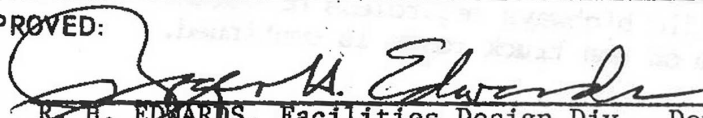


TO: SUPERSEDED BY EI 85-043 EFFECTIVE 1/30/86	<h1>ENGINEERING INSTRUCTION</h1> <p>NEW YORK STATE DEPARTMENT OF TRANSPORTATION</p>
Distribution: 31 Main Office 33 Regions 34 Special	Code: 85-25
APPROVED:  E. H. EDWARDS, Facilities Design Div., Deputy Chief Engr.	Date: 4/15/85 Supersedes: EI 82-62

Reflection cracking of asphalt concrete overlays at the transverse joints of portland cement concrete pavements reduces the service life of the overlay. Studies done by the Technical Services Division several years ago indicated that sawing and sealing the overlay would be an effective procedure to reduce reflective cracking at the transverse joints and extend the overlay's service life on concrete pavements with high volumes of mixed traffic. As a result of those studies, we issued Item 18403.25 Sawing and Sealing Bituminous Concrete Overlays and EI 82-62 which said to use the item on P.C.C. pavements with more than 5000 vpd in the most heavily traveled lane.

Since then, there has been additional monitoring of test sites on Rte. 5S in Region 4 which indicates that overlay life is extended on mixed traffic roads with AADT's as low as 2700 vpd. In addition to this finding, there are several changes in the specification for the procedure regarding the sealant material and the placement of the bond breakers as reflected in the attached, Item 18403.2501 Sawing and Sealing Joints in Bituminous Concrete Overlays. This item replaces item 18403.25 which was issued with EI 82-62.

The designer should remember that for overlay sawing and sealing to be effective a well defined joint must be present. If the joint has lost its integrity through blow up, excessive spalling, deterioration, or general lack of support, it will be necessary to restore the joint for the procedure to be effective. Various techniques exist to do this using both conventional and unconventional concrete products. Such repairs however, for the most part, will prove too expensive to undertake if there are a lot of them to be done. If this is the case, project choices are to either:

- (1) Fix the joint as well as can be done using the methods given in subsection 633 Conditioning Existing Pavement, or;
- (2) If most of the joints are bad and there is mid panel cracking as well, consider a Cracking and Sealing project with thick lift resurfacing. Consult the Technical Services Division.

over

Subject: SAWING AND SEALING OF ASPHALT CONCRETE OVERLAYS

Starting with the letting of August 8, 1985, this new specification should be included for transverse joints when overlaying PCC pavement for the first time on all mixed traffic highways regardless of volume. The policy of not including the item on non truck roads is continued.

ITEM 18403.2501 - SAWING AND SEALING JOINTS IN BITUMINOUS CONCRETE OVERLAYS

DESCRIPTION

This work shall consist of saw cutting, cleaning and sealing transverse joints in new bituminous concrete overlays and shoulders. Bituminous concrete pavement joints shall be constructed over, and in line with, the existing underlying transverse portland cement concrete joints in accordance with plans, specifications, and as directed by the Engineer.

MATERIALS

Joint Sealant. The sealant shall meet the requirements of ASTM D3405. Application for approval of sealant material by the manufacturer shall be submitted to the Materials Bureau. Upon approval by the Materials Bureau, the name of the product will be placed on the Department's Approved List titled "Highway Joint Sealant (ASTM D3405)".

The sealant shall be accepted on the basis of the brand name appearing on the Department's approved list and the manufacturer's certification that the material supplied to the project conforms to the requirements of ASTM D3405. The Department reserves the right to conduct supplementary sampling and testing.

The joint sealant compound shall be packaged in sealed containers. Each container shall be clearly marked with the name of the manufacturer, the trade name of the sealant, the manufacturer's batch and lot number, the pouring temperature, and the safe heating temperature.

Bond Breaker Tape. Bond breaker tape shall consist of regular masking tape or a suitable bond breaker tape designed for use with hot poured sealants. The width of the tape may be equal to but not more than 1/8" narrower than the width of the sawcut.

CONSTRUCTION DETAILS

General. The contractor shall conduct his operation so that sawcutting of transverse joints, cleaning, and sealing is a continuous operation. Traffic shall not be allowed to knead together or damage the sawed joints. Sawed joints should be filled and cured prior to opening to traffic. Sawed joints not sealed before traffic is allowed on the overlay shall be resawed when sawing and sealing operations resume at no additional cost to the State. Sawcutting, cleaning and sealing shall be done within seven (7) days after placement of the top course of asphalt pavement.

