

---

**PART 1 - GENERAL****1.1 GENERAL INFORMATION ON PROJECT WORK**

- .1 Materials and installation methods associated with the work listed below, as well as accessories and other components of such systems. All this work is required in order to allow work to be done to repair the building's envelope. Once the repairs have been completed in the area, the equipment, fittings and piping will be reinstalled on the original site.
  - .1 Temporary liquid nitrogen tank relocation, vaporizer and all externally installed components of the nitrogen supply system. Work on the relocation of the nitrogen tank and its components must be carried out without interruption of the nitrogen supply to the Departmental Representative.
  - .2 Temporary relocation of the nitrogen supply system shall be carried out by the nitrogen supplier.
  - .3 Temporary relocation and relocation work on the initial location of the nitrogen feed system shall be coordinated with the Contractor. The nitrogen pipe between the temporary site and the building must be installed so as not to interfere with the Contractor's operations and be safe from accidental breakage: without interruption.
  - .4 Temporary dismantling of laboratory gas vents. Supply and installation of new laboratory gas vent piping, once repairs are completed in the area.
  - .5 Temporary dismantling of diesel fuel supply and oil vent pipe. Re-installation of the piping once the repairs are completed in the area.

**1.2 RELATED SECTIONS**

- .1 Section 21 05 01 - Common Work Results for Mechanical.

**1.3 REFERENCE STANDARDS**

- .1 American Petroleum Institute (API).
  - .1 API STD 1104-e01, Welding of Pipelines and Related Facilities.
- .2 American Society of Mechanical Engineers (ASME).
  - .1 ASME B16.11-2009, Forged Fittings Socket Welding and Threaded.
- .3 American Society for Testing and Materials International (ASTM).
  - .1 ANSI/AWS A5.8, Brazing Filler Material.

- .2 ASTM B88-09, Standard Specification for Seamless Copper Water Tube.
- .3 ASTM B819, Standard Specification for Seamless Copper Tube for Medical Gas Systems.
- .4 ASTM A48/A48M-00, Standard Specification for Grey Iron Castings.
- .5 ASTM A53/A53M-10, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- .6 ASTM A181/A181M-01, Standard Specification for Carbon Steel Forgings, for General-Purpose Piping.
- .7 ASTM A216/A216M-93(03), Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High-Temperature Service.
- .4 Canadian Standards Association (CSA International).
  - .1 CAN/CSA Z7396.1 - Medical Gas Pipeline Systems.
  - .2 CAN/CSA B96, Compressed Gas Cylinder Valve Outlet and Inlet Connections.
  - .3 CSA-B139-09, Installation Code for Oil Burning Equipment.
- .5 National Fire Protection Association (NFPA).
  - .1 NFPA 55, Compressed Gases and Cryogenic Fluids Code.
- .6 Compressed Gas Association (CGA).
  - .1 P-8.7, Safe location of Oxygen and Inert Gas vents.
  - .2 G-10.1, Commodity Specification for Nitrogen.

#### **1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and data sheet.
  - .2 Submit WHMIS MSDS, which must comply with this system. Indicate VOC's for adhesive and solvents during application and curing.

- .3 Shop Drawings:
  - .1 Submit Shop Drawings to indicate project layout, including:
    - .1 Vertical and horizontal piping locations and elevations and connections details.
    - .2 Schedule identifying units and their locations.
- .4 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

## **1.5 QUALITY ASSURANCE**

- .1 Conform to Section 01 45 00 - Quality Control.
- .2 Provide products of this section from same manufacturer.
- .3 Health and Safety:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

## **PART 2 - PRODUCTS**

### **2.1 NITROGEN SYSTEMS AND LABORATORIES GAS VENTS**

- .1 All piping required for gas services shall be in degreased and clogged copper tube for transport, type "L" or "K", in accordance with ASTM B88-09 and ASTM B819, such as existing piping.
- .2 For systems with pressures greater than 1,379 kPa, the piping shall be type "K".
- .3 All fittings used for the assembly of copper pipes shall be made of copper, brass or wrought bronze and shall be manufactured in accordance with a solder connection.
- .4 Seals:
  - .1 Except for joints which may be made using flared brass fittings approved for gas hoses, and those used for faucets or other equipment requiring threaded connections, all joints of the piping is made by brazing with a silver alloy in accordance with AWS BCuP-5 or other metal with a minimum melting point of 977°F. The use of the fondant is strictly forbidden.
  - .2 All brazing work must be carried out by an enterprise that holds a certificate registered with the "Régie du bâtiment du Québec" certifying that the brazing method is accepted.

- .3 The company shall ensure that its employee, who performs the brazing work for the purposes of this standard, holds a valid brazing certificate issued by the Pipefitting Inspection Service of the "Ministère de l'Habitation" et de la Protection du Consommateur.
- .4 Threaded joints used with insulation taps and outlet taps shall be installed by swishing the male thread with soft welds. However, it is permitted to use litharge and glycerin or an oxygen compatible filler or sealant.
- .5 Supply and install supports and fasteners.

### **PART 3 - EXECUTION**

#### **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

#### **3.2 PREPARATION**

- .1 Obtain approval of authorities having jurisdiction prior to commencing work of this section.

#### **3.3 INSTALLATION**

- .1 Nitrogen systems:
  - .1 Mount nitrogen tank and vaporizer on housekeeping pad.
  - .2 The temporary location of the tank shall take account of the accessibility of filling the tank during the period of the envelope repair work.

#### **3.4 CLEANING**

- .1 Perform cleaning operations as specified in Section 01 74 11.

**END OF SECTION**