

MATERIALS & RESEARCH DIVISION

Reviewed By:

J.R. Phalen
J. R. Phalen, P.E.
Materials & Research
Engineer



Prepared By: R. I. Mascoia
March 31, 1987

Update No. 87-6

R E S E A R C H U P D A T E

Need For Pavement Scarification

References - Work Plan 86-R-3.

Purpose - To determine if it is necessary to scarify an existing bituminous pavement prior to overlaying it with additional subbase material and a new pavement system.

History - Two 1,000 foot test sections were left unscarified on Vermont Route 100 (Project Stowe-Morrystown F 029-1 (9)S) in 1986. The test sections are located in Morrystown at MM 0.426-0.615 and MM 1.561-1.75. Both exhibited extensive longitudinal cracking ranging from 600 to 900 lineal feet per 100 foot of 11 foot wide roadway. Accompanying wheelpath rutting ranged from 4/16" to 1 7/16" with an average of 8/16". In addition, the road surface was out of shape with the edge of pavement averaging 5 1/4 inches lower than the centerline elevation on the southerly test section.

Reconstruction in the non-scarified test section included placement of 6" of subbase of gravel, 3" of plant mixed base course, 1 1/4" of Type III binder and 3/4" of Type IV surface course.

The Resident Engineer noted that prior to placement of the bituminous course, the gravel placed over the non-scarified sections retained more moisture following periods of heavy rain and appeared to rut slightly in the wheelpaths. Although the condition never resulted in significant problems, he felt the cost saving from omitting the scarification process was not worth the risk of a failure.

The remainder of the project included 1.73 miles with scarification, 0.65 miles of new construction, and 0.63 miles of overlay only. Scarification of the 8 existing bituminous courses totaling 5" to 7" was accomplished with ripper teeth on a Caterpillar 16 road grader. 50 % of the scarified bituminous material was less than 1 s.f. in size with the remainder ranging up to 1 by 3 lineal feet in dimension.

Cost Information - The contract called for scarification of 23,750 s.y. of existing pavement. The item was bid at \$1.50 per s.y. for a total cost of \$35,625 to scarify 1.73 miles of pavement.

Status - Through March 10, 1987, six months after construction there was no measureable difference in performance between the non-scarified test sections and adjacent scarified areas. Monitoring will continue on the project with emphasis on roughness (shoving or rippling) wheelpath rutting and crack development.