

503-R-692 JOINTS

(Revised 11-19-20)

The Standard Specifications are revised as follows:

SECTION 503, BEGIN LINE 9, INSERT AS FOLLOWS:

503.02 Materials

Materials shall be in accordance with the following:

Chemical Anchor System.....	901.05
Concrete, Class A.....	702
Dowel Bars	910.01(b)10
Epoxy Coated Reinforcing Bars	910.01(b)9
Hot Poured Joint Sealant	906.02(a)2
Joint Filler.....	906.01
Joint Materials	906
PCC Sealer/Healers.....	901.06
Reinforcing Bars.....	910.01
Support Devices	910.01(b)9
Threaded Tie Bar Assembly.....	910.01(b)2

SECTION 503, BEGIN LINE 44, DELETE AND INSERT AS FOLLOWS:

(a) Type D-1 Contraction Joint

Type D-1 contraction joints shall be created by sawing slots in the pavement unless alternative methods are approved. The sawed contraction joint spacing shall be as shown on the plans or as directed, but shall not exceed 18 ft.

~~Sawed contraction joints shall be cut in two operations. The initial saw cut shall commence as soon as the concrete has hardened sufficiently to enable sawing without raveling, usually 2 to 12 h after placement. All joints shall be saw cut through the edges of the pavement to the required depth before uncontrolled shrinkage cracking takes place. The sawing operations shall be carried on during day and night, regardless of weather conditions. The sawing of a joint shall be omitted if a crack occurs at or near the joint location prior to the time of sawing. Sawing shall be discontinued if a crack develops ahead of the saw. Formed contraction joints may be used where conditions make sawing impractical.~~

~~The second saw cut shall be made after the concrete has sufficiently cured, but before opening the pavement to non-construction traffic. The width of the saw cut will be measured for specification compliance at the time of the sawing operations. Slurry or saw residue remaining in the slot shall be immediately flushed with water. Construction traffic shall not be allowed on the PCCP after the second saw cut until the joint is sealed.~~

The sawed slot shall be cleaned to remove all foreign matter from the entire depth of cut. Joint sealing shall be in accordance with 503.05.

(b) Longitudinal Joint

Longitudinal joints shall be created by sawing slots in the pavement unless alternative methods are approved. The longitudinal joint spacing shall be as shown on the

plans or as directed, but shall not exceed ~~16~~14 ft. Tie bars shall be placed by mechanical equipment in accordance with 508.04(a), or rigidly secured in place.

Longitudinal joints shall be cut to the depth, width, and line shown on the plans. The longitudinal joint slots shall be sawed concurrently with the ~~initial~~ D-1 contraction joint slots. If random cracking occurs ahead of sawing, the sawing operations shall be discontinued in that area. ~~A second saw cut shall be made when construction traffic uses the PCCP prior to sealing.~~ *The sawed joint shall be cleaned in accordance with 503.03(a).* Joint sealing shall be in accordance with 503.05.

Longitudinal joints may be replaced with longitudinal construction joints when approved by the Engineer.

SECTION 503, BEGIN LINE 94, DELETE AND INSERT AS FOLLOWS:

(d) Longitudinal Construction Joint

The longitudinal construction joint spacing shall be as shown on the plans or as approved. Tie bars shall be placed by mechanical equipment in accordance with 508.04(a) or other approved methods. Longitudinal construction joint saw cuts may be made as soon as the PCCP has sufficiently hardened.

Longitudinal construction joints shall be cut to the depth, width, and line shown on the plans. Construction traffic shall not be allowed on the PCCP after the saw cuts are made until the joints are sealed. Joint sealing shall be in accordance with 503.05.

Bent tie bar spacing shall be adjusted to prevent interference with the D-1 contraction joints. Bent tie bars shall not be omitted. Bent tie bars shall be replaced with retrofitted tie bars when more than one tie bar breaks within 30 ft during straightening.

The longitudinal construction joint for shoulder widths *4 ft or less* ~~than 6 ft~~ may be replaced by a longitudinal joint ~~or be with tie bars. If the construction joint is eliminated by extending the type D-1 contraction joint through the shoulder. If either option is used,~~ the mainline and shoulder shall be constructed at the same time.

(e) Terminal Joints

~~Terminal joints shall consist of a sleeper slab, polyethylene bond breaker, and HMA mixtures. The polyethylene bond breaker shall be an approved polyethylene sheeting having a thickness of 6 mils or greater. HMA mixtures shall consist of type B surface and intermediate mixtures in accordance with 402.04. A MAF in accordance with 402.05 will not apply. Aggregate requirements of 904.03(d) do not apply. The portion of the sleeper slab on which the polyethylene bond breaker is to be placed shall be finished to a smooth trowel finish.~~ *A terminal joint of the type specified shall be constructed at the locations as shown on the plans. The embankment shall be shaped to the required grade and section, free from all ruts, corrugations, or other irregularities, and uniformly compacted and approved in accordance with 203. The embankment shall be furnished within a tolerance of 1/2 in. from the grade as shown on the plans. The subgrade shall be prepared as shown on the plans and in accordance with 207. The sleeper slab shall be placed on top of the prepared subgrade.*

1. Terminal Joint, Type PCCP

Terminal joint, type PCCP, shall consist of a sleeper slab, polyethylene bond breaker, pre-compressed foam joint, and jointed reinforced concrete pavement, JRCP, transition slabs. The polyethylene bond breaker shall be an approved polyethylene sheeting having a thickness of 6 mils or greater. The portion of the sleeper slab on which the polyethylene bond breaker is to be placed shall be finished to a smooth trowel finish. The pre-compressed foam joint shall be in accordance with 724 and as shown on the plans. The concrete and placement for JRCP transition slabs shall be in accordance with 502 and as shown on the plans. Steel reinforcement shall be epoxy coated and placed in accordance with 703. The metal chairs, spacers, clips, wire, or other mechanical means used for fastening or holding reinforcement in place shall be epoxy coated.

