

**SECTION 21 13 13**  
**WET-PIPE SPRINKLER SYSTEM**

**PART 1 - GENERAL**

**1.1 SCOPE OF WORK**

- A. Work includes the design and installation of a hydraulically calculated automatic wet system complete and ready for operation, for the new chiller room and electrical room in Building 22A on a design/build basis. Existing system riser and water supply in Building 22A shall be used. Existing and new riser and water supply in Building 22A shall be used. Contractor shall also perform test of the water supply system recording static pressure, residual pressure and flow from hydrant(s).
- B. The buildings are of noncombustible construction. Sprinklers shall be provided in accordance with NFPA 13 and the current edition of the VA Fire Protection Design Manual.

**1.2 RELATED WORK**

- A. Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Section 07 84 00, FIRESTOPPING.
- D. Section 09 91 00, PAINTING.
- E. Section 28 31 00, FIRE ALARM SYSTEM.

**1.3 QUALITY ASSURANCE**

- A. Installer Reliability: The installer shall possess a valid State of California fire sprinkler contractor's license. The installer shall have been actively and successfully engaged in the installation of commercial automatic sprinkler systems for the past three years.
- B. Materials and Equipment: All equipment and devices shall be of a make and type listed by UL, FM, or other nationally recognized testing laboratory for the specific purpose for which it is used. All materials, devices, and equipment shall be approved by the VA.
- C. Submittals: Submit as one package in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES. Prepare detailed working drawings that are signed by a NICET Level III or Level IV Sprinkler Technician or stamped by a Registered Professional Engineer practicing in the field of Fire Protection Engineering. As Government review is for technical adequacy only, the installer remains responsible for correcting any conflicts with other trades and building construction that arise during installation. Partial submittals will not be accepted. Material submittals shall be approved prior to the purchase or delivery to the job site. Suitably bind submittals in notebooks or binders and provide index referencing the appropriate specification section. Submittals shall include, but not be limited to, the following:
  - 1. Qualifications
    - a. Provide a copy of the installing contractor's license.
    - b. Provide a copy of the NICET certification for the NICET Level III or Level IV Sprinkler Technician who prepared and signed the detailed working drawings unless the drawings are stamped by a Registered Professional Engineer practicing in the field of Fire Protection Engineering.

2. Drawings: Submit detailed 1/8 inch scale (minimum) working drawings conforming to NFPA 13. Include a site plan showing the piping to the fire pump location.
3. Manufacturers Data Sheets: Provide for materials and equipment proposed for use on the system. Include listing information and installation instructions in data sheets. Where data sheet describes items in addition to that item being submitted, clearly identify proposed item on the sheet.
4. Calculation Sheets: Submit hydraulic calculation sheets in tabular form conforming to the requirements and recommendations of NFPA 13.
5. Final Document Submittals: Provide as-built drawings, testing and maintenance instructions in accordance with the requirements in Section 01 33 23. Submittals shall include, but not be limited to, the following:
  - a. One complete set of reproducible as-built drawings showing the installed system.
  - b. Provide maintenance instructions on replacing any components of the system including internal parts, periodic cleaning and adjustment of the equipment and components with information as to the address and telephone number of both the manufacturer and the local supplier of each item.
  - c. Material and Testing Certificate: Upon completion of the sprinkler system installation or any partial section of the system, including testing and flushing, provide a copy of a completed Material and Testing Certificate as indicated in NFPA 13.
  - d. Certificates shall document all parts of the installation.
  - e. Instruction Manual: Provide one copy of the instruction manual covering the system in a flexible protective cover and mount in an accessible location adjacent to the riser.
- D. Design Basis Information: Provide design, materials, equipment, installation, inspection, and testing of the automatic sprinkler system in accordance with the requirements of NFPA 13. Recommendations in appendices shall be treated as requirements.
  1. Perform hydraulic calculations in accordance with NFPA 13 utilizing the Area/Density method. Do not restrict design area reductions permitted for using quick response sprinklers throughout by the required use of standard response sprinklers in the areas identified in this section.
  2. Sprinkler Protection: To determine spacing and sizing, apply the following coverage classifications:
    - a. Light Hazard Occupancies: Office areas, treatment rooms, exam rooms, bathrooms, corridors, conference rooms, waiting areas, reception areas and similar areas.
    - b. Ordinary Hazard Group 1 Occupancies: Mechanical, electrical and all other areas.
    - c. Request clarification from the Government for any hazard classification not identified.
  3. Hydraulic Calculations: Calculated demand including hose stream requirements shall fall no less than 10 percent below the available water supply curve.
  4. Water Supply: Contractor to confirm available water supply. The Contractor is responsible for verifying the available supply by flow test of the hydrants and for designing system so that

demand does not exceed available supply. Contractor shall notify COTR immediately upon testing supply if supply is found to be equal to, or less than, that noted above.

