# SECTION 21 01 70

# FIRE PROTECTION SYSTEMS

## PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary and other Conditions, if any) and Division 1 as appropriate, apply to the work specified in this Section.

1.2 DESCRIPTION OF WORK

A. This Section shall include all work necessary and/or required and furnish all materials and equipment for extension of the existing automatic sprinkler system for the building areas indicated. Such work includes but is not limited to the following:

1. UL/FM labeled equipment.

2. All piping and equipment required for a complete wet sprinkler system on occupied floor levels.

3. All piping and equipment for a complete wet standpipe system.

4. To coordinate with the Mechanical, Plumbing and Electrical Contractors, the installation of the mains and sprinkler piping and supports to allow installation of their work with maximized accessibility for these trades and service requirements for maintenance and repair. Prior to installing any piping or other devices, obtain written conformation from these contractors that requirements, conflicts and coordination issues have been discussed and resolved. Provide system drawings with elevation of any piping or other systems to the Mechanical Contractor so he can prepare the necessary coordination drawings that may be required. No work may be installed until the coordination issues are resolved. Any and all expense relating to coordination issues shall be born by the Contractor who did not install his work according to the coordination drawings.

1.3 REFERENCE STANDARDS

A. Refer to Section 220000 for a general description of requirements applying to this section.

1.4 QUALITY ASSURANCE

A. Refer to Section 220010 for a general description of requirements applying to this section.

B. Sprinkler System Contractor shall provide new separate and complete sprinkler systems (wet and dry) in satisfactory operating condition which shall conform to requirements of the following:

1. NFPA Pamphlet 13.
2. State of Delaware Fire Marshal's Office.

3. Owner's Insurance Agency.

C. Submit working drawings to the State of Delaware Fire Marshal's Office and obtain approval before beginning work.

D. Sprinkler systems shall be "Light Hazard Occupancy" and shall cover all rooms, closets, attic spaces, etc., in the entire building.

. Sprinkler systems shall be “Ordinary Hazard Occupancy” for Mechanical Rooms and Storage Rooms.

1. Design and layout shall be based on Calculated System (Hydraulic).

2. Exact routing of piping shall be governed by structural conditions and obstructions.

3. The Sprinkler Contractor shall coordinate his work with the other trades so as to clear all construction items, lights, ducts, piping, etc, within the Auditorium and associated rooms.

1.5 SUBMITTALS

A Submit shop drawings and product data in accordance with Section 220000.

Submit shop drawings with Fire Marshal's approval and descriptive data, complete with product designation for the following:

1. Sprinkler Heads

B. Submit complete sprinkler layout indicating location of heads by dimensions from walls, pipe size, and locations of valves, fittings and accessories, with Fire Marshal's approval.

C. Submit manufacturer's product data on sprinkler heads, valves, siamese connections, compressor, etc.

1.6 WARRANTY/GUARANTEE

A. All work and materials are subject to the general warranty as described in the General Conditions of the Contract and in Division 1, GENERAL REQUIREMENTS.

1.7 TESTS AND INSPECTIONS

A. Contractor shall arrange and pay for all inspections, examinations and tests required by authorities specified herein and deliver certificates of such inspections to Owner.

B. Complete sprinkler system shall be tested in accordance with the latest requirements of NFPA Pamphlet 13 and the State of Delaware Fire Marshal's Office.

C. Fire Marshal's acceptance test shall be performed before system is placed in service and not less than five working days after Fire Marshal is notified.

1.8 QUALIFICATIONS OF CONTRACTOR

A. Contractor for sprinkler installation shall be licensed by the State of Delaware and be regularly engaged in installation of automatic sprinkler systems and other fire protection equipment.

B. Consult General Provisions for additional requirement.

**PART 2 – PRODUCTS**

2.1 FIRE PROTECTION PIPING MATERIALS & PRODUCTS

A. Provide piping materials and factory-fabricated piping products of sizes, types, pressure ratings, temperature ratings, and capacities as indicated. Where not indicated, provide proper selection as determined by installer to comply with installation requirements. Provide sizes and types matching piping and equipment connections; provide fittings of materials which match pipe materials used in fire protection piping systems. Where more than 1 type of materials or products are indicated, selection is installer's option.

