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TO:

ENGINEERING INSTRUCTION

NEW YORK STATE DEPARTMENT OF TRANSPORTATION

FINAL

SUPERSEDED BY EI 82-065 EFFECTIVE 3/3/83

SUBJECT: PRESSURE RELIEF JOINTS

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Because of distress observed in the abutments and backwalls of structures on portland cement concrete highways, starting in the late sixties we began to retrofit pressure relief joints at existing bridges and to include stress relief joints in new construction.

While both four (4) inch joints and five (5) foot wide joints were available, most new construction and retrofit construction as well, employed only five foot wide relief joints constructed of various courses of asphalt concrete. The primary advantages of the four inch joints were that they provided better riding qualities and did not cause the joints of adjacent slabs to open up as much during seasonal expansion/contraction cycles. Unfortunately, in many instances they tended to close up too quickly resulting in short useful lives.

This EI disapproves the following items and similar regional specifications:

15502.4505 - Cement Concrete Pavement Stress Relief Joints (TYPE E)

15502.4506 - Cement Concrete Pavement Stress Relief Joints (TYPE F)

15502.4507 - Cement Concrete Pavement Stress Relief Joints (TYPE G)

15502.4508 - Cement Concrete Pavement Stress Relief Joints (TYPE H)

This EI also establishes the following new items:

15502.4509 - Cement Concrete Pavement Pressure Relief Joints

15502.4599 - Pressure Relief Joints in Existing Cement Concrete Pavement

The first of these replaces Item 15502.4506 and is to be used on new cement concrete pavement construction. The second is to be used on existing concrete pavements.

This EI shall be effective with the letting of June 24, 1982.

15502.4509 - CEMENT CONCRETE PAVEMENT PRESSURE RELIEF JOINTS

Description. The Contractor shall construct cement concrete pavement pressure relief joints in accordance with the plans, specifications and in a manner approved by the Engineer.

MATERIALS.

Asphalt Concrete. Asphalt concrete used in this item shall meet the requirements of 403-2, Asphalt Concrete, Types 1, 3, 6, 6F, 7, or 7F.

Asphalt Emulsion shall meet the material requirements of subsection 702-3001, 702-3401, 702-3601 or 702-4501.

Asphalt. The asphalt used as the bond breaker shall meet the material requirements of subsection 702-02, 702-03, or 702-3101.

CONSTRUCTION DETAILS. The details for constructing and maintaining the cement concrete pavement pressure relief joints shall be in accordance with Section 401, Plant Mix Pavements - General, Section 502, Portland Cement Concrete Pavement, and as shown herein.

The ends of the cement concrete shall be normal to the pavement centerline, perpendicular to the surface and lie in a straight line across the full width of the pavement. The upper edges shall be beveled as shown unless otherwise approved by the Engineer. The concrete along the joint shall be carefully consolidated and finished to a true surface. The surface of the concrete at the joint shall be tested with a 10 foot straight edge or template immediately after forming. Any variations from the true surface shall be corrected immediately.

The top surface of the twelve inch reinforced concrete approach slab shall be steel trowelled until smooth, and coated with 30 mils of asphalt bond breaker material.

All vertical contact surfaces between asphalt concrete and portland cement concrete around the perimeter of the joint shall be painted with a uniform coating of Asphalt Emulsion. The application of the asphalt emulsion shall be made to a clean and dry surface and at a rate as ordered by the Engineer.

The construction details for the asphalt concrete shall comply with the requirements specified in Subsection 4 1-3.01 through 401-3.15, except as modified by the following:

Type 1 Dense Base or Type 3 Dense Binder shall be placed and leveled in a manner approved by the Engineer. These mixes shall be placed to achieve a maximum compacted lift thickness of 4 inches. When the lifts of Dense Base or Dense Binder have been placed and compacted, a final lift of Type 6, 6F, 7, or 7F Top Course shall be placed and compacted so that it is level with the top of the pavement.

The bituminous concrete joint material shall be compacted transversely across the pavement by a self-propelled, dual drum vibratory roller approved by the Deputy Chief Engineer, Technical Services. The roller shall be capable of achieving 95% of Marshall density. Walk behind dual drum vibratory rollers having a minimum drum width of twenty-four (24) inches wide are considered to be acceptable for this work provided that they have demonstrated that they are capable of achieving the required 95% Marshall density, in accordance with Department written instruction. A minimum of six (6) passes shall be required over each lift of bituminous material. Additional passes may be required by the Engineer.

In areas not accessible to the roller, the joint material shall be thoroughly compacted with mechanical tampers as directed by the Engineer. However, this method of compaction shall be kept to an absolute minimum.

