

SECTION 40 27 00.03 CARBON STEEL PIPE AND FITTINGS—GENERAL SERVICE		
Item	Size	Description
General	All	Physical Characteristics: Black carbon steel pipe and fittings. Functional Characteristics: Service Flow Streams on Piping Schedule as shown on the Drawings. .
Pipe	All pipe material	Performance Characteristics: ASTM A106/A106M, Grade B seamless or ASTM A53/A53M, Grade B seamless or ERW. Threaded, butt-welded, socket-welded, and flanged joints:
	Threaded: 1-1/2" & smaller	Performance Characteristics: Standard weight.
	Welded: 1" & larger	Performance Characteristics: Standard weight.
Joints	1-1/2" & smaller	Performance Characteristics: Threaded, socket-welded or flanged at valves and equipment. Grooved joints not allowed for Fuel Gas and Fuel Oil Service.
	1" & larger	Performance Characteristics: Butt-welded, socket-welded or flanged at valves and equipment. Grooved joints not allowed for fuel gas and fuel oil service.

SECTION 40 27 00.03
CARBON STEEL PIPE AND FITTINGS—GENERAL SERVICE

Item	Size	Description
Fittings	1-1/2" & smaller	Performance Characteristics: Threaded: 150-pound or 300-pound malleable iron, ASTM A197/A197M or ASTM A47/A47M, dimensions in accordance with ASME B16.3. Fire sprinkler fittings to be UL listed. Socket-welded: 1/2" to 4" forged steel fittings in accordance with ASME B16.9 or ASME B16.11.
	2" & larger	Performance Characteristics: Butt Welded: Wrought carbon steel butt- welding, ASTM A234/A234M, Grade WPB meeting the requirements of ASME B16.9; fitting wall thickness to match adjoining pipe; long radius elbows unless shown otherwise. Socket-welded: 1/2-inch to 4-inch forged steel fittings in accordance with ASME B16.9 or ASME B16.11.
Branch Connections	1-1/2" & smaller	Performance Characteristics: For Threaded Pipe: Threaded, straight, or reducing tees in conformance with Fittings specified above. For welded pipe, use threadolet.
	2" & larger	Performance Characteristics: Butt-welding or socket-welding tee in conformance with Fittings specified above.

SECTION 40 27 00.03
CARBON STEEL PIPE AND FITTINGS—GENERAL SERVICE

Item	Size	Description
Flanges	1-1/2" & smaller	Performance Characteristics: Forged carbon steel, ASTM A105/A105M, Grade II, ASME B16.5 Class 150 or Class 300 socket-weld or threaded, 1/16-inch raised face.
	2" & larger	Performance Characteristics: Butt-Welded Systems Standard Flange (RFWN): Forged carbon steel, ASTM A105/A105M, ASME B16.5 Class 150 or Class 300 slip-on or welding neck, 1/8-inch raised face; weld neck bore to match pipe internal diameter. Use weld neck flanges when abutting butt-weld fittings. Weld slip-on flanges inside and outside. Butt-Welded Systems Standard Flange (FFWN) or Blind Flange: Forged carbon steel, ASTM A105/A105M, ASME B16.5 Class 150 slip-on or welding neck, 1/8-inch flat face; weld neck bore to match pipe internal diameter. Use weld neck flanges when abutting butt-weld fittings. Weld slip-on flanges inside and outside. Cast Iron Mating Flange: AWWA C207, Class D or E, hub or ring type to mate with ASME B16.1, Class 125 cast-iron flange. AWWA C207 Class F hub type or ASTM A105/A105M, ASME B16.5 Class 300 to mate with ASME B16.1 Class 250 cast-iron flange.
Unions	1-1/2" & smaller	Performance Characteristics: Threaded malleable iron, ASTM A197/A197 or ASTM A47/A47M, 150-pound or 300-pound WOG, meeting the requirements of ASME B16.3.
Couplings	2" & larger	Performance Characteristics: Screwed End: Malleable iron, ASTM A197/A197M or ASTM A47/A47M.

SECTION 40 27 00.03
CARBON STEEL PIPE AND FITTINGS—GENERAL SERVICE

Item	Size	Description
Bolting	All	Performance Characteristics: Flanges: Carbon steel ASTM A307, Grade A hex head bolts; ASTM A563, Grade A hex head nuts and ASTM F436 hardened steel washers at nuts and bolt heads. Achieve 40 percent to 60 percent of bolt minimum yield stress. When mating flange on equipment is cast iron and gasket is flat ring, provide ASTM A307, Grade B hex head bolts; ASTM A563, Grade A heavy hex nuts and ASTM F436 hardened steel washers at nuts and bolt heads. Achieve 40 percent to 60 percent of bolt minimum yield stress.
Gaskets	All flanges	Performance Characteristics: Water, Steam, and Air Services: Gasket, inorganic aramid fiber with nitrile binder, CL150, 1/8-inch thick, Shore A 80 Durometer, ASME B16.21 and ASME B16.5, ASTM D1330, NSF 61, full-face gasket for raised-face flange, extended to inner edge of bolt. Fuel Gas and Fuel Oil Service: 1/8-inch thick, nitrile rubber, rated 250 degrees F continuous and conforming to ASME B16.21 and ASTM D2000. Mating Flange: Cast iron or plastic. Full face, 1/8-inch thick, homogeneous black rubber (EPDM), hardness 60 to 80 (Shore A), rated to 275 degrees F, conforming to ASME B16.21 and ASTM D1330. NSF 61 approved for potable water service. Fuel Gas and Fuel Oil Service Blind Flanges: Gasketed covering the entire inside face with the gasket cemented to the blind flange. Gasket, inorganic aramid fiber with nitrile binder, CL150, 1/8-inch thick, nitrile rubber, ASME B16.21 and ASME B16.5, ASTM D2000, flat-ring gasket for flat-face flange.

SECTION 40 27 00.03 CARBON STEEL PIPE AND FITTINGS—GENERAL SERVICE		
Item	Size	Description
Thread Lubricant	1-1/2" & smaller	Manufacturers and Products: AA Thread Seal Tape, Inc. Or equal. Performance Characteristics: General Service: 100 percent virgin polytetrafluoroethylene PTFE tape. Fuel Gas and Fuel Oil Service: Yellow polytetrafluoroethylene PTFE tape designed for fuel gas service, Air Force A-A-58092.

END OF SECTION