2.2 BASIC IDENTIFICATION

A. Provide identification complying with applicable Division 22 sections in accordance with the following listings:

1. Fire Protection Piping: Plastic pipe markers.

2.3 BASIC PIPE AND FITTINGS

A. Comply with the weight, size and type of pipe and fittings by the latest issued schedule of NFPA Pamphlet 13, adopted by Authorities having jurisdiction.

B. Plastic piping shall not be permitted in classrooms, office spaces, etc, in accordance with the listed applications. No exposed plastic pipe will be permitted.

C. Uni-Flange type connections shall not be permitted on this project.

2.4 FIRE PROTECTION SPECIALTIES

A. Provide fire protection specialties, UL listed, in accordance with the following listing. Provide sizes and types which mate and match piping and equipment connections.

B. Automatic Sprinklers: Sprinkler heads shall be UL approved for intended use and have temperature ratings as indicated or required for location.

Provide the following type sprinkler heads as indicated:

Upright: Viking “Micromatic Model "M" bronze finish, 1/2" orifice.
Pendent: Viking “Micromatic Model "M" chrome plated, 1/2" orifice and escutcheon plate.
Pendent: Viking “Microfast Model “M” quick response with all white finish including escutcheon plate, ½” orifice.

Sidewall: Viking "Micromatic Model "M", chrome plate, ½" orifice.
Sidewall: Viking "Microfast Model "M" – quick response, all white finish including escutcheon plate, ½" orifice.
Sidewall: (Extended Coverage) Viking "Microfast Model "M", quick response, all white finish, extra large orifice.
Semi-Recessed: Viking "Silhouette Model A-1 quick response, chrome plated, ½" orifice.
Full Concealed: Viking "Horizon-Mirage" large orifice quick response, white cover plate.

C. Sprinkler Cabinet and Wrench: Furnish steel, baked red enameled, sprinkler box with capacity to store 10 sprinklers and wrench sized to sprinklers.

2.5 MANUFACTURERS

A. Subject to compliance with requirements, manufacturers offering fire protection specialties and or equipment which may be incorporated in the work include and are limited to the following:

Sprinkler Heads

Central
Viking
Star-Chemetron
Automatic Sprinkler

**PART 3 – EXECUTION**

3.1 INSTALLATION OF BASIC IDENTIFICATION

A. Install fire protection signs on piping in accordance with ANSI/NFPA 13.

3.2 FIRE SPRINKLER PIPING SYSTEMS

A. Comply with requirements of ANSI/NFPA 13 for installation of fire sprinkler piping materials. Install fire sprinkler piping products where indicated, in accordance with manufacturer's written instructions, and in accordance with recognized industry practices to ensure that fire sprinkler piping complies with requirements and serves intended purposes.

B. Coordinate with ceiling space available, other trades, including plumbing piping, as necessary to interface components of fire sprinkler piping properly with all other items of construction.

C. Install the following type sprinkler head in the following locations:

D. Install sprinkler in acoustical tile suspended ceilings, in the center of the tile with heads installed in such a way that the requirements for both coverage and symmetry are fulfilled.

3.3 INSTALLATION OF SUPPORTS, ANCHORS AND SEALS

A. Comply with the latest issue of NFPA adopted by the Authorities having jurisdiction.

3.4 INSTALLATION OF FIRE PROTECTION SPECIALTIES

A. Comply with the latest issue of NFPA adopted by the Authorities having jurisdiction.

3.5 ADJUST & CLEAN

A. Sprinkler Piping Flushing: Prior to connecting sprinkler risers for flushing, flush water feed mains, lead-in connections and control portions of sprinkler piping. After fire sprinkler piping installation has been completed and before piping is placed in service, flush entire sprinkler system, as required to remove foreign substances, under pressure as specified in ANSI/NFPA 13. Continue flushing until water is clear, and check to ensure that debris has not clogged sprinklers.

3.6 FIELD QUALITY CONTROL

A. Hydrostatic Testing: After flushing system, test fire sprinkler piping hydrostatically, for period of 2 hours, at not less than 200 psi or at 50 psi in excess of maximum static pressure when maximum static pressure is in excess of 150 psi. Check system for leakage of joints. Measure hydrostatic pressure at low point of each system or zone being tested.

3.7 EXTRA STOCK

A. For each style and temperature range required, furnish additional sprinkler heads, amounting to 1 unit for every 100 installed units.

**END OF SECTION 21 01 70**