

Part 1 General**1.1 PIPING**

- .1 All work covered by this section shall be carried out in accordance with, but not limited to the following standards, which shall be deemed to be and form part of this specification.
 - .1 American National Standards Institute:
 - B31.3 – “Chemical Plant and Petroleum Refinery Piping”
 - B2.1 – “Pipe Threads”
 - B16.50 – “Steel Pipe Flanges and Flanged Fittings”
 - B16.90 – “Steel Butt-weld Fittings
 - B16.11 – Forged Steel Fittings Socket Welding and Threaded
 - B16.21 – “Non-Metallic Gaskets for Pipe Flanges”
 - B18.20 – “Square and Hex Nuts and Bolts”
 - B16.25 – “Butt Welding Ends”
 - .2 Boiler and Pressure Vessel Regulations of the Province of Saskatchewan.
 - .3 American Society of Mechanical Engineers: ASME Boiler and Pressure Vessel Code.
 - .4 Applicable Municipal and Regional Codes

1.2 MATERIALS

- .1 Steel Pipe – Class 150
Steel pipe, valves and fittings shall meet the following requirements:
 - .1 40mm and down - Steel, seamless, Schedule 80, API 5L, Gr.B threaded or socket ends.
 - .2 50mm - Steel, seamless, XS, API 5L Gr.B plain or B.W. ends.
- .2 Stainless Steel Pipe - 304L, Schedule 40
- .3 Petroleum Tubing/Fittings
 - .1 Tubing: Type 316 stainless steel, ASTM A-269, seamless, full annealed, max. RB80, 12mm O.D. x 1.3mm wall thickness.
 - .2 Tube Fittings: 316 SS compression type.
 - .3 Shut-Off Valves: 316 SS compression type.
 - .4 Fusible link valve – 12mm.
 - .5 Flexible Metal Hoses: 316SS tube with SS overbraid, 12mm nominal hose I.D., 900mm minimum length.

- .4 Fittings
 - .1 40mm and down – ANSI Class 3000 CWP, steel, A-105 forged, threaded or socket
 - .2 50mm – B.W., carbon steel, std. Wt., A-234 Gr.WPB

1.3 INSTALLATION - GENERAL

- .1 All work to meet local, Provincial, and Federal Acts, codes, and regulations, installed and tested to the satisfaction of governing fire authority and Departmental Representative. Fuel system installation work is to be done by an ITA Certified Petroleum Installer certified by the Province of Saskatchewan. Certificates to be provide with bid. PWGSC requires the ITA Certified Petroleum Installer to provide a signed record that they completed the installed works as per CEPA Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations, CCME Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products, and the National Fire Code.
- .2 Fabrication of all piping shall be as per CSA B139-09, ANSI B31.3 and ASME Boiler and Pressure Vessel Codes as applicable.
- .3 Piping to be installed fitted and tested only by a petroleum pipe fitter of journeyman status. Journeyman certificates to be provided with bid.
- .4 All piping must be flushed and tested.
- .5 The use of close nipples is not permitted.
- .6 The use of street elbows or 45 degree elbows for swing joints is not permitted.
- .7 The Contractor shall follow the drawings in all matters concerning the location and placement of all pipe, valves, fittings and supports, and no changes are to be made from the drawings without prior written permission from the Departmental Representative.
- .8 Pipes shall be adequately supported to prevent abnormal stress from being imposed on equipment. Inaccuracies in pipe fabrication causing stress to be imposed on the equipment will not be permitted. The Departmental Representative reserves the right, if he deems it desirable, to have flanged joints unbolted at the equipment flanges to determine if there is any misalignment. Unsatisfactory workmanship shall be corrected by re-adjustment of pipe supports, anchor points, or re-fabrication.
- .9 All pipe and fittings must be swabbed clean (i.e. wire with a rag) prior to their assembly.
- .10 After a pipe or fitting has been swabbed, plug the end with a rag or other device.
- .11 Pipes shall be accurately cut to length so as to permit normal thread engagement between male and female threads.
- .12 Threads shall be tapered and smooth, cut with the correct taper, lead, thread angle and diameter and shall conform to NPT (A.S.A.-B2-1-1945).
- .13 After completion of installation, all scale, dirt, welding electrodes, slag, rags and other foreign materials shall be removed from the lines.
- .14 Each joint shall be cleaned to remove dirt, loose mill scale or foreign substances before placing pipe in alignment for welding.
- .15 Pipe not yet in use or in material stock pile on site shall be plugged with a rag or similar device to prevent foreign material from entering the pipe.

- .16 All practical precautions shall be taken to prevent the introduction of foreign material into instruments, valves, meters, loaders, pumps and any other equipment.

1.4 ABOVEGROUND PIPE INSTALLATION

- .1 Pipelines must be located aboveground, in parallel banks, plumb and true to provide a neat, orderly arrangement.
- .2 Pipeline runs located as shown on plot plan and piping plan. Spaced centre to centre.
 - .1 40 mm and smaller - 150 mm C.C.
 - .2 50 mm – 200 mm C.C.
- .3 Pipe Supports
 - .1 Pipe supports/hangers shall be provided to support lines from 20 mm to 75 mm diameter every 2400 mm minimum and 100 mm to 300 mm diameter every 6500 mm or as shown on drawings.
 - .2 If variations to .1 above are indicated on the drawings, the drawings shall govern.

1.5 INSPECTION AND TESTING

- .1 The Contractor's work shall be available for inspection at any time by the Departmental Representative. All work shall be in accordance with and inspected and tested to meet the requirements of the standards specified.
- .2 Contractor shall test valves for shut off and operation, and check packing for leakage.
- .3 Defects disclosed in the work shall be made good or the work replaced without additional cost to the Owner.
- .4 Test Procedures
 - .1 The Contractor's work shall be available for inspection at any time by the Owner. All work shall be in accordance with and inspected and tested to meet the requirements of the standards specified.
 - .2 Contractor shall test valves for shut-off and operation, and check packing for leakage.
 - .3 Defects disclosed in the work shall be made good or the work replaced without additional cost to the Owner.
- .5 Repairs to piping systems shall be made with new material. No caulking or screwed joints, cracks, or holes will be acceptable. Where it becomes necessary to replace pieces of pipe, such replacements shall be the same lengths as the defective pieces.

1.6 PAINTING

- .1 All aboveground pipelines including all vent lines and pipe supports are to be painted to meet CPPI Colour-Symbol System.
- .2 Painting and coating shall be performed after inspection and testing of the pipe.
- .3 Gasoline pipe, Vent pipe and Supports in White.
- .4 Surface preparation: Sandblast to SSPC-SP6 Commercial Blast Cleaning or cleaned to SSPC-SP11 Power Tool Cleaning to Bare Metal.

- .5 Prime Coat: One coat (3 mils dry thickness).
- .6 Final Coat: One coat (3 mils dry thickness).
- .7 Contractor to touch up any paint damaged during installation.

Part 2 Products

1.2 NOT USED

- .1 Not used.

Part 3 Execution

1.3 NOT USED

- .1 Not used.

END OF SECTION