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RESEARCH UPDATE U96-7

RECLAIMED BASE
VT. ROUTE 12 - RANDOLPH

REFERENCES:

Work Plan 86-R-4, Report 89-4

INTRODUCTION:

The Randolph project, RS 0241(21) was one of the first rehabilitation projects in Vermont to utilize the reclaimed base concept. Constructed during the autumn of 1986, this project was the first of the reclaimed base projects to be constructed without a stabilizing additive. As the oldest project built under these conditions it is of special interest. The pre-rehabilitated section was severely cracked, and the need for a rehabilitation technique specifying removal of all existing pavement that could cause reflective cracking, was the primary motivation for selecting the reclamation concept for the Randolph VT Route 12 project.

PROJECT DESCRIPTION:

The project began on VT Route 12, approximately 1.75 km northerly of the Bethel-Randolph town line and extended northerly for 0.74 km to the Randolph village line. The 1992 ADT through this section of VT Route 12 was 3860.

The experimental section was 260 m in length and constructed at the northern end of the project. It was reclaimed to a depth of 150 mm, and the material was compacted with a vibratory roller, with its compacted density optimized by the addition of water. The reconstituted base was allowed to consolidate under traffic for twelve days, then the top 100 mm was reworked, compacted a second time, and overlaid with two 40 mm courses of bituminous concrete pavement.

The control section was 480 m in length. This section was completed concurrently with the paving of the experimental section. The control section was prepared with crack filling material and a thin leveling course, followed by a 45 mm overlay of bituminous concrete.

All units in metric. Exceptions: mile markers/mileage references for project location; supplier's costs (presented in dual English/metric units.)

Metric

PERFORMANCE COMPARISONS:

Two test sections, one for each of the two treatments, were created. The evaluation and comparison of the effectiveness of these two sections was based on cracking, rutting and ride quality. These three performance factors have been recorded for each treatment every year since 1990. Current values of these indices suggest that both treatments have performed reasonably well over the nine year service life of the project.

Randolph Project RS 0241 (21) Nine Year Performance		
	Test Section One (Control)	Test Section Two (Recycle)
1995 Cracking (m/100m)	497	303
1995 Rutting (mm)	4	5
1995 Mays (mm/km)	2225	2225

The rutting and ride values are virtually equal for both test sections, but the degree of cracking is significantly less for test section two, which suggests that the recycle treatment did inhibit crack development.

COST:

The cost to recycle the experimental (reclaimed) pavement was $\$8.03/m^2$ ($6.71/SY). This total cost was comprised of a cost of $\$3.36/m^2$ ($2.81/SY) for the 40 mm overlay of bituminous concrete and $\$4.67/m^2$ ($3.90/SY) for the reclaimed base. By comparison, the cost of the control (standard overlay) was $\$3.92/m^2$ ($3.28/SY) for the 45 mm overlay of bituminous concrete. Based on more recent and extensive bid experience the cost for the reclaimed base was very high since the bid price for this item currently averages about $\$1.82/m^2$ ($1.52/SY). The reasons for the higher costs associated with this project can only be based on conjecture at this point but it seems reasonable to assume that a contributing factor was the small quantities involved.

CONCLUSIONS:

It would appear from the crack survey that the reclaimed base treatment was reasonably successful in inhibiting crack development (40% fewer cracks). The other two performance factors were about equal. Both the experimental and control sections are nearing the end of their effective service lives, and with the cost of the reclaimed base approximately double that of the standard overlay, it does not appear to be cost effective to recommend the reclaimed base approach in this particular case. The evaluation phase of this project has been terminated.