

## SECTION 05822

# EXPANSION BEARINGS

### PART 1 GENERAL

#### 1.1 SECTION INCLUDES

- A. Furnish and install expansion bearings, and mating surface.

#### 1.2 RELATED SECTIONS

- A. Section 05120: Structural Steel.

#### 1.3 REFERENCES

- A. AASHTO Standard Specifications for Highway Bridges, Division II, Section 18.
- B. AASHTO M 270: Structural Steel for Bridges.
- C. ASTM A 240, Type 304: Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels.
- D. Federal Specifications MMM-A-134:

#### 1.4 DEFINITIONS

- A. **Mating surface:** stainless steel sheet welded to the girder sole plate.
- B. **Prefabricated expansion bearing:** Polytetraflouroethylene (PTFE) sliding surface bonded to the preformed fabric pad.

#### 1.5 PAYMENT PROCEDURES

- A. Expansion bearing is included in the contract lump sum price for structural steel.

## **PART 2 PRODUCTS**

### **2.1 POLYTETRAFLUOROETHYLENE (PTFE)**

- A. Meet AASHTO Standard Specifications for Highway Bridges Division II, Section 18.
- B. Material composed of either filled or unfilled virgin PTFE sheets as specified.
- C. Unfilled sheets must have minimum thickness of 0.03 inch, and filled sheets must be 0.1 inch  $\pm$  0.01 inch thick.

### **2.2 STAINLESS STEEL PLATE**

- A. Meet ASTM A 240, Type 304.
- B. Minimum thickness of 1/4 inch and minimum 8  $\mu$ inch (root mean square) mirror-like finish on the side which contacts the PTFE.

### **2.3 ADHESIVE MATERIAL**

- A. Meet Federal Specifications MMM-A-134.
- B. Epoxy resin, FEP film or approved equal.

### **2.4 PREFORMED FABRIC PAD**

- A. Meet AASHTO Standard Specifications for Highway Bridges, Division II, Section 18.
- B. As specified with dimensions in compliance with the plans.

### **2.5 STRUCTURAL STEEL**

- A. Painted Structural Steel: As specified. Meet AASHTO M 270, Grade 36 Type steel.
- B. Unpainted Weathering Steel for girders: As specified. Meet AASHTO M 270, grade 50W.
- C. These standards do not apply to the stainless steel plate.

## 2.6 MANUFACTURE - EXPANSION BEARINGS

- A. The preformed fabric pad must be bonded to the PTFE at the bearing manufacturer's factory under controlled conditions and in strict conformance to the adhesive system manufacturer's written instructions.
- B. Bond the filled or unfilled PTFE to a rigid, confining substrate that limits the flow (elongation) of the confined PTFE to not more than 0.009 inch under a load of 2,000 psi for 15 minutes at 78 degrees F for a 2 inch x 3 inch test sample. Do not bond the PTFE to the preformed fabric pad.
  - 1. Make the bonded PTFE surface smooth and free from bubbles.
  - 2. Polish the filled PTFE surfaces.
- C. Weld the stainless steel with 1/8 inch continuous fillet welds to the sole plate.
  - 1. Do not allow the weld metal to project beyond the plane of the sliding surface.
  - 2. Use Type 309 electrodes or filler rods.
  - 3. Use welding procedures compatible with the stainless steel specified.
- D. Prevent damage to the sliding surface.
- E. Protect stainless steel and PTFE sliding surfaces during manufacture, shipment, and erection.
  - 1. Wipe the sliding surfaces clean immediately before setting the girder in place.
  - 2. Reject portion of the sliding surfaces damaged by scratches, weld splatter, gouges, or overspray from painting, or other defects.
  - 3. Replace the damaged units with new units in good condition at no additional cost to the Department.
- F. Coefficient of friction between the PTFE and the stainless steel not more than 0.10 at 2,000 psi bearing pressure.

## PART 3 EXECUTION Not used.

END OF SECTION