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**SECTION 22 05 16**  
**PLUMBING EXPANSION FITTINGS AND LOOPS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

**1.2 RELATED REQUIREMENTS**

- A. Section 22 00 00 - Plumbing Common Work Results; for additional administrative requirements.
- B. Section 22 00 00 - Plumbing Common Work Results; for additional product requirements.
- C. Section 22 00 00 - Plumbing Common Work Results.
- D. Section 22 10 05 - Plumbing Piping.

**1.3 REFERENCE STANDARDS**

- A. ASME B31.9 and ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications.
- B. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2014e1.
- C. AWS D1.1 - Structural Welding Code.
- D. EJMA (STDS) - EJMA Standards; Expansion Joint Manufacturers Association; Ninth Edition.
- E. MSS SP-69 - Pipe Hangers and Supports – Selection and Application.

**1.4 SUBMITTALS**

- A. See Section 22 00 00 - Plumbing Common Work Results; for submittal procedures.
- B. Product Data: Provide manufacturer's most current catalog data sheet for equipment indicating rough-in size, finish, and accessories. Manufacturer's data sheets on each item of equipment and device, shall be clearly marked up to identify the items, accessories and options to be used on the project.
- C. Project Record Documents: Record actual installed locations of flexible pipe connectors, expansion joints, anchors, and guides.
  - 1. Refer to Section 22 00 00 - Plumbing Common Work Results.
  - 2. Record Documents (22 00 00 - 005 - A)

**PART 2 PRODUCTS**

**2.1 EXPANSION JOINTS - TWO-PLY BRONZE BELLOWS TYPE**

- A. Construction: Bronze with anti-torque device, limit stops, internal guides.
- B. Pressure Rating: 125 psi and 400 degrees F.
- C. Maximum Compression: 1-3/4 inches.
- D. Maximum Extension: 1/4 inch.
- E. Joint: Soldered.
- F. Size: Use pipe sized units.
- G. Application: Copper piping.

**2.2 ACCESSORIES**

- A. Stainless Steel Pipe: ASTM A269/A269M.
- B. Pipe Alignment Guides:

1. Two piece welded steel with enamel paint, bolted, with spider to fit standard pipe, frame with four mounting holes, clearance for minimum 1 inch thick insulation, minimum 3 inches travel.
- C. Swivel Joints:
  1. Fabricated steel body, double ball bearing race, field lubricated, with rubber (Buna-N) O-ring seals.

### **PART 3 EXECUTION**

#### **3.1 INSTALLATION**

- A. Install in accordance with the following:
  1. Federal, State and Local Code.
  2. Manufacturer's recommendations.
  3. EJMA (Expansion Joint Manufacturers Association) Standards.
- B. Install flexible pipe connectors on pipes connected to vibration isolated equipment. Provide line size flexible connectors.
- C. Anchor pipe to building structure. Provide pipe guides so movement is directed along axis of pipe only. Erect piping such that strain and weight is not on cast connections or apparatus.
- D. Provide support and equipment required to control expansion and contraction of piping. Provide loops, pipe offsets, and swing joints, or expansion joints where required.
- E. Refer to Section 22 10 05 - Plumbing Piping for piping types.
- F. Install two guide(s) on each side of pipe expansion fittings and loops. Install guides nearest to expansion joint not more than four pipe diameters from expansion joint.
- G. Attach guides to pipe and secure guides to building structure.
- H. Install anchors at locations to prevent stresses from exceeding those permitted by ASME B31.9 and to prevent transfer of loading and stresses to connected equipment.
- I. Anchor Attachments:
  1. Anchor Attachment to Black-Steel Pipe: Attach by welding. Comply with ASME B31.9 and ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
  2. Anchor Attachment to Galvanized-Steel Pipe: Attach with pipe hangers. Use MSS SP-69, Type 42, riser clamp welded to anchor.
  3. Anchor Attachment to Copper Tubing: Attach with pipe hangers. Use MSS SP-69, Type 24, U-bolts bolted to anchor.
- J. Fabricate and install steel anchors by welding steel shapes, plates, and bars. Comply with ASME B31.9 and AWS D1.1/D1.1M.
  1. Anchor Attachment to Steel Structural Members: Attach by welding.
  2. Anchor Attachment to Concrete Structural Members: Attach by fasteners. Follow fastener manufacturer's written instructions.
- K. Use grout to form flat bearing surfaces for guides and anchors attached to concrete.

#### **END OF SECTION 22 05 16**