1. GENERAL SPECIFICATION

1.1. A total flooding, FM-200 fire suppression system, super-pressurized with dry nitrogen shall be installed to meet a minimum design concentration of ____ %, by volume in all designated spaces to be protected.

2. CODES/STANDARDS COMPLIANCE

2.1. The design, installation, testing and maintenance of the above stated FM-200 fire suppression system shall be in accordance to the following codes, standards and regulatory bodies:

- 2.1.1. NFPA 2001 – Standard for Clean Agent Fire Extinguishing Systems – 2000 edition.
- 2.1.2. NFPA 12A – Halon 1301 Fire Extinguishing Systems
- 2.1.3. UL 2166 – Standard for Halocarbon Clean Agent Extinguishing System Units
- 2.1.4. Factory Mutual Approval Guide
- 2.1.5. ANSI B1.20.1 – Standard for pipe threads, General Purpose, 1992
- 2.1.6. Design and installation practices set forth by system manufacturer
- 2.1.7. NFPA 70 - NEC – National Electrical Code
- 2.1.8. NFPA 72 – National Fire Alarm Code
- 2.1.9. Requirements of the Local Authorities Having Jurisdiction (AHJ)

2.2. The Fire suppression system must have the following listings and approvals:

- 2.2.1. FM Approved – Factory Mutual Research Center
- 2.2.2. UL 2166 Listed – Underwriters Laboratories Inc.

2.3. The manufacturer shall meet ISO 9001 requirements for the design, production and distribution of the FM-200 fire suppression systems.

3. SYSTEM DESCRIPTION

3.1. All FM-200, fire suppression equipment and accessories must be manufactured by:

Kidde Fire Systems
400 Main Street
Ashland, MA 01721
U.S.A.
phone: (508) 881-2000
URL: http://www.kiddefiresystems.com

3.2. The manufacturer shall warrant all FM-200, fire suppression system products for 18 months from date of shipment or one (1) full year from the date of installation.

3.3. The system shall be supplied and installed by a factory-authorized, Kidde Fire Systems distributor. The distributor / Installer shall be trained by the manufacturer to calculate / design, install, test and maintain the FM-200 Fire suppression system and shall be able to produce a certificate stating such on request.

3.4. The systems design can be of a Modular, Central storage and or a combination of both.

3.5. The total flooding system shall consist of a Kidde FM-200 Agent Storage Cylinder, Kidde actuation hardware and Kidde ECS series system distribution nozzles attached to a pipe network.

3.6. (OPTIONAL EQUIPMENT) The FM-200 Agent Cylinder shall have the option of a Liquid level indicator. This device will provide a reliable means other than weighing for determining the agent weight with the storage container during normal routine servicing.

4. COMPONENTS

4.1. **FM-200 Cylinder and Valve Assembly**

4.1.1. FM-200 shall be stored in a Kidde ECS series Cylinders P/N 90-100XXX-XXX . Operating pressure of the FM-200 shall be at 360 psig @ 70°F.

4.1.2. FM-200® storage cylinders shall be provided with a safety rupture disc. An increase in internal pressure due to high temperature shall rupture the safety disc and allow the contents to vent before the rupture pressure of the container is reached. The contents shall not be vented through the discharge piping and nozzles. FM-200® containers shall be equipped with a pressure gauge to display internal pressures. The gauge shall be an integral part of the equipment and shall be color-coded for fast referencing of pressure readings.

4.1.3. A low-pressure switch shall be provided as standard equipment on all the FM-200 agent containers. A decrease in pressure will cause the normally open contacts to close, indicating a trouble condition at the CIE. The low pressure switch shall be field removable/replaceable while the container is still fully charged

4.1.4. The FM-200 Agent cylinder shall be provided with a safety rupture disc.

4.2. **Kidde Actuation hardware**

4.2.1. The FM-200 Cylinder valve assembly shall be actuated using a Kidde electric control head, electric / cable control head or lever operated control head.

