

ENGINEERING FABRIC REPAIR PRIOR TO RESURFACING - ROADGLAS US 30

**FINAL REPORT FOR
IOWA DOT PROJECT HR-525**

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**Iowa Department
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Final Report
for
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Project HR-525

Engineering Fabric Repair Prior to
Resurfacing - Roadglas - US 30

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8. ABSTRACT

In Iowa it is normal procedure to either use partial or full-depth patching to repair deteriorated areas of pavement prior to resurfacing. The Owens/Corning Corporation introduced a repair system to replace the patching process. Their Roadglas repair system was used in this research project on US 30 in Story County. It was installed in 1985 and has been observed annually since that time. There were some construction problems with slippage as the roller crossed the abundant Roadglas binder. It appears the Roadglas system has helped to control reflective cracking in the research areas.

Since the time when this project was completed it has been reported that Owens/Corning has discontinued production of the Roadglas system.

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DISCLAIMER

The contents of this report reflect the views of the author and do not necessarily reflect the official views of the Iowa Department of Transportation. This report does not constitute a standard, specification or regulation.

INTRODUCTION

This project compared the use of Owens/Corning Roadglas system to full depth patching prior to an asphalt overlay.

Roadglas is a woven glass fiber roving fabric. It has a tensile strength of about 800 lbs per inch. A polymer-modified asphalt binder called Roadbond was used with the Roadglas system.

This material was used on US 30 in Story County. Twenty transverse joints that originally were to have been repaired with full depth patching were selected for the Owens/Corning Roadglas patching system. Ten joints that were conventionally repaired provided a control section.

OBJECTIVE

The objective of this project was to determine if the Roadglas repair system was sufficient surface preparation to yield maintenance free performance of the asphalt concrete resurfacing.

CONTRACTOR AND SUPPLIER

Manatt's Inc. of Brooklyn, Iowa was the contractor for the project. Owens/Corning supplied the Roadglas and Roadbond.

PROJECT LOCATION

The project was located on US 30 in Story County in the area of MP 153. Thirty joints were used in the project from Station 1470+30 to Station 1504+05. Ten of these were full depth repaired and used for control sections while the other twenty

were repaired using the Roadglas system. These were all located in the eastbound lane.

PAVEMENT HISTORY

The original 10" thick PCC pavement with contraction joints at an interval of 20 feet was paved in 1964. Both the coarse and fine aggregates were from the Hallett Pit in Ames. This coarse aggregate has since been identified as exhibiting poor durability on heavily salted roadways. Severe deterioration had occurred at most of the contraction joints which required substantial patching.

CONSTRUCTION

The Roadglas was placed July 10, 1985 and the asphalt overlay was placed beginning July 11.

Surface preparation and application were as recommended by Owens/Corning Fiberglass Corporation. A 4 foot wide area received an application of Roadbond binder. Forty-four inch wide Roadglas fiberglass reinforcement was centered in the binder. An additional 4 foot wide application of Roadbond binder was placed over the reinforcement, thereby sandwiching the Roadglas between two layers of Roadbond binder.

When rolling the binder course, the asphalt would slip, due to the abundance of Roadbond binder, as the roller crossed the areas covered with Roadglas leaving a bump on each side of the area. The bumps were milled out before placing the surface course.

VISUAL INSPECTION AND TESTING

Road Rater testing was done on this project prior to construction and annually after construction. The April 1991 test results are, in general, higher than previous years. There seems to be no explanation for this. The results are summarized in Appendix A.

The 25-Foot Profilometer was run in September 1987 and again in November 1991. In comparing the profiles where the test sections were located, it appears they held the deteriorated concrete in place and remained smooth.

A visual inspection has been conducted annually. There was not as much reflective cracking in the areas covered with the Roadglas system compared to the control areas. In most cases, there is only one crack instead of two, as is the case in the full depth patched areas. The test sections are in the eastbound lane only, but in most cases the edges of the conventionally repaired areas in the westbound lane adjacent to the Roadglas patches have reflected through the surface. You can see where the cracks in the westbound lane have crossed the centerline and are spreading into the areas where Roadglas was used causing most of the cracking in these sections. In Appendix A is a chart showing the percentage of reflective cracking for both the west and east sides of the areas patched or treated with Roadglas.

EVALUATION

It appears, by visual evaluation, that the Roadglas system has performed well with less cracking than the control sections that were patched prior to overlay. There were some construction problems but the project turned out well.

