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RESEARCH UPDATE

U 1999-2

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**PERFORMANCE OF COLD RECYCLED BITUMINOUS PAVEMENT  
DERBY - CHARLESTON, VT ROUTE 105**

**REFERENCES:**

Report WP 93-R-1, Research Report 94-6, U96-3, U96-10

**INTRODUCTION:**

This report describes the performance of cold recycled bituminous pavement (CRBP) which was placed on VT Route 105 in the towns of Derby and Charleston. The project was one of the earlier pavement rehabilitation efforts using CRBP with special equipment for in-place recycling. An analysis of pavement performance based on collected data is presented herein.

**PROJECT DESCRIPTION:**

Derby-Charleston project STP 9248 (1)/C1 began on VT Route 105 at MM 0.800 in Derby and proceeded southeasterly for 7.828 km to MM 0.800 in Charleston. Constructed during the summer of 1993, the project included 102 mm of cold recycled pavement, resurfacing of the recycled pavement with a 45 mm binder course of Type II (~~prime coat and seal coat of bituminous material with pea stone and stone grits~~) bituminous concrete; and a 38 mm wearing course of Type III (~~prime coat of bituminous material with sand cover~~) bituminous concrete. The paving activity included the construction of a 0.32 km control section in Charleston, which did not include any recycling activity, but was a standard overlay comprising the same pavement layers as the section with the recycling.



All units in metric. Exceptions: mile markers/mileage reference for project location and supplier's costs.

Thirteen test sites were established on the project, eleven in areas with CRBP and two in areas with a standard overlay. Each year these sites are examined and measured for cracking, rutting and ride roughness.

**PERFORMANCE:**

The following table compares six years of performance evaluation between CRBP and standard overlay.

<b>DERBY-CHARLESTON PERFORMANCE COMPARISON</b>			
		<b>CRBP TEST SITES</b>	<b>STANDARD OVERLAY SITES</b>
<b>1994</b>	<b>CRACKING</b>	0	73
	<b>RUTTING</b>	0	0
	<b>ROUGHNESS</b>	1.6	1.4
<b>1995</b>	<b>CRACKING</b>	42	127
	<b>RUTTING</b>	0	0
	<b>ROUGHNESS</b>	1.0	1.2
<b>1996</b>	<b>CRACKING</b>	128	293
	<b>RUTTING</b>	1	1
	<b>ROUGHNESS</b>	1.6	1.8
<b>1997</b>	<b>CRACKING</b>	261	406
	<b>RUTTING</b>	2	1
	<b>ROUGHNESS</b>	1.5	1.7
<b>1998</b>	<b>CRACKING</b>	360	474
	<b>RUTTING</b>	3	1
	<b>ROUGHNESS</b>	1.6	1.8
<b>1999</b>	<b>CRACKING</b>	368	474
	<b>RUTTING</b>	3	3
	<b>ROUGHNESS</b>	N/A	N/A

Units: Cracking ..... m/100m  
 Rutting ..... mm  
 Roughness (IRI) ... m/km

### **SUMMARY:**

After six years of service, the CRBP is continuing to perform slightly better than the standard overlay in cracking, rutting and roughness are about equal. At the time of this report, it was not possible to obtain current measurements for roughness due to unavailability of equipment. Another effort to obtain this information will be made later in the year.

Although performance is almost equal, the cost differential between the CRBP and standard overlay is not. The CRBP was placed at a cost of \$2.54/m<sup>2</sup> above that of the standard overlay; therefore, it would be expected to have a service life that is 27% longer than that of the standard overlay. To date, the CRBP placed on the Derby-Charleston project has yet to show such superior performance when compared to the standard overlay.

### **FOLLOW UP:**

Pavement surveys will continue on an annual basis until firm conclusions can be drawn as to the anticipated service life of the CRBP and its relative cost effectiveness.