CITY OF FORT WAYNE MASTER UPDATED: 1/5/15

SECTION 40 05 06

COUPLINGS, ADAPTERS AND SPECIALS FOR PROCESS PIPING

NTS: This section includes flexible mechanical couplings, flanged adapters, various expansion joints for piping, and dielectric connections. Edit the section to suit the project and add other piping specialties as required.

This section contains detailed descriptive requirements of the product(s) of the named manufacturer(s). If the product of another manufacturer is to be included, this section may require editing.

1. GENERAL
	1. DESCRIPTION
		1. Scope:
			1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install all couplings, adapters, and specials for process piping.
		2. Coordination:
			1. Review installation procedures under this and other Sections and coordinate installation of items that must be installed with or before couplings, adapters, and specials for process piping Work.

NTS: Delete Paragraph “2” on single-prime contract projects.

* + - 1. Notify other contractors in advance of the installation of couplings, adapters, and specials for process piping to provide them with sufficient time for installing items included in their contracts that must be installed with or before couplings, adapters, and specials for process piping Work.
		1. Related Sections:

NTS: List below only sections covering products, construction, and equipment specifically identified in this section and specified in another section and directly referenced in this specification. Do not list administrative and procedural Division 01 sections.

* + - 1. Section 09 97 43, Coating Systems for Water and Wastewater Facilities.
			2. Section 33 11 00, Water Piping Installation.
			3. Section 33 31 00, Sanitary Sewer Piping Installation.
			4. Section 33 41 00, Storm Utility Piping Installation.
	1. MEASUREMENT AND PAYMENT

NTS: Insert at (--1--) below the various fittings for process piping to be used for the project adjust Section 1.5 below for additional work item number as needed.

* + 1. Couplings, adapters, and specials for process piping
			1. Work Item Number and Title

 **40 05 06-A Couplings**

 **40 05 06-B Adapters**

 **40 05 06-C (--1--) Specials**

* + - 1. Measurement: The quantity of (couplings, adapters or specials) installed shall be on a unit price basis per type and size as indicated on the Bid Schedule.
			2. Payment: The payment of (couplings, adapters or specials) shall be based on the unit price as listed in the Bid schedule per each type and size successfully installed.
	1. REFERENCES

NTS: Retain applicable standards and add others as required.

* + 1. Standards referenced in this Section are:
			1. ANSI B16.1, Cast-Iron Pipe Flanges and Flanged Fittings.
			2. ANSI B16.39, Malleable Iron Threaded Pipe Unions.
			3. ASME B31, Standards of Pressure Piping.
			4. ASTM A53/A53M, Specification for Pipe, Steel, Black and Hot-dipped, Zinc-Coated, Welded and Seamless.
			5. ASTM A105/A105M, Specification for Carbon Steel Forgings and Piping Applications.
			6. ASTM B169/B169M Specification for Aluminum Bronze Sheet, Strip, and Rolled Bar.
			7. ASTM B650, Specification for Electro-Deposited Engineering Chromium Coatings of Ferrous Substrates.
			8. ASTM C1173, Standard Specification for Flexible Transition Couplings for Underground Piping Systems.
			9. ASTM D5926, Standard Specifications for Poly (Vinyl Chloride) (PVC) Gaskets for Drain, Waste, and Vent (DWV), Sewer, Sanitary, and Storm Plumbing Systems.
			10. ASTM F593, Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs
			11. AWWA C606, Grooved and Shouldered Joints.
	1. QUALITY ASSURANCE

NTS: Edit or delete Paragraph “A” below, if project requirements prohibit experience clause.