ITEM 18403.2501 - SAWING AND SEALING JOINTS IN BITUMINOUS CONCRETE OVERLAYS

If the top course is to be placed the following Spring, due to seasonal paving limitations, all underlying courses shall receive a 1" deep by 1/8" wide sawcut to facilitate and control reflective cracking as well as to provide a means of properly referencing the sawcut to eventually be made in the top course. These sawcuts shall be made in all underlying courses within seven (7) days after the underlying courses are placed and before any evidence of reflective cracking has developed. Sealing of these sawcuts will not be required. Payment for sawcutting all underlying courses shall be included in the unit bid price for sawing and sealing.

Sawcutting of Transverse Joints. The contractor shall sawcut transverse joints to the appropriate dimensions shown in Figure I, based on the existing pavement slab length and new overlay depth. Full depth patches adjacent to joints in the underlying concrete shall have separate sawcuts in the overlay over the patch/slab interface. See Figure II. Sawcuts over patch interface shall conform to Figure I. The sawcut joints shall be directly over the existing portland cement concrete pavement joints and shall be accurately located by a method employing pins and stringline. The pins shall be accurately located prior to paving. Details of the method for locating the sawcuts shall be subject to the approval of the Engineer.

The blade or blades shall be of such size and configuration that the desired dimensions of the sawcut can be made with one pass. Either dry or wet cutting will be allowed. No spacers between blades will be allowed.

The transverse sawcut joints shall normally extend the full width of the pavement and shall extend into the asphalt shoulder to a distance three (3) feet beyond the edge of the underlying portland cement concrete pavement edge, unless otherwise detailed on the plans or in the proposal. Existing transverse joints that are offset at the longitudinal joint by more than 1 inch, measured between the centers of the joint cavities, shall require separate sawcuts terminating at the longitudinal joints.

Cleaning. Dry sawed joints shall be thoroughly cleaned with a stream of air sufficient to remove any dirt, dust or deleterious matter adhering to the joint walls or remaining in the joint cavity. Wet sawed joints shall be thoroughly cleaned with a water blast (50 psi minimum) immediately after sawing to remove any sawing slurry, dirt, or deleterious matter adhering to the joint walls or remaining in the joint cavity. Wet sawed joints shall be blown with air to provide dry joint surfaces prior to sealing.

All sawing slurry from the wet sawing process shall be immediately flushed from the pavement surface. Dry dust and material from the dry sawing process shall be blown or brushed off the pavement surface.

The contractor shall be required to provide protective screening, subject to the approval of the Engineer, if his cleaning operations are capable of causing damage to or interference with traffic in adjacent lanes.

ITEM 18403.2501 - SAWING AND SEALING JOINTS IN BITUMINOUS CONCRETE OVERLAYS

Sealing. The joint sealant material shall be heated in a kettle or melter constructed as a double boiler, with the space between the inner and outer shells filled with oil or other heat transfer medium. The equipment shall include positive temperature control, mechanical agitation, recirculation pumps and thermometers for continuous reading of the temperature of both the sealing compound and the heat transfer medium. The applicator wand shall be heated or insulated to maintain the pouring temperature of the sealant during placing operation. Pour pots or similar devices shall not be used to fill sawed joints.

A copy of the manufacturer's recommendations pertaining to the heating and application of the joint seal material shall be submitted to the Engineer prior to the commencement of work. These recommendations shall be adhered to and followed by the contractor. The temperature of the sealer in the field application equipment shall never exceed the safe heating temperature recommended by the manufacturer. Any given quantity of material shall never be heated at the pouring temperature for more than six hours and shall never be reheated.

After cleaning, and just prior to sealing, a bond breaker tape shall be placed in the bottom of the sawcut joint. The joints shall be sealed when the sealant material is at the pouring temperature recommended by the manufacturer. The sealant shall fill the joint such that after cooling, the level of the sealer will not be greater than 1/8 inch below the pavement or shoulder surface. Care shall be taken in the sealing of the joints so that the joints are not overfilled and the final appearance will present a neat fine line. The applicator wand shall be returned to the machine and the joint sealant material recirculated immediately upon completion of each joint sealing. Sand shall not be spread on the sealed joints to allow early opening to traffic. Sealant shall be tack free prior to opening to traffic.

METHOD OF MEASUREMENT

This work will be measured by the number of linear feet of joints properly sawed and sealed.

BASIS OF PAYMENT

The unit price bid per linear foot shall include the cost of all labor, equipment and materials necessary to complete the work as specified.