CONCLUSION

The Owens/Corning Roadglas system did keep reflective cracking to a minimum. These areas have been maintenance free since construction in 1985. The Roadglas system provided better performance than the full-depth patching on this project.

It has been reported that Owens/Corning has discontinued production of the Roadglas system since the construction of this project.

Appendix A
Field Testing

Structural Rating
HR-525
Engineering Fabric Repair Prior to Resurfacing Roadglas

Station	Before Resurfacing						
	<u>6-21-85</u>	<u>5-22-86</u>	<u>9-17-87</u>	<u>5-26-88</u>	<u>5-19-89</u>	<u>11-8-90</u>	<u>4-11-91</u>
1483+00	1	2.50	2.80	2.35	3.25	5.77	6.08
1486+00	1.30	2.85	2.80	1.95	2.90	1.95	4.27
1486+60	1.80	3.05	3.80	3.60	3.45	3.56	5.01
1488+00	1	2.85	3.45	3.60	4.00	2.81	5.49
1488+90	2.10	4.00	4.05	3.80	4.05	5.11	6.08
1489+70	1.70	3.95	4.05	4.25	4.25	5.90	6.42
1489+90	1.25	3.60		4.05	6.40	5.02	6.98
1490+00	2.35	7.10	4.05	6.45	5.85	5.48	6.81
1490+20	1.70	3.70				8.90	6.42
1490+40	2.10	4.75	4.25	4.25	4.00	4.10	6.81
1497+60	1	2.95	3.15	2.80	3.25	6.40	5.39
1498+00	2.30	3.30	3.80	3.80	4.00	4.10	5.01
1498+60	1.25	2.45	3.00	3.00	2.50	5.31	4.27
1499+20	1	2.60	3.15	3.25	3.15	4.84	5.01
1499+80	2.15	3.25	3.45	4.05	4.05	4.44	5.01
1502+00	1	3.15	3.60	3.15	4.25	4.44	5.01
1502+60	1.70	2.90	3.45	3.15	3.45	3.56	4.27
1502+80	1.90	2.80	3.25	2.90	3.25	4.10	4.27
1503+60	1.90	2.45	4.25	3.60	3.60	3.81	4.27
1504+05	1.65	3.55	3.45	3.80	3.25	4.10	3.98

Structural Rating
HR-525
Control (Full Depth Patch)

<u>Station</u>	<u>6-21-85</u>	<u>5-22-86</u>	<u>9-17-87</u>	<u>5-26-88</u>	<u>5-19-89</u>	<u>11-8-90</u>	<u>4-11-91</u>
1470+30	1.80	4.67	4.55	4.00	3.80	2.42	2.71
1470+70	1.90	5.70	5.30	4.90	3.45	3.56	3.98
1472+15	1.65	4.80	4.55	4.90	4.90	5.06	5.10
1472+90	1.75	5.10	4.25	3.60	3.60	4.84	2.98
1473+10	1.65	5.25	5.30	4.90	4.55	3.34	3.98
1473+54	2.05	6.05	6.05	5.30	3.30	4.10	3.51
1474+35	1.45	4.60	4.25	3.60	3.25	6.25	2.38
1475+15	2.00	5.10	4.90	4.90	4.55	2.81	3.98
1475+55	0.40	4.50	3.60	3.45	3.45	2.21	4.61
1478+00	0.30	5.25	5.35	4.90	4.55	4.10	7.26

The chart below shows the percentage of the reflected cracks at joints on each side of the areas patched or treated with Roadglas. The first percentage is the west side and the second percentage is for the east side of each area patched or treated.

Control			Roadglas					
Station	% Reflection		Station	% Reflection		Station	% Reflection	
	W	E		W	E		W	E
1470+30	100	100	1483+00	100	100	1497+60	100	0
1470+70	100	75	1486+00	0	100	1498+00	100	0
1472+10	100	100	1486+60	0	100	1498+60	0	100
1472+90	100	100	1488+00	100	0	1499+20	50	0
1473+10	100	100	1488+90	25	100	1499+80	0	100
1473+50	100	100	1489+70	0	0	1502+00	0	100
1474+30	50	100	1489+85	0	100	1502+60	0	100
1475+10	100	100	1490+05	0	25	1502+80	0	25
1475+48	100	100	1490+15	----		1503+60	0	100
1477+92	100	100	1490+40	0	100	1504+05	0	0
Average Control			Westside			Eastside		
			95%			97.5%		
Roadglas			25%			60.5%		