**Note to users: items shown in red indicated edits / selections that need to be made to tailor the specification for the application.**

Retain and edit "Delegated-Design Submittal" Paragraph 1.E below if design services have been delegated to the contractor. The delegated design may be completed entirely by the contractor or may also involve the equipment manufacturer. Typically, the contractor would be responsible for the means and methods to attach anchors and guides to the structure, and field-fabrication of anchors. Expansion joint manufacturers may be involved in the piping analysis and selection of expansion joints and placement of anchors and guides.

# Packed Expansion Joint:

1. General:
2. Provide expansion joints as indicated on the contract drawings designed to accommodate axial thermal expansion and contraction of the piping system.

Product Specifications

1. Expansion joints shall be single / dual end joints accommodating pipe movement each end. Dual expansion joints shall have anchor base to act as intermediate anchor.
2. Expansion joints shall be of the packed type.
3. Expansion joints shall not be utilized to compensate for lateral, angular, or rotational movements.
4. Delegated-Design Submittal: Provide analysis signed and sealed by a qualified professional engineer. Submittal shall include [edit as required for project]:
	1. Design Calculations: Calculate requirements for thermal expansion of piping systems and criteria for selecting and designing expansion joints, hard-pipe loops, and swing connections.
	2. Schedule and drawings: Indicate type, manufacturer's number, size, material, pressure rating, end connections, and locations for each expansion joint, anchor and guide.
	3. Anchor Details: Detail fabrication of each anchor indicated. Show dimensions, methods of assembly, and attachment to building structure.
	4. Alignment Guide Details: Detail field assembly and attachment to building structure.

2. Products

1. Manufacturer: Expansion joints shall be **“Metra Pak”** as manufactured by The Metraflex Company®, Chicago, IL.
2. Expansion joints shall conform to ASTM F-2934 and ASTM F 1007.
3. Packing shall be non-asbestos, self-lubricating, semi-plastic, Flake Graphite packing material suitable for service up to 875°F.
4. Performance: Expansion joints shall be pressure rated for
	1. 150 lb. class.
	2. 300 lb. class.
5. Expansion joint shall accommodate 24” axial compression and 6” extension.
6. End fittings shall be:
	1. Raised Face Flange.
	2. Weld End.
		1. Sch 40 / Standard Weight.
		2. Sch 80 / extra strong.
	3. Grooved end.
	4. As specified.
7. All joints to be provided with drain connection and lifting lug (s).

3. Execution

A. Guiding: Pipe guides adjacent to the expansion joint shall be in accordance with EJMA guidelines based on design pressure and line size.

B. Expansion joint shall be equipped packing cylinders that will allow for repacking in service.

C. All dual end expansion joints shall be installed equidistantly between main anchors.

D. Installation shall be in accordance with manufacturers printed instructions.