

PART 1 - GENERAL

1.1 Codes

- .1 All work shall be done in accordance with the requirements of the following codes and regulatory organizations:
 - .1 HRSDC Fire Protection Services.
 - .2 NFPA 55 Compressed Gases and Cryogenic Fluids Code.

1.2 Shop Drawings

- .1 Submit shop drawings on the following:
 - .1 Hydrogen tubing.
 - .2 Hydrogen valves.
 - .1 ASHRAE Standard 90.1- 1989

PART 2 – PRODUCTS

2.1 Tubing

- .1 Diameter, as noted on drawings, minimum tube wall thickness 0.035" working pressure 22,000 kPa.
- .2 Full annealed, type 316 seamless stainless steel tubing. To ASTM A269 or A213. Hardness 90 HRB or less.
- .3 Acceptable manufacturer; Swagelok

2.2 Fittings

- .1 Type 316 stainless steel.
- .2 All fittings sizes as noted on the drawings.
- .3 5400 kPa working pressure.
- .4 Acceptable manufacturer; Swagelok

PART 3 – EXECUTION

3.1 Tubing

- .1 Install in accordance with manufacturer's instructions.
- .2 Minimum tube bend radius to be equal to or greater than five times the OD of the tubing.
- .3 For all tubing installations, utilize Swagelok support kit with weld mounting plate or rail with railnuts.

3.2 Fittings

- .1 Install in accordance with manufacturer's instructions

3.3 Valves

- .1 Install in accordance with manufacturer's instructions

3.4 Pressure Gauges

- .1 Install in accordance with manufacturer's instructions

3.5 Safety Relief Valve

- .1 Install in accordance with manufacturer's instructions

3.6 Insulation

- .1 Insulate new outdoor hydrogen piping as indicated on the drawings.

3.7 Testing and Inspections

- .1 Each section or area, as completed, shall be subjected to testing by means of Helium gas at a pressure of 1754 kPa. This pressure shall be maintained for a minimum of twenty-four hours, with no allowance for loss of pressure. Quality of testing gas shall be in accordance with that required for medical gas systems as required by Z305.1 Non-Flammable Medical Gas Piping System.
- .2 If there is a drop in pressure, each joint and the equipment in that area or section shall be inspected and tested for leakage, using snoop leak detection liquid. After leaks have been located and repaired, this section shall be retested as per the preceding paragraph. Temperature and pressure must be recorded. Pressure drops corresponding to temperature change is acceptable.
- .3 A final test of all systems shall be performed upon completion of all areas or sections.
- .4 After completion of all testing, the system is to remain under helium pressure at 1034 kPa until commissioning. Safety signs must be attached to the system indicating "System Under Pressure".
- .5 Contractor is responsible to supply all Helium for all tests and commissioning.
- .6 Pressure tests must be witnessed and approved by an accredited pressure systems inspector.

END