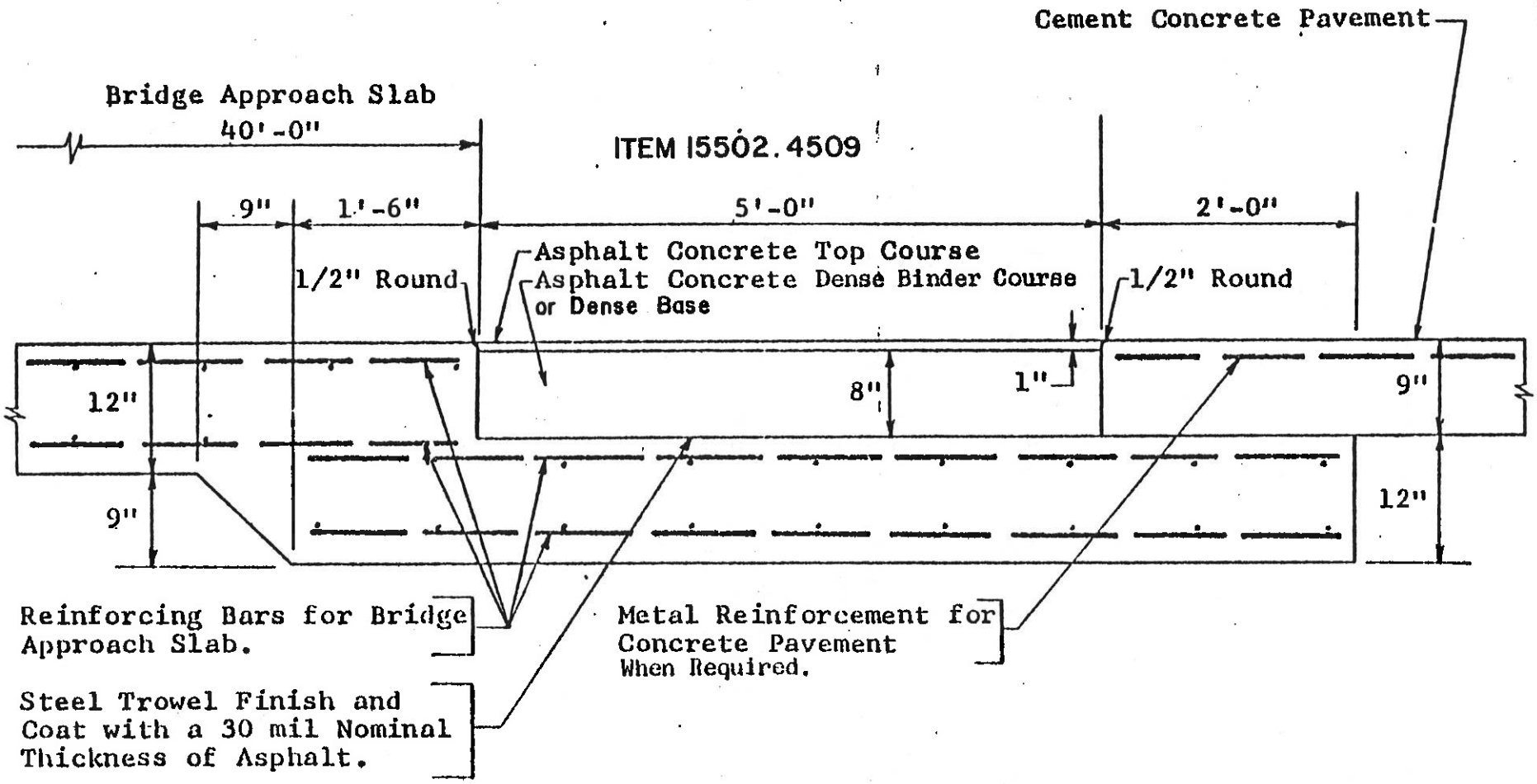
METHOD OF MEASUREMENT. The pressure relief joint shall be measured transversely across the pavement along the centerline of the joint to the nearest tenth of a foot.

BASIS OF PAYMENT. The unit price bid per linear foot shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work. There will be no deduction in the subbase courses for materials removed to construct these joints.

The payment for this item shall include all asphalt concrete mixtures, the asphalt bond breaker, the labor to steel trowel finish the upper surface of the bridge approach slab where it is to receive the asphalt bond breaker, and the asphalt emulsion used to seal the perimeter of the joint.