2. Terminal Joint, Type HMA

Terminal joint, type HMA, shall consist of a sleeper slab, concrete lug, polyethylene bond breaker, and pre-compressed foam joint. The polyethylene bond breaker shall be an approved polyethylene sheeting having a thickness of 6 mils or greater. The portion of the sleeper slab on which the polyethylene bond breaker is to be placed shall be finished to a smooth trowel finish. A type A construction joint shall be constructed as shown on the plans. The pre-compressed foam joint shall be in accordance with 724 and as shown on the plans.

The saw cut shall be sealed with hot pour joint sealant in accordance with 906.02(a)2.

SECTION 503, AFTER LINE 151, INSERT AS FOLLOWS:

(h) Expansion Joint with Load Transfer

Expansion joints with load transfer shall be constructed at the locations shown on the plans. The joint shall be an assembly of dowel bars, expansion caps, and joint filler components as shown on the plans. The components shall be supported by an approved welded wire assembly which holds the components rigid and in proper alignment during placement of the concrete.

Damaged or repaired joint filler shall not be used. The joint filler shall be held in a position which is normal to the surface and secured in place. The bottom of the joint filler shall be set firmly in place. The top of the joint filler shall be parallel to the pavement surface and be the full width of the pavement. The expansion joint assembly shall be held in place in accordance with 503.04(g). Finished joints shall deviate no more than 1/4 in. in the horizontal alignment from a straight line. There shall be no offsets between adjacent sections when the joint filler consists of more than one section. No plugs or leakage of concrete shall be allowed to occur through the joint filler or into the air gap of expansion caps.

The expansion joint opening shall be sealed with hot pour joint sealant in accordance with 906.02(a)2.

SECTION 503, BEGIN LINE 204, DELETE AND INSERT AS FOLLOWS:

503.05 Sealing Cracks and Joints

~~Cracks and~~ *All joints and cracks in the PCCP shall be cleaned and sealed with hot poured joint sealant in accordance with the sealant manufacturer's recommendations. Water blasting shall not be applied under pressure which may damage the concrete. All*

cracks and joints shall be sealed prior to discontinuing work for the winter.

~~When preformed elastomeric joint seals are used, the material shall be installed in one continuous piece by means of an approved machine. The seal shall not be stretched more than 5% while being placed and show no twisting, rollover, folding, cutting, or excess lubricant adhesive on the top of the seal. Elastomeric joint seal may be installed in two separate pieces for phased construction with the splice point occurring at the highest point of the joint. The splicing method used shall be in accordance with the seal manufacturer's recommendations.~~

SECTION 503, BEGIN LINE 239, DELETE AND INSERT AS FOLLOWS:

503.07 Method of Measurement

D-1 contraction joints, *expansion joint with load transfer*, and terminal joints will be measured by the linear foot as measured along the centerline of the joint. *The sleeper slab, reinforcing bars, bond breaker, sealants for the terminal joint will not be measured. When required, removal of an existing terminal joint or sleeper slab will not be measured.*

JRCP will be measured by the square yard of the thickness specified. Reinforcing bars, the metal chairs, spacers, clips, wire, or other mechanical means used for fastening or holding reinforcement in place in the JRCP will not be measured.

Pre-compressed foam joints will not be measured.

Retrofitted tie bars will be measured by the number of units installed.

503.08 Basis of Payment

D-1 contraction joints, *expansion joint with load transfer* and terminal joints will be paid for at the contract unit price per linear foot, complete in place.

JRCP will be paid for at the contract unit price per square yard of the thickness specified, complete in place.

Retrofitted tie bars will be paid for at the contract unit price per each, complete in place.

Payment will be made under:

Pay Item	Pay Unit Symbol
D-1 Contraction Joint	LFT
<i>Expansion Joint with Load Transfer</i>	<i>LFT</i>
<i>Jointed Reinforced Concrete Pavement, _____ in.</i>	<i>SYS</i>
<i>thickness</i>	
Retrofitted Tie Bars	EACH
Terminal Joint, Type ____	LFT

The cost of furnishing and placing all materials, not specified as a pay item, shall be included in the cost of PCCP.

The cost of reinforcing bars, metal chairs, spacers, clips, wire, or other mechanical means used for fastening or holding reinforcement in place shall be included in the cost of the JRCP.

For D-1 contraction joints, the cost of dowels, dowel bar assemblies, backer rod, joint sealants and all necessary incidentals shall be included in the cost of D-1 contraction joints.

For the construction of expansion joints, the cost of dowels, dowel bar assemblies, expansion caps, joint filler, joint sealants and all necessary incidentals shall be included in the cost of the expansion joint with load transfer.

The cost of the sleeper slab, reinforcing bars, bond breaker, ~~and HMA mixtures~~, pre-compressed foam joint, joint sealant and all necessary incidentals shall be included in the cost of the terminal joint. When required, removal of an existing terminal joint and sleeper slab shall be included in the cost of the terminal joint.

The cost of retrofitted tie bars or PCCP replacement used to repair damaged PCCP due to fault or negligence, remediation of random cracking, or the replacement of broken deformed bars shall be included in the cost of the PCCP.