* + 1. Qualifications:
			1. Manufacturer shall have at least five years experience producing substantial similar products to those specified and shall be able to provide documentation of at least five installations in satisfactory operation for at least five years each.
		2. Component Supply and Compatibility:
			1. Obtain each type of coupling, adapter, and special for process piping product included in this Section, regardless of component manufacturer, from a single couplings, adapters, and specials manufacturer.
			2. Supplier shall prepare, or review, and approve all submittals for components furnished under this Section.
			3. Components shall be suitable for specified service conditions and be integrated into overall assembly by the Supplier.
	1. SUBMITTALS
		1. Action Submittals: Submit the following:
			1. Shop Drawings:
				1. Submit piping layout Shop Drawings in accordance with the Contract Documents.
			2. Product Data:
				1. Submit product data on each type of coupling, expansion joint, and other piping specialties and accessories, including gaskets, hardware, and appurtenances sufficient to demonstrate compliance with the Contract Documents.
		2. Informational Submittals: Submit the following:
			1. Certificates:
				1. When requested by Engineer submit certificate attesting to compliance with standards referenced in this Section, signed by manufacturer.
			2. Manufacturer’s Instructions:
				1. Provide instructions for handling, storing, installing, and adjusting of products.
			3. Source Quality Control:
				1. When requested by Engineer, submit results of source quality control tests.
			4. Qualifications Statements:
				1. Submit qualifications of manufacturer when requested by Engineer.

NTS: Delete types of piping specialties and accessories not used. Edit “PART 2” as required.

1. PRODUCTS
	1. COUPLINGS
		1. Sleeve-type, Flexible Couplings:
			1. Pressure and Service: Same as connected piping.
			2. Products and Manufacturers: Provide products of one of the following:

NTS: Substitute Dresser “Style 38” for “Style 253”, and substitute Smith Blair “Style 411” for “Style 441” for couplings greater than 16-inch diameter, when working pressure exceeds 200 psi (for Dresser Style 38) or 250 psi (for Smith Blair Style 441), and when steel couplings are acceptable. Dresser Style 38 and Smith Blair Style 411 (steel coupling) are available in sizes from 0.5-inch to 60-inch diameter (Smith Blair Style 411) and 72-inch diameter (Dresser Style 38). Dresser Style 253 and Smith Blair Style 441 (cast-iron coupling) are available in sizes from two-inch to 16-inch diameter for the following pipe materials: steel, asbestos cement, cast or ductile iron, and PVC.

* + - * 1. Style 253, as manufactured by Dresser Piping Specialties, part of Dresser, Inc.
				2. Style 441, by Smith Blair, Inc.
				3. Or Engineer approved equal.

NTS: If the pipe is steel or if there will be no problem with corrosion, in Paragraph “3” below substitute “steel” for ductile‑iron and coordinate with model numbers specified in Paragraph “2” above.

* + - 1. Material: Ductile Iron.

NTS: In Paragraph “4”, below, special rubber gaskets are available for different conditions. Select “as recommended by manufacturer” or consult with specified manufacturers and insert at No. 1 the gasket material. Paragraph “5”, below, may revised to standard-strength bolts and nuts if acceptable.

* + - 1. Gaskets: Suitable for specified service, as recommended by manufacturer (‑‑1‑‑).
			2. Bolts and Nuts: Alloy steel, corrosion‑resistant, primer-coated. For buried or submerged applications, provide stainless steel bolts complete with washers complying with ASTM F593, AISI Type 316 and with nitrided stainless nuts.

NTS: Retain one version of Paragraph “6”, below, and delete the other. Use the second version when complete harnessing details are included on the drawings; otherwise, use the first version.

