

MATERIALS & RESEARCH DIVISION



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Date: 1/19/94  
Page: 1 of 2

RESEARCH UPDATE

Number U94-1

Hercules Fiber Pave 3010, Polypropylene Fiber

REFERENCE:

Research Reports 84-7, U87-11  
Work Plan WP 83-R-30

HISTORY:

On August 5, 1983, approximately 105 tons of bituminous concrete mix which had been modified with Hercules fibers were placed as a 1" wearing course on a 1500 foot section of Route 14 in Royalton. The placement included one test section modified with 6 lbs. of fibers per ton of mix and another which used fibers at a rate of 10 lbs. per ton of mix. Preconstruction crack counts had revealed an average of 377 feet of cracks per 100 feet of roadway. The fiber mix (FM) and standard (STD) bituminous concrete test sections averaged 69% and 66% preconstruction longitudinal cracking, respectively.

STATUS:

Crack surveys were done as part of a continuing evaluation through eight years of service, until the project area was reclaimed in 1992. Thickness of the overlay averaged 15/16 of an inch not counting the leveling course.

A crack summary combining data from the surveyed test sections is given below:

PERCENT REFLECTION CRACKING

Yrs. of Service	TRANSVERSE		LONGITUDINAL/MISC.		ALL TYPES	
	FM vs.	STD	FM vs.	STD	FM vs.	STD
1 Yr.	30%	49%	0%	22%	9%	31%
2 Yrs.	41%	66%	0%	50%	12%	55%
3 Yrs.	55%	80%	0%	70%	16%	73%
8 Yrs.	68%	98%	13%	94%	22%	95%

CONCLUSIONS:

Through eight years, the 6 lb./ton and 10 lb./ton fiber mix has shown to be an effective treatment for the control of premature reflective cracking, far exceeding the STD mix (22% vs 95%). The change in the effectiveness between the 6 lb. and the 10 lb. FM to control cracking was insignificant.

The cost per SY for the 1" of bituminous concrete was \$1.60 for the STD mix. The material cost per SY was \$2.00 for the FM (6 lb./ton), a 25% increase.

RECOMMENDATIONS:

Fiber Pave 3010 is recommended for additional study given the positive indications for crack control documented in this study.

STD Mix vs FM (10 lbs/ton)  
Fiber Mix treatment ends  
in background of FM lane.



STD Mix vs FM (6 lbs/ton)



DIST: A, B, D and F