

SECTION 15121 - PIPE EXPANSION FITTINGS AND LOOPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes pipe expansion fittings and loops for mechanical piping systems, and the following:
 - 1. Braided Expansion Loops
 - 2. Pipe bends and loops.
 - 3. Guides and anchors.

1.3 PERFORMANCE REQUIREMENTS

- A. Compatibility: Products suitable for piping system fluids, materials, working pressures, and temperatures.
- B. Capability: Absorb 200 percent of maximum piping expansion between anchors.

1.4 SUBMITTALS

- A. Product Data: For each type of expansion fitting indicated.
- B. Schedule: Indicate manufacturer's number, size, location, and features for each expansion fitting and loop.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Flexible-Hose Expansion Joints:
 - a. Flexicraft Industries.
 - b. Metraflex Co.
 - 2. Guides:
 - a. B-Line Systems, Inc.
 - b. Grinnell Corp.
 - c. Hyspan Precision Products, Inc.
 - d. Metraflex Co.

2.2 BRAIDED EXPANSION LOOPS

- A. Provide flexible expansion loops of size and type noted on drawings; Metraflex Metraloop expansion joints, or approved equal. Flexible loops shall consist of two flexible sections of hose and braid, two 90° elbows, and a 180° return assembled in such a way that the piping does not

change direction, but maintains its course along a single axis. Flexible loops shall have a factory supplied, center support nut located at the bottom of the 180° return, and a drain/air release plug.

- B. Flexible loops shall impart no thrust loads to system support anchors or building structure. Loops shall be installed in a neutral, pre-compressed or pre-extended condition as required for the application.
- C. Materials of construction and end fitting type shall be consistent with pipe material and equipment/ pipe connection fittings.
- D. Size for 4" end-to-end movement.

2.3 GUIDES

- A. Steel, factory fabricated, with bolted two-section outer cylinder and base for alignment of piping and two-section guiding spider for bolting to pipe.

2.4 MISCELLANEOUS MATERIALS

- A. Structural Steel: ASTM A 36/A 36M.
- B. Bolts and Nuts: ASME B18.10 or ASTM A 183, steel, hex head.
- C. Washers: ASTM F 844, steel, plain, flat washers.

PART 3 - EXECUTION

3.1 EXPANSION FITTING INSTALLATION

- A. Install expansion fittings according to manufacturer's written instructions.
- B. Install expansion fittings in sizes matching pipe size in which they are installed.
- C. Align expansion fittings to avoid end-loading and torsional stress.

3.2 PIPE BEND AND LOOP INSTALLATION

- A. Install pipe bends and loops cold-sprung in tension or compression as required to partly absorb tension or compression produced during anticipated change in temperature.
- B. Attach pipe bends and loops to anchors.

3.3 SWING CONNECTIONS

- A. Connect risers and branch connections to mains with at least five pipefittings, including tee in main.
- B. Connect risers and branch connections to terminal units with at least four pipefittings, including tee in riser.
- C. Connect mains and branch connections to terminal units with at least four pipefittings, including tee in main.

3.4 GUIDE INSTALLATION

- A. Install guides on piping adjoining expansion fittings and loops.
- B. Attach guides to pipe and secure to building structure.

3.5 ANCHOR INSTALLATION

- A. 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.
- B. Install pipe anchors according to expansion fitting manufacturer's written instructions if expansion fittings are indicated.

END OF SECTION 15121