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ENGINEERING INSTRUCTION

NEW YORK STATE DEPARTMENT OF TRANSPORTATION

ECT: REVISED SPECIFICATION FOR PREFORMED ELASTIC STRIP SEAL JOINT SYSTEMS

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APPROVED: 8/31/92

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Code: E.I. 92-035

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Supersedes: MEMORANDUM OF AUGUST 15, 1980.

This Engineering Instruction transmits the new Specification for Preformed Elastic Strip Seal Joint Systems. This Specification change was needed as a result of changes made to Section No. 567 of the New York State Standard Specifications, dated January 2, 1990. This new Specification transfers approval authority from the Deputy Chief Engineer (Structures) to the Regional Director. This change will not affect the cost.

Item Number 15567.22 shall be deleted and replaced with Item Number 16567.26.

This change shall become effective with the Letting of October 1, 1992.

Attachments

ITEM NO. 16567.26 - ARMORED JOINT SYSTEM WITH PREFORMED ELASTIC STRIP SEAL

DESCRIPTION.

A. WORK. The work shall consist of fabricating, furnishing, and placing an armored joint system, of the type indicated on the Contract Plans, at the locations indicated on the Contract Plans.

B. INSTALLATION. Armored joint systems of this nature are installed by various methods. The required method for a particular installation will be indicated on the Contract Plans.

C. DEFINITIONS.

1. ARMORED JOINT SYSTEM. This system shall consist of structural steel components, angles, anchor studs, threaded studs, bolts, nuts, washers, lock washers, anchor bolts, preformed elastic strip seal and adhesive, all combined in the manner required by the Contract Documents so that a fully operational, waterproof system will seal the joint over which it is installed. The armored joint system will be referred to as the "joint system".

2. JOINT. The opening provided between two portions of a structure to allow for expansion and contraction.

3. TYPE. Preformed elastic strip seals are manufactured in various sizes, defined by a type number. The type of strip seal to be installed in any one joint system will be indicated on the Contract Plans.

MATERIALS.

A. GENERAL. Since there are various methods of installing the joint system, all of the materials listed in this Subsection may not be applicable for a particular installation. It is the Contractor's responsibility to ensure that only those materials necessary are actually installed, where required, or as specified on the Approved Shop Drawings.

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B. MATERIAL REQUIREMENTS.

1. ANGLES, PLATES, EXTRUSIONS AND MILLED SHAPES. Steel used shall conform to the requirements of ASTM Designation A588. It shall also meet the requirements of Material Specification 715-01.

2. HEADED CONCRETE ANCHOR STUDS AND THREADED STUDS. These shall conform to the requirements of Material Specification 709-05. They shall be furnished in the dimensions indicated on the Contract Plans.

3. BOLTS AND NUTS. The steel used in the bolts and nuts shall conform to the requirements of ASTM Designation A307, or A325.

4. ANCHOR BOLTS. The steel used shall meet or exceed the requirements of ASTM A307. Anchor bolt grout shall meet the requirements of Subsection 701-07, Anchoring Materials - Chemically Curing of the Standard Specifications.

5. PREFORMED ELASTIC STRIP SEAL. This shall be extruded polymerized chloroprene material, meeting the requirements of ASTM Designation D2628 modified to omit the recovery test. The sealer shall be supplied in one piece for the full length of each joint.

6. ADHESIVE. This shall be used to bond the strip seal to the steel surfaces. It shall be a one-part moisture-curing polyurethane and hydrocarbon solvent mixture meeting the requirements of Subsection 567-2.03A6 of the Standard Specifications.

7. CONCRETE. Concrete, if used, shall be Class E and shall be placed and paid under a separate item.

8 BONDING GROUT. The grout shall meet the requirements of Subsection 705-22, Portland Cement Mortar Bonding Grout.

9. ELASTOMERIC CONCRETE. Elastomeric Concrete, if used, shall be placed and paid under a separate item.

C. FABRICATION REQUIREMENTS.

1. SHOP DRAWINGS. Shop Drawings will be required for each joint system supplied. All Shop Drawings shall note the name and address of the Joint System Fabricator, and the location of the fabrication work.

The applicable provisions of Section 2- Drawings of the New York State Steel Construction Manual (SCM) shall apply with the following modifications:

a. Shop Drawings shall be submitted to the Engineer for review and/or approval in accordance with the requirements of Section 2 of the SCM.

b. The Contractor/Fabricator shall submit with the Shop Drawings a Welding Procedure Specification, WPS, approved by the Structures Division's Metals Engineering Unit within 3 months prior to joint fabrication, for each combination of joint type and welding process shown on the Shop Drawings.

NOTE. Shop Drawing approval shall be withheld until this requirement has been met. As stated under Section 4 of the SCM, no shop work shall be started until the Shop Drawings have been approved.

c. The Shop Drawings shall indicate the type, location, and details of the mechanical devices required to compress the joint to its required width at the time of installation. This information is indicated on the Shop Drawings.