* + - 1. Harnessing:
				1. Harness couplings to restrain pressure piping. For pipelines that will be under pressure, test pressures are specified in piping schedules in Section 33 05 05, Buried Piping Installation, and Section 40 05 05, Exposed Piping Installation.
				2. Tie adjacent flanges with bolts of corrosion-resistant alloy steel. Provide flange-mounted stretcher bolt plates to be designed by manufacturer, unless otherwise approved. For buried or submerged applications, provide external bolting and other hardware of Type 316 stainless steel, including tie bolts, bolt plates, lugs, nuts, and washers.
				3. On plain-end piping, for harnessing couplings, provide anchor restraint system such as Dresser Piping Specialties STAR Anchor Style 443, or equal.
				4. Conform to dimensions, size, spacing, and materials for lugs, bolts, washers, and nuts as recommended by manufacturer and approved by Engineer for pipe size, wall thickness, and test pressure required. Provide minimum 5/8-inch diameter bolts.
			2. Harnessing:
				1. Harness couplings to restrain pressure piping. For pipelines that will be under pressure, test pressures are specified in piping schedules in Section 33 05 05, Buried Piping Installation, and Section 40 05 05, Exposed Piping Installation.
				2. Harnessing shall conform to details shown. For buried or submerged applications, provide external bolting and other hardware of Type 316 stainless steel, including tie bolts, bolt plates, lugs, nuts, and washers.
				3. On plain end piping, for harnessing couplings, provide anchor restraint system such as Dresser Piping Specialties STAR Anchor Style 443, or equal.
			3. Remove pipe stop(s) if used, unless otherwise shown or specified.
		1. Flanged Coupling Adapters:
			1. Description: One end of adapter shall be flanged and opposite end shall have sleeve-type flexible coupling.
			2. Products and Manufacturers: Provide one of the following:

NTS: For flanged coupling adapters greater than 12-inch diameter and when steel flanged coupling adapters are acceptable, substitute Dresser “Style 128” for “Style 227”, and substitute Smith Blair “Style 913” for “Style 912” below. Dresser Style 128 and Smith Blair Style 913 (steel flanged adapter) are available in sizes from two-inch to 24-inch diameter as standard (up to 96-inch is available as custom). Dresser Style 227 and Smith Blair Style 912 (cast-iron flanged adapter) are available in sizes from three-inch to 12-inch diameter for the following pipe materials: steel, asbestos cement, cast or ductile iron, and PVC.

* + - * 1. Style 227, as manufactured by Dresser Piping Specialties, part of Dresser, Inc.
				2. Style 912, by Smith Blair, Inc.
				3. Or Engineer approved equal.
			1. Pressure and Service: Same as connected piping.

NTS: If the pipe is steel or if there will be no problem with corrosion, in Paragraph “3” below substitute “steel” for ductile‑iron and coordinate with model numbers specified in Paragraph “2” above.

* + - 1. Material: Ductile iron.

NTS: In Paragraph “5”, below, special rubber gaskets are available for different conditions. Retain “recommended by the manufacturer” or consult with specified manufacturers and insert at No. 1 the gasket material. Paragraph “6”, below, may revised to standard-strength bolts and nuts if acceptable.

* + - 1. Gasket: Recommended by the manufacturer (‑‑1‑‑).
			2. Bolts and Nuts: Alloy steel, corrosion‑resistant, primer-coated. For buried or submerged applications, provide stainless steel bolts complete with washers complying with ASTM F593, AISI Type 316 and nitrided stainless nuts.

NTS: Retain one version of Paragraph “7” below and delete the other. Edit to suit the project. Use the second version when complete harnessing details are included on the drawings; otherwise, use the first version.

* + - 1. Harnessing:
				1. Harness adapters to restrain pressure piping. For pressure pipelines, test pressures are included in piping schedules in Piping Installation Sections.
				2. For flanged adapters 12‑inch diameter and smaller, provide 1/2‑inch diameter (minimum) Type 316 stainless steel anchor studs installed in pressure-tight anchor boss. For buried or submerged applications, provide external bolting and other hardware of Type 316 stainless steel, including tie bolts, bolt plates, lugs, nuts, and washers. Provide number of studs required to restrain test pressure and service conditions. Harness shall be as designed and recommended by flanged adapter manufacturer. Provide the following minimum anchor studs unless otherwise approved by Engineer.