DETAILS FOR TRANSVERSE JOINTS IN ASPHALT CONCRETE OVERLAYS

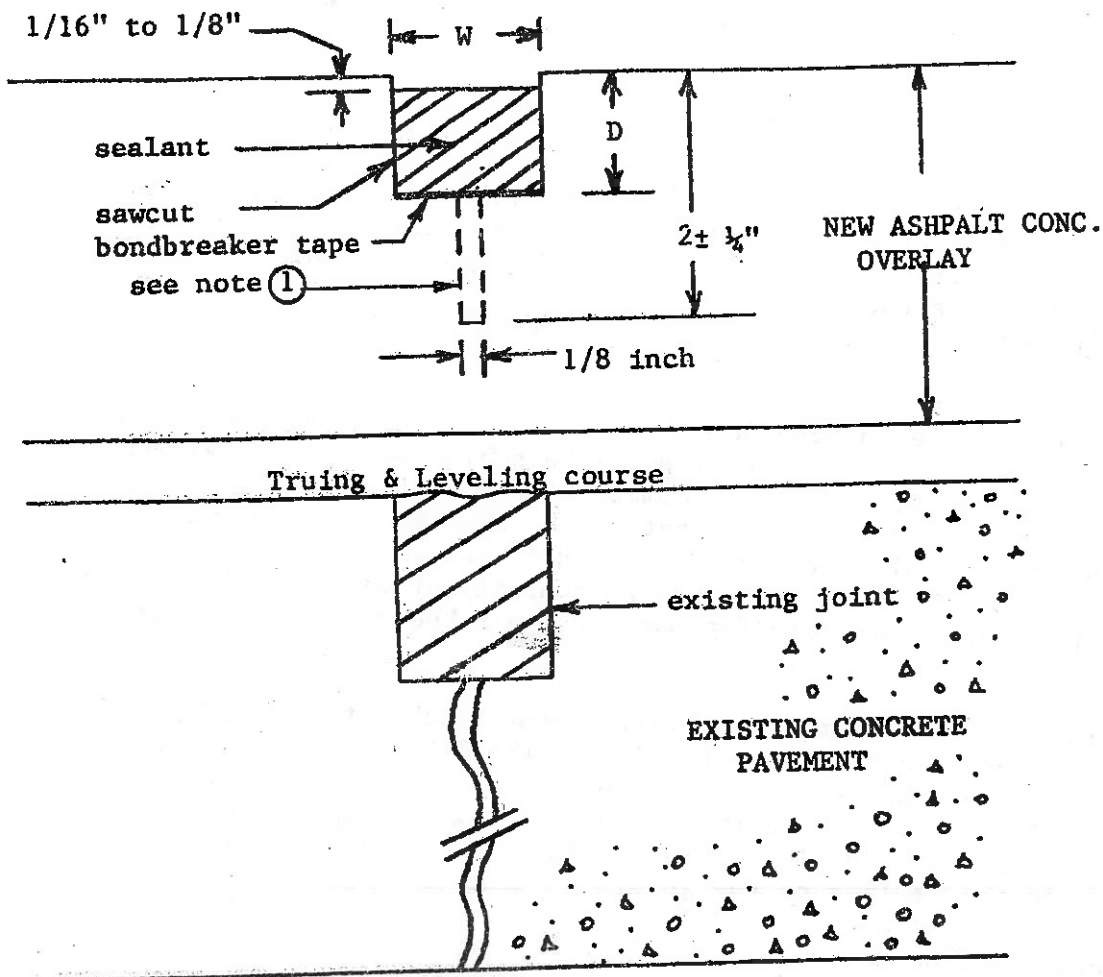
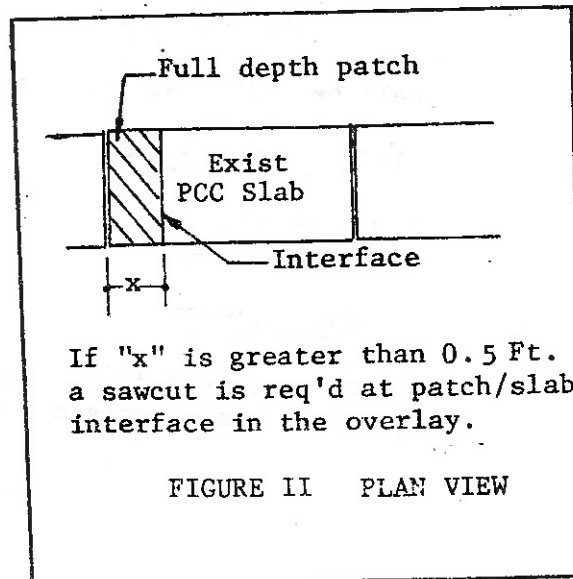


FIGURE I

SAWCUT DIMENSIONS

SLAB LENGTH	W	D
50 Ft or less	1/2 in	5/8 in
51 to 62 Ft	5/8 in	5/8 in
63 to 75 Ft	3/4 in	5/8 in
76 to 87 Ft	7/8 in	3/4 in
88 to 100 Ft	1 in	7/8 in



NOTE ①

When the total overlay thickness is greater than 3 inches and the T & L course is in excess of 1½ inches, a 1/8 inch wide sawcut shall be included in the joint geometrics to a depth of 2 ± ¼ inches.