

## SECTION 15500

## AUTOMATIC FIRE PROTECTION

1 PART 1 GENERAL

## 1.1 DESCRIPTION OF WORK

- A. The work covered by this Section of the specifications includes the furnishing of labor, materials, equipment, transportation, permits, inspections and incidentals and the performing of operations required to design, install and test a pressurized, fully supervised, wet pipe fire protection system for full building protection in accordance with NFPA, BOCA, and the Owner's insurance underwriter. Areas subject to freezing, such as unheated attic spaces shall have a dry pipe system, dry pendent or sidewall heads, or glycol-and-water loop per NFPA.

## 1.2 RELATED DOCUMENTS

- A. The drawings and the specifications including SECTION 15000 "SUPPLEMENTAL MECHANICAL GENERAL REQUIREMENTS" are hereby made a part of the work of this section.

## 1.3 QUALIFICATIONS

- A. The Fire Protection Work shall be performed by a qualified Contractor primarily engaged in the design and installation of Fire Protection Systems. The fire protection system design shall be performed under the direction of, and sealed by, a professional engineer registered in the State of Maine.
- B. Welding qualifications of individuals installing welded piping shall be certified by the National Certified Welding Bureau for the type(s) of weld(s) proposed for use in piping assembly.

## 1.4 SUBMITTALS

- A. Items for which the submittal requirements of section 15000, Supplemental Mechanical General Requirements, apply are as Follows:
1. Hydrant flow test.
  2. System components.
  3. Hydraulic calculations.
  4. Piping layout, details and control diagram.
  5. Flushing and testing records.
  6. Certificate of installation.
  7. Copy of Fire Protection Contractors License.
  8. Welding certificates of individual welding technicians.
  9. Zone flow switches and valves.
  10. Sprinkler heads.
  11. Alarm valve(s).
  12. Fire department connection(s).
  13. Firestopping materials and methods.
  14. Fire pump.

15. Jockey pump.
16. Fire pump controllers.
17. Copy of State Fire Marshal review and approval.

Submit hydrant flow test, equipment descriptive data, hydraulic calculations and system layout for review by the Owner's Insurance Underwriter. Submit the system layout to the Architect for review. The Architect's review will be limited to checking for conformance with the design concept of the project and general compliance with the contract documents and will in no way assume liability for review for compliance with codes, standards and laws.

## 1.5 SPRINKLER COVERAGE

- A. Sprinkler head coverage shall conform with NFPA requirements for the use of the building (0.10 GPM/SF density for the hydraulically most remote 1500 S.F.). Coverage shall be increased accordingly where required by the Authority having jurisdiction.
- B. Provide wet standpipe systems within the two (2) stair towers only as required by code.
- C. If the requirements of the inspection agency or the Owner's insuring agent are more rigorous than those stated herein, then the more rigorous requirements shall govern.

## 2 PART 2 PRODUCTS

### 2.1 SYSTEM COMPONENTS AND HARDWARE

- A. Pipe, Fittings, Joints, Hangers, Valves, Fire Department Connections, Alarms: Conform to NFPA-13, Installation of Sprinkler Systems.
- B. Sprinkler Heads:
  1. Interior Heated Spaces: Conform to NFPA-13, commercial quick response type. Provide semi-recessed type with white finish for acoustical tile ceilings. Sprinkler heads in GWB ceilings shall be concealed type. Dry pendent or sidewall heads, where required, may be standard response type.
  2. Provide a spare head cabinet with wrenches and six(6) heads of each orifice size, finish, temperature classification, pattern and length furnished in the project.
  3. Provide sprinkler head guards where required.
  4. Sprinkler heads in unheated areas shall be dry pendent or sidewall type, or served by a glycol and water loop or separate dry-pipe system.
  5. Temperature ratings for sprinkler heads shall be suitable for the space. Heads in boiler rooms, kiln rooms and similar locations with concentrated heat sources shall have heads with the appropriate temperature rating.
- C. Fire Department Connection: Provide a 4" Storz connection or 2-1/2" siamese connection (as verified with the local fire department) at a location coordinated with the local fire department and the Architect.

## 2.2 WATER SUPPLIES

- A. Conform to the requirements of NFPA-13, Installation of Sprinkler Systems. There shall be two (2) water supplies, see site drawings for further information.

## 2.3 DEVICES

- A. Detection devices and associated wiring both within the fire protection system and to the building Fire Alarm System shall be the responsibility of the Sprinkler Contractor.

## 2.4 BACKFLOW PREVENTER

- A. Provide AMES MODEL 2000.

