

## **DIVISION 21 – FIRE SUPPRESSION**

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**SECTION 21 10 00**  
**WATER BASED FIRE SUPPRESSION SYSTEMS**

CONSULTANT DESIGN GUIDELINE

Before installation, submit Shop Drawings of fire protection system and receive approval from Factory Mutual Global Insurance and the Facilities Management Fire Marshall. All fire lines shall be inspected and approved by the City of Fayetteville before the fire line is activated.

Underground sprinkler lead-in from the public mains shall be minimum six-inch (6") diameter.

Provide an allowance for a five (5) PSIG pressure drop between supply curve and demand point, including 250 GPM hose stream allowance.

Provide W.P.I.V. or P.I.V. control valves at each system riser.

Provide standard fire hydrant within 100' hose lay distance of fire department pumper connection, if not already existing.

Route piping such that if areas separated by four-hour rated firewalls, they shall be zoned with their own flow detector.

Provide "as built" sheets as appropriate of construction documents to FM Global, which show any campus water main changes, modifications or additions.

Provide double check detector assembly at the beginning of each system involving class 1,2,3. For systems involving classes 4,5,6 specify the proper reduced pressure detector assembly.

INCLUDE IN CONSTRUCTION DOCUMENTS

Provide standard, soldered-link, automatic sprinklers with 165°F operating temperature; except, provide sprinklers with operating temperatures as required by NFPA 13 for installation near heating equipment or lights. In unoccupied utility areas, heads shall be Grinnell Duraspeed, ½" orifice, chrome, with two-piece white enamel escutcheon plate, deflector type SSP-1. Supply sprinkler pendants that are located less than eight (8) feet above finished floor with wire guards. Paint wire guards white in all office and toilet areas; red at other locations.

For each style and temperature range required, furnish an additional two fire sprinklers for every 100 installed units, but not less than six (6) units of each type.

Provide red, baked enamel, steel sprinkler cabinet to store extra sprinklers and wrenches, as required by NFPA 13.

Provide 8" diameter water operated alarm gong on exterior of building adjacent to sprinkler system riser.

Equip each sprinkler system riser with vane-type flow detector, Model #VSR-D, manufactured by

Potter Electric Signal of St. Louis, Missouri, or Model #20-E-12-2, manufactured by Notifier Company of Lincoln, Nebraska. Set adjustable delayed signal at 30 seconds. Additional flow detectors shall be required if other individuals, government agencies, or companies intend to use water flow detection information.

OS&Y control valves shall be equipped with tamper switches, Model #OSYS-B manufactured by Potter Electric Signal of St. Louis, Missouri or equivalent. Post indicator valves shall be equipped with tamper switches, Model #PIVS-B manufactured by Potter Electric Signal of St. Louis, Missouri or equal. The OS&Y control valves and post indicator valves shall be FM labeled and installed per manufacturer's instructions.

END OF SECTION

## **SECTION 21 11 00** **FACILITY FIRE-SUPPRESSION WATER SERVICE PIPING**

### CONSULTANT DESIGN GUIDELINE

Consultant shall locate riser and main laterals on construction plans. By note, indicate flow and pressure information that the fire protection subcontractor will need to design the system.

All plans approved by the State Fire Marshal. The Fayetteville Fire Chief is the representative of the State Fire Marshal in Fayetteville for this purpose.

Consultant shall review submittal plans in order to check for potential freeze and coordination problems such as a fire protection lateral located directly below a relief air hood.

Throttle valves for testing fire pumps shall be butterfly type valves with gear operators.

Specify all water valves to have tamper switches for remote monitoring through the fire alarm.

Fire alarm inputs shall also include:

1. Fire pump running.
2. Pump not in automatic position.
3. Power for all 3 phases monitored and remotely monitored through fire alarm.

END SECTION

**SECTION 21 11 16**  
**FACILITY FIRE HYDRANTS**

CONSULTANT DESIGN GUIDELINE

Hydrants. Specify fire hydrants to meet A.W.W.A. specifications equipped with hose connections meeting the National Standard Fire Hose thread specifications. Acceptable hydrants equal to or better than Mueller A-24015 or Darling B-62-B.

Specify hydrants with two, size 2-1/2" and one, size 4-1/2" nozzles, which turn counterclockwise to open.

INCLUDE IN CONSTRUCTION DOCUMENTS

Hydrant Construction. Hydrants shall be of two-piece barrel construction with breakable safety flange at ground line. Hydrant to have "O" ring stuffing box with valve seat diameter of 5" or larger. Hydrant pipe connection shall be size 6" with mechanical joint ends. Equip hydrants with the National Standard operating nut. Supply hydrant nozzle-caps without retaining chains.

Acceptable Manufacturers. Hydrants equal to or better than Mueller A-24015.

Location. Locate hydrant within 6 feet of the curb of the nearest roadway.

Nozzle Opening. Install hydrants with 4-1/2" nozzle opening facing nearest roadway with a minimum of 14" clearance between the bottom of the lowest nozzle and the surface of the surrounding landscape and a maximum of 60".

Painting. Paint hydrant in standard University color scheme of white barrel and red caps and top.

A Know box is required on each building.

Hydrant Lubricant. Furnish hydrant lubricant with each hydrant.

Testing. Test hydrant prior to acceptance of the University.

Documentation. Manufacturer or Contractor to supply brochure or specifications booklet.