STATE OF NEW YORK
DEPT. OF TRANSPORTATION

PRESSURE RELIEF JOINT AT THE END OF REINFORCED CONCRETE BRIDGE APPROACH SLAB



15502.4599 - PRESSURE RELIEF JOINTS IN EXISTING CEMENT CONCRETE PAVEMENT

Description. Under this item the Contractor shall cut existing pavement, curbs, gutters, remove and dispose of such materials and place asphalt concrete pressure relief joints in accordance with the plans or specifications and in a manner approved by the Engineer.

Materials. Asphalt concrete used in this item shall meet the requirements of Subsection 403-2, Asphalt Concrete - Type 6, 6F or 7, 7F Top Course as shown on the plans and Asphalt Concrete - Type 1 Base or Type 3 Binder Course. Asphalt emulsion shall meet the requirements of material designation 702-3001, 702-3401, 702-3601 or 702-4501.

Construction Details. Unless otherwise directed, pressure relief joints shall be located in the vicinity of existing transverse joints. The pressure relief joint shall be so located that the existing transverse joint is completely cut out unless the existing transverse joint may serve as one of the cut faces if in the opinion of the Engineer the joint is in good condition and will provide a square interface. If the existing transverse joint is used as one of the cut faces the contractor shall remove the protruding elements of the load transfer device in a manner approved by the Engineer at no additional cost to the State.

The pavement shall be cut normal to the pavement centerline, perpendicular to the surface and in a straight line across the full width of the pavement, curb, and gutter (where required). The cut shall be made with an approved powered rotary rock and concrete cutter or power saw or a combination of these to produce a neat cut without excessive shatter beyond the cut lines as determined by the Engineer. At relief joint locations with adjacent curbs or gutters, the curb and gutter shall be saw cut unless the Contractor can demonstrate that the rotary rock cutter will produce satisfactory results. All cutting shall be accomplished in a manner that will not damage the roadway elements which are to remain. Any pavement, shoulder and/or subbase which is to remain and is damaged by the Contractor's operations shall be repaired or replaced by him in a manner approved by the Engineer under this item at no additional cost to the State.

The pavement shall then be removed in a workmanlike manner with a minimum of disturbance to the remaining pavement, subbase and shoulders. The subbase shall be leveled and compacted to a firm base in a manner approved by the Engineer prior to the placement of the asphalt concrete. The removed material shall become the property of the Contractor and be disposed of by him at locations and in a manner as approved by the Engineer.

All contact surfaces between asphalt concrete and portland cement concrete around the perimeter of the joint shall be painted with a uniform coating of Asphalt Emulsion. The application of the asphalt emulsion shall be made to a clean and dry surface and at a rate as ordered by the Engineer.

The construction details for the asphalt concrete shall comply with the requirements specified in Subsections 401-3.01 through 401-3.15, except as modified by the following:

Unless indicated otherwise in the contract documents, the pressure relief joints shall be a minimum of five (5) feet wide and not less than six (6) inches wider than the roller drum width selected for use by the Contractor. The asphalt concrete joint material shall be compacted transversely across the pavement by a self-propelled, dual drum vibratory roller approved by the Deputy Chief Engineer, Technical Services.

The roller shall be capable of achieving 95% of Marshall density. Walk behind dual drum vibratory rollers having a minimum drum width of twenty-four (24) inches wide are considered to be acceptable for this work provided that they have demonstrated that they are capable of achieving the required 95% Marshall density in accordance with Department written instructions. A minimum of six (6) passes shall be required over each lift of bituminous material. Additional passes may be required by the Engineer.

In areas not accessible to the roller the joint material shall be thoroughly compacted with mechanical tampers as directed by the Engineer. However, this method of compaction shall be kept to an absolute minimum.

Type 1 Dense Base or Type 3 Dense Binder shall be placed and leveled in a manner approved by the Engineer. These mixes shall be placed to achieve a maximum compacted lift thickness of 4 inches. Thinner lifts shall be placed if heat retention affects maintenance of traffic scheduling. When the lifts of Dense Base or Dense Binder have been placed and compacted, a final 1" nominal lift of Type 6, 6F or 7, 7F Top Course shall be placed and compacted so that it is level with the top of the existing pavement.

Cut-out curbs and gutters shall be replaced with asphalt concrete formed to the approximate original shape of those elements.

Method of Measurement. The pressure relief joint in existing cement concrete pavement shall be measured transversely across the pavement along the centerline of the joint to the nearest tenth of a foot.

Basis of Payment. The price bid per linear foot shall include the cost of furnishing all labor, equipment and material necessary to satisfactorily complete the work.