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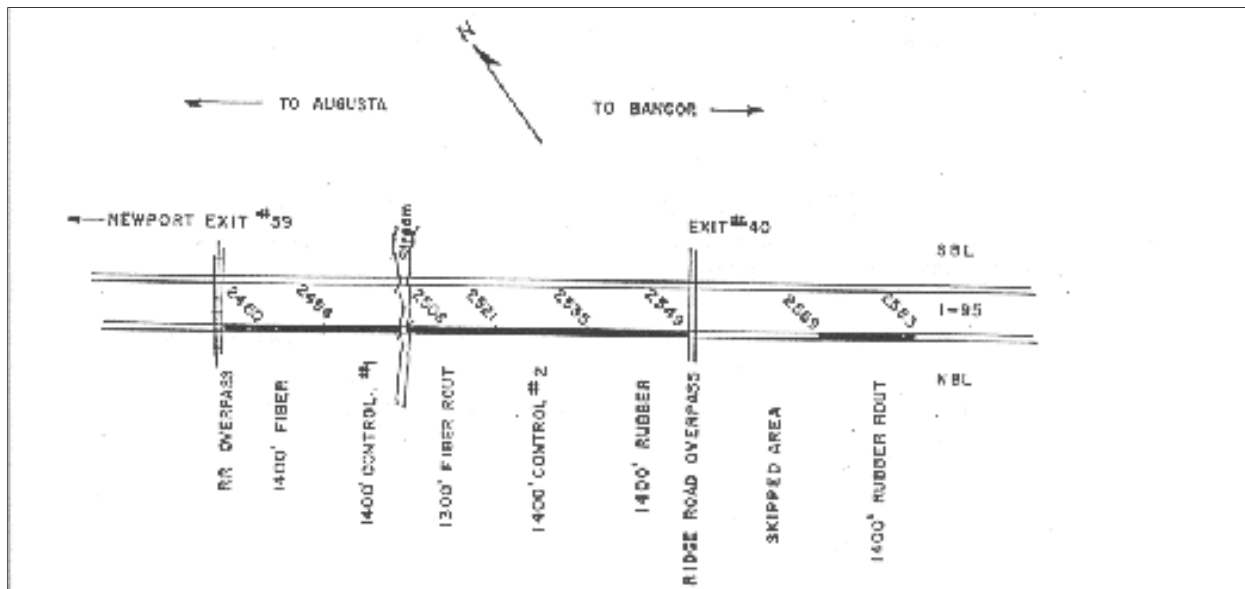
## FEDERAL EXPERIMENTAL CONSTRUCTION 91-02

### CRACK SEALING BEFORE OVERLAYING AN ASPHALT CONCRETE SURFACE (FINAL REPORT)

#### INTRODUCTION

In an attempt to reduce reflective cracking on overlay projects a study was conducted that consisted of sealing all transverse cracks greater than  $\frac{1}{4}$  inch with hot crack sealers before the project was resurfaced. The experiment will evaluate the effectiveness of two types of crack sealants and two methods of crack sealing. One method was simply to fill the cracks while the other method required routing and filling the cracks. The two sealants used were asphalt with fibers and asphalt with rubber. These four options were compared against two "Control Sections" where no crack preparation was performed prior to paving.

The following sketch shows the location and length of the various test areas as they exist on the northbound lane of Interstate 95 in the town of Newport, Maine.



## RESULTS

Due to uncontrollable circumstances an evaluation was not conducted in 1995 and 1996. During the summer of 1996 a crack sealing project was applied on a large portion of I-95. Unfortunately, this experimental construction was included in the crack sealing project. As a result, all visible cracks within this experimental project were sealed using an Asphalt Rubber Crack Sealer. In November 1997 an evaluation was conducted using the sealed cracks as a guide to identify, locate and plot the reflected cracks before they were sealed in 1996. These data were sketched on pre-prepared sheets for convenient processing. Processing the data consisted of counting the number of cracks in the respective lane as well as adding the linear feet of cracking in each lane. Only transverse cracks were considered. These data were summarized and tabulated on the attached sheet. The reference point used for tabulations was the number and linear feet of original sealed cracks. These numbers are slightly less than the total number of cracks that existed on the roadway prior to overlay. The reason for the difference is that only cracks over ¼ of an inch wide were sealed. These additional cracks were less than ¼ of an inch.

The results of the fourth evaluation indicate the transverse cracks continued to reflect through the overlay. A listing of the sections by performance (good to bad) as compared to the last evaluation is as follows:

Section	Description	1997		1994		1997		Rank	Diff. % LnFt
		New Cracks	LnFt	%New Cracks	%LnFt	%New Cracks	%LnFt		
6	Rubber & Rout	24.0	138.0	80.0	77.7	105.3	90.3	1	12.6
4	Control	21.0	117.0	76.4	81.6	96.2	92.3	2	10.7
2	Control	15.0	97.0	97.9	90.2	113.5	99.1	3	8.9
3	Fiber & Rout	22.0	157.0	108.1	94.2	127.9	106.1	4	11.9
5	Rubber	8.0	82.0	115.3	121.5	123.5	129.9	5	8.4
1	Fiber	18.0	128.0	112.2	120.1	132.2	134.4	6	14.3

The actual number of cracks and linear feet of cracking for each section is presented on the attached summary sheet. A review of the tabulated data indicates that:

1. The Rubber & Rout section outperformed all other sections.
2. The two Control sections outperformed all sections with the exception of the Rubber & Rout section.
3. Routing the cracks before sealing increases the effectiveness of crack sealing.
4. The Rubber & Rout and the two Control sections do not have 100% reflective cracking after 6 years.

## CONCLUSION

According to the data, the Rubber & Rout method of crack sealing reduced the amount of reflective cracking but the control sections performed very similarly. Because of this similarity in performance it may be cost effective not to crack seal before overlaying. In the future there may

be a crack sealing product and/or procedure that will greatly decrease or eliminate the amount of reflective cracking.

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Other Documents Available

Construction Report January 1992  
(1st) Interim Report October 1992  
(2nd) Interim Report October 1993  
(4th) Interim Report June 1994