

EXPERIMENTAL USE OF
REINFORCED CRACK
SEALING SYSTEM ON ROUTE 14
SOUTH BARRE, VERMONT

FINAL REPORT 87-1

JANUARY 1987

REPORTING ON WORK PLAN 83-R-32

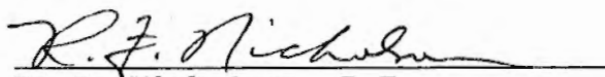
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MATERIALS & RESEARCH DIVISION

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TABLE OF CONTENTS

Abstract	1
Introduction	2
Location Map	3
Discussion Of Performance	4
Conclusions & Recommendation	6
Work Plan	7

ABSTRACT

This final report discusses the performance of a reinforced crack sealing system. The product evaluated was Owens Corning Roadglas crack repair system placed beneath a new bituminous concrete overlay on Vermont Route 14 in the Town of Barre, on October 3, 1983. The original roadway had severe transverse cracking in the pavement structure which included portland cement concrete slabs and 3 inches of bituminous concrete. Information related to application and initial observations can be found in Report 85-2, dated January, 1985.

The Mays Ride Meter readings taken on the project after construction averaged 71 inches per mile on the southbound lane (treated with Roadglas) and 61 inches/mile on the northbound lane. Readings taken on October 9, 1986 averaged 134 inches per mile on the southbound lane and 164 inches per mile on the northbound control lane.

Crack survey results through 32 months of service revealed 59% of the cracks treated with Roadglas reflected through the new overlay, while 67% and 64% reflection was found for areas treated with the standard crack filler or left untreated.

The crack survey results and pavement roughness values suggest the performance of the crack sealing system does not justify its additional cost.

INTRODUCTION

This final report discusses 36 months of performance of an experimental crack repair system designed to reduce reflective cracking. The information describing the application and initial performance can be found in Report #85-2, dated January, 1985.

