

SECTION 15325 SPRINKLER SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish labor, equipment, materials, and tools and perform operations in connection with the renovation of the existing sprinkler riser and the existing sprinkler system for all areas of the building. Comply with Codes and the local AHJ, preparation of Record Drawings and Owner's Manuals, guarantees and warranties, protection of work and quality assurance of workmanship.

1.2 SECTION INCLUDES

- A. Inside sprinkler piping.
- B. Valves and supervisory devices.
- C. Backflow preventer.
- D. Sprinkler heads.
- E. Supports, hangers, sleeves and accessories.
- F. Tests and certification of tests.

1.3 RELATED SECTIONS:

- A. Section 02200: Earthwork.
- B. Section 09900: Painting.
- C. Section 15190: Mechanical Identification.
- D. Section 15410: Plumbing - General Purpose.
- E. Division 16 - Electric.

1.4 SUBMITTALS

- A. Shop Drawings:
 - 1. Prepare and submit Shop Drawings in accordance with the requirements of Section 01330, and obtain the Architect's approval before proceeding with the fabrication and work.
 - 2. Show plans, cross section, elevations, details, job conditions, relationship to other work, reflected ceiling plan features, pipe sizes, elevations above floor, head locations, hydraulic design area, hydraulic design calculations, inspectors test connection, sprinkler entrance, valves, alarms, flow switches and supervisory devices.
 - 3. Shop Drawings and catalog cuts shall indicate Specification Section and paragraph requiring equipment submitted.

4. Submit data on the following items:
 - a. Piping and couplings.
 - b. Backflow preventer.
 - c. Valves and supervisory devices.
 - d. Sprinkler heads and escutcheon plates.
 - e. Supports, hangers and accessories.
 5. Submit to the Owner's Insurance Underwriter sufficient copies for approval to allow one copy to be incorporated into each Owner's Manual in addition to the required as-built plans.
- B. Samples: Submit samples, with the shop drawing submittal, of each sprinkler head and each escutcheon plate in accordance with requirements of the Conditions of Contract, and before ordering materials, obtain written approval from the Architect.

1.5 HYDRAULIC DESIGN DATA

- A. System Type: Wet pipe.
- B. Building Occupancy: Light Hazard.
- C. Water Density and Square Foot Requirements: 0.10 gpm over the most hydraulically remote 1,500 per NFPA #13 and the local AHJ (Authority Having Jurisdiction).
- D. Hose Stream Allowance: 100 gpm.
- E. Codes and Requirements: NFPA, the Owner's Insurance Underwriter, State Fire Marshal's Office, local Fire Prevention Officer and local Water District.

PART 2 - PRODUCTS

Products must be either Factory Mutual (FM) or Underwriters' Laboratory (U.L.) listed or both.

2.1 MANUFACTURERS

- A. Equipment: Viking, Victaulic, Grinnell, Reliable, or equal.
- B. Sprinklers: Viking, Victaulic or approved equal.
- C. Flow Switch and Supervisory Device: Potter Electric Signal Company or equal.
- D. Backflow preventer: Ames or equal.

2.2 MATERIALS

- A. Piping:
 1. Schedule 40 black steel, threaded with standard weight iron screw pattern fittings or lightweight, Schedule 10, black steel with mechanical couplings. Install flanged fittings and flanges at valves and where required.

B. Sprinkler:

1. Sprinklers shall be rated between 155°F and 165°F except as follows or as required by Code.
2. Types of sprinkler heads:
 - a. Either upright or pendant style, chrome finish, shall be used in all finished areas which have no suspended ceilings.
 - b. Pendant style, chrome finish, shall be used in all finished areas which have suspended ceilings. Use recessed type escutcheons.
 - c. Either upright or pendant style, bronze finish shall be used in all unfinished areas, utility spaces, Equipment Rooms, Mechanical Rooms, Storage Rooms and other similar spaces.
 - d. Sidewall style, chrome finished heads may be used in any room where exposed pendants are permitted.
3. See Drawings for various types and locations of heads other than those previously identified.
4. Provide and install a spare head case per N.F.P.A. 13 requirements. The case shall contain not less than 24 heads total, no less than two of each style of heads and one wrench for each style of head. Locate case in the sprinkler room near the check valve assemblies.

C. Hangers:

1. UL listed adjustable hangers, clevis type for 2-1/2" IPS and larger, swivel flat band hangers for 2" IPS and smaller.
2. Support all piping from the top chord of the bar joists at the "Panel Points" or from the top flange of the beams. 2" and smaller piping may be supported from the bottom chord of the bar joists at the "Panel Points" or from the bottom flange of the beams.
3. Maximum spacing between hangers per NFPA 13.

