
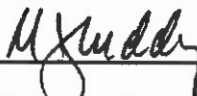


<b>To:</b>  <b>SUPERSEDED BY EI 97030</b> <b>EFFECTIVE 4/23/98</b>		<i>New York State Department of Transportation</i> <b>ENGINEERING BULLETIN</b>	<b>EB</b>  <b>95-036</b>
<b>Title: ASTM D3405 CRACK FILLER</b>			
<b>Distribution:</b> <input checked="" type="checkbox"/> Main Office(30) <input type="checkbox"/> Local Gov.(31) <input checked="" type="checkbox"/> Regions(32) <input type="checkbox"/> Contractors/AGC(39) <input type="checkbox"/> Consultants(34) <input type="checkbox"/> _____ ( )	<b>Approved:</b>  <hr/> M. J. Cuddy, Asst. Commissioner and Chief Engineer		
		Date <b>9/15/95</b>	

**EFFECTIVE DATE** This Bulletin is effective immediately on all Department contracts requiring ASTM D3405 material for sealing or filling pavement and shoulder cracks using the overband (Band-Aid) configuration. This Bulletin expires December 31, 1995. An Engineering Instruction containing updated specifications for crack sealing will be prepared and distributed prior to the 1996 construction season.

**PURPOSE** Motorcyclists have complained of instability when encountering filled and overbanded cracks. The handling of the motorcycle improves with lesser amounts of crack filler on the pavement surface. By memo dated August 28, 1995, (W. Brule to Regional Directors, "Pavement Crack Filling", copy attached) the Materials Bureau provided the Regions with recommendations for reducing the amount of crack filler. Those recommendations shall be regarded as a directive from the Chief Engineer for handling projects using D3405 material.

The following additional directives shall also apply.

There will be no overbanding of filler material in the direction of travel. Instead of using the specified overband shape, fill longitudinal joints and cracks flush with the pavement surface. For this flush-fill method to work, the cracks need an adequate reservoir. Do not fill cracks less than one-half inch in width unless standard equipment will work with minor adjustments in installation technique. Transverse cracks shall continue to be filled using the overband configuration, as specified. Significantly lower quantities of D3405 material may result.

All persons engaged in the administration of crack filling contracts must be knowledgeable of the crack filling specifications and these directives. The Regional Materials Engineer can provide or arrange training.

**QUESTIONS** Questions on specifications and procedures for crack filling may be referred to Jerry Perregaux or David Graves of the Materials Bureau at (518) 457-4285.



MEMORANDUM  
DEPARTMENT OF TRANSPORTATION

**TO:** Regional Director, Region \_\_\_\_  
**FROM:** W. J. Brule, Materials Bureau, 7A-210, MC 0861  
**SUBJECT:** PAVEMENT CRACK FILLING  
**DATE:** August 28, 1995

ORIGINAL SIGNED BY  
WAYNE J. BRULE

By memo dated July 21, 1995, Mr. Cuddy ordered all work on projects using ASTM D3405 crack filling material to cease. Regions had to complete field inspections to find out if they were experiencing construction problems. The inspections have been completed. Only Regions 1 and 8 reported problems with crack filling projects this year. The problems included motorcyclists' complaints of lost traction on pavements, tracking, and the occasional lifting of sealant along with pieces of asphalt pavement, causing shallow potholes. The lost traction is due to excessive and thick application of sealant which can cause movement and instability. The tracking problem was isolated to U. S. Route 6 in Region 8. We believe it resulted from contamination by cleanup solvent in the melter, or from excessive heating or reheating of sealant prior to application. The material that tracked was Roadsaver Brand Type 201, supplied by Crafcro.

This memorandum reports our findings from investigations into the problems, provides guidance for continuation of work this year, suggests remedial treatments for areas where sealant was over applied on the pavement, and outlines plans we have for specifications and guidelines reviews and revisions.

We found no significant materials problems to date with Roadsaver Brand Type 201. A review of the certified test results provided by the supplier showed all lots supplied to Region 8 met ASTM D3405 specification requirements. Our limited testing generally support the certifications.

The problems encountered this year occurred on projects using the overband method of installation. No problems of this nature occurred on rout and seal projects using D3405, where the sealant is placed slightly below the pavement surface.

**Over Application** Over application of the crack sealant is the most troublesome area. It's a problem that has been difficult for Regions to control in both contractor and maintenance personnel applied material since the Department started the latest pavement crack sealing/filling program with EI 90-1 in 1990.

