1.1 **GENERAL**

1.2 **System Description**

.1 Natural gas on campus is owned and operated by SFU Facilities. FortisBC is responsible for main incoming gas service up to and including the central pressure reducing valve.

2.1 **MATERIALS AND DESIGN REQUIREMENTS**

2.2 **Responsibilities**

.1 The SFU Facilities is primarily responsible for operation, maintenance, and overall stewardship of the natural gas distribution system.

.2 FortisBC is not responsible for any part of the gas piping or equipment past the central pressure reducing valve of the main incoming gas service.

.3 The Project Designer must incorporate all specific requirements for metering, design and materials and execution of this section into the contract drawings in the form of job-specific notes. Only making reference to SFU Owners’ Technical Requirements in the drawings is not sufficient.

2.3 **Natural Gas Distribution Standards**

.1 The latest revisions of the following standards shall apply to natural gas distribution at SFU:

   .1 Canadian National Gas Code.
   .2 NACE.
   .3 CGA Standard (as applicable).
   .4 CSA Standard (as applicable).

2.4 **Natural Gas Service Connections**

.1 Installation of any new or substantially modified connections to the natural gas distribution system at SFU must be coordinated with SFU Facilities.

.2 Any new connections to the gas distribution system will be reviewed for consistency with SFU Owners’ Technical Requirements.

.3 Project design drawings shall provide building load (list of appliances with nameplate capacities in m³/hour) and required pressure.

2.5 **Metering**

.1 No specific metering requirements are noted at this time.

2.6 **Seismic Protection**

.1 The decision whether to install seismic shutoff valves is the responsibility of the project consultants. Buildings which meet the following criteria may not benefit significantly by installing a seismic shutoff valve:

   .1 Building is structurally designed for current seismic codes.
   .2 Restraints installed on all gas equipment (e.g. water heaters, air heating units) and piping.
.3 Flexible connections installed on all gas equipment.

.2 Buildings which use natural gas for emergency power or other emergency needs are recommended not to install seismic valves.

.3 Seismic valves are to be manufactured by Pacific Seismic Products.

.4 Regardless, SFU Facilities requires that seismic restraints be used on all gas equipment (i.e. water heaters) and main gas piping in the building.

.5 SFU Facilities requires that flexible gas connections be used on all gas equipment in the building.

2.7 Design and Materials

.1 Design piping pressure: 415 kPa (60 psig).

.2 Connections shall be to the highest available pressure.

.3 New underground piping shall be SDR11 Series 125 Polyethylene, manufactured to CAN 3-B137.4M86. New underground valves shall be PSV polyethylene shut off valves with butt fusion outlet ends, to accommodate SDR 11 pipe, confirming to ASTM D-2513. Pipe fittings shall be butt heat fusion polyethylene manufactured to ASTM D-3261-85.

.4 New aboveground piping up to shall be minimum Schedule 40, ASTM A53 steel piping. Up to, but not including the gas meter assembly, all piping shall be painted yellow. All piping up to 2" size shall be socket welded, manufactured to ASTM A182. New piping over 2" may be butt welded. All aboveground valves shall be bronze plug-type shutoff valves with threaded outlet ends to accommodate A53 steel pipe, and conforming to ASTM B62.

2.8 Permits

.1 Permits by B.C. Gas Safety Branch and inspections/witness by B.C. Gas Safety Inspector of pressure testing and purging are the sole responsibility of the project.

2.9 Notification

.1 The FortisBC shall be notified in advance of any planned pressure testing of a new gas service pipe. Failure to provide notice may result in installed services to be re-excavated for inspection.

3.1 EXECUTION REQUIREMENTS

.1 Minimum soil cover shall be 600 mm.

.2 Warning tape at 300 mm below grade level shall be provided.

.3 Minimum 750 mm horizontal clearance is required from all other services.

.4 When crossing electric ductbank, run pipe above electrical ductbank with minimum vertical clearance 150 mm from the top of electric ductbank. Crossing angle shall be 90° degree. If crossing of electric ductbank cannot be done in this manner, then encase natural gas pipe in one larger plastic pipe projecting minimum 500 mm from either side of the electric ductbank.

.5 A top tracer wire attached to the underground polyethylene pipe shall be provided.
.6 Continuity of the existing cathodic protection system shall be maintained when any additions or replacements are undertaken.

.7 Hot tapping may be done only with written permission from SFU Facilities.

.8 Purge pipe with nitrogen after new service pipe is installed.

.9 For pipe bedding use clean granular pipe bedding, graded gravel, 10 mm (minus), MMCD type:

.9.1 Bottom bedding shall be a quarter of pipe diameter or 100 mm thick, whichever is larger. Top bedding shall be minimum 300 mm thick. Side bedding shall be a minimum 225 mm to maximum 300 mm thick

.10 For trench backfill, native backfill may be used if free of rock greater than 25 mm in easements and boulevards only. Approval by SFU Facilities is required.

.11 No trees shall be planted within 1,200 mm of underground gas piping.

.12 Shutdowns must be requested in writing adhering to SFU's campus-wide standard procedures.

.13 Connections to existing gas distribution system may be made by Contractor with SFU Facilities approval.

.14 Gas distribution valves and meter stations on the SFU natural gas system may only be operated by SFU Facilities.

***END OF SECTION***