1.1 **GENERAL**

1.2 **Related SFU Technical Requirements**

   .1 *Section 20 00 05 Mechanical - General Requirements*
   
   .2 *Section 21 05 00 Fire Protection - General Requirements*

1.3 **Coordination Requirements**

   .1 Coordinate design with design of building fire alarm systems and associated detectors, manual stations, operating devices, supervisory panel, alarms and wiring are specified in *Division 26*.

1.4 **Description**

   .1 Additional SFU design and approval requirements for Carbon Dioxide Extinguishing Systems.

1.5 **Quality Control and Assurance**

   .1 Reference Standards

2.1 **MATERIALS AND DESIGN REQUIREMENTS**

2.2 **Design Standards**

   .1 Do the work in accordance with the latest edition of the following standards unless specified otherwise NFPA 12.

2.3 **Engineering Design Criteria**

   .1 Coordinate with *Division 26* for electrical design, especially the pre discharge alarm.

   .2 Provide complete concentration calculations, hydraulic calculations, and drawings, bound in presentation binder.

2.4 **General**

   .1 All components to be ULC listed for fire service.

   .2 Refer to NFPA 12 for details of concentration and holding times for contents and use of spaces being protected.

2.5 **Storage Containers**

   .1 Floor mounted, anchored to wall and cylindrical shape. One bank to be for initial protection and one bank to be connected reserve.

   .2 Discharge shall be 24V electric solenoid valve compatible with fire alarm system specified in *Division 26*.

   .3 Specify
      
      .1 Visual indication of discharge at container.
      
      .2 Pressure switch for indication of discharge at main fire alarm panel.
.3 Directional flow valves.
.4 Assembly to permit weighing while cylinders are in place.

2.6 Piping and Fittings
.1 Galvanized iron with welded, screwed or flanged joints and fittings, to NFPA.

2.7 Nozzles
.1 Stainless steel or non-ferrous with satin finish.
.2 Specify frangible discs or blow-off caps as indicated or specified.

2.8 Warning Signs
.1 To NFPA 12. Fabricate from metal with brass chain suspension; white letters on red background.
.2 Locate warning signs and instruction plates at entrance to and inside each protected space.

2.9 Installation
.1 In accordance with approved or reviewed shop drawings and ULC listing.
.2 Ream piping and swab with Freon TF or chlorothene ND.
.3 Use Teflon on threaded joints.
.4 Anchor piping to prevent movement in accordance with NFPA 12.
.5 Hang and support piping in accordance with Division 22.

2.10 Piping System Leakage Test
.1 Specify pressure test with nitrogen, CO2 or air with tracer gas at 1 MPa for 10 minutes. Pressure drop not to exceed 35 kPa.

2.11 Concentration Test
.1 Specify concentration test at direction of and in presence of owner.
.2 Record concentration on 3 pens UL listed or FM approved gas analyzers. Provide sufficient number of analyzers to simultaneously record concentration levels in protected area on basis of a maximum of 37 m² per analyzer channel. Minimum of one channel per protected area.
.3 Calibrate analyzers immediately before test using certified gas samples. Calibration to take place in presence of and to satisfaction of owner.
.4 Locate analyzers outside test area. Use 6 mm clear plastic hose connected to analyzers from test area. Location of sampling tube nozzles will be determined by owner.
.5 Run tests for one hour. Maintain concentration for time specified above.
.6 Ceiling tiles, floor panels, equipment or personnel shall not be injured or damaged by discharge of extinguishing agent. Ceiling tiles and floor panels shall not be unseated during
discharge. Do not use mechanical means or hold down devices for floor panels or ceiling tiles. Supervising personnel in test area shall wear breathing apparatus during test.

.7 If test results do not comply with requirements, retest at no additional cost to the owner.

2.12 Recharging

.1 After completion of all testing, ensure each cylinder in both initial and reserve banks contain correct weight of extinguishing agent and restore systems to normal condition.

***END OF SECTION***