NTS: Studs specified below are suitable for 175 psi. Edit as required to suit service conditions. For flanged adapters on pump discharge outlets, edit this section to require conformance to hydraulic institute standards for allowable nozzle loads

Six‑inch Diameter and Smaller: Two

Eight‑inch Diameter and Smaller: Four

Ten‑inch Diameter and Smaller: Six

Twelve‑inch Diameter and Smaller: Eight

* + - * 1. For adapters larger than 12‑inch diameter, provide split‑ring harness clamps with minimum of four corrosion-resistant alloy steel bolts. For buried or submerged applications, provide external bolting and other hardware of Type 316 stainless steel, including tie bolts, bolt plates, lugs, nuts, and washers. Harness assembly shall be as designed and recommended by flanged adapter manufacturer. Dimensions, sizes, spacing and materials shall be suitable for service and conditions encountered and shall be approved by Engineer.
			1. Harnessing:
				1. Harness couplings to restrain pressure piping. For pressure pipelines, test pressures are included in piping schedules in Section 33 05 05, Buried Piping Installation, and Section 40 05 05, Exposed Piping Installation.
				2. Harnessing shall conform to details shown. For buried or submerged applications, provide external bolting and other hardware of Type 316 stainless steel, including tie bolts, bolt plates, lugs, nuts, and washers.
		1. Split-type Grooved or Shouldered End Couplings:
			1. Pressure and Service: Same as connected piping. Use shouldered end where required by pressure rating.

NTS: For piping other than steel (where both rigid and flexible couplings are specified below), the couplings in Paragraph “2” are flexible. Most of the flexible couplings specified have rigid counterparts by the named manufacturers. Edit to suit the project.

In addition to the pipe types and models specified in Paragraph “2”, below, Victaulic also offers Style 606 couplings for jointing copper pipe, two-inch to eight-inch diameter.

* + - 1. Products and Manufacturers:
				1. For coupling of cast-iron or ductile iron pipe, provide products of one of the following:

Style 31, as manufactured by Victaulic Company.

Series 500, as manufactured by Tyler Pipe, Gustin Bacon Division.

Gruvlok Figure 705, as manufactured by Grinnell Mechanical Products, division of Tyco.

Or Engineer approved equal.

NTS: When both Paragraphs “b” and “c” below are used, specify or show on the drawings where joint deflection is allowed and where rigid couplings are required.

* + - * 1. For coupling of standard steel pipe, where joint deflection is desired or allowed, provide products of one of the following:

Style 77, as manufactured by Victaulic Company.

Series 1000, as manufactured by Tyler Pipe, Gustin Bacon Division.

Or Engineer approved equal.

* + - * 1. For coupling of standard steel pipe, where joint deflection is not desired or allowed, provide products of one of the following:

Style HP‑70, as manufactured by Victaulic Company.

Series 110, as manufactured Tyler Pipe, Gustin Bacon Division.

Or Engineer approved equal.

* + - * 1. For coupling of stainless steel pipe, provide products of one of the following:

Style 77‑S, as manufactured by Victaulic Company.

Or Engineer approved equal.

* + - * 1. For coupling of aluminum pipe, provide products of one of the following:

Style 77A, as manufactured by Victaulic Company.

Series 101, as manufactured by Tyler Pipe, Gustin Bacon Division.

Or Engineer approved equal.

* + - * 1. For coupling of thermoplastic pipe, provide products of one of the following:

Style 774, as manufactured by Victaulic Company.

Or Engineer approved equal.

* + - 1. Couplings shall conform to applicable requirements of AWWA C606.

NTS: Retain housing material(s) to suit types of pipe included in the project and delete types of housings not required.

* + - 1. Housing Material:
				1. For coupling of cast-iron pipe, ductile iron pipe, steel pipe, and thermoplastic pipe: Malleable iron or ductile iron.
				2. For coupling of stainless steel pipe: Type 304 stainless steel, or equal.
				3. For coupling of aluminum pipe: Aluminum alloy 356‑T6.

NTS: In Paragraph “5”, below, special rubber gaskets are available for different conditions. Retain “recommended by the manufacturer” or consult with specified manufacturers and insert at No. 1 the gasket material.

