

MATERIALS & RESEARCH DIVISION

Reviewed by:

Robert F. Cauley  
Materials and Research  
Engineer



Prepared by:

Craig Graham  
November 17, 1994

RESEARCH UPDATE

Number U94-14

WIRTGEN HOT IN PLACE RECYCLED BITUMINOUS PAVEMENT, SHERBURNE, US 4

REFERENCE: Work Plan WP 88-R-8, U89-6

HISTORY: In the summer of 1988, the WIRTGEN recycling system was used to rehabilitate a 4.4 mile section of US 4 in Sherburne, VT. The project selected was Sherburne HMA 2979, extending from MM 3.16 to MM 7.56. An adjacent project, Sherburne F020-2(23)S, which received a 1 1/2" standard overlay from MM 0.65 to MM 3.16, was selected for comparison purposes.

TREATMENT: The WIRTGEN recycling process involves infrared heating and milling of the existing pavement to a designated depth. A remixer then combines and mixes the milled material with the new hot mix. This remixed material is then spread and rolled in a manner similar to a normal, hot mixed pavement course. For this project, one 2000' section was recycled to a depth of 1" and one 200' section was recycled to a depth of 3" for evaluation purposes. The remainder of the project was recycled to a depth of 1 1/2". New bituminous mix was added at a rate of 24.6 lbs/sy resulting in 16% new material.

COST: The cost for the standard overlay was \$2.96/sy, while the WIRTGEN recycle cost was \$3.26.

PERFORMANCE: The following tables summarize the performance of both projects over the past 6 years. The first reading for 1988 is preconstruction, and the second is postconstruction. Asterisks indicate no available readings. 1991 results were not available.

Standard Overlay:

	1988(Pre)	1988(Post)	1989	1990	1992	1993	1994
Mays (in/mi)	185	102	109	*	118	143	169
Cracks (ft/100 ft)	258	0	21	38	*	105	156
Ruts (1/16")	7	0	1	*	*	2	2

WIRTGEN Recycle:

	1988(Pre)	1988(Post)	1989	1990	1992	1993	1994
Mays (in/mi)	124	70	83	*	107	166	189
Cracks (ft/100 ft)	273	0	34	80	*	166	248
Ruts (1/16")	6	0	1	*	*	4	4

All test results indicate that the WIRTGEN recycle has not performed as well as the standard overlay. Crack counts and rut readings for the 3" deep recycled section were slightly better than the 1 1/2" area. No test site was located in the 1" recycled area. The Mays readings among the three areas did not differ significantly.

SUMMARY: Based on the field results obtained to date, the WIRTGEN treatment does not appear to be cost effective. This evaluation will continue until retreatment occurs, at which time a final report with a cost/benefit analysis will be issued.