

SECTION 15325 – SPRINKLER SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish all labor, equipment, materials, and tools and perform all operations to renovate and expand the existing sprinkler system.
- B. All areas of the existing building including above all ceilings, all electric rooms, all data rooms and closets etc. shall be protected.
- C. The existing fire department connections shall remain.
- D. Comply with all codes, including the Portland Sprinkler Ordinance, the Portland Fire Department and the State Fire Marshall's Office.
- E. Meetings shall be arranged with the Portland Fire Department to review all design parameters prior to submission of plans.

1.2 SECTION INCLUDES

- A. All inside sprinkler piping.
- B. Valves and supervisory devices.
- C. Piping from the existing sprinkler service within the building.
- D. Sprinkler heads.
- E. Supports, hangers, sleeves and accessories.
- F. Tests and certification of tests and proof of permit from the State Fire Marshall's Office as well as the Portland Fire Department.

1.3 RELATED SECTIONS

- A. Section 15190: Mechanical Identification.
- B. Section 15410: Plumbing - General Purpose.
- C. Division 16 - Electric.

1.4 SUBMITTALS

- A. Shop Drawings:
 - 1. Prepare and submit Shop Drawings in accordance with the requirements of Section 01300, and obtain the Architect's, Portland Fire Department, State Fire Marshall's approval and Owner's Insurance Underwriter 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. The plans shall show all piping and sprinklers in rooms to be renovated as well as all new spaces. Sprinklers and piping in rooms with no work will not need to be shown.
 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. Sprinkler heads and escutcheon plates.
 - c. 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: Ordinary Hazard Group 2 for all areas of the building.
- C. Water Density and Square Foot Requirements: 0.17 gpm over the most hydraulically remote 3,000 square feet.
- D. Hose Stream Allowance: 500 gpm.
- E. Codes and Requirements: NFPA, the Owner's Insurance Underwriter, 1995 amended Portland Sprinkler Ordinance, the Portland Fire Department and the State Fire Marshall's Office.

PART 2 - PRODUCTS

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

2.1 MANUFACTURERS

- A. Equipment: Grinnell, Victaulic, Viking, Central Sprinkler Corp., Reliable, or equal.
- B. Heads: Viking, or equal.
- C. Flexible Sprinkler Connection: FlexHead Industries.

2.2 MATERIALS

- A. Piping: Inside building: Shall be 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 Heads:
1. Heads shall be rated between 155EF and 165EF, unless otherwise noted or required by code, and listed as a quick response type head.
 2. Sprinklers:
 - a. Either upright or pendant style, white finish, shall be used in all finished areas which have no suspended ceilings.
 - b. Pendant style, semi-recessed, white finish, shall be used in all finished areas which have suspended ceilings.
 - c. Concealed style with ABright White® finished coverplate for all gypsum ceiling surfaces.
 - d. 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.
 3. Provide and install a spare head case per N.F.P.A. 13 requirements. The case shall contain not less than 6 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. Flexible Sprinkler Connection (Contractor's option to use flexible connectors): UL and FM approved for commercial sprinkler installations. The flexible connector is comprised of a braided hose rated for 300 psi working pressure. Hose shall not have less than 7" bend radius and shall not be more than 6' in length.
- D. 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 APanel 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 APanel Points® or from the bottom flange of the beams.
 3. Maximum spacing between hangers per NFPA 13.
- E. Seismic Supports:
1. Provide both lateral and longitudinal braces sized in accordance with NFPA #13. Seismic restraints shall utilize a pre-engineered manufactured system. Seismic restraint shall be applied to all areas of the building including the remaining portions of existing sprinkler system.
 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.
- F. 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.

G. Valves:

1. Sectionalizing Valves: butterfly type with tamper supervision. Provide ceiling tags where valves are located above ceilings.
2. Drain and Test Valves: Bronze body, gate type or ball type, capable of being padlocked in either open or closed position.

2.3 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. All piping shall be run concealed wherever possible.
- B. All branch piping shall be run above the bottom chord of all open joists and trusses.
- C. All heads shall be located in a symmetrical pattern with respect to the light fixtures, diffusers and all other ceiling features and shall be located in the center tile where tiles occur.

3.2 EXAMINATION

- A. Study all Drawings and Specifications, visit the site and become acquainted with the existing conditions and the requirements of the Plans and Specifications. No claim will be recognized for extra compensation due to failure to become familiarized with the conditions and extent of the proposed work.
- B. All sprinkler work shall avoid proposed locations of and installation clearances for lighting, ducts, piping, framing and equipment. In all 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. All 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. All New Piping: Flush the system in accordance with NFPA 13.
- B. At the completion of work, clean the exterior of all exposed piping in all rooms of oil, grease, dirt, etc., suitable to accept a prime coat of paint.

END OF SECTION 15325