

**SECTION 21 13 13**  
**WET PIPE FIRE SPRINKLER SYSTEM**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including Bid Manual, General and Supplementary Conditions apply to this Section.
- B. The contractor shall fully comply with all stages of construction including special coordination requirements.
- C. Fire protection sprinkler system design shall meet the following requirements:
  - 1. Factory Mutual Research Corporation
  - 2. Underwriter's Laboratories
  - 3. Global Risk Consultants
  - 4. International Building Code – Latest edition
  - 5. National Fire Protection Association
  - 6. The Authority Having Jurisdiction

**1.2 SECTION INCLUDES**

- A. Wet-pipe sprinkler system
- B. System design, installation, and certification

**1.3 REFERENCES**

- A. NFPA 13 – Latest Edition
- B. NFPA 101 – Latest Edition
- C. NFPA 416 – Latest Edition
- D. NFPA 130 – Latest Edition

**1.4 SUBMITTALS**

- A. Submit under provisions of Shop Drawings, Product Data and Samples:
  - 1. Product Data
  - 2. Samples
  - 3. Hydraulic Calculations
  - 4. Shop Drawings
  - 5. Manufacturer's Certificate of the Product
  - 6. Manufacturer's Installation Instructions

## 1.5 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Project Record Documents

## 1.6 OPERATION AND MAINTENANCE DATA

- A. Submit under provisions of Operating and Maintenance Data

## 1.7 QUALIFICATIONS

Installation of entire system shall be accomplished by manufacturers of approved sprinkler, their representatives or licensees, who are now or have been engaged in the installation of automatic sprinkler systems and standpipe systems for the past five years.

## 1.8 DELIVERY, STORAGE AND HANDLING

- A. Refer to Materials and Equipment: Transport, handle, store, and protect products.
- B. Deliver materials to Project site in original manufacturer's unopened cartons and containers each bearing names of product and manufacturer, Project identification and shipping and handling instructions.

## 1.9 WARRANTY

- A. The Contractor shall warrant all items, supplied by him and specified herein, to be free from all defects and perform the specified functions when used for their intended purposes. Any item found to be defective within one (1) year from final system acceptance will be repaired, corrected or replaced (parts and labor), as appropriate, at no cost to the owner.

## 1.10 EXTRA MATERIALS

Contractor shall furnish and install a sprinkler head metal storage container with lock and key containing extra heads, release devices and head wrench in the quantities specified in NFPA 13 in the fire pump room.

## 1.11 QUALITY ASSURANCE

- A. The design, materials, equipment, installation, inspection, and testing of the automatic sprinkler systems shall be in strict accordance with the required and advisory provisions of NFPA 13 and NFPA 72.
- B. The sprinkler systems shall be designed to provide the required water supply discharge densities as defined by NFPA 13 and the Factory Mutual requirements. Factory Mutual Insurance required discharge densities and/or application areas are presented where they exceed NFPA 13 values. Hydraulic calculations shall be based on the following criteria and shall be in accordance with NFPA 13.

- 1. Sprinkler systems hazard groups and densities.

**Ordinary hazard group I:**

wet pipe systems

0.15 gpm/sq-ft over 1,500 sq-ft

2. Inside and outside hose stream allowance.

A water allowance of 500 gpm shall be added for inside and outside hose streams to the sprinkler requirement for ordinary hazard occupancies at the connection to the distribution main.

Remote hydraulic design basis areas shall be 1500 sq-ft with the dimension parallel to the branch line at least 1.2 times the square-root of the area.

The automatic sprinkler system hydraulic calculations shall be based on the following criteria and shall be in accordance with NFPA 13 and/or NFPA 14

3. Verify the following water supply flow test with the Fire Department:
- a. Static pressure: TBD
  - b. Residual pressure: TBD
  - c. Flow: TBD
4. Verify by means of hydraulic calculations that velocities in fire sprinkler piping shall not exceed 20 feet per second at a maximum design flow rate within each system.