## 2.5 PIPING SYSTEM IDENTIFICATION

- A. Piping system and valve identification and color coding shall be in accordance with ANSI.

## 2.6 FIRE PUMP AND CONTROLLER

- A. Shall be a UL-listed and FM-approved electrically-driven horizontal split case type designed specifically for fire pump service applications by Peerless or approved equal. The fire pump shall be selected to operate at the design flow at a discharge pressure of 75 psig at the calculated suction pressure. The fire pump shall be designed to deliver 150% of its rated capacity at a minimum of 65% of its rated pressure. Electrical provisions have been made for a 75 Hp., 208V.-3Ph. fire pump motor. If the electrical requirements of the selected pump differ from these requirements, any resulting cost impact shall be included in the bid price.
- B. The fire pump controller shall be UL-listed and FM-approved for the pump selected (limited service type).
- C. The fire pump shall be supported on a six (6") inch high reinforced concrete pad with a one (1") chamfer.

## 2.7 JOCKEY PUMP AND CONTROLLER

- A. Shall be UL-listed and built in accordance with NEMA industrial standards, factory-wired and tested including magnetic motor starter, pressure switches, minimum runtime timer, reset button and "Hand-Off-Auto" selector switch. Electrical provisions have been made for a 5 Hp., 208V.-3Ph. fire pump motor. If the electrical requirements of the selected pump differ from these requirements, any resulting cost impact shall be included in the bid price.

# 3 PART 3 EXECUTION

## 3.1 PIPING LAYOUT AND DESIGN

- A. System requirements, installation requirements, design, plans, and calculations: Conform to NFPA-13, Installation of Sprinkler Systems.

- B. Sprinkler piping shall be run concealed above ceilings in occupied areas. Piping in other areas may be run exposed. Piping shall not be exposed in occupied spaces unless indicated on the drawings.
- C. Pipe penetrations through walls and floors shall be in accordance with Section 15000 - Additional General Mechanical Requirements. Traverse points of piping shall be escutcheoned with split chrome floor and ceiling plates and spring anchors, where visible to occupancy.
- D. Coordinate design and layout with building structure and building systems. The work shown in the contract documents has precedence for space requirements. Work of other trades may be modified or moved only with permission of the trade involved. Costs associated with modifications or relocations shall be the same as for "Substitutions" Section 15000. Sprinkler system piping may need to be located within the structural system in certain locations.
- E. Architect shall review proposed system layout and reserve the right to relocate heads, substitute head system and in general review final layout for components visible in occupied spaces.

### 3.2 SYSTEM ACCEPTANCE

- A. Approval, flushing, hydrostatic testing, instructions, and certificates of installation: Conform to NFPA-13, Installation of Sprinkler Systems.
- B. Disinfect the water piping in accordance with AWWA C601. Fill the piping systems with solution containing a minimum of 50 parts per million of available chlorine and allow solution to stand for minimum of 24 hours. Repeat disinfection if chlorine residual is less than 10 parts per million after 24 hours. Flush the solution from the systems with clean water until maximum residual chlorine contents is not greater than 0.2 parts per million.
- C. Closing in Work:
  - 1. General: Cover up or enclose work after it has been properly and completely reviewed.
  - 2. No additional cost to the Owner will be allowed for uncovering and recovering, work that is covered or enclosed prior to required review and acceptance.
- D. Cleanup and Corrosion Prevention:
  - 1. Upon completion of the work thoroughly clean and flush piping systems to the sewer with water.
  - 2. Piping and equipment shall be thoroughly cleaned. Dirt, dust, and debris shall be removed and the premises left in a clean and neat condition.
  - 3. Before uncovered piping is permitted to be concealed, corrosion and rust shall be wire brushed and cleaned and in the case of iron products, a coat of approved protective paint applied to these surfaces. When corrosion is from the effects of hot solder

paste, the areas shall be cleaned and polished and a wash of bicarbonate of soda and water used to neutralize the acid condition.

- E. Instructions: On completion of the project, provide a technician familiar with the system to thoroughly instruct the Owner's representative in the care and operation of the system. The total period of instruction shall not exceed four (4) hours. The time of instruction shall be arranged with the Owner.
- F. Warranty: For a period of one (1) year after completion of the installation repair or replace any defective materials or workmanship. Upon completion of the installation, the system shall be turned over to the Owner fully inspected and tested, and in operational condition.

### 3.3 FIRESTOPPING

- A. Firestopping shall be performed in accordance with Specification Section 07841 "Firestopping". All penetrations of fire-rated assemblies including walls and floors by mechanical system components (piping, ductwork, conduits, etc.) shall be firestopped as specified.

\* END OF SECTION \*