* + - 1. Gaskets: Recommended by the manufacturer (‑‑1‑‑).
			2. Bolts and Nuts: Heat-treated carbon steel track bolts, plated. For buried or submerged applications, provide stainless steel bolts complete with washers complying with ASTM F593, AISI Type 316 and with nitrided stainless nuts.

NTS: The mechanical products industry manufactures a large variety of expansion joints for piping. Verify with specified manufacturers the service and application before editing Article “2.2” for the project.

* 1. EXPANSION JOINTS
		1. Rubber-type Expansion Joints:
			1. General:
				1. Use rubber-type expansion joints at all expansion joint locations, except where other types of expansion joints are shown or specified.
			2. Manufacturers: Provide products of one of the following:
				1. Mercer Rubber Company.
				2. U.S. Rubber Supply Company, USA
				3. Or Engineer approved equal.
			3. Liquid Service:
				1. Construct expansion joints of neoprene or Buna-N suitable for temperatures up to 180 degrees F.
				2. Expansion joints shall be filled arch type. Provide backup or retaining rings as recommended by expansion joint manufacturer.
				3. Expansion joints shall be yoked in manner to provide transmission of tension loading to which expansion joint may be subjected during system operation. Compressive or lateral movement of expansion joint shall not be impaired by yoking system. Details of expansion joint yoking shall be submitted to Engineer for approval.
			4. Air Service:
				1. Provide pipe expansion joints in air piping where shown as a minimum. Provide additional expansion joints if recommended by pipe manufacturer.
				2. Air Service Expansion Joints – General:

Except for expansion joints required at inlet and outlet connections of air blowers, construct expansion joints of chlorobutyl rubber, reinforced with embedded steel rings and strong synthetic fabric.

Expansion joints six-inch diameter and smaller shall be double arch units. Expansion joints larger than six-inch diameter shall be triple arch units.

Ends shall be flanged, with flanges conforming to ANSI B16.1, Class 125. Provide epoxy-coated split steel retaining rings to prevent damage to flanges when bolts are tightened.

Expansion joints shall be suitable for temperatures up to 300 degrees F, and pressures to 40 psi.

* + - * 1. Air Service Expansion Joints – At Air Blower Inlet and Outlet Connections:

Expansion joints shall be U‑type units constructed of chlorobutyl rubber, reinforced with a strong synthetic fabric.

Expansion joints shall minimize the transmission of vibration from blower to piping at suction and discharge connections.

Expansion joint ends shall be flanged, with flanges conforming to ANSI B16.1, Class 125. Provide epoxy-coated split steel retaining rings to prevent damage to flanges when bolts are tightened.

Expansion joints shall be suitable for temperatures up to 300 degrees F, and pressures to 40 psi.

* + - * 1. The following table specifies minimum required non‑concurrent movements for double arch units.

NTS: Insert at No. 1 to No. 4 values to suit the project.

|  |  |  |  |
| --- | --- | --- | --- |
| **Expansion Joint Diameter (inches)** | **Lateral Deflection (inches)** | **Axial Elongation (inches)** | **Axial Compression (inches)** |
| (--1--) | (--2--) | (--3--) | (--4--) |
|  |  |  |  |
|  |  |  |  |

* + - * 1. The following table specifies minimum required non‑concurrent movements for triple arch units.

NTS: Insert at No. 1 to No. 4 values to suit the project.

|  |  |  |  |
| --- | --- | --- | --- |
| **Expansion Joint Diameter (inches)** | **Lateral Deflection (inches)** | **Axial Elongation (inches)** | **Axial Compression (inches)** |
|  (--1--) | (--2--) | (--3--) | (--4--) |
|  |  |  |  |
|  |  |  |  |

