



SUPERSEDED BY EB 21-057 EFFECTIVE 11/24/21		ENGINEERING INSTRUCTION NEW YORK STATE DEPARTMENT OF TRANSPORTATION
	SUBJECT: ELIMINATING THE USE OF ASTM D3406, HOT-APPLIED JOINT SEALANT Subject Code: 7.42	
Distribution: Main Office 30 Regions 32 Special 34		Code: EI 92-1
APPROVED:  J. R. Lambert, Dep. Chief Engr., Fac. Des. Div.		Date: 07/06/92 Supersedes: EI 78-41

Effective with the October 22, 1992 letting, the Department is eliminating the use of ASTM D3406, (Joint Sealant, Hot Applied, Elastomeric-Type, for Portland Cement Concrete Pavements). The primary material found in this sealer, coal tar, is carcinogenic and requires very careful handling. The savings that were formerly enjoyed over other sealers no longer exist when one considers the cost of safety requirements for heating and handling, protective clothing, respirators, ventilation, and waste disposal associated with this material. These safety requirements are confronted not only in sealing operations but during manufacturing, inspection, sampling, and testing as well. We now have other sealers, such as silicones, that offer equal or better performance and can be considered cost effective, when all factors are considered. A check with suppliers and sealing contractors indicates that the industry concurs with this decision, and in fact, has been recommending alternate materials for quite some time.

Designers are not to use any specification that calls for ASTM D3406. Any Regional Design sheets or similar Region specific details that contain reference to ASTM D3406, should be revised and an appropriate sealer substituted. Following is a list of sealing and crack filling items that specify the use of ASTM D3406, or refer to it as an alternate material. If not currently disapproved or deleted from the present Engineers Estimate Handling System and Addenda Catalogue, these items will be disapproved as of October 22, 1992.

<u>ITEM NO.</u>	<u>ITEM NO.</u>	<u>ITEM NO.</u>
04502.90	10502.4013	18502.4403
06633.0501	10502.4014	18502.442001
08502.35	10502.440701	18502.4425
08502.4403	10502.440801	18502.74
10502.0802	10502.440901	18502.7501
10502.4004	10633.0502	18633.050101
10502.4011	15502.8199	18633.0502
10502.4012	18502.4401	

Continued Overleaf

ENGINEERING INSTRUCTION: 92-1
ISSUE DATE:

The Materials Bureau will no longer maintain an Approved List of ASTM D3406 materials; acceptance for ongoing projects will be dealt with on an individual basis.

A new specification, Item 18502.4402 - Sawing and Sealing Pavement and Shoulder Joints in New Portland Cement Concrete Pavements - 20' and 63' Slabs, has been created. This item will be inserted into new proposals by the Design Quality Assurance Bureau. Item 18502.4402 supersedes Item 18502.4401, which allowed the use of ASTM D3406.

When designing rehabilitation projects, EI 90-1, Pavement Preventive Maintenance Joint Sealing/Filling Guidelines should be followed.

Questions concerning the above may be directed to Mr. David Graves or Mr. Richard Gentile of the Materials Bureau at (518) 457-4285.

ITEM 18502.4402 - SAWING AND SEALING PAVEMENT AND SHOULDER JOINTS IN NEW PORTLAND CEMENT CONCRETE PAVEMENTS - 20' AND 63' SLABS

DESCRIPTION

Under this item the Contractor shall construct and seal longitudinal and transverse joints on newly constructed portland cement concrete pavement and shoulders in accordance with the plans and specifications, and as ordered by the Engineer.

MATERIALS

- A. Preformed Elastic Joint Sealers. Materials shall meet the requirements specified in the following subsections:

7/16" and 11/16" sealers - §705-10 Preformed Elastic Longitudinal Joint Sealers

13/16", 1 1/4" and 1 5/8" sealers - §705-12 Preformed Elastic Transverse Contraction and Expansion Joint Sealers

Sealer lubricant - §705-13 Lubricant For Preformed Elastic Joint Sealer

- B. Silicone Joint Sealants. The sealant shall be a one part silicone appearing on the Department's Approved List of silicone joint sealants. The sealant shall be installed as per the manufacturer's instructions except as modified herein.

The silicone sealant shall be pumped directly from plastic pails or drums by compressed air powered extrusion pumps designed for moisture curing silicone sealants. Teflon seals and packing and teflon lined hoses are recommended to prevent moisture permeation. Sealant application nozzles shall be designed so that sealant is applied within the confines of the joint.