- C. All devices and equipment shall be UL listed and FM approved.
- D. Cutout disks, which are created by cutting holes in the walls of pipe for non-threaded pipe connections, shall be wired near the pipe where they originated. They shall be displayed for 6 months after the sprinkler system is completed.
- E. All sprinkler heads which protect the lowest landing of stairway enclosures shall be installed with listed sprinkler head guards.

2.0 PRODUCTS

- 2.1 Materials used shall be free of Asbestos, PCP and other carcinogenic materials.

- 2.2 All materials shall be new and of highest quality, made in the U.S.A.

2.3 SUBSTITUTIONS

All reference to manufacturers or supplier's model numbers and other pertinent information are supplied to establish minimum standards of performance, function and quality. Equivalent equipment (FM approved) may be substituted for that specified. The submitted equipment shall equal or exceed the quality, performance, functions and features of the specified equipment. The supplier of the non specified equipment must obtain approvals as required by Specification for Substitutions and Product Options.

2.4 GENERAL

All protection equipment and devices shall be UL listed and FMRC approved for the

service required and shall be installed in conformance with NFPA 13. The electrical installation shall conform to the National Electrical Code (NEC). Hose threads shall conform to local fire bureau standards if so applicable.

## 2.5 SPRINKLER HEADS

- A. All sprinkler heads shall be UL listed and FM approved, quick response sprinkler heads and with a temperature of 155° F, "K" factor of 5.60.
- B. Approved corrosion-proof sprinkler heads shall be installed in areas subject to corrosive atmospheres or exposed to weather.

## 3.0 EXECUTION

### 3.1 PRE-CONSTRUCTION MEETING

- A. Convene minimum one week prior to commencing any work of this section.
- B. Notify design professional, construction manager, and other coordinating trade representatives in a timely manner to attend the meeting.

### 3.2 INSTALLATION

- A. Workmanship shall be of the highest quality, conforming to the best standard practices of this trade and as stipulated by the applicable codes and regulations as herein specified.
- B. The work shall be carefully laid out in advance and no excessive cutting of construction shall be permitted.
- C. The sprinkler systems shall be installed so that no part shall interfere with doors, windows, heating, air conditioning, plumbing or electrical equipment.
- D. Sprinkler piping shall be installed so that the system may be drained. Sprinkler pipes may be installed level. Trapped piping should be drained by auxiliary drains.
- E. Ductwork, greater than four feet in width in areas required to be sprinklered, shall be provided with sprinklers above and below the ductwork.
- F. Identification Signs. Attach properly lettered approved metal signs conforming to NFPA No. 13 to each valve and alarm device. Permanently affix hydraulic sprinkler design data nameplates to the riser of each system.

### 3.3 DAMAGE

The contractor shall be responsible for any damage to the work by others, to the building, property, and materials of others caused by leaks in the fire protection systems equipment, damage from unplugged or disconnected pipes and/or fittings and shall pay for the necessary replacement and/or repair for work and/or items damaged during the installation and testing periods of these systems.

### 3.4 TESTING AND INSPECTION

#### A. General.

Reports of any testing during installation shall be forwarded to the Owner's representative.

#### B. Formal Inspection and Tests.

The Owner, Owner's representative, insurance company representatives, Global Risk Consultants and the local Fire Department will witness formal tests and approve all systems before they are accepted. The request for formal inspection shall be submitted at least 15 days prior to the date the inspection is to take place. An experienced technician regularly employed by the sprinkler installer shall be present during the inspection. At the inspection, any or all of the required tests shall be repeated as directed. Defects in the work provided by the contractor shall be corrected and additional tests performed until it has been demonstrated that the systems comply with all contract requirements. All appliances, equipment, electricity, instruments, connecting devices, and personnel for the tests shall be furnished by the Contractor. The Owner will furnish water for the tests.

#### C. Acceptance.

Acceptance of the automatic sprinkler work shall be based upon the inspection and tests of the completed installation by representatives of the authorities having jurisdiction and the Owner's representative.

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