

**VAMC WACO, TEXAS**

**SECTION 21 13 13**

**WET-PIPE SPRINKLER SYSTEMS**

**TABLE OF CONTENTS**

PART 1	GENERAL .....	1
1.1	SCOPE OF WORK .....	1
1.2	RELATED WORK.....	1
1.3	QUALITY ASSURANCE.....	1
1.4	APPLICABLE PUBLICATIONS .....	4
PART 2	PRODUCTS .....	4
2.1	PIPING & FITTINGS .....	4
2.2	VALVES .....	4
2.4	SPRINKLER CABINET .....	5
2.5	IDENTIFICATION SIGNS/HYDRAULIC PLACARDS .....	5
2.6	SWITCHES .....	5
2.7	GAUGES .....	5
2.8	PIPE HANGERS AND SUPPORTS.....	5
2.9	WALL, FLOOR AND CEILING PLATES .....	5
PART 3	EXECUTION .....	5
3.1	INSTALLATION .....	5
3.2	INSPECTION AND TEST .....	6
3.3	INSTRUCTIONS .....	7



**VAMC WACO, TEXAS****SECTION 21 13 13****WET-PIPE SPRINKLER SYSTEMS****PART 1 GENERAL****1.1 SCOPE OF WORK**

- A. Design, installation and testing shall be in accordance with NFPA 13 except for specified exceptions. All design, installation and testing shall be conducted by SimplexGrinnell – No substitutions are permitted.
- B. The scope of work for the new automatic sprinkler system for the Building 11 renovation shall utilize the existing 2½” cross mains on each level to provide the extension of a new cross main into the new addition. The new cross main shall supply the new branch line piping and sprinkler heads required to protect the new addition. Sprinkler protection within the renovated areas will be achieved by modifying the existing sprinkler system. The existing sprinkler heads within the renovated areas shall be demolished and removed. The remaining sprinkler head outlets shall be used to supply the new piping and sprinkler heads as required for complete protection.
- C. Provide all labor and materials to provide complete wet-pipe automatic sprinkler system protection throughout the new addition and the renovated areas. The system shall be designed and configured as indicated in this specification and as indicated.
- D. Existing piping shall be drained and flushed until clear and all effluent disposed of properly in accordance with state and local regulations prior to re-filling.

**1.2 RELATED WORK**

- A. Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Section 07 84 00, FIRESTOPPING, Treatment of penetrations through rated enclosures.
- C. Section 09 91 00, PAINTING.
- D. Section 28 31 00, FIRE DETECTION AND ALARM, Connection to fire alarm of supervisory switches.

**1.3 QUALITY ASSURANCE**

- A. Installer Reliability
  - 1. Work shall be performed by an automatic fire sprinkler contractor holding a current Sprinkler Certificate of Registration (SCR) with the Texas Department of Insurance.
  - 2. Design shall be performed by a Fire Protection Engineer licensed in Texas or under the supervision of a NICET Level III or IV Automatic Sprinkler

Engineering Technician also holding a current Responsible Managing Employee-General (RME-G) license with the Texas Department of Insurance.

3. The contractor shall be fully responsible for all designs to meet project requirements, including related items not specifically illustrated or mentioned in the contract documents.
- B. Materials and Equipment: All equipment and devices shall be of a make and type listed by UL and approved by 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 signed and sealed 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 fire sprinkler and state contractors 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 1:100 (1/8 inch) scale (minimum) working drawings conforming to NFPA 13. Include a site plan showing the piping to the water supply test location.
  3. Manufacturers Data Sheets:
    - a. 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, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES. Submittals shall include, but not be limited to, the following:
  - a. One complete set of reproducible as-built drawings showing the installed system with the specific interconnections between existing and new equipment.
  - b. Complete, simple, understandable, step-by-step, testing instructions giving recommended and required testing frequency of all equipment, methods for testing all equipment, and a complete trouble shooting manual. 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. Area reductions are permitted for using quick response sprinklers.
  2. Sprinkler Protection: To determine spacing and sizing, apply the coverage classifications as defined in NFPA 13 and shown on the F drawings.
  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: Base water supply on the fire flow test conducted by the FPE on July 19, 2010. Fire flow test results and graph are provided on the F drawings.

## **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):
  1. 13-2007 Installation of Sprinkler Systems
  2. 101-2009 Life Safety Code
  3. 170-2009 Fire Safety Symbols
- C. Underwriters Laboratories, Inc. (UL):
  1. Fire Protection Equipment Directory – 2010
- D. Factory Mutual Engineering Corporation (FM):
  1. Approval Guide – 2010
- E. International Building Code – 2009
- F. State Licensing Regulations:
  1. Texas Insurance Code Chapter 6003, Fire Protection Sprinkler System Service and Installation and the Fire Sprinkler Rules, Spring 2009.