* + - 1. Harnessing:
				1. Harness each expansion joint against thrust for test pressure in piping, as specified in Piping Installation Sections.
				2. Harnessing shall be by control units consisting of two or more tie rods connected between flanges, set for maximum allowable elongation of expansion joint.
				3. Provide epoxy-coated triangular plates to connect tie rods to flanges. Tie rods shall be Series 300 stainless steel. Rubber washers shall be used between triangular plates and tie rods.
				4. Provide control units in accordance with recommendations of expansion joint manufacturer.
		1. Stainless Steel Expansion Joints:
			1. Provide stainless steel expansion joints where shown.
			2. Manufacturers: Provide products of one of the following:
				1. Senior Flexonics Canada, Ltd.
				2. Hyspan Precision Products, Inc.
				3. Or Engineer approved equal.
			3. Stainless Steel Expansion Joints – General:
				1. Expansion joint elements shall be hydraulically formed of single-ply austenitic stainless steel, and shall withstand specified pressure and temperature conditions, and shall absorb thermal expansion of piping.
				2. Expansion joints shall be free flexing type with internal sleeves and shall be Type 304 stainless steel with fixed rolled angle flange.
				3. Expansion joints shall be manufactured and rated in accordance with ASME B31, wherever possible. Burst strength shall be equal to four times working pressure of pipeline, and test hydrostatic pressure shall be equal to 1.5 times rated working pressure of expansion joint.
				4. Expansion joints in yard air piping shall have internal guide with thickness equal to piping wall thickness.
			4. Stainless Steel Expansion Joints – Digester Gas Service:
				1. Expansion joints shall be formed of three-ply, Type 316L stainless steel and shall withstand specified pressure and temperature conditions, and shall absorb thermal expansion.
				2. Joints shall be free flexing type with internal sleeves and shall be Type 316L stainless steel with fixed rolled angle flange.
				3. Expansion joints shall be manufactured and rated in accordance with ASME B31, wherever possible. Burst strength shall be equal to four times working pressure of pipeline, and test hydrostatic pressure shall be equal to 1.5 times rated working pressure of expansion joint.
			5. The following table specifies minimum required non‑concurrent movements for stainless steel expansion joints:

NTS: Insert at No. 1 to No. 4 values below to suit the project.

|  |  |  |  |
| --- | --- | --- | --- |
| **Expansion Joint Diameter (inches)** | **Lateral Deflection (inches)** | **Axial Elongation (inches)** | **Axial Compression (inches)** |
| (--1--) | (--2--) | (--3--) | (--4--) |
|  |  |  |  |
|  |  |  |  |

* + - 1. Harnessing:
				1. Harness each expansion joint against thrust for test pressure in piping, as specified in piping schedules in Piping Installation Sections.
				2. Harnessing shall be by two or more limit rods connected between flanges set for maximum allowable elongation of expansion joint.
				3. Limit rods and connection accessories shall be of Series 300 stainless steel.
				4. Limit rods shall be provided in accordance with the recommendations of expansion joint manufacturer.

NTS: The most common uses for packed slip expansion joints are in the distribution of steam and hot water, and where the principal movement is axial. The specification in Paragraph “C” is proprietary to Hyspan.

* + 1. Packed Slip Expansion Joints:
			1. Expansion joints shall be slip type containing injectable packing ports, allowing additional packing to be added under full line pressure.
			2. Manufacturers: Provide products of one of the following:
				1. Hyspan Precision Products, Inc.
				2. Or Engineer approved equal.
			3. Expansion joints shall be capable of 150 psi steam working pressure and 300 degrees F temperature.
			4. Features: Provide expansion joints with the following:
				1. One-piece body conforming to ASTM A53/A53M, Grade B. Slip tube shall be hard-chrome plated, 0.802-inch thick, in accordance with ASTM B650.
				2. Graphite injectable packing and seals.
				3. Internal and external aluminum bronze guides, conforming to ASTM B169.
				4. 360-degree, stainless steel extension limit stop on each slip tube. Slip tube shall be Schedule 80 carbon steel pipe conforming to ASTM A53/A53M Grade B pipe through 16-inch diameter internal pipe size (IPS).
				5. Provide drain port.

NTS: As an alternate to flanges specified in Paragraph “f”, plain-end (welded) and grooved (“Victaulic-Style”) ends are available. Edit Paragraph “f” to suit the project.