Contractors and maintenance personnel often apply the crack sealant too thick and too wide for proper crack filling. Specifications call for a 4-inch wide overband no thicker than one-eighth inch. The intent is to plug single, open cracks that allow surface water to penetrate the pavement.

The sealant should not be applied to hairline cracks, multiple cracks and certainly not alligator cracking. Pavements with these types of cracks are not good candidates for crack filling using the overband method. A hairline crack is too tight for significant amounts of water to enter and does not have a reservoir to hold the sealant. A multiple crack shows advanced deterioration and is not a candidate for preventive maintenance treatment. Also, the sealant is not a "glue" for holding alligator cracking together a couple of years before resurfacing.

In these situations the crack sealant is spread much wider and thicker than specified. The pavement gets covered with random blotches of the sealant. Motorists are concerned about the loss of pavement markings. Motorcyclists complain about lack of pavement stability and loss of traction. Too much pavement covered with sealant in the wheel tracks can be a friction problem for vehicles. On a hot day the soft, thick sealant squeezes into the treads of tires and can result in pulling on the pavement. If the pavement is cracked, the pulling action may lift loose pieces and leave a shallow pothole.

**Recommendations - Application** Motorists have not complained when crack sealant is applied according to specifications to pavements that are appropriate candidates for this treatment. The issue, then, is how to assure that the contractors or maintenance personnel apply the crack sealant properly. It's a three-part solution.

#### 1. Project Selection

a. Select projects with only transverse reflective cracks or continuous longitudinal cracks located outside the wheel paths. Intermittent single cracks in the wheel path with an individual crack length of less than 20 feet may be filled. For centerline and edge-of-pavement cracking, you must decide if a 4-inch band of the sealant will obliterate pavement markings.

b. On contracts already let for sealing this fall, Regions need to review each pavement to decide if it satisfies the above criteria. Replace those pavements that do not meet the criteria with appropriate ones. If this is out of the question, then fill only the primary crack (widest). Let the 4-inch overband cover secondary cracking to the extent possible. Do not try to fill secondary cracking with additional applications. This may leave secondary cracks unfilled, which under the circumstances is acceptable.

c. We acknowledge that more has to be done to better define appropriate candidates for crack sealing filling. We will be seeking the Regions' input along with those of the industry on this issue at the end of the construction season to improve the candidate selection process contained in EI 90-1.

## 2. Specifications

We will review specifications and consider removing incentives for over application. We will seek the Regions' input after the construction season and look to revise EI 90-1 this Fall. A lineal foot or lane-mile payment method is one possibility; another is to allow no exceptions to the V-shaped squeegee method of application.

## 3. Construction Inspection

a. The specifications, as written, achieve good results if the project is an appropriate candidate for crack filling and the specifications are enforced.

b. Make sure the crack width ( $\geq 1/8$  and  $\leq 3/4$ ) is sufficient to receive sealant and limit the applicator to the 4-inch band width.

c. The V-shaped squeegee is best for limiting the sealant band width. Contractors resist using it because it requires an extra person to apply the sealant.

d. Consider training for your inspectors this winter. We will work with industry to put together a training package.

**Recommendations - Remedial Treatment for Over Application** If too much crack filling material is applied to the pavement and a remedial treatment is necessary to eliminate a potential safety hazard, the following treatments should be considered:

1. Mill & Fill. Mill out 1 and 1/2 inch of the existing pavement and replace it with the appropriate hot mix asphalt surface course.

2. Hot Mix Asphalt Overlay. Remove excess crack filling material by scraping and apply a 1 and 1/2 inch hot mix asphalt overlay. This treatment has the potential of resulting in distortion of the surface due to displacement and movement of excess crack filling material under the overlay.

3. Micro-surfacing. Remove excess crack filling material by scraping and apply a micro-surfacing treatment. The micro-surfacing is a cold applied material but it could also result in distortion if excessive material remains.

Please note that these recommended remedial treatments are offered to reduce or eliminate a potential safety problem and none are intended to deal with structural deficiencies of the pavement section.

In summary, pavement crack filling is a very effective preventive maintenance program when it is utilized properly. Please take the necessary steps to assure the crack filling material is applied this Fall according to specifications. If over application results in unacceptable pavement surface conditions, the solutions are limited and expensive. It is far better to prevent over application from occurring in the first place than to deal with it after the fact. We are available to provide additional guidance. You may call Jerry Perregaux or Dave Graves at (518) 457-4285.

WJB/GRP/fss

File: 6.1

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