The sealant shall be applied so that it completely fills the width of the joint to a level below the surface of the slab.

- C. Backer Rod. The backer rod material for silicone joint sealants shall be closed cell polyethylene foam. The diameter of the backer rod shall be 25% greater than the width of the joint. When placed in the joint the backer rod shall: support the sealant at its proper depth, prevent the sealant from leaking around and underneath it, and allow the sealant to deform freely when the joint expands and contracts.

CONSTRUCTION DETAILS

- A. General. The provisions of §502-3 pertaining to construction, curing, repairing and sealing joints shall apply except for the modifications herein.

The Contractor shall have the option of using either preformed elastic joint sealers or silicone joint sealants, except that only one type of sealing material shall be permitted on the contract for all joint types.

ITEM 18502.4402 - SAWING AND SEALING PAVEMENT AND SHOULDER JOINTS IN NEW PORTLAND CEMENT CONCRETE PAVEMENTS - 20' AND 63' SLABS

Tables 1A and 1B reference appropriate construction details for preparing and sealing joints under different conditions. The referenced figures can be found in the Standard Sheets and/or this specification.

TABLE 1A

CONSTRUCTION DETAILS FOR THE PREPARATION AND SEALING OF JOINTS UNREINFORCED CONCRETE - 20' SLAB LENGTH

Joint Type	Preformed Sealer	Silicone Sealant
<u>Transverse</u> Pavement and Shoulder	Figures I & II and Standard Sheet 502-2R1 (edge of pavement detail)	Figures I & III
<u>Longitudinal</u> 24' pavement constructed as one unit	Figure V (for first stage saw cut only) and Standard Sheet 502-2R1 (for second stage saw cut and sealer dimensions)	Figures V & VI
Lanes constructed separately Shoulder/pavement	Standard Sheet 502-2R1 Standard Sheet 502-2R1	Figure VII Figure VII

**ITEM 18502.4402 - SAWING AND SEALING PAVEMENT AND SHOULDER JOINTS IN
NEW PORTLAND CEMENT CONCRETE PAVEMENTS - 20' AND 63' SLABS**

TABLE 1B

**CONSTRUCTION DETAILS FOR THE PREPARATION AND SEALING OF JOINTS
REINFORCED CONCRETE - 63' SLAB LENGTH**

Joint Type	Preformed Sealer	Silicone Sealant
<u>Transverse</u>		
Pavement and Shoulder	Standard Sheet 502-2R1	Figures I & IV
<u>Longitudinal</u>		
24' pavement constructed as one unit	Figure V (for first stage saw cut only) and Standard Sheet 502-2R1 (for second stage saw cut and sealer dimensions)	Figures V & VI
Lanes constructed separately	Standard Sheet 502-2R1	Figure VII
Shoulder/pavement	Standard Sheet 502-2R1	Figure VII

ITEM 18502.4402 - SAWING AND SEALING PAVEMENT AND SHOULDER JOINTS IN
NEW PORTLAND CEMENT CONCRETE PAVEMENTS - 20' AND 63' SLABS

- B. Sawing. Joints are normally sawn in a two stage operation. The first stage saw cut is to establish a plane of weakness in the concrete where the shrinkage crack will occur. The second stage saw cut is to form the proper sized reservoir for the joint sealer. The first stage saw cut is not required for the longitudinal joint when lanes are placed separately.
1. Transverse Joints in Portland Cement Concrete Shoulders. The joints shall extend in a straight line with transverse pavement joints across the shoulders as required by the plans. When preformed sealer is used, the saw cut shall be extended vertically down the edge of the shoulder to accommodate the joint seal. See the standard sheet for PREFORMED ELASTIC JOINT SEALERS FOR SAWED JOINTS for "Transverse Joint Seal Installation Details at Edge of Pavement," where the word "pavement" is used, substitute "shoulder".
 2. Portland Cement Concrete Shoulder/Pavement Joints. The joints shall be sawn as specified in §502-3 for longitudinal joints except the dimensions shall be those shown in the appropriate figures.
- C. Cleaning. The contractor shall be responsible for protecting traffic and property from hazards or damage resulting from the joint cleaning operation. Materials and methods used for this purpose will be subject to the approval of the Engineer.

