

SECTION 21 05 01

FIRE PROTECTION

PART 1 GENERAL

1.01 DESCRIPTION

- A. Furnish material, labor, tools, accessories and equipment, final fabrication Drawings and detailed system design to complete and leave ready for operation all Fire Protection systems of this Project, as described in these Contract Documents and as shown on the Drawings, and as otherwise required for a complete installation which complies with all codes having jurisdiction.
- B. Refer to Sections 20 00 00 through 20 99 99 (as included) for items of a general nature which apply to this portion of the work. Sections 21 00 00 through 21 99 99 (as included) also describe Fire Protection work.
- C. It is the intent that the Fire Protection work be complete in every respect.
- D. Use sufficient journeymen and competent supervisors in execution of this portion of the work to ensure proper and adequate installation throughout. In the acceptance or rejection of installed Fire Protection work, no allowance will be made for lack of skill on the part of workmen.
- E. Coordinate location of all work with other Contractors and equipment.
- F. Work includes, but is not limited to, the following:
 - 1. Wet Sprinkler System
 - 2. Demolition
- G. Sprinkler system shall be hydraulically calculated and sized.
- H. This Contractor is responsible for the demolition of all existing sprinklers and piping that is presently serving any areas to be a remodeled area that, under this contract, is receiving a new sprinkler layout complete with sprinklers.
- I. Locate sprinklers so they are symmetrical.
- J. Connect to existing sprinkler system.

1.02 QUALITY ASSURANCE

- A. Standards: American Society for Testing and Materials (ASTM), American National Standards Institute (ANSI), National Fire Protection Association (NFPA), Underwriters' Laboratories, Inc. (UL) and Factory Mutual (FM), American Water Works Association (AWWA), American Standards for Testing Materials (ASTM), and Ohio Building Code (OBC).

- B. All Fire Protection work shall comply with applicable NFPA and Local Code requirements and contract documents.

1.03 DRAWINGS

- A. Drawings are schematic showing the type of systems, scope of systems and general location sprinklers. Drawings indicate the basis of design and general arrangement of the fire protection systems for use by the Contractor in developing the detailed systems design. The detailed system design is the responsibility of the Contractor. Not all system details, sprinklers, and other materials are shown on the Contract Documents. No additional payment will be made for such details or materials required to comply with codes or to secure a building permit. Contractor's design-build responsibilities include providing everything required for a complete system which complies with the conditions of the Contract Documents and the codes having jurisdiction.
- B. The number and location of branch piping and sprinklers shall be coordinated with other architectural, structural, mechanical and electrical equipment items such as ceiling panel patterns, beams, diffusers, speakers and light fixtures. The Fire Protection Contractor shall coordinate any and all changes in this layout with all other Contractors and notify the Architect immediately of any changes in location or other conflicts that may affect either the fire protection coverage or the work of other Contractors.
- C. The work shall be installed as required by applicable codes and governing agencies. Furnish the necessary valves, fittings, devices and accessories required, including all hangers, inserts, and other accessories. Locate sprinklers in a pattern so spaced as to meet the minimum requirements of the Governing Authorities involved and coordinate their locations so as not to interfere with work by any other Trade.
- D. The Contractor is responsible for the hydraulic calculations design, installation and obtaining all approvals for the Fire Protection Systems and preparing complete working reproducible (sepias or mylars) shop Drawings of the entire Fire Protection System. The Contractor shall submit the hydraulic calculations and shop Drawings approved by the AHJ to the A/E for record purposes. Shop drawings shall bear the stamp of a registered Professional Engineer or a State Certified Sprinkler Designer. The Contractor must submit for approval to the Ohio Department of Commerce Division of Industrial Compliance Bureau of Construction Compliance.
- E. No additional money will be allowed for additional heads and piping required after code review.

1.04 LICENSES

- A. The installation of this Fire Protection work shall be made only by a Contractor and craftsman licensed and certified by the City, County, and State to work on fire protection systems.
- B. Include copies of the Certificate of Approval in the Record and Information Booklets turned over to the University.

1.05 FEES

- A. This Contractor shall pay for all permits, inspection fees and other charges related to the installation of the Fire Protection Work.

1.06 COMPLETION OF FIRE PROTECTION SYSTEM

- A. The Fire Protection system shall not be considered complete and acceptable unless and until all Code and Governing Agency requirements are satisfied.
- B. Final completion of the work shall require successful completion of all required testing and approval, and submittal of the Contractor's Material and Test Certificate.

END OF SECTION

SECTION 21 13 13

WET SPRINKLER PIPING SYSTEM

PART 1 GENERAL

1.01 DESCRIPTION

- A. Provide quick response sprinklers and piping to provide coverage of all renovated areas of the Building.
- B. Locate sprinklers in ceilings so they are symmetrical.
- C. Test new piping.

1.02 QUALITY ASSURANCE

- A. Standards: National Fire Protection Association (NFPA 13 and 25), Underwriters' Laboratories Inc. (UL), and Factory Mutual (FM), American Standards for Testing Materials (ASTM), American National Standards Institute (ANSI), American Society of Mechanical Engineers (ASME), American Water Works Association (AWWA), and Ohio Building Code (OBC).

