

**SECTION 15300 - FIRE SPRINKLER SYSTEMS**

**PART 1 - GENERAL**

1.01 SUMMARY

- A. Related Documents: Conditions of the Contract, Division 1 - General Requirements and Drawings apply to the Work of this Section.

1.02 DESCRIPTION OF WORK

- A. Provide all required labor, materials, equipment, testing and services necessary for a complete and operational fire protection systems for the building as hereinafter described and as shown on the engineering drawings.
- B. Work shall begin at the 8 in. flange provided by others, located at 1'-0" inside the proposed fire sprinkler riser room and shall include the following:
  - 1. Wet pipe fire sprinkler systems for the entire building.
  - 2. Coordination of work and schedules with other trades.
- C. Site Work - Provide the Following: None.
- D. Interior Work - Provide the Following:
  - 1. Backflow preventer.
  - 2. Electrically supervised indicating control valves.
  - 3. Check valves.
  - 4. Pressure gauges.
  - 5. Flow switches.
  - 6. Overhead pipe, fittings, hangers and sprinklers.
  - 7. Test connections, main drains and auxiliary drains.
  - 8. Corrosion Management Products.

**ENGINEER OF RECORD:**

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CORPORATE CERTIFICATE OF AUTHORITY  
NO. 739



- E. It is intended that the engineering drawings and specification shall describe and provide for a working installation complete in every detail and all items necessary for such complete installation shall be provided whether or not specifically mentioned herein or shown on the engineering drawings.

### 1.03 REFERENCES

- A. All work shall be installed in accordance with all applicable codes and referenced design standards:
1. 2021 Arkansas Fire Prevention Code, Volume I - Fire
  2. 2021 Arkansas Fire Prevention Code, Volume II - Building
  3. NFPA 13, Sprinkler Systems - 2019 Edition
  4. FM Global 8-9 – Storage of Class I-IV and Plastic Commodities
  5. FM Global 3-26 – Fire Protection for Nonstorage Occupancies

### 1.04 SYSTEM DESCRIPTION

- A. FIRE SPRINKLER SYSTEMS DESIGN CRITERIA SHALL BE STRICTLY PER THIS SPECIFICATION.
- B. Fire sprinkler systems to provide fire protection for the entire building as indicated on the engineering drawings.
- C. Interface fire sprinkler systems with building fire and smoke alarm system.
- D. OFFICE AREAS, RESTROOMS, BREAKROOM, ETC (Light Hazard wet pipe fire sprinkler system):
- Density - 0.10 gpm/sq ft
  - Operating Area - 1,500 sq ft
  - Temp. Classification / Nominal K-factor / Response Type - ORD / 5.6 / QR
  - Hose Stream Allowance - 100 gpm
  - Duration – 0.50 hrs
- E. FRONT ENTRANCE CANOPY (Provide protection in accordance with NFPA 13 for an ordinary hazard group II dry pipe fire sprinkler system):
- Density – 0.20 gpm/sq ft
  - Operating Area – 1,500 sq ft
  - Temperature Classification / Nominal K-factor / Response Type – INT / 5.6 / SR
  - Hose Stream Allowance – 250 gpm
  - Duration – 1.0 hrs

F. NFPA 13 DESIGN CRITERIA FOR SALES FLOOR, GUN VAULT, ENTRY VESTIBULE AND CUSTOMER SERVICE AREAS (Ordinary Hazard Group II Wet Pipe Sprinkler System):

- Density – 0.20 gpm/sq ft
- Operating Area – 1,500 sq ft
- Temp. Class. / Nominal K-factor / Response Type – ORD / varies / EC
- Hose Stream Allowance - 250 gpm
- Duration – 1.0 hrs

G. FM GLOABAL DESIGN CRITERIA FOR SALES FLOOR, GUN VAULT, ENTRY VESTIBULE AND CUSTOMER SERVICE AREAS (Provide in accordance with FMDS 3-26 Hazard Class 2 for a wet pipe fire sprinkler system):

- PRIMARY Density – 0.20 gpm/sq ft
- SECONDARY Density – 0.30 gpm/sq ft
- PRIMARY Operating Area – 2,500 sq ft
- SECONDARY Operating Area – 1,000 sq ft
- Temp. Class. / Nominal K-factor / Response Type – ORD / varies / EC
- Hose Stream Allowance - 250 gpm
- Duration – 1.0 hrs

FM design criteria (2,500 sq. Ft.) Is more demanding than NFPA (1,500 sq. Ft.) Due to a larger design area. Therefore, calculating FM criteria satisfies NFPA.

H. FM GLOABAL DESIGN CRITERIA FOR RECEIVING AREAS (Provide protection in accordance with FMDS 8-9, Table 8 for a wet pipe fire sprinkler system to protect storage of class IV cartoned unexpanded commodities in open-frame rack storage with a maximum deck height):

- End Head Pressure – 22 psi min.
- Number of Operating Heads – 6 heads
- Temp. Classification / Nominal K-factor / Response Type – ORD / 25.2 / EC
- Hose Stream Allowance - 250 gpm
- Duration – 1.0 hrs

I. RECEIVING AREAS (Provide protection in accordance with NFPA 13, Table 21.5.1.1 for a wet pipe fire sprinkler system to protect storage of cartoned unexpanded group A plastic commodities up to 15'-0" with 8 ft aisles):

- Density – 0.45 gpm/sq ft
- Operating Area – 2,000 sq ft
- Temp. Classification / Nominal K-factor / Response Type – ORD / 25.2 / EC
- Hose Stream Allowance - 500 gpm
- Duration – 1.0 hrs

J. Water Supply:

Fire protection water supply has been obtained from a hydrant flow test performed on October 6, 2025, by VSC Fire & Security. The water supply shall be considered effective at the intersection of the gauged hydrant's main with the flow hydrant main. The approximate water supply elevation is even with the finished floor. No substitutions of water supply data or its effective point will be allowed.

Actual static:	60 psi
Actual residual:	57 psi
Actual flow:	1,928 gpm

The above water supply coordinates do not include the required 10% from the static pressure safety factor that shall be enforced by the AHJ and academy sports. The coordinates below have been adjusted -6 psi for the required safety factor:

Design static:	54 psi
Design residual:	51 psi
Design flow:	1,928 gpm

K. SPRINKLER SPACING SHALL BE AS SHOWN ON THE ENGINEERING DRAWINGS.

1. Acoustical Tile - Locate sprinklers in accordance with the engineering drawings. Not more than a 3 in. radius tolerance about the point identified by dimension will be accepted. Where rows of sprinklers are provided within the same ceiling plane, any part of the tolerance used for one sprinkler shall be the same for all others in that same row.
2. Hard Ceilings - Locate sprinklers in accordance with the engineering drawings. Sprinklers shall be in line with light fixtures and other sprinklers where indicated on the drawings. Coordinate closely with the electrical contractor.
3. Unfinished Areas - Locate sprinklers as shown on the engineering drawings.

L. Provide all necessary offsets, raises or drops in main or branch line piping and auxiliary drains required by building conditions whether or not shown on the engineering drawings.

M. Examine the job conditions and verify all measurements, distances, elevations, clearances, pipe sizes, etc.

- N. It is understood, unless specifically indicated otherwise, that the pipe sizes as shown on the engineering drawings will be used.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications:
  - 1. Installer's responsibilities include preparing shop drawing submittal, fabricating and installing sprinkler systems. Base calculations on water supply coordinates provided herein.