When using air blasting equipment, suitable traps or devices shall be installed on the air equipment to prevent moisture and oil from contaminating the joint surfaces. The Contractor shall maintain these devices to insure proper functioning.

Immediately after sawing the joint reservoir, the resulting slurry shall be completely removed from the joint and immediate area by flushing with a jet of water under pressure and by the use of other tools as necessary. The removed material and debris shall be cleared from the pavement to prevent re-contamination of the joint.

When sealing with silicone sealants, all joints shall be sandblasted. Both faces of the joint shall be thoroughly blasted to the bottom of the intended joint reservoir. The operator of the sandblaster shall tip the nozzle of his equipment so that the blast medium is directed against one face at a time. A clean joint face shall have a noticeably abraded, uniformly appearing surface.

Immediately prior to the placement of the preformed sealer or the backer rod material for silicone, all joints shall be blown with an air stream of sufficient power to remove any remaining loose material.

ITEM 18502.4402 - SAWING AND SEALING PAVEMENT AND SHOULDER JOINTS IN NEW PORTLAND CEMENT CONCRETE PAVEMENTS - 20' AND 63' SLABS

D. Sealing. Tables 1A and 1B give the appropriate figures contained in this specification, or Standard Sheets, to be referenced in sealing of various joint and sealer combinations.

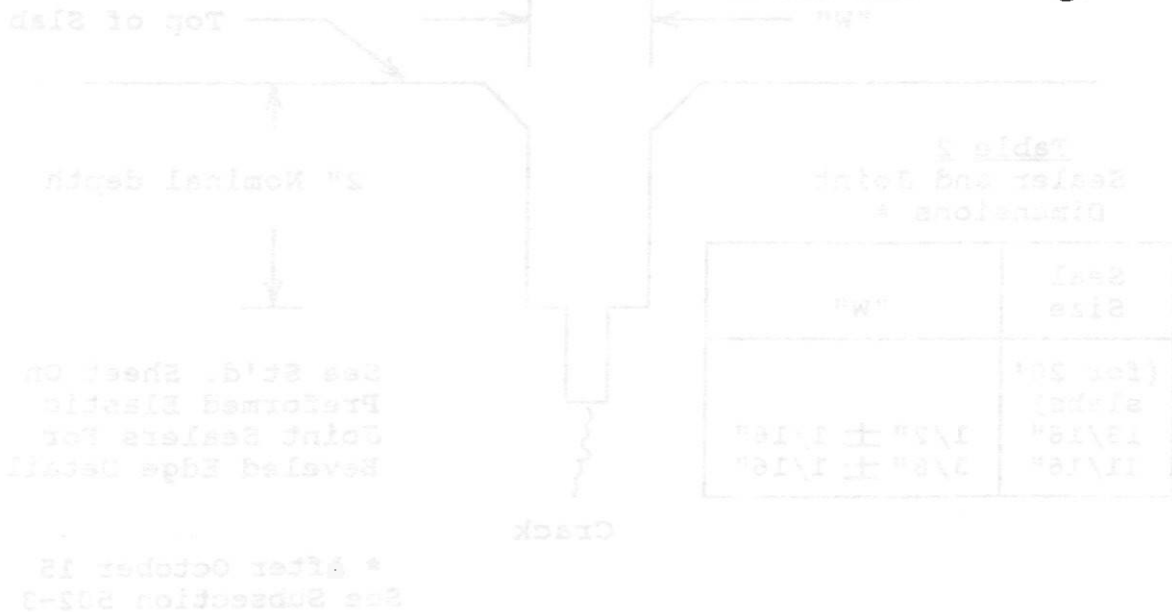
1. Preformed Joint Sealers. The joint sealer shall be installed across the full width of pavement and portland cement concrete shoulders and down the full vertical face of the exposed shoulder edges.
2. Silicone Sealant. Prior to sealing, backer rod shall be rolled into the joint in a manner that accurately sets the proper depth and does not rip, tear or puncture the rod surface. Sealing shall only be performed when pavement or ambient temperatures are 40°F or above and rising. Sealing shall not be performed when moisture is present on the pavement surface. To achieve the specified recess, sealant shall be either placed as such with self-leveling types or tooled with tooled types.

METHOD OF MEASUREMENT

The quantity of pavement and shoulder joints sawed and sealed shall be measured by the linear foot of sealed joints incorporated into the work in accordance with the contract documents, excluding the length of sealer (preformed) turned down at the pavement or shoulder edges.