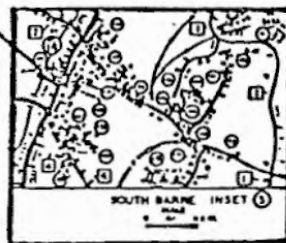
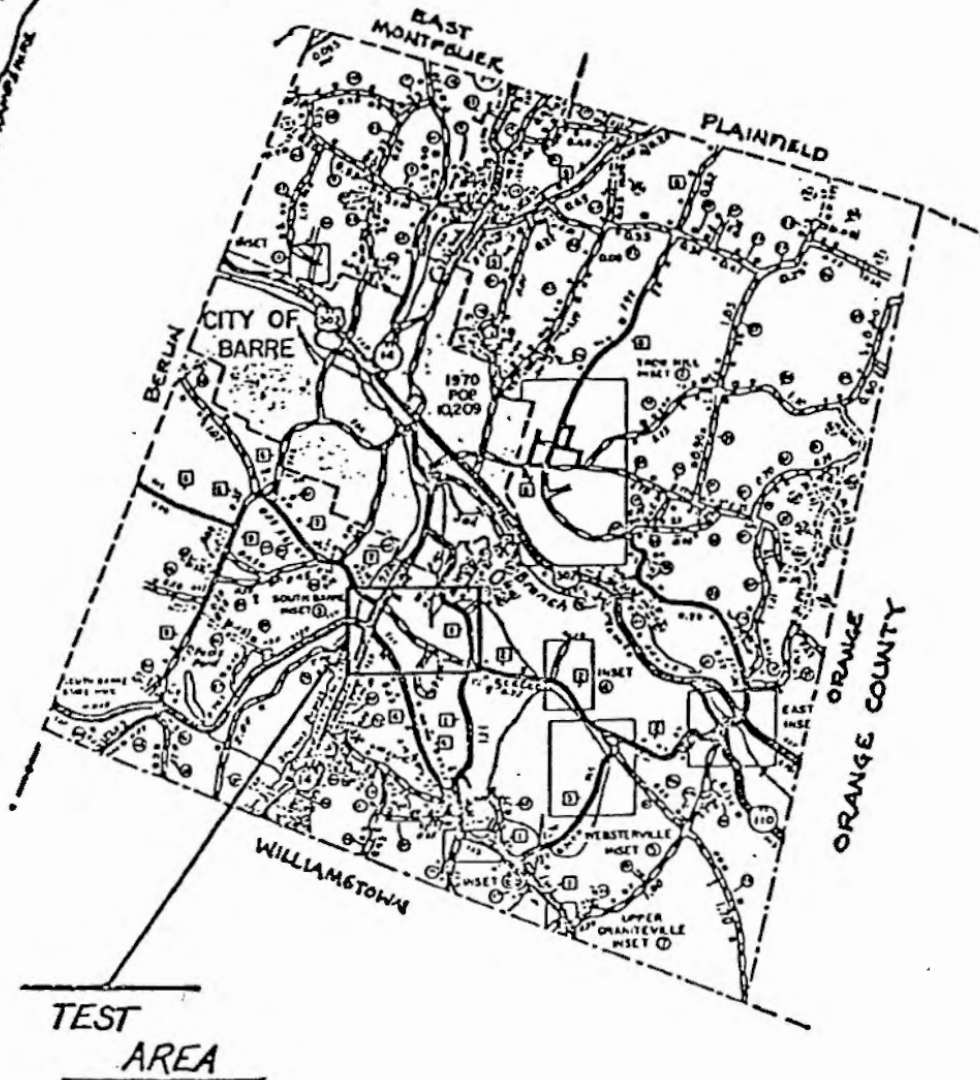
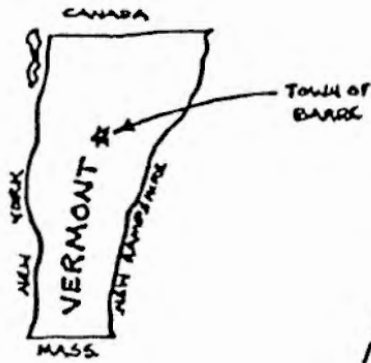
The Owens Corning Roadglas crack repair system was placed on a portion of the Williamstown-Barre RS 0147 (10) paving project. The experimental system was placed on the project on October 3, 1983. The test area is located in the Town of Barre on Vermont Route 14 between milemarker 1.70± and 2.00± (see location map).

Control sections consisted of standard crack filler (meeting Federal Specifications SS-S-001401) applied to various cracks and a series of cracks untreated.

The cost of the material at the time of installation was \$1.20 per linear foot for the 12 inch wide reinforcement and \$2.00 per linear foot for the 24 inch wide reinforcement. The price included the Roadbond binder but did not include labor costs.

The project was surveyed for reflective cracking periodically through the evaluation period. Mays Ride Meter readings were taken after construction and in October of 1986 for comparison of the standard treatment to the Owens Corning System.

LOCATION MAP

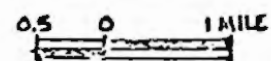


OWENS CORNING ROADGLAS
SPOT REPAIR SYSTEM

WILLIAMSTOWN - BARRE
RS 0147(10) RTE. 14

TOWN OF BARRE

GENERAL HIGHWAY MAP



SCALE APPROX.

WASHINGTON COUNTY
VERMONT

DISCUSSION OF PERFORMANCE

Initially the Roadglas product was effective in suppressing reflection of longitudinal cracks and showed marginal performance in preventing reflection of transverse cracks. After eleven months of service, cracks, which had reflected through the Roadglas, were significantly tighter than cracks sealed with standard crack filler or left untreated.

After approximately 32 months of service, the material has failed to perform adequately. The most recent survey on May 14, 1986, showed the percent reflection at 59% for the Roadglas repaired cracks. The charts below show the results of the survey.

