

PART 1 **GENERAL****1.1** **RELATED SECTIONS**

- .1 Section 01330 - Submittal Procedures.
- .2 Section 01355 - Waste Management and Disposal.
- .3 Section 01780 - Closeout Submittals.
- .4 Section 01810 – Commissioning
- .5 Section 13202 - Above Ground Oil Storage Tanks
- .6 Section 15401 – Installation of Pipework.

1.2 **REFERENCES**

- .1 Codes and standards referenced in this section refer to the latest edition thereof.
- .2 American National Standards Institute (ANSI) American Society of Mechanical Engineers (ASME).
 - .1 ANSI/ASME ASME-B16.3, Malleable-Iron Threaded Fittings, Classes 150 and 300.
 - .2 ASME B1.20.1, Pipe Threads, General Purpose (INCH) Revision and Redesignation of ASME/ANSI B2.1.
- .3 American Society for Testing and Materials (ASTM)
 - .1 ASTM A47, Specification for Ferritic Malleable Iron Castings.
 - .2 ASTM A53, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless.
 - .3 ASTM/ASME B16.22, Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.
 - .4 ASTM B88 Standard Specification for Seamless Copper Tube.
 - .5 ASTM B61, Specification for Steam or Valve Bronze Castings.
- .4 Canadian Standards Association (CSA)
 - .1 CSA B149.1, Natural Gas and Propane Installation Code.
 - .2 CSA B149.2, Propane Storage and Handling Code.
 - .3 CAN/CSA-Z184, Gas Pipeline System
- .5 Provincial Regulations:
 - .1 Boiler, Pressure Vessel and Compressed Gas Regulations.

- .6 Manufacturers Standardization Society of the Valve and Fitting Industry (MSS)
 - .1 MSS-SP-80, Bronze Gate, Globe, Angle and Check Valves.
- .7 Underwriters Laboratories of Canada (ULC)
 - .1 CAN/ULC-S642 Standard for Compounds and Tape for Threaded Joints.

1.3 PRODUCT DATA

- .1 Submit product data in accordance with Section 01330 - Submittal Procedures.
- .2 Indicate on manufacturer's catalogue literature the following: valves

1.4 CLOSEOUT SUBMITTALS

- .1 Provide maintenance data for incorporation into manual specified in Section 01780 - Closeout Submittals.

PART 2 PRODUCTS

2.1 PIPE

- .1 Steel pipe: to ASTM A53, Schedule 40, seamless as follows:
 - .1 Above ground: Schedule 40, screwed.
- .2 Copper pipe: to ASTM B88, Type K.
 - .1 Below ground: continuous without joints.

2.2 JOINTING MATERIAL

- .1 Screwed fittings: to CAN/ULC -S642 tape.
- .2 Copper Tubing: solder joints above ground.

2.3 FITTINGS

- .1 Steel pipe fittings, screwed:
 - .1 Malleable iron: screwed to ANSI B16.3, Class 150 for service pressures up to and including 861 kPa.
 - .2 Unions: malleable iron, brass to iron, ground seat, to ASTM A47M.
 - .3 Nipples: schedule 40, to ASTM A53.
- .2 Copper tube fittings:
 - .1 Service line riser and transition fittings.
 - .1 Wrought copper and copper alloy, solder type 1 to ANSI/ASME B16.22.

2.4 MANUAL SHUT-OFF VALVES

- .1 NPS 4 and under, full port, forged brass ball valve for two piece body construction complete with the following:
 - .1 Blowout-proof stem.
 - .2 Adjustable packing gland.
 - .3 Chrome-plated ball.
 - .4 Class 150 WSP, 600 WOG.
 - .5 CGA 3.16 approved.
 - .6 Provide complete with CRN.
 - .7 Lever handle.
 - .8 ANSI B1.20.1 NPT end connections

PART 3 EXECUTION**3.1 PIPING**

- .1 Install piping in accordance with Provincial/Territorial Codes.
- .2 Install in accordance with CSA-B149.1.
- .3 Assemble piping using fittings manufactured to ANSI standards.
- .4 Connect to equipment in accordance with manufacturer's instructions unless otherwise indicated.
- .5 Slope piping down in direction to flow to low points.
- .6 Install drip points:
 - .1 At low points in piping system and where indicated.
 - .2 Provide complete with blowdown valve i.e. manual shut-off valve) as specified above.
 - .3 Minimum 75 mm in length from tee connection in riser to top of valve. Size to be minimum NPS ¾. Provide complete with threaded end cap.
- .7 Use eccentric reducers at pipe size change installed to provide positive drainage.
- .8 Provide clearance for access and for maintenance.
- .9 Ream pipes, clean scale and dirt, inside and out.
- .10 Install piping to minimize pipe dismantling for equipment removal.
- .11 Field ending of piping to be prohibited.
- .12 Nesting of bushings to be prohibited. Utilize properly sized reducing fittings.

- .13 Do not utilize propane piping as an electrical ground.

3.2 VALVES

- .1 Install valves with stems upright or horizontal unless approved otherwise by Engineer/Architect.
- .2 Install valves as indicated.

3.3 FIELD QUALITY CONTROL

- .1 Test system in accordance with CSA-B149.1 and requirements of authorities having jurisdiction.
- .2 Test pressure to be minimum of 103 kPa held without pressure drop for a period of minimum 15 minutes.
- .3 Propane appliance design service pressure to be 2.73 kPa.
- .4 First stage regulator design discharge pressure to be 68.9 kPa.

3.4 PURGING

- .1 Purge after pressure test in accordance with CSA-B149.1.

3.5 IDENTIFICATION

- .1 Identify new propane piping systems in accordance with requirements for CSA-B149.1.
- .2 Above ground propane piping to be primed and painted yellow along its entire length. All below ground propane piping to be covered with plastic yellow identification marker tape suitable for direct burial.
- .3 Supply and install “Propane Gas” pipe identification markers along length of propane piping installation in accordance with CSA-B149.1 and Section 15075 – Mechanical Identification Maximum spacing along straight length of pipe to be 6 m.
- .4 Maintain minimum depth of burial of underground propane piping of 600 mm, unless otherwise noted.

3.6 STORAGE CYLINDERS

- .1 Propane storage cylinder shall be supplied and installed by the Owner. This tank shall not be considered part of this contract.
- .2 The responsibility for connection of the propane storage cylinder to the propane distribution piping shall be borne by the Owner.

END OF SECTION