

SECTION 210500

COMMON WORK RESULTS FOR FIRE SUPPRESSION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes modifying the existing fire suppression system including sprinkler system adjustments and additions to meet the new layout of the renovation.

1.2 SYSTEM DESCRIPTION

- A. Sprinkler System: Conform to the following criteria:
 - 1. Design system coverage for entire building.
 - 2. Design system hydraulically to NFPA 13.
 - 3. System performance to achieve ordinary hazard, Group 1 occupancy requirements (Mechanical Room and Storage). Remaining areas to be light hazard.

1.3 SUBMITTALS

- A. Shop Drawings: Indicate detailed pipe layout, supports, components, accessories, sizes, and hydraulic calculations.
- B. Product Data: Submit data for pipe materials used, valves, manufacturer's catalog sheet for equipment indicating rough-in size, finish and accessories.
- C. Manufacturer's Certificate: Certify equipment has been tested and meets or exceeds code requirements.
- D. All data for Division 21 must be submitted as a single package as the Engineer will commence review only when all data has been received. Submit 1 electronic version of submittals in accordance with Division 1.
- E. The Contractor shall determine and verify field measurements and field construction criteria for conformance with Drawings and Specifications and for conflicts with other items of Construction past or present. He shall coordinate each submittal with the requirements of the Work and of the Contract Documents and notify the Engineer in writing, at the time of the submission, of any and all deviations in the submittals from requirements of the Work and Contract Documents.

No fabrication or work which requires submittals shall begin until submittals are returned with the Engineer's approval.

- F. Engineer's review does not constitute acceptance or responsibility for accuracy or dimensions, nor shall it relieve the Contractor from meeting any requirements of the Work and Contract Documents, nor shall it constitute approval for any deviation from the Contract Documents unless such deviations are specifically stated as such on the submittal and specifically allowed by the Engineer by specific written notification for each such variation. The Engineer's review will not relieve the Contractor from responsibility for errors or omissions in the Shop Drawings.
- G. Submit copies of materials for submittal review as required by Division 1.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of sprinkler heads, piping and sizes, fire riser and equipment.
- B. Operation and Maintenance Data: Submit description of components of system, servicing requirements, record drawings, inspection data, and parts lists.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with:
 - 1. Sprinkler Systems: NFPA 13.
- B. Maintain one copy of each document on site.
- C. Design fire suppression system under direct supervision of Professional Engineer or NICET certified technician experienced in design of this Work and licensed at Project location.

1.6 PERMITS

- A. Permits necessary for the performance of the work under this contract shall be secured and paid for by the Contractor. Final inspection by the Engineer will not be made or certificate of final payment issued until certificates of satisfactory inspection from the inspection authorities are delivered.

1.7 SUBSTITUTIONS

- A. Prior approval required. See Section 016300 and 016302 of the Specifications for Substitutions. Bidder is required to document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- B. Basis of Design. Equipment/materials indicated in schedules and details shown on the plans form the Basis of Design for this project. Alternate equipment/materials proposed by the contractor must match the specified item in dimension, configuration, weight, electrical requirements, etc. Any revision to plans necessary to accommodate the alternate equipment will be the responsibility of the contractor and shall be reflected in a shop drawing prepared by the contractor and approved by the Engineer.

1.8 TRAINING

- A. The mechanical contractor shall conduct a 2 hour minimum training session with owner designated staff to review all fire protection equipment installed under this contract. Contractor shall physically demonstrate the operation of each piece of equipment. A sign in sheet and agenda indicating a list of all equipment reviewed shall be included in the close out documents.

PART 2 PRODUCTS

2.1 PIPE AND TUBE

- A. Manufacturers:
 - 1. Ansul Incorporated
 - 2. Automatic Sprinkler Corp.
 - 3. Kike Protection Systems
 - 4. Grinnell Corp.
 - 5. Reliable Sprinkler Corp.
 - 6. WSA Inc.
 - 7. Substitutions: Approved equals.
- B. Steel Pipe: ASTM A53/A53M, Grade B, ASTM A135, or ASME B36.10M, Schedule 10 or 40 black or galvanized.
 - 1. Steel Fittings: ASME B16.9, wrought steel, butt welded; ASME B16.25, butt weld ends; ASTM A234/A234M, wrought carbon steel and alloy steel; ASME B16.5, steel flanges and fittings; ASME B16.11, forged steel socket welded and threaded.
 - 2. Cast Iron Fittings: ASME B16.1, flanges and fittings; ASME B16.4, threaded fittings.
 - 3. Malleable Iron Fittings: ASME B16.3, threaded type; ASTM A47/A47M.
 - 4. Mechanical Grooved Couplings: Malleable iron housing, "C" shaped elastomeric sealing gasket, steel bolts, nuts, and washers; galvanized for galvanized pipe.
- C. Steel Pipe: ASTM A53/A53M, Grade B, ASTM A135, or ASTM A795 Schedule 5 black.
 - 1. Steel Fittings: Cold drawn steel, mechanically attached, with butylene or EPDM O-ring.
- D. Steel Pipe: ASTM A135 Grade A, ULC threadable thin wall, black.
 - 1. Cast Iron Fittings: ASME B16.1, flanges and fittings.
 - 2. Malleable Iron Fittings: ASME B16.3 threaded type.