C R A C K S U M M A R Y C H A R T S

All Cracks

Chart #1

TYPE	PRECONSTRUCTION (Linear Feet)	% REFLECTION	% REFLECTION	% REFLECTION
Roadglas	723	11%	13%	59%
Standard Crack Filler	597	47%	47%	67%
No Treatment	1031	25%	61%	64%

Transverse Cracks Only

Chart #2

	8/17/83	3/21/84	8/8/84	5/14/86
TYPE	PRECONSTRUCTION (Linear Feet)	% REFLECTION	% REFLECTION	% REFLECTION
Roadglas	172	44%	49%	66%
Standard Crack Filler	90	91%	91%	94%
No Treatment	230	95%	95%	95%

Longitudinal Cracks Only

Chart #3

	8/17/83	3/21/84	8/8/84	5/14/86
TYPE	PRECONSTRUCTION (Linear Feet)	% REFLECTION	% REFLECTION	% REFLECTION
Roadglas	551	1%	2%	56%
Standard Crack Filler	507	1%	39%	63%
No Treatment	801	4%	51%	55%

The figures show that there is not a significant difference in suppression of crack reflection. It should be noted that the most recent survey also revealed that the cracks above the Roadglas system are now wider and no longer significantly tighter than the other cracks in the test area.

The Mays Ride Meter readings on the Roadglas section increased from 71 inches per mile initially to 134 inches per mile after 36 months of service. The northbound control section experienced a greater increase in roughness changing from 61 inches per mile to 164 inches per mile during the same period. The roughness values are considered significant on both lanes considering the length of service involved.

CONCLUSIONS AND RECOMMENDATION

Although the Roadglas Spot Repair System did reduce reflective cracking and pavement roughness, the improvements were not significant and therefore, use of the system could not be considered cost effective. Further use of the product is not recommended.

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WORK PLAN FOR
CATEGORY II EXPERIMENTAL PROJECT
REINFORCED CRACK SEALING SYSTEM
WORK PLAN 83-R-32

OBJECTIVE OF EXPERIMENT

To evaluate the performance of a reinforced crack sealing system in preventing reflective cracking and related surface distress in a bituminous pavement placed over a P.C. concrete base.

PROJECT

Williamstown-Barre RS 0147(10)

PROJECT LOCATION

On Section II of the Williamstown-Barre project, Vt. Rte. 14 beginning at MM 1.686, the intersection with Route 63, and extending northeasterly 0.633 miles to MM 2.319, the Barre City line.

EXPERIMENTAL WORK LOCATION

The experimental material shall be applied over 1300 linear feet of cracks at test locations to be selected by Materials & Research and Maintenance personnel.

MATERIALS TO BE USED

The Roadglas Spot Repair System manufactured by Owens-Corning Fiberglas Corp., Highways Systems, Box 415, Granville, Ohio 43023. New England Office phone (203) 243-8936.

APPLICATION PROCEDURE

Application of the spot repair system shall be as recommended by the manufacturer.

CONTROL SECTION AND TREATMENT

The control section shall consist of areas adjacent to the test section which will be treated with standard crack filler and also areas left untreated.

COST

Materials for the test installation will be donated by Owens-Corning Corporation. The estimated cost for materials is \$1.20 per linear foot which includes 12 inch wide, 24 ounce per square yard fiberglass and polymer asphalt binder. The application shall be made by District 6 maintenance forces.

DATE OF INSTALLATION

Prior to October 15, 1983.

DURATION OF STUDY

The project will be evaluated for the length of time required to obtain valid conclusions on the performance of the material.

SURVEILLANCE

The experimental project will be monitored at least twice a year for the duration of the study. The long term performance of the treated section will be compared with that of the control areas with emphasis on the following areas:

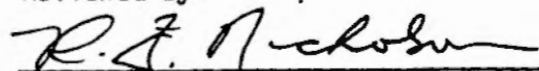
- 1) Reductions in reflective cracking
- 2) Retention of initial ride values

REPORTS

An initial report covering the application and initial observations, and a final report showing conclusions on the effectiveness of the experimental material, shall be submitted to the Federal Highway Administration.

Materials Division
Agency of Transportation
July 26, 1983

Reviewed By:


R. F. Nicholson, P.E., Materials Engineer

Date: July 27, 1983