5. Provide seismic protection in accordance with NFPA 13.

#### **1.4 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. National Fire Protection Association (NFPA), latest edition:  
  
13 ..... Installation of Sprinkler Systems  
  
101 ..... Safety to Life from Fire in Buildings and Structures (Life Safety Code)
- C. Underwriters Laboratories, Inc. (UL):  
  
Fire Protection Equipment Directory
- D. Factory Mutual Engineering Corporation (FM):  
  
Approval Guide

### **PART 2 PRODUCTS**

#### **2.1 PIPING & FITTINGS**

- A. Schedule 40 piping and cast or malleable iron fittings meeting the requirements of NFPA 13. Piping 2.5 inches and larger may be Schedule 10.

#### **2.2 VALVES**

- A. All system isolation and control valves in Building 22A are existing. Provide new inspector's test valve.
- B. Control valves shall be listed/approved indicating type.
  1. OS&Y valves shall be resilient seat type.
  2. Butterfly valves shall be gear operated.
  3. Ball valves shall be gear operated with full port.
  4. Pressure reducing floor control valves shall be indicating type.
- C. Drain, trim, and test valves shall be approved.
- D. Water flow alarm control valve shall be indicating type and capable of supervised open.
- E. Check Valves
  1. Check valves for water supply, fire department connections and risers shall have removable covers for maintenance with out removing the valve from the system.

## **2.3 SPRINKLERS**

- A. Type: Sprinklers shall be UL listed and FM approved. Provide quick response sprinklers in all areas, except where specifically prohibited by their listing. Recessed pendent (k=8.0), chrome finish with chrome escutcheon in finished areas. Upright (k=8.0), brass finish in unfinished areas.
- B. Temperature Ratings: In accordance with NFPA 13.
- C. Provide sprinklers above and below electrical room and closet ceilings.

## **2.4 SPRINKLER CABINET**

- A. Provide sprinkler cabinet with the required number of sprinkler heads of all ratings and types installed, and a sprinkler wrench for each system. Locate as directed by Contracting Officer.

## **2.5 GAUGES**

- A. All gauges in Building 22A are existing.
- B. Listed/approved with range approximately twice maximum pressure at point of connection, 3-1/2-inch diameter, complete with 1/4-inch threaded inlet with shut off valve with 1/4-inch plugged outlet.

## **2.6 PIPE SUPPORTS**

- A. Supports, hangers, etc., of an approved pattern placement to conform to NFPA 13. Provide all required seismic bracing including end of branch line restraints in accordance with NFPA 13.

## **2.7 WALL, FLOOR AND CEILING PLATES**

- A. Provide plated steel escutcheon plates with chrome finish for exposed piping passing through walls, floors or ceilings.

# **PART 3 - EXECUTION**

## **3.1 INSTALLATION**

- A. Provide a qualified technician, experienced in the installation and operation of the type of system being installed, to supervise the installation and testing of the system.
- B. Installation of Piping: Accurately cut pipe to measurements established by the installer and work into place without springing or forcing. Bending of the pipe is prohibited. Install concealed piping in spaces that have finished ceilings. Install to avoid conflicts with ducts.
- C. Welding: Shop welding shall conform to the requirements and recommendations of NFPA 13. No welding is permitted in building.
- D. Drains: Pipe drains in Building 22A are existing. Provide auxiliary drains in accordance with NFPA 13.
- E. Inspector's Test Connection: Install inspector' test connection where noted on the drawings. Discharge to the exterior.
- F. Sleeves: Provide for pipes passing through masonry or concrete. Provide space between the pipe and the sleeve in accordance with NFPA 13. Seal this space with a UL Listed through penetration fire stop material in accordance with Section 07 84 00, FIRESTOPPING. Where core drilling is used in lieu of

sleeves, also seal space. Seal penetrations of walls, floors and ceilings of other types of construction, in accordance with Section 07 84 00, FIRESTOPPING.

- G. Repairs: Repair damage to the building or equipment resulting from the installation of the sprinkler system by the installer at no additional expense to the Government.

### **3.2 INSPECTION AND TEST**

- A. Preliminary Testing: Hydrostatically test system, including new and existing sprinkler piping on the floor, as specified in NFPA 13, in the presence of the Contracting Officers Technical Representative (COTR) or his designated representative.
- B. Final Inspection and Testing: Subject system to tests in accordance with NFPA 13, and when all necessary corrections have been accomplished, advise COTR to schedule a final inspection and test. Coordinate water flow test with the fire alarm contractor. Furnish all instruments, labor and materials required for the tests and provide the services of the installation supervisor or other competent representative of the installer to perform the tests. Correct deficiencies and retest system as necessary, prior to the final acceptance. Include the operation of all features of the systems under normal operations in test.

### **3.3 INSTRUCTIONS**

- A. Furnish the services of a competent instructor for not less than two hours for instructing personnel in the operation and maintenance of the system, on the dates requested by the COTR.

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