MICHIGAN

DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

FOR

**GROUT-FILLED MECHANICAL SPLICE SLEEVE**

BWB:CAW 1 of 2 APPR:SCK:MJF:01-04-24

**a. Description.** This work consists of furnishing and installing grout-filled mechanical splice sleeves for reinforcing bars. Install sleeves at the locations as shown on the plans, and in accordance with the manufacturer's recommendations.

**b. Material.** Furnish a grout-filled mechanical splice sleeve from the Qualified Products List (QPL) (712.03L). Ensure splice sleeves are epoxy-coated in accordance with the standard specifications. Use only the grout designated by the manufacturer.

**c. Construction.** Prepare and install sleeves in accordance with the manufacturer's recommendations. Install inlet and outlet PVC grout tubes and secure the grout tubes in place with suitable epoxy cement. Seal the grout ports or PVC tubes with the plastic seals furnished by the manufacturer. Install the prepared sleeve on the first rebar and in accordance with the manufacturer’s recommendations to assure proper embedment length. The embedment length of connected bars must meet the recommended minimums as indicated in the manufacturer's literature.

Securely fasten sleeves to the concrete forms by means of the sleeve setter recommended by the manufacturer to prevent displacement of the grout tubes during placement of the concrete. Examine the sleeves after concrete has been poured and forms removed, to see that there has been no leakage of cement paste into the sleeves and grout tubes and to ensure proper consolidation around the mechanical splice sleeve. Remove any material found in the grout tubes.

Pressure grout the sleeves with the approved grout mixed in accordance with the grout manufacturer's recommendations. Proportion the grout so that it will achieve the minimum 28-day strength required by the splice sleeve supplier as determined by testing specimens made in accordance with the manufacturer’s specified test method.

Pump the grout into the sleeves via the bottom inlet grout tube until it flows freely from the top outlet tube.

Insert a rubber stopper into the outlet grout tube after cessation of pumping, and before removing the pump nozzle. Insert a rubber stopper into the inlet grout tube immediately upon removal of the nozzle from the inlet grout tube in such a manner as to prevent leakage of grout from the sleeve. Brace and leave undisturbed by movement, shock, or vibration, all members with spliced joints, until the grout is strong enough to permit removal of supports.

Under conventional erection procedures, braces may be removed when the grout has gained a minimum strength of 4,000 psi as determined by testing performed by the Department on grout specimens cured under jobsite conditions. Under unanticipated special conditions of loading, the Engineer may wish to require greater strength in the connections and may specify that higher grout strength be attained prior to removal of supports. Ensure grout strength is determined by means of testing specimens made in accordance with the recommendations of the sleeve and grout manufacturers.

In the event reinforcement does not meet embedment length minimums, or the 28-day strength test of the grout is less than the strength required by the splice sleeve supplier, the Engineer will determine the appropriate corrective measures to be taken. Corrective measures, at the discretion of the Engineer, may include structural analysis, analysis of available test data, preparation and testing of samples, extension of the bars, removal and replacement of the sleeves, or any combination of the above.

Submit certification of the following:

1. Manufacturer of splice sleeve to this specification.

2. Tensile strength of the splice sleeve.

3. Material certification of the splice sleeve and the grout.

Identification. Identify each splice sleeve by the size and type imprinted on the sleeves together with the manufacturer’s name, address, and evaluation report number. Suppliers of the grout-filled mechanical splice sleeves are listed on the QPL.

**d. Testing.** Two separate testing procedures must be completed. Proof Testing must be completed prior to production and Field Testing must be conducted during production.

1. Proof Testing. Testing must be conducted prior to production. Prepare three test splices for proof testing. Furnish adequate notice to allow the Engineer to witness the preparation. Grouting installation for the test splices must follow the grouting installation method to be used during construction. Submit the test splices to the Department at least 3 weeks before production. The Department will conduct the testing.

2. Field Testing. Prepare three test splices during the first production day, at a location selected by the Engineer. In preparing the test splices, the Contractor must use the same grout used for filling the splice sleeves during production. Grouting installation for the test splices must follow the grouting installation method used during construction. The Department will conduct the testing.

**e. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

**Pay Item Pay Unit**

Grout-Filled Mechanical Splice Sleeve, (Bar Size) Each

**Grout-Filled Mechanical Splice Sleeve, (Bar Size)** includes the splice sleeve, grout used to fill the splice sleeve, inlet and outlet grout tubes, splice sleeve accessories, any hardware used to secure the splice sleeve to the forms, storage and shipping. The unit price also includes testing or certification required as per this special provision.