4.2.2. (OPTIONAL EQUIPMENT): pneumatic actuation of the FM-200 Cylinder valve can be accomplished by using a nitrogen pilot Cylinder Kidde P/N's 877940 or 06-129773-00X

4.3. **Distribution Nozzles**

4.3.1. Engineered discharge nozzles for use with the Kidde ECS series system will be made of Brass, Kidde P/N 90-1940XX-XXX

4.3.2. Each nozzle shall be located in the space per the manufacturers guidelines, Nozzles can have either a 180 or a 360-degree discharge pattern.

4.3.3. Each Nozzle discharge pattern shall be available in sizes ranging from _" NPT to 2" NPT.

4.4. **Pipe Network**

4.4.1. Distribution piping and fittings shall be installed in accordance with NFPA 2001, approved piping standards and FM-200 system manufacturer's requirements.

5. SUBMITTALS

5.1. **Engineered Design Drawings**

5.1.1. The factory-authorized Kidde Fire Systems Distributor shall provide all required installation drawings per NFPA 2001.

5.2. **Flow Calculation Reports**

5.2.1. The contractor shall provide the following information in the flow calculation report.

5.2.1.1. Customer Information and Project Data

5.2.1.2. Enclosure Information – at a minimum enclosure information is to include Minimum and adjusted design concentrations, Minimum and maximum enclosure temperatures, minimum agent required and volume of enclosures, including non-permeable volume if applicable.

5.2.1.3. Agent information – at a minimum agent information is to include Cylinder size and part number, quantity of cylinders, main and / or reserve cylinders, pipe take off direction and the floor loading for agent cylinder.

5.2.1.4. Pipe network information – at a minimum pipe network information is to include pipe type, pipe diameter, pipe length, change in direction or elevation, pipe equivalent length and any added accessory equivalent length. In addition, the following nozzle information shall be provided; number of nozzles and identification of enclosure location, flow rate of associated nozzle, nozzle nominal size, nozzle type and nozzle orifice area.

5.2.1.5. Detailed list of all Pipes and Pipe Fittings designed in the pipe network

5.3. **Commissioning Equipment List**

5.3.1. The contractor shall provide a commissioning equipment list for each installed FM-200 suppression system. The equipment list shall identify all installed equipment and configurations.

5.4. **Test Plan**

5.4.1. The contractor / Installer shall submit a test plan which describes how the system equipment and room integrity shall be tested. This shall include a step-by-step description of all tests and shall indicate type and location of test apparatus to be used. At a minimum, the tests to be conducted shall be per NFPA 2001 and any additional supplemental tests required by the AHJ. Tests shall not be scheduled or conducted until the engineer of record approves the test plan.

5.5. **Installation Drawings**

5.5.1. Four (4) sets of installation drawings for each installed FM-200 suppression system and One (1) set of the calculation report, owners manual and product data sheets shall be submitted to the end-user / owner.

5.5.2. Upon completion of installation and commissioning acceptance, two (2) sets of “As-Built” installation drawings and One (1) set of the calculation report for each installed FM-200 suppression system shall be given to the owner / end-user for use and reference.

5.6. **Operation and Maintenance Manuals**

5.6.1. Two (2) copies of the Kidde ECS FM-200 fire suppression system, Operation and Maintenance Manual shall be submitted after complete installation.

6. SYSTEM INSTALLATION AND COMMISSIONING

6.1. **FM-200 Fire Suppression System Equipment**

6.1.1. The contractor shall install the system in accordance with the manufacturer's installation, operation and maintenance manual.

6.2. **Training Requirements**

6.2.1. The contractor shall be certified and trained by the manufacturer on installation, design and maintenance of the Kidde ECS, FM-200 fire suppression systems.

6.3. **Routine Maintenance**

6.3.1. Routine maintenance shall be performed as recommended by the manufacturer's installation, operation and maintenance manual. At a minimum the routine maintenance will include the following:

6.3.1.1. Visual Check of Pipe network and distribution nozzles per the operation and maintenance manual.

6.3.1.2. Weight and pressure of the FM-200 Agent cylinder per the operation and maintenance manual.

6.3.1.3. Inspect all cylinders and equipment for damage per the operation and maintenance manual.