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**SECTION 21 00 00**

**FIRE PROTECTION SYSTEMS**

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**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Contractor shall obtain latest Marriott specifications from Marriott Fire Protection Department prior to preparing design/build documents. Marriott latest version shall take precedence over this version.
- B. Provide labor and materials necessary for a complete fire sprinkler system. Conform to General Conditions, Supplementary Conditions, the modifications thereto and Division 1 - General Requirements for all work in this section.
- C. Design, fabricate, install, test and secure all necessary written stamped approvals of a complete automatic fire protection sprinkler system acceptable to the governing Fire Marshal, and in accordance with the standards set forth in this section. Provide and install a complete fire protection system including connection to the water main outside the building, riser, piping, controls, and accessories for a complete system. Contractor shall obtain and pay for all permits required by local authorities.
- D. In addition to conforming with all pertinent codes and regulations, conform with the requirements of NFPA 13, NFPA 13R, other applicable sections of NFPA, and IBC and local jurisdiction.
- E. In case the specifications conflict with code or local requirements, the code or local requirements govern.
- F. The word "provide" in this specification shall be understood to mean "furnish and install complete and operational".
- G. Fire protection Contractor shall be licensed and regularly engaged in the design and construction of automatic sprinkler systems. Contractor shall have been engaged in work of this section for a period of at least five years and have installed at least five such systems of comparable size.

**1.2 DESIGN REQUIREMENTS**

- A. Provide sprinkler systems designed in accordance with NFPA 13. The design and installation shall be in accordance with all local requirements. Provide fire water service with double detector check valve assembly for the sprinkler systems.
- B. Provide dry sprinkler systems, or dry heads served by wet systems, to protect the following areas:
  - 1. Exterior corridors and stairs.
  - 2. Exterior canopies and roof overhand areas as required.
- C. Provide standpipes and hose cabinets as required by CBC and local requirements.

- D. Determine flows and pressures of available water supply and adjust the design accordingly.
- E. Provide main drains, sectional drains, and test connections as required by the applicable sections of NFPA, piped to outside of building or an approved location. Closely coordinate all drain valves and drain termination locations with the architect and clearly show them on the shop drawings.
- F. Coordinate sprinkler system installation with structure, ductwork, plumbing, lighting, and conduit to preclude interferences. Coordinate all electrical connection requirements with the electrical contractor and the alarm contractor as required.

### 1.3 SUBMITTALS

- A. Shop drawings shall be stamped by a licensed individual (minimum of NICET Level III or registered fire protection engineer in the state where project is located. Completion of shop drawings shall be done so that the fire marshal can review the fire sprinkler drawings with the fire alarm shop drawings. Coordinate with the alarm contractor as necessary.
  - 1. Layout drawing of complete overhead sprinkler system indicating relationship of all other overhead items including ceiling air diffusers and grilles, ductwork, lighting fixtures, and beams. Conform to symmetrical spacing, align in straight rows, and integrate with locations of lights and other ceiling devices.
  - 2. Drawing scale shall be the same as the architectural floor plans. Obtain building CAD files from architect.
  - 3. Include complete details and sections as required to clearly define and clarify the design, including a materials list describing all proposed materials by manufacturer's name and catalog number.
  - 4. Plot plan shall indicate location of all underground connections, valves, piping, and related items, and all structures within 15 feet of the buildings. Drawing scale shall be the same as the architectural plot plan.
  - 5. As part of shop drawing creation, review mechanical, electrical, and plumbing plans for coordination and interference issues with sprinkler piping. Submit RFI's to notify all parties of the issues. Resolve coordination issues prior to start of construction.

### 1.4 SPRINKLER SYSTEM MANUAL

- A. Upon completion of the installation, and as a condition of its acceptance, compile an 8-1/2" x 11" sprinkler system manual. Provide two copies of the manual to the Architect.
- B. Contents of manual shall be as follows:
  - 1. A complete list of all components of the system with manufacturer's names, catalog numbers and all data required for ordering replacement parts.
  - 2. One copy of the record drawings.
  - 3. All information required to affect or secure emergency repairs or service.
  - 4. One copy of written warranty.