1.03 BUILDING FIRE HAZARD CLASSIFICATION

- A. Light Hazard.
- B. Ordinary Hazard.

1.04 CEILING TEMPERATURE COORDINATION

- A. It shall be the responsibility of this Contractor to install sprinklers having the proper temperature ratings. Contractor shall check ceiling temperatures as needed to determine proper sprinkler head temperature ratings.

1.05 MANUFACTURERS

- A. Reliable, Gem, Globe, Automatic Sprinkler, Viking, Victaulic, Star or Central.

PART 2 PRODUCTS

2.01 PIPING

- A. Interior Piping:
 - 1. Schedule 40 black steel (ASTM A795).
 - 2. Schedule 40 wrought steel (ANSI B36.10M).
 - 3. Schedule 40 welded and seamless steel (ASTM A53).

- B. Piping shall be UL listed and FM approved.

2.02 FITTINGS

- A. Cast iron threaded fittings, 125 lb. or 250 lb. SWP as required, (ANSI B16.4 and B16.1).
- B. Malleable iron threaded fittings, 150 lb. or 300 lb. SWP as required (ANSI B16.3).
- C. Factory-made wrought steel, butt-weld fittings (ANSI B16.9).
- D. Butt welding ends for pipe, valves, flanges and fittings (ANSI B16.25).
- E. Steel pipe flanges and flanged fittings (ANSI B16.5).
- F. Forged steel fittings, socket welded and threaded (ANSI B16.11).
- G. Grooved-end type fittings and couplings (ASTM A47) are acceptable only if they are used with Schedule 40 or heavier, roll-grooved piping. Victaulic, Gruvlok, or approved equal by Central.
- H. Fittings shall be UL listed and FM approved.
- I. Cut-Groove and Pres-Fit type piping and fittings are not acceptable.

2.03 SPRINKLERS

- A. General: All sprinklers shall be UL listed and FM listed and bear an approved stamp or label.
- B. Construction: Automatic spray, quick response where allowed by code, glass bulb type, bronze tensioned frame, directional deflectors, nominal 1/2 inch orifice, 1/2 inch NPT threaded connection.
- C. Furnish following sprinkler type:
 - 1. Pendant: Reliable Model F1.
 - 2. Concealed: Reliable Model G4A with adjustable coverplate.
- D. Temperature Ratings:
 - 1. Unless otherwise noted, furnish Ordinary Class, 165°F sprinklers.
- E. Finish:
 - 1. Pendant sprinklers shall be chrome plated.
- F. Escutcheon Plates:
 - 1. Escutcheon plates shall be installed tight to the ceiling where sprinklers are either mounted below acoustical tile ceiling, drywall ceiling or protrude from wall or soffit. Provide chrome plated finish.

PART 3 EXECUTION

3.01 INSPECTION

- A. Schedule all inspections required by all Codes and Governing Agencies.

3.02 INSTALLATION

- A. Piping:
1. All piping shall be arranged in accordance with the best standards of the Trade, with and horizontal branches run parallel or perpendicular to the building walls.
 2. Securely fasten pipe and support with hangers that meet NFPA requirements, spaced not less than 12 inches or more than 18 inches from a sprinkler. One hanger on each length of pipe and on cross mains between each branch line.
 3. Install all piping as required in connection with this installation. Install all necessary standard hangers and special hangers of approved type and size. Refer to other sections within these Specifications regarding hangers, supports and inserts.
 4. Ceiling grid systems shall not be supported from, or used to support from, or used to support, electrical conduit, sprinkler lines, or any other utility lines. Each utility and the ceiling grid system shall be independently supported from the building structure, concrete, steel or masonry. Where interferences occur, in order to support piping, conduit, ceiling grid systems, trapeze-type hangers or supports will have to be employed and shall not be located where they interfere with access panels, valves and other mechanical equipment items.
 5. Provide all necessary adaptors, fittings and piping required to make connections to the existing piping.
- B. Joints:
1. Threaded Pipe and Fittings:
 - a. Ream pipe ends to full cross sectional area after cutting.
 - b. Threads shall conform to ANSI Standard B2.1.
 - c. Joints shall be made with TFE tape, applied to male thread only.
- C. Install sprinklers in center of ceiling tile in lay-in ceiling system to within 1 inch of exact center of ceiling grid.

3.03 TESTS

- A. After all tests have been completed, the Contractor's Material and Test Certificate required by NFPA 13 shall be completed and forwarded to the Authorities Having Jurisdiction.
- B. The new sprinkler piping shall be tested hydrostatically at 200 psig for two (2) hours. The hydrostatic test pressure shall be measured at the low point of the individual system or zone being tested. There shall be no visible leakage during the hydrostatic testing.
- C. Comply with NFPA 25, "Inspection, Testing and Maintenance of Water-Based Fire Protection Systems."