COUPLER – a mechanical device that physically connects two reinforcing bars.

The Minnesota Department of Transportation (MnDOT) will only accept Mechanical Splice Couplers for Reinforcement Bars from the MnDOT Approved/Qualified Products List. This applies to all Couplers for Reinforcement Bars sold to contractors for use on MnDOT projects.

For Reinforcement Bar Couplers to be pre-approved by MnDOT, a Manufacturer must demonstrate an ability to manufacture couplers meeting the requirements of MnDOT Specification 2472 and the information stated below.

The Manufacturer of Couplers must comply with the following:

A. Reference Samples

Manufacturer shall submit one coupler sample for each size of rebar that approval is requested to the MnDOT Bridge Office as listed below, a Technical Data Information Sheet including specific installation instructions, a letterhead letter certifying that the reinforcement coupler(s) meets the required standards as stated below, and Material Test Report (MTR), and proof that the coupler was melted and manufactured in the USA.

B. Laboratory Acceptance

Submit a Certified Test Report from a Qualified Laboratory accredited through the AASHTO Accreditation Program (AAP), and/or an AASHTO accredited laboratory to the Department that indicates actual results of tests covered below. Photographically document the locations of the ruptures and include in the Test Report.

1. Bar type coupler recommended per the contract:
   • Black non-coated steel reinforcement;
   • Epoxy-coated in accordance with MnDOT 3301, "Reinforcement Bars";
   • A recommended shrink wrap Corrosion Protection Wrap System material (see requirement below); or
   • Stainless Steel in accordance with the "Stainless Steel Reinforcement Bars" special provision (2472).

2. Required Testing Methods to Determine Performance and to be considered for the A/QPL
Provide Third Party Independent Lab results for mechanical splice coupler as follows:

a. TENSION - Per ASTM A1034, *Testing Mechanical Splices for Steel Reinforcing Bars*, test per, "Monotonic Tension Test," ascertains the performance of the assembly under an increasing tension load to failure. The resistance of a full-mechanical connection shall not be less than 125 percent of the specified yield strength of the bar in tension;

b. COMPRESSION - Per ASTM A1034, *Testing Mechanical Splices for Steel Reinforcing Bars*, test per, "Monotonic Compression Test," ascertains the performance of the assembly under an increasing tension load to failure. The resistance of a full-mechanical connection shall not be less than 125 percent of the specified yield strength of the bar in compression;

c. SLIP TEST - Per ASTM A1034, *Testing Mechanical Spli ces for Steel Reinforcing Bars*, test per, "Slip Test," ascertains the plastic movement between reinforcing bars within the bar-splice assembly, when loaded in tension. The total slip of the bar within the mechanical splice of the connector after loading in tension to 30.0 ksi and relaxing to 3.0 ksi shall not exceed the following measured displacements between gage points clear of the splice:
   - For bar sizes up to No. 14……0.01 inches
   - For No. 18 bars and larger……0.03 inches

d. HIGH-CYCLE FATIGUE TEST – Per ASTM A1034, *Testing Mechanical Splices for Steel Reinforcing Bars*, test per "High-Cycle Fatigue Test" ascertains the long term performance under cyclical loadings. The mechanical splice shall achieve a minimum of 1,000,000 cycles without failure, where each cycle consists of loading the splice in tension from 0 ksi - 12.0 ksi.

LOW-TEMPERATURE TEST - Per ASTM A1034, *Testing Mechanical Spli ces for Steel Reinforcing Bars*, test per, "Low-temperature Test," the behavior of the mechanical splice coupler under a low temperature of -30°F for tests a, b, and c above.

Corrosion Protection Wrap System – the layer of the covering should be made of heat-shrinkable material, including but not limited to flexible, irradiated, and cross-linked, low density polyethylene or stretchable and heat shrinkable polyolefin or polyamide. The wrap system must be sufficiently durable so that it can withstand casting in concrete. Submit product installation information and all product
data sheets necessary to evaluate the system for inclusion onto the APL.

C. Non-Compliance

Per MnDOT’s Schedule Materials Control (SMC) representative samples per each lot will be required to be sent in to the MnDOT Lab for verification testing for each contract where they are required. If future samples of these pre-qualified couplers do not meet MnDOT specifications the product may be removed from the A/QPL product list and subject to other failing material procedures.

Please also note that it is the manufacturer’s responsibility to immediately notify MnDOT of any product change or modification, or if the product is no longer being produced. If our testing determines that there has been a change, without prior notification from the manufacturer, the product may be removed from the approved product list.

The list of approved products may be found on the MnDOT Bridge A/QPL website at http://www.dot.state.mn.us/products/bridge/index.html

Reference samples, test data, and certification shall be sent to:
Minnesota DOT
Attention: MnDOT Bridge Office – Construction Unit
3485 Hadley Avenue North
Oakdale, MN  55128-3307