2. FABRICATION.

a. CLEANING. Metal surfaces which are to be coated with adhesive shall be thoroughly cleaned of all dirt, oil, grease, scale and oxides by grinding or sandblasting. Metal surfaces after cleaning shall exhibit a clean quality of CSa2, or better, as defined by the Steel Structures Painting Council Standard SSPC Vis1.

b. ADHESIVE COATING. The recess of the steel extrusions shall be thoroughly coated with adhesive. The strip seal shall be installed within the recess in such a manner that it will be completely and firmly bonded to the recess surface over the total length of the joint system.

c. STEEL FABRICATION. Steel Fabrication shall be done in conformance with the requirements of the SCM. Mill inspection will not be required. Shop inspection will be conducted at the discretion of the Department.

D. BASIS OF ACCEPTANCE. The fabricated joint system will be accepted at the work site by the Engineer after a visual inspection and upon receipt of the Manufacturer's Certification Report (MCR) that the materials and the fabricating procedures were in accordance with the Approved Shop Drawings and this Specification. The Manufacturer shall submit, with the MCR, a Certified Copy of the Mill Test Report (MTR) for all steel used to fabricate the joint system.

CONSTRUCTION DETAILS.

A. SITE DELIVERY. The joint system shall be shop assembled and delivered to the work site ready for installation, unless prior permission to field assemble has been granted by the Engineer.

B. FIELD ASSEMBLY.

1. If the Contractor desires to assemble the joint system at the work site, prior permission to do so shall be obtained from the Engineer, in writing.

2. Joint systems assembled at the work site shall have all materials certified by the respective Manufacturers. The certifications shall state that the MATERIALS requirements of this Specification have been met.

3. Field methods of fabrication shall be in accordance with the MATERIALS requirements of this Specification.

C. FIELD INSPECTION. The requirements of Subsection 567-3.02D2 shall apply.

D. HANDLING AND STORING MATERIALS. The requirements of Subsection 567.302D1 shall apply.

E. PRE-INSTALLATION INSPECTION. Immediately prior to installation, the joint system shall be inspected for the following:

1. BENDS OR KINKS. Except for those necessary to follow the required geometrics, no bends or kinks in the structural steel will be allowed. A joint system exhibiting such bends or kinks shall be removed from the work site and replaced with a new joint system at the Contractor's expense. No straightening will be allowed.

2. NEOPRENE BOND. The neoprene shall be fully bonded to the steel over the entire length of the joint system. If it is not, the Contractor shall take whatever steps necessary, at his own expense, to ensure full bond.

3. STUDS. Studs shall be properly placed and completely end welded. Any threaded stud which does not have a complete end weld shall be replaced. Any headed stud which does not have a complete end weld or does not emit a ringing sound when struck a light blow with a hammer, shall be replaced. Studs located more than one inch, in any direction, from the location indicated on the Shop Drawings shall be carefully removed. A new stud shall be placed in the proper location.

F. TEMPERATURE SETTING. In order for the joint system to be installed properly, it must be set at a width which is directly dependent upon the ambient temperature at the time of installation. This temperature is shown on the Shop Drawings. The width setting shall be accomplished through the use of mechanical devices supplied by the Joint System Fabricator. After the joint system has been set to its proper line and grade and secured in-place, the devices shall be removed and returned to the Fabricator.

G. WELDING. All welding work shall be performed in accordance with the requirements of the New York State teel Construction Manual (SCM).

H. RECESS FINISHING. If the joint system is installed within a preformed concrete or asphalt recess, the recess will be filled and finished to grade with either structural concrete or elastomeric concrete. The exact materials will be indicated on the Contract Plans. The respective materials will be installed in the following manner:

1. CONCRETE. Placement shall be in accordance with SECTION 555. Prior to concrete placement, all existing concrete surfaces shall be coated with Portland Cement Bonding Grout. Finishing shall be done in accordance with Subsection 555-3.08D. Machine finishing will not be required.

2. ELASTOMERIC CONCRETE. Placement shall be in accordance with the requirements of the Specification.

I. WATERTIGHT INTEGRITY TEST. The requirements of Subsection 567-3.01D. shall apply.

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METHOD OF MEASUREMENT. The work will be measured as the number of linear feet of joint system completely installed. Measurement will be taken horizontally and vertically along the centerline of the joint system between the outer limits indicated on the Contract Plans. The words "completely installed" shall be interpreted to mean the joint system in-place with the following operations completed, where applicable:

1. Nuts tightened, or retightened, as required.
2. Concrete placed and finished.
3. Elastomeric concrete placed and finished.
4. Watertight integrity tests performed.

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

A. NON-PAYMENT. No payment will be made for any of the following:

1. Resealing of the neoprene strip seal to the joint system steel.

2. The drilling of any anchor bolt holes made necessary by the misalignment of the originally drilled holes and the matching holes in the supporting angles of the joint system.

3. Any work done by the Contractor to stop water leakage evidenced by any watertight integrity test.

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