## 1.5 RECORD DRAWINGS

- A. During progress of the work of this section, maintain an accurate record of all changes made in the design of the fire sprinkler system. Upon completion of the installation, and as a condition of its acceptance, insert one set of record drawing prints into each copy of the sprinkler manual.

## **PART 2 - PRODUCTS**

### 2.1 GENERAL

- A. All materials, equipment, valves and devices installed and/or furnished under this Section shall be new and shall be UL listed and approved and/or FM listed and approved. All materials shall be the latest design of the manufacturer. All materials shall meet the requirements of the local authorities.

### 2.2 FIRE DEPARTMENT CONNECTION

- A. Fire department connection shall be all brass, or bronze, labeled "Auto-sprkr", UL approved, national standard thread fire department hose connection.
- B. Locate where approved by the fire department.

### 2.3 VALVES

- A. All gate valves in fire protection system shall be class 150, UL or FM listed, 285 psi at 100 degrees F. Provide tamper switch, flow switch, drain valve and sight glass for each OS & Y and butterfly valves.

### 2.4 SPRINKLER HEADS

- A. Sprinkler heads shall have white finish, UL or FM listed standard type conforming to section 3-16 of NFPA 13. Sprinkler heads to be installed in the vicinity of heating equipment shall be of the temperature ratings required by NFPA 13. Provide for high temperature, corrosion resistant, or fast response heads in locations where special occupancies indicate the need. Provide fast response heads to conform with ADA requirements if limited exits exist, such as second floors that are available to the handicapped.
- B. Sprinkler heads in areas with gypsum wall board ceilings shall be white finished semi-recessed pendant type with adjustable off-white escutcheon plate.
- C. Sprinkler heads in mechanical spaces shall generally be upright type and shall be high temperature where located near heat-producing equipment.

**2.5 PIPING**

- A. Above grade 2" and smaller, use Schedule 40 standard black steel pipe, ASTM A-53, with 150-lb. cast iron screwed fittings. CPVC or Schedule 10 may be used where allowed by local jurisdiction.
- B. Above grade 2 1/2" and larger, use Schedule 10 black steel pipe, ASTM A-53, with U/L or FM listed grooved mechanical fittings.
- C. Below grade shall be ductile iron pipe AWWA C151, with cement mortar lining complying with AWWA C104 Class 51, or as required by local jurisdiction. All below grade piping shall be covered with 10 mil polyethylene tape in accordance with requirements of local jurisdiction.

**PART 3 - EXECUTION****3.1 GENERAL**

- A. Run all sprinkler piping concealed in all occupied areas. Provide all hangers, supports, beam clamps, earthquake bracing, sleeves through walls and floors and openings for the fire sprinkler system in accordance with NFPA 13. Provide firestopping through fire rated penetrations as required by local jurisdiction.
- B. Sprinkler lines shall be routed in a satisfactory manner which will eliminate the necessity of cutting, burning or otherwise damaging any structural member that would result in weakening the structure. All overhead sprinkler main lines must be supported from exterior walls or beams with steel hangers. Sprinkler mains to be as close to bottom of beams as possible. Piping shall not be run over the top of electrical panels or switchgear.
- C. Provide near each riser a cabinet containing a minimum of six extra heads of each type used for this project, including a special head wrench. The drain valve shall be so indicated with a suitable sign. Instruction charts describing operation and proper maintenance shall be provided and posted near the risers by the Sprinkler Contractor. Valve charts to be provided per Specification.
- D. Design shall be coordinated with the Architect to achieve maximum utility of building spaces and the best practical appearance. Provide sprinkler guards on all heads lower than 7'6" to finished floor. All heads in ceiling panels shall be located as close to the center of the panel as possible. Return bend piping takeoffs shall be used as necessary to get heads centered in panels.
- E. Installation of valves, gauges and equipment shall be conveniently and accessibly located with reference to the finished building for repairs, removal and service. Access doors in finished ceilings and walls to be provided by the general contractor. Coordinate access door locations with the general contractor to access these components where concealed.
- F. After completion, perform a hydrostatic leakage test witnessed by representative of the Fire Marshall. Submit NFPA test report.

**END OF SECTION**