## **PART 2 PRODUCTS**

### **2.1 PIPING & FITTINGS**

- A. Piping shall be black steel and shall be either Schedule 10 or Schedule 40 as permitted in accordance with NFPA 13.

### **2.2 VALVES**

- A. Valves in accordance with NFPA 13.
- B. Do not use quarter turn ball valves for 50 mm (2 inch) or larger drain valves.

### **2.3 SPRINKLERS**

- A. All sprinklers shall be FM approved unless otherwise indicated in this section or on the F drawings. Provide quick response sprinklers in all areas, except where specifically prohibited by their listing or approval.
- B. Provide institutional sprinklers in all areas where the nature of the occupants warrants such precautions and as indicated on the F drawings. Institutional type sprinklers are not required to be specifically FM Approved.

- C. Provide 'cages' to protect sprinkler heads from breakage/damage when the elevation of the head is less than 7 feet 6 inches above finished floor in mechanical rooms, janitor closets, etc where the sprinkler heads are subject to damage due to normal operations.

#### **2.4 SPRINKLER CABINET**

Provide a sprinkler cabinet with the required number of sprinkler heads of all ratings and types installed, and a sprinkler wrench for each system. Locate adjacent to the riser. Sprinkler heads shall be installed in center of tile or center to center.

#### **2.5 IDENTIFICATION SIGNS/HYDRAULIC PLACARDS**

Plastic, steel or aluminum signs with white lettering on a red background with holes for easy attachment. Enter pertinent data for each system on the hydraulic placard.

#### **2.6 SWITCHES**

Valve Supervisory Switches for Ball and Butterfly Valves: May be integral with the valve.

#### **2.7 GAUGES**

Provide gauges as required by NFPA 13.

#### **2.8 PIPE HANGERS AND SUPPORTS**

Supports, hangers, etc., of an approved pattern placement to conform to NFPA 13. System piping shall be substantially supported to the building structure. The installation of hangers and supports shall adhere to the requirements set forth in NFPA 13. Materials used in the installation or construction of hangers and supports shall be listed and approved for such application.

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

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

### **PART 3 EXECUTION**

#### **3.1 INSTALLATION**

- A. Installation shall be accomplished by the licensed contractor. 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. Pipe-bending is prohibited. Piping shall be concealed in spaces that have finished ceilings.
- C. Welding: Conform to the requirements and recommendations of NFPA 13.
- D. Drains (If required): Pipe drains to discharge at safe points outside of the building or to sight cones attached to drains of adequate size to readily carry the full flow from each drain under maximum pressure. Do not provide a direct drain connection to sewer system

or discharge into sinks. Install drips and drains where necessary and required by NFPA 13.

- E. Supervisory Switches (If required): Provide supervisory switches for sprinkler control valves.
- F. Affix cutout disks, which are created by cutting holes in the walls of pipe for mechanical tees used to provide outlets for the sprinkler system extension, to mechanical tee assembly.
- G. 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. Where core drilling is used in lieu of sleeves, also seal space.
- H. Seal penetrations of walls, floors and ceilings of other types of construction, in accordance with Section 07 84 00, FIRESTOPPING.
- I. Securely attach identification signs to control valves and drain valves, when necessary. Locate hydraulic placard information signs at each sectional control valve where there is a zone water flow switch.
- M. 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.
- N. Interruption of Service: There shall be no interruption of the existing sprinkler protection, water, electric, or fire alarm services without prior permission of the Contracting Officer. Contractor shall develop an interim fire protection program where interruptions involve occupied spaces. Request in writing at least one week prior to the planned interruption.

### **3.2 INSPECTION AND TEST**

- A. Preliminary Testing: Flush newly installed piping prior to performing hydrostatic tests in order to remove any debris which may have been left as well as ensuring piping is unobstructed. Hydrostatically test system, as specified in NFPA 13, in the presence of the Contracting Officers Technical Representative (COTR) or his designated representative. Test and flush underground water line prior to performing these hydrostatic tests.
- B. Final Inspection and Testing: Subject system to tests in accordance with NFPA 13, and when all necessary corrections have been accomplished, advise COTR/Resident Engineer to schedule a final inspection and test. Connection to the fire alarm system shall have been in service for at least ten days prior to the final inspection, with adjustments made to



prevent false alarms. Furnish all instruments, labor and materials required for the tests and provide the services of the installation foreman 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**

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/Resident Engineer.

-- END OF SECTION--

