercially manufactured materials designed to minimize reflective cracking in asphalt pavements.

PRODUCT DESCRIPTION

PavePrep (SA)

PavePrep (SA) is a self-adhesive, stress relief interlayer consisting of dual layer geotextile fabric and a high density mastic. It is designed for localized application and is manufactured by PavePrep Corporation located in Harrison, Ohio.

GlasGrid (8501)

GlasGrid (8501) is a self-adhesive, glass fiber reinforcement mesh designed for complete coverage application. It is manufactured by Bay Mills Limited located in Ontario, Canada.

PROJECT LOCATION/DESCRIPTION

The project selected for this experimental construction is a portion of U.S. Route 1 located in the towns of Caribou and Connor. The project, STP-050-5857(00)X is a medium resurfacing, beginning at the intersection of Route 89 and extending northerly 11 miles (see attached map). The 1994 Average Daily Traffic (ADT) was 4,810, five percent being trucks, and is estimated to reach 6,780 by the year 2014.

The experimental section consists of three adjacent 1,000 foot sections beginning near the Route 89 intersection at Station 7+00 and extends northerly to Station 37+00 (see Figure I). Each section includes three lanes; two travel lanes and a northbound truck lane. The existing pavement thickness in the experimental section was estimated at between 7 and 8 inches.

Figure I

PRE CONSTRUCTION SURVEY

A detailed crack mapping survey was conducted prior to application of the two products. Cracks were recorded using the corresponding stationing and subsequently sketched on data sheets

Extensive cracking was present in several areas within the 3,000 foot experimental section. The severity of this cracking made it impractical to record each crack.

Open pavement joints occurred at centerline, 12 feet left, 12 feet right and 24 feet right along the entire experimental sectio

Material was applied to each of these conditions (extensive cracking and pavement joints). However, they were not tabulated in the linear footage totals and will not be included in the reflective cracking evaluation process.

CONSTRUCTION PROCEDURES

PavePrep (SA)

PavePrep (SA) was applied August 21, 1995. Prior to product application, cracks were blown clean using an air compressor and the larger ones patched with D-Mix. Material was placed according to manufacturer's specifications and no significant problems were encountered during the application process. All visible cracks in the two northbound lanes were covered

The material was examined after having been exposed to traffic for 12 hours. The self-adhesive appeared to have functioned well without the use of edge nails or staples

Pavement roughness was present after the placement of the ½ inch (minimum) shim layer. This roughness was eliminated with the placement of the 1-1/2 inch wearing surface.

A total of 6,300 square feet of PavePrep was installed at a cost of $12,600.00.

GlasGrid (8501)

GlasGrid was applied August 29,1995, over the ½ inch (minimum) shim layer. Material was placed in accordance to manufacturer's specifications and no significant problems were encountered.

During placement of the 1-1/2 inch wearing surface, the finish roller did encounter problems with the mix pushing and the roller leaving ridges. These problems were eliminated by allowing the mix to cool approximately 45 minutes before finishing.

A total of 35,295 square feet of GlasGrid was applied at a cost of $24,706.50

FIELD INSPECTION SUMMARY

On May 18, 1999, the fourth annual field inspection was completed. This evaluation revealed a relatively small amount of new reflective cracking in each of the four sections.

As mentioned in the previous interim report, three small areas (approximately three to five square feet) in the GlasGrid section displayed signs of raveling. Pavement was absent and the GlasGrid material was exposed. These areas occurred at the intersecting point of transverse and longitudinal cracks.

The wearing surface has been worn away in an area approximately 35 square feet in size, located in the GlasGrid section. This area is located at a snowmobile trail crossing and it is believed that the snowmobiles are the cause of this isolated problem.

Rutting was present in each of the four sections, but did not appear to have worsened.

Results from the fourth year evaluation indicate the GlasGrid section continues to outperform the Paveprep and two control sections. Table I summarizes, in linear feet, the original cracking and reflective cracking from each of the four evaluations performed to date.

In the third year interim report, it was noted that the pavement joints in the GlasGrid section were outperforming the joints in each of the other sections. A pavement joint evaluation was presented in this interim report which included the pavement joint at the shoulder. During the 1999 evaluation, it was determined that only the centerline joint and the joint separating the travel and truck lane in the northbound lane would be evaluated. This decision was based on the uncertainty of material placement at the shoulder joint within the GlasGrid section. This eliminated the southbound control section (station 7+00 to 17+00) from the pavement joint evaluation. Data for the three remaining sections are summarized below.

Pavement Joints

Section	Total Linear Feet of Longitudinal Pavement Joint	Total Linear Feet of Open Pavement Joint	Percent of Open Pavement Joint
PavePrep (SA)			
Sta. 7+00 - 17+00			
2 Northbound Lanes	2,000	1,017	50.9
Control Sta. 17+00 - 27+00			
Fullwidth	2,000	935	46.8
GlasGrid (8501)			
Sta. 27+00 - 37+00			
Fullwidth	2,000	316	15.8

FUTURE FIELD INSPECTIONS/REPORTING

The next scheduled field inspection is for the spring of 2000, with the final report to follow.

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Other Documents Available

Construction Report - November 1995

Interim Report - First Year, June 1996

Interim Report - Second Year, January 1997

Interim Report - Third Year, July 1998