* + - * 1. End-connections shall be flanged, ASTM A105 raised face slip-on or flat faced.
				2. Coat non-chromed internal and external surfaces with 0.008-inch dry-film thickness of Tnemec Potapox epoxy coating.
			1. Expansion joint minimum travel shall be four inches axially, and shall allow 0.5-inch expansion.
			2. Expansion joint full stroke life cycle shall be minimum of 20,000 full strokes.

NTS: Expansion joints specified in Paragraph “D” below for sludge piping applications withstand harsh service and grit, which can adversely affect rubber-type expansion joints and bellows-style expansion joints.

In Paragraph “D.1”, below, insert at No. 1 and 2 the appropriate model number. For Dresser, typically use “Style 63” and specify “type \_\_\_”. For Smith-Blair, typically use “Model 611” or “Model 612”.

Consult with specified manufacturers and edit paragraph “D” to suit the project.

* + 1. Expansion Joints – Sludge Piping
			1. Products and Manufacturers: Provide one of the following:
				1. Style (--1--), by Dresser Piping Specialties, part of Dresser, Inc.
				2. Model (--2--), by Smith-Blair, Inc.
				3. Or Engineer approved equal.
			2. Features: Sludge piping expansion joints shall have:

a. Suitable packing acceptable for temperatures greater than 212 degrees F.

NTS: Insert at No. 1 the material. Expansion joints are available in a variety of materials; consult with manufacturers for alternatives. Edit Paragraph “c” as required to coordinate with material selected in paragraph “b”.

* + - * 1. Body Material: (--1--).
				2. Linings and Coatings:

Where sludge expansion joints are installed in glass lined pipe, expansion joint slip pipe shall be glass lined. Where pipes are not glass lined, slip pipe and interior of expansion joint body shall be lined with coal tar epoxy.

Coat interior of expansion joint body with coal tar epoxy.

Exterior surface of slip pipe in contact with packing during movement shall be chrome-plated machined surface.

* 1. MISCELLANEOUS SPECIALTIES AND ACCESSORIES
		1. Dielectric Connections:
			1. General: Where copper pipe connects to steel pipe, cast-iron pipe, or ductile iron pipe, provide either dielectric union or an insulating section of rubber or plastic pipe. When used, insulating section shall have minimum length of 12 pipe diameters.
			2. Manufacturers: Provide products of one of the following:
				1. Epco Sales, Inc.
				2. Watts Regulator Company.
				3. Capitol Manufacturing Company.
				4. Or Engineer approved equal.

NTS: Edit Paragraphs “3” and “4” to suit the project.

* + - 1. Dielectcric Unions: Rated for 250 psi, ANSI B16.39.
			2. Insulating Sections: Rated for same pressure as associated piping test pressure. Material shall be suitable for the application and service.
	1. PAINTING
		1. Shop Painting:
			1. Clean and prime-coat ferrous metal surfaces of products in the manufacturer’s shop in accordance with Section 09 97 43, Coating Systems for Water and Wastewater Facilities, unless otherwise specified in this Section
			2. Coat machined, polished and non‑ferrous surfaces bearing surfaces and similar unpainted surfaces with corrosion prevention compound that shall be maintained during storage and until products are placed into operation.
		2. Field painting shall conform to Section 09 97 43, Coating Systems for Water and Wastewater Facilities.
1. EXECUTION
	1. INSPECTION
		1. Inspect materials for defects in material and workmanship. Verify compatibility of products with pipe, fittings, valves, and appurtenances.
	2. INSTALLATION
		1. Installation:
			1. Install piping specialties in accordance with the Contract Documents and manufacturer’s instructions.
			2. Refer to Piping Installation Sections.
		2. Adjust expansion joints as required to ensure that expansion joints will be fully extended when ambient temperature is at minimum operating temperature, and fully compressed at maximum operating temperature for the system in which expansion joints are installed.

+ + END OF SECTION + +