D. Seismic Supports:

1. Provide both lateral and longitudinal braces sized in accordance with NFPA #13. Provide load calculations for all braces used or manufacturers load tables for pre-engineered systems.
2. Braces must be placed parallel to the forces acting on the piping being restrained either in the 2-way or 4-way configuration. 3-way braces are not acceptable.
3. Maximum spacing between braces shall be per NFPA #13.

E. Sleeves:

1. Pipes Through Floors: Form with Schedule 40 (galvanized) steel pipe and extend 1" above surrounding floor.
2. Pipes Through Interior Fire-rated or Sound-rated Partitions: Form with steel pipe or 16 gauge galvanized steel.
3. Pipes Through Exterior Building Walls, Concrete Walls or Footing: Form with Schedule 40 (galvanized) steel pipe.
4. Size: The minimum sleeve diameter shall be either 2 pipe sizes or 2" in diameter larger than the outside diameter of the pipe.

F. Valves:

1. Sectionalizing Valves: Butterfly or OS&Y cast iron body.
2. Drain and Test Valves: Bronze body, gate type or ball type, capable of being padlocked in either open or closed position.

2.3 COMPONENTS

- A. Backflow Preventer: No 200a double check assembly, all-stainless steel construction, renewable seats, strainer, butterfly type shut-off valves, flanged ends and test connections.
- B. Supervision:
 - 1. Electric Supervisory Switch: Valves prior to the alarm check valve shall have an electric supervisory device with 2 sets of SPDT contacts to report to the building fire alarm system. Provide on riser control valve prior to the flow switch.
 - 2. Mechanical: Valves after the alarm check valve shall be padlocked in its standard operating position (either full open or full closed depending upon the function of the valve), with 2 keys per padlock and all padlocks shall be keyed the same.

2.4 ACCESSORIES

- A. Escutcheon Plates: Shall be all-metal construction with finish to match the finish of heads and chrome at piping which penetrates walls, partitions, floors and ceilings; 3/8"+ thick by 3-1/4"+ outside diameter. One-piece construction at pendant heads, two-piece adjustable at recessed pendant heads; 2-piece split ring at piping penetrations.
- B. Tags and Charts:
 - 1. See Section 15190: Mechanical Identification.
 - 2. Each valve shall also bear a red enamel sign with white lettering indicating the service or purpose of each valve, secured in place with linked chain.
 - 3. Provide placards in accordance with NFPA 13.

PART 3 - EXECUTION

3.1 LOCATIONS OF EQUIPMENT AND APPURTENANCES

- A. Piping shall be run concealed wherever possible.
- B. Branch piping shall be run above the bottom chord of all open joists and trusses.
- C. Heads shall be located in a symmetrical pattern with respect to the light fixtures, diffusers and other ceiling features and within the center the ceiling tile in areas directly above the sales floor.
- D. Sprinkler heads shall be installed in center of tile.
- E. System drains shall be valved and piped to discharge. No valve shall be provided ahead of the electric alarm devices.

3.2 EXAMINATION

- A. Study Drawings and Specifications, visit the site and become acquainted with the existing conditions and the requirements of the Contract Documents. No claim will be recognized for extra compensation due to failure to become familiarized with the conditions and extent of the proposed work.

- B. Sprinkler work shall avoid proposed locations of and installation clearances for lighting, ducts, piping, framing and equipment. In cases of conflict, the existing design conditions shall have priority. No compensation will be given for neglect to comply with the above and no claim will be recognized for sprinkler piping, heads and miscellaneous appurtenances which must be modified, removed and reinstalled or relocated, due to conflicts with other work which is or will be installed per the Contract Documents.

3.3 TESTS

- A. The entire installation shall be tested with water and air (independent tests) in accordance with all NFPA requirements, all requirements of the local Fire Department; and the Owner's Insurance Underwriter; this includes the testing of all alarms.
- B. Tests shall be witnessed by the Owner's representative and local Fire Prevention Officer. Submit copies of all test certificates, properly signed, to the Architect.

3.4 CLEANING

- A. New Piping: Flush with water until no visibly dirty water appears at the most remote head on each floor for gridded systems or the last head of every branch line for "tree" systems, then continue to flow clean water for a minimum 30 seconds.
- B. At the completion of work, clean the exterior of exposed piping of oil, grease, dirt, and other substances, suitable to accept a prime coat of paint.

END OF SECTION 15325