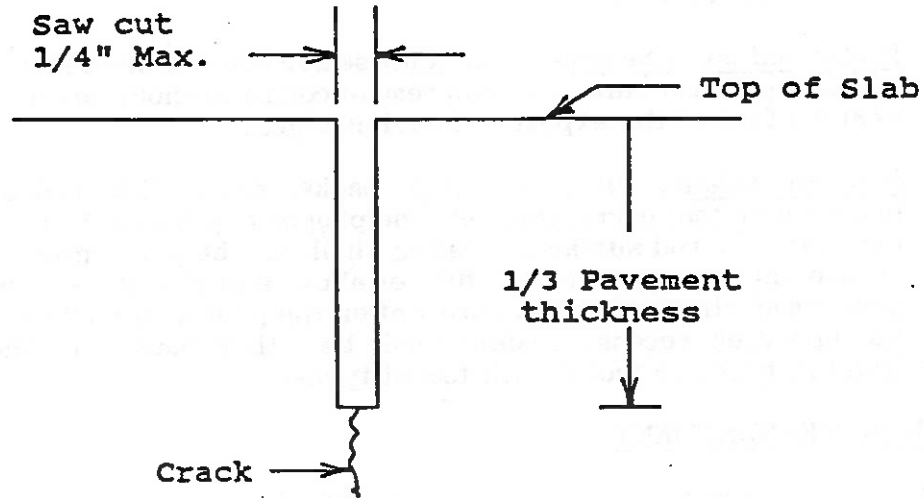
BASIS OF PAYMENT

The unit price bid for sawing and sealing pavement and shoulder joints shall include all labor, materials and equipment required for sawing, cleaning and sealing.

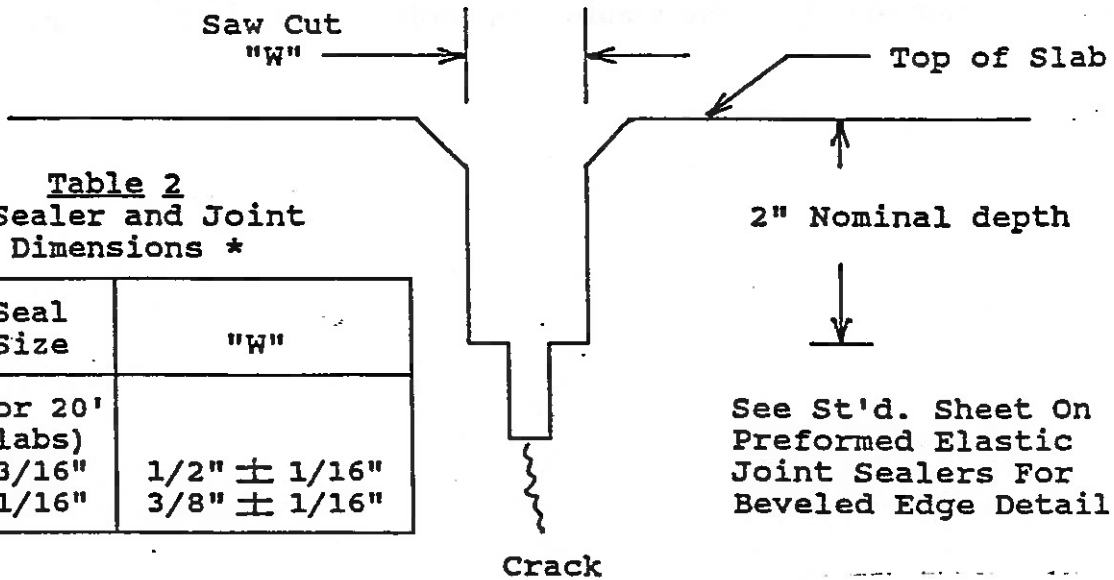


ITEM 18502.4402 - SAWING AND SEALING PAVEMENT AND SHOULDER JOINTS IN NEW PORTLAND CEMENT CONCRETE PAVEMENTS - 20' AND 63' SLABS.