END SECTION

## 21 11 19 Fire Department Connections

### 21 12 00 Fire Suppression Standpipes

21 12 13 Fire Suppression Hoses and Nozzles

21 12 16 Fire Suppression Hose Reels

21 12 19 Fire Suppression Hose Racks

21 12 23 Fire Suppression Hose Valves

21 12 26 Fire Suppression Valve and Hose Cabinets

### 21 13 00 Fire Suppression Sprinkler Systems

**Fire Sprinkler Systems:** All new buildings on the campus shall be sprinkler protected with either wet, dry, or combination of wet/dry depending on the construction of the building and whether all spaces in the building are conditioned spaces, if not then a dry sprinkler system shall be required. All sprinkler systems shall have an free standing FDC with 5" Storz locking connection with 30 degree down tilt with University furnished FDC reflective sign. The system shall have a PIV (Post Indicator Valve) which is lockable with padlock AND is tamper switch protected along with a dedicated fire hydrant within 100 feet of the FDC. The sprinkler system shall be installed per current NFPA 13 standards, and if a fire pump is included in the system it shall be installed per NFPA current standards and all maintenance and testing shall conform to NFPA current standards, National Electrical Code, and Arkansas Fire Prevention Code. All valves which control the flow of water in any way shall have a metal sign hung by chain to indicate what the function of the valve is. If valve is located in drop ceiling a metal sign shall be placed on the ceiling grid or on the wall to indicate there is a valve there and what function the valve provides. If valve is behind a wall a locking door shall be provided to access the valve and a metal sign shall be affixed to the wall or door indicating a valve is there and what function the valve provides. In cases where a dry sprinkler system is needed the air compressor which feeds the system shall be permanently wired into a disconnect switch box which shall be provided with signage indicating the disconnect is feeding an air compressor and the disconnect handle shall be padlocked with university furnished padlock.

Hose cabinets shall not be provided, however standpipes shall be located so that distance between each standpipe connection shall not exceed 200 feet, and the pressure at the highest level of the building shall have a minimum pressure of 100 psi.

Spec note: automatic sprinkler system flow switches shall have inspector test valves on the discharge side of the flow switch.

21 13 13 Wet Pipe Sprinkler Systems

21 13 16 Dry Pipe Sprinkler Systems

21 13 19 Preaction Sprinkler Systems

21 13 23 Combined Dry Pipe and Preaction Sprinkler Systems

21 13 26 Deluge Fire Suppression Sprinkler Systems

21 13 29 Water Spray Fixed Systems

21 13 36 Antifreeze Sprinkler Systems

21 13 39 Foam Water Systems

## **21 20 00 FIRE EXTINGUISHING SYSTEMS**

**Fire Extinguishers:** General hand fire extinguisher coverage in all university buildings shall be provided by 10# ABC fire extinguisher Ansul AA10S with a minimum rating of 4A 80BC. These units shall be spaced so that travel distance to reach any unit does not exceed 75 feet. Break rooms, small chemical laboratories, and certain small kitchen spaces can be protected by a 5# ABC unit Ansul A02VB with rating of 3A 40 BC . Computer rooms, data rooms, and data closets shall be protected by a minimum 4 ¾# Clean Agent fire extinguisher Ansul FE05 with rating of 5BC. Large commercial kitchens and cooking areas shall be protected by Ansul K-Gard 6 liter kitchen extinguisher.

### **21 21 00 Carbon-Dioxide Fire Extinguishing Systems**

21 21 13 Carbon-Dioxide Fire Extinguishing Piping

21 21 16 Carbon-Dioxide Fire Extinguishing Equipment

### **21 22 00 Clean Agent Fire Extinguishing Systems**

21 22 13 Clean Agent Fire Extinguishing Piping

21 22 16 Clean Agent Fire Extinguishing Equipment

### **21 23 00 Wet Chemical Fire Extinguishing Systems**

21 23 13 Wet Chemical Fire Extinguishing Piping

21 23 16 Wet Chemical Fire Extinguishing Equipment

### **21 24 00 Dry Chemical Fire Extinguishing Systems**

21 24 13 Dry Chemical Fire Extinguishing Piping

21 24 16 Dry Chemical Fire Extinguishing Equipment

## **21 30 00 FIRE PUMPS**

### **21 31 00 Centrifugal Fire Pumps**

21 31 13 Electric Drive, Centrifugal Fire Pumps

21 31 16 Diesel-Drive, Centrifugal Fire Pumps

### **21 32 00 Vertical-Turbine Fire Pumps**

21 32 13 Electric-Drive, Vertical-Turbine Fire Pumps

21 32 16 Diesel –Drive, Vertical-Turbine Fire Pumps

### **21 33 00 Positive-Displacement Fire Pumps**

21 33 13 Electric-Drive, Positive-Displacement Fire Pumps

21 33 16 Diesel-Drive, Positive-Displacement Fire Pumps

## **21 40 00 FIRE-SUPPRESSION WATER STORAGE**

### **21 41 00 Storage Tanks for Fire Suppression Water**

21 41 13 Pressurized Storage Tanks for Fire Suppression Water

21 41 16 Elevated Storage Tanks for Fire Suppression Water

21 41 19 Roof Mounted Storage Tanks for Fire Suppression Water

21 41 23 Ground Suction Storage Tanks for Fire Suppression water

21 41 26 Underground Storage Tanks for Fire Suppression Water

21 41 29 Storage Tanks for Fire Suppression Water Additive