- E. CPVC Pipe: ASTM F442/F442M, SDR 13.5.
 - 1. Fittings: ASTM F438 schedule 40, or ASTM F439 schedule 80, CPVC.
 - 2. Joints: ASTM F493, solvent weld.

2.2 GATE VALVES

- A. Up to and including 2 inches: Bronze body and trim, rising stem, hand wheel, solid wedge or disc, threaded ends.
- B. Over 2 inches: Iron body, bronze trim, rising stem pre-grooved for mounting tamper switch, hand wheel, OS&Y, solid bronze or cast iron wedge, flanged or grooved ends.

2.3 CHECK VALVES

- A. Up to and including 2 inches: Bronze body and swing disc, rubber seat, threaded ends.
- B. Over 2 inches: Iron body, bronze trim, swing check with rubber disc, renewable disc and seat, flanged ends with automatic ball check.
- C. 4 inches and Over: Iron body, bronze disc with stainless steel spring, resilient seal and threaded, wafer or flanged ends.

2.4 DRAIN VALVES

- A. Bronze compression stop with hose thread nipple and cap.
- B. Brass ball valve with cap and chain, 3/4 inch hose thread.

2.5 SPRINKLERS

- A. Manufacturers:
 - 1. Star
 - 2. Central
 - 3. Gem
 - 4. Substitutions: Approved Equals.
- B. Suspended Ceiling Type: Semi-recessed pendant type with enameled finish, and matching escutcheon.
- C. Exposed Area Type: Standard upright type with brass finish.
- D. Sidewall Type: Semi-recessed horizontal sidewall type enameled finish with matching escutcheon.
- E. Guards: Finish to match sprinkler head.

2.6 SPRINKLER PIPING SPECIALTIES

- A. Wet Pipe Sprinkler Alarm Valve: Check type valve with electrically or hydraulically operated alarms, with pressure retard chamber and variable pressure trim.
- B. Water Motor Alarm: Hydraulically operated impeller type alarm gong, red enameled.
- C. Electric Alarm: Electrically operated chrome plated red enameled gong with pressure alarm switch.
- D. Water Flow Switch: Vane type switch with two contacts.

2.7 FIRE DEPARTMENT CONNECTION

- A. Type: Flush mounted wall type with chrome plated finish.
- B. Outlets: one way with thread size to suit fire department hardware; threaded dust cap and chain of matching material and finish.
- C. Drain: 3/4 inch automatic drip, to outside.
- D. Label: "Sprinkler - Fire Department."

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance NFPA 13 and NFPA 24.
- B. Ream pipe and tube ends to full inside diameter. Remove burrs and bevel plain end ferrous pipe.
- C. Remove scale and foreign material, inside and outside, before assembly.
- D. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- E. Install sleeves where penetrating footings, floors, or walls. Seal pipe and sleeve penetration to maintain fire resistance equivalent to fire separation of footings, floors, or walls.
- F. Install pipe runs to minimize obstruction to other work. Offset around ductwork.
- G. Install piping in concealed spaces above finished ceilings.
- H. Install drain valves at main shut-off valves, low points of piping and apparatus.
- I. Connect system to water source ahead of domestic water connection with double check valve assembly.
- J. Install heads to coordinate with reflected ceiling plan.
- K. Protection:

1. Apply temporary tape or paper cover to sprinkler heads to protect from painting.
 2. Protect concealed sprinkler head cover plates from painting.
- L. Install drain piping from tank to nearest floor drain.
- M. Interface sprinkler system with building fire and smoke alarm system.
- N. Locate fire department connection with sufficient clearance from walls, obstructions, or adjacent Siamese connectors to allow full swing of fire department wrench handle.
- O. Hydrostatically test entire system. Schedule test to be witnessed by, authority having jurisdiction.
- P. Hydrostatically test underground piping and attached appurtenances to 200 PSI or 50 PSI greater than working pressure, whichever is greater per NFPA 24. Test in presence of authority having jurisdiction and provide written report to engineer.
- Q. Flush all underground piping per NFPA 24. Provide written report to engineer.
- R. Provide guards on all sprinkler heads within the gymnasium.

3.2 EXISTING SERVICES

- A. The Contractor shall carefully examine the drawings and specifications, visit the site of the work, fully inform himself as to all existing conditions, dimensions and limitations before starting work.
- B. If existing active or non-active services (which are not shown on plans) are encountered that require relocation or disconnection, the Contractor shall notify the Engineer for a decision on proper handling of these services. The Contractor shall not proceed with the work until so authorized.

END OF SECTION