**FIGURE 1
ALL TRANSVERSE JOINTS - STAGE 1**



**FIGURE II
TRANSVERSE JOINTS
PERFORMED SEAL - STAGE 2**



**Table 2
Sealer and Joint
Dimensions ***

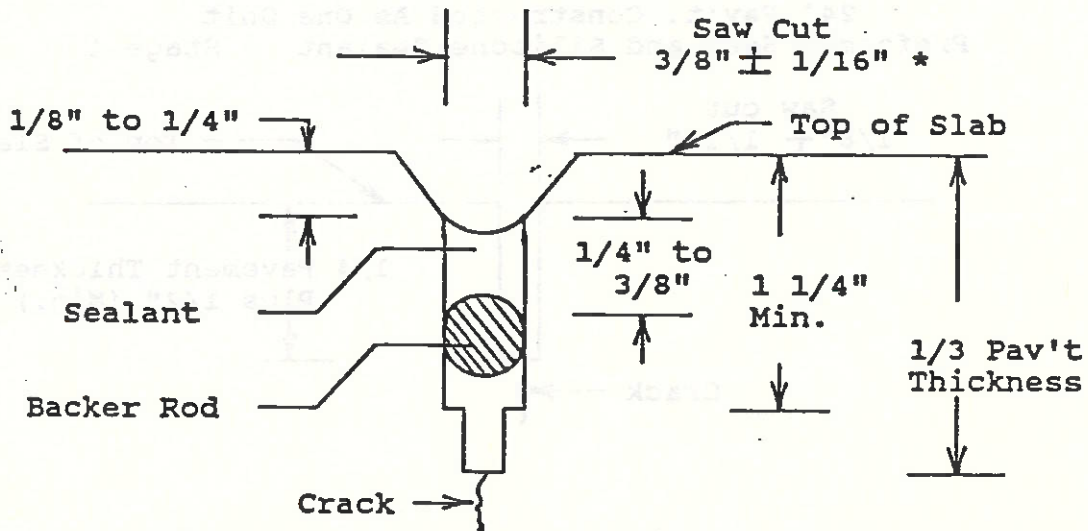
Seal Size	"w"
(for 20' slabs)	
13/16"	1/2" ± 1/16"
11/16"	3/8" ± 1/16"

See St'd. Sheet On
Preformed Elastic
Joint Sealers For
Beveled Edge Detail

* After October 15
See Subsection 502-3

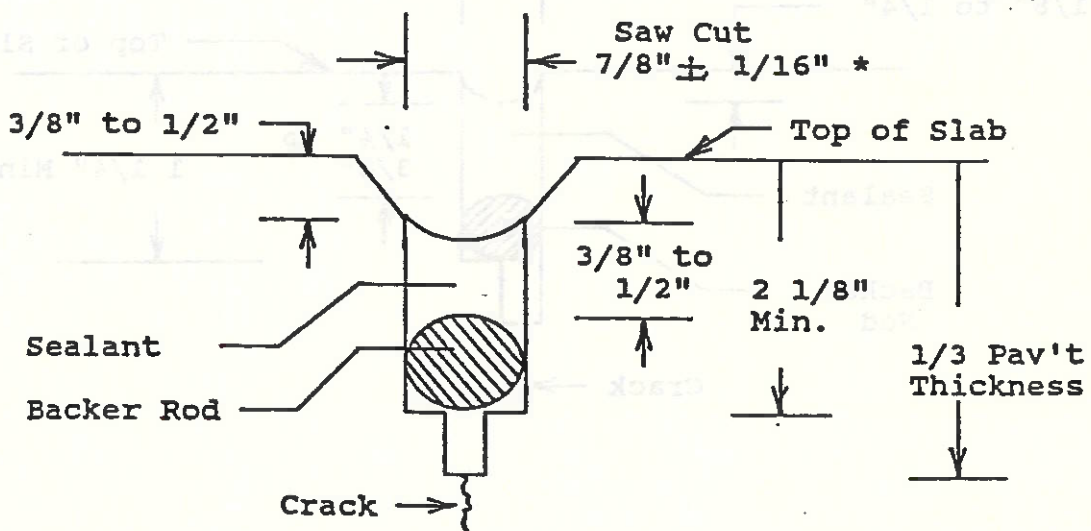
ITEM 18502.4402 - SAWING AND SEALING PAVEMENT AND SHOULDER JOINTS IN NEW PORTLAND CEMENT CONCRETE PAVEMENTS - 20' AND 63' SLABS.

FIGURE III
TRANSVERSE JOINTS
SILICONE SEALANT - STAGE 2
- 20' Slabs -



See St'd Sheet on Preformed Elastic Joint Sealers for Beveled Edge Detail. * After October 15, See Subsection 502-3

FIGURE IV
TRANSVERSE JOINTS
SILICONE SEALANT - STAGE 2
- 63' Slabs -



See St'd. Sheet on Preformed Elastic Joint Sealers for Beveled Joint Detail. * After October 15, See Subsection 502-3

ITEM 18502.4402 - SAWING AND SEALING PAVEMENT AND SHOULDER JOINTS IN NEW PORTLAND CEMENT CONCRETE PAVEMENTS - 20' AND 63' SLABS.

FIGURE V
LONGITUDINAL JOINTS
24' Pav't. Constructed As One Unit
Preformed Seal and Silicone Sealant - Stage 1

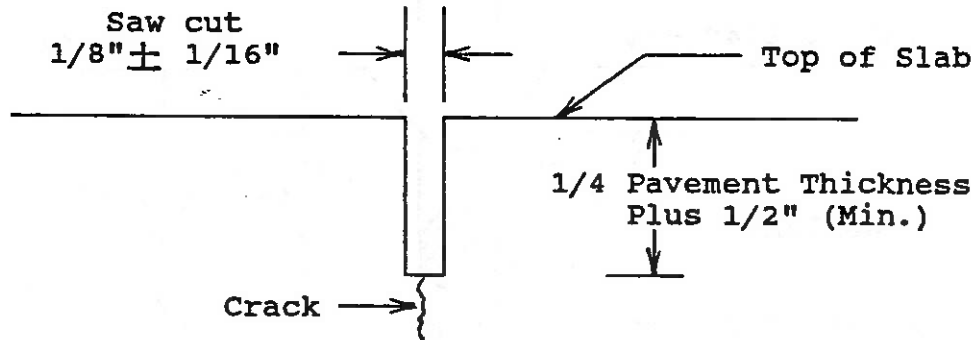
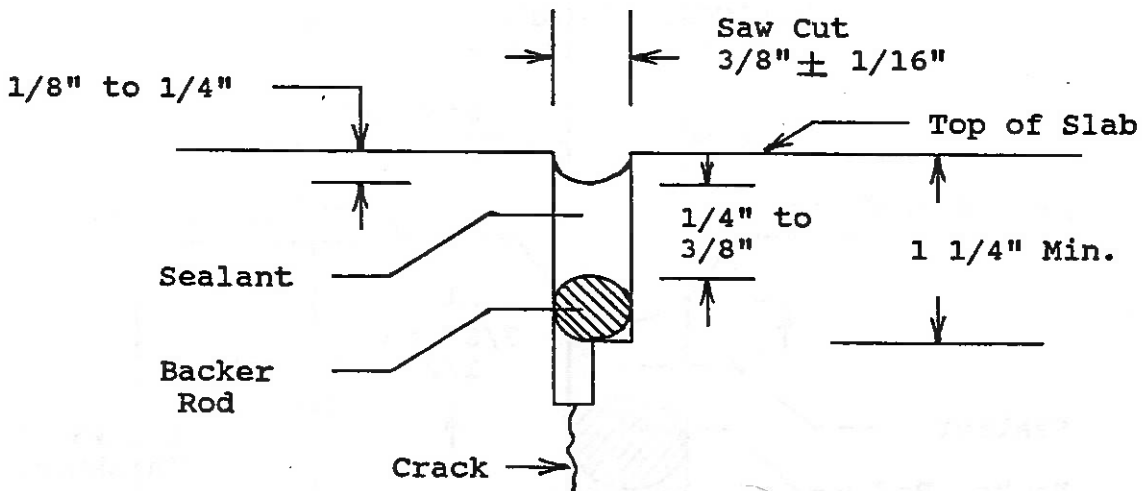


FIGURE VI
LONGITUDINAL JOINTS
24' Pav't. Constructed As One Unit
Silicone Sealant - Stage 2



ITEM 18502.4402 - SAWING AND SEALING PAVEMENT AND SHOULDER JOINTS IN NEW PORTLAND CEMENT CONCRETE PAVEMENTS - 20' AND 63' SLABS.

FIGURE VII
LONGITUDINAL JOINTS

Pav't & Shoulder Placed Separately
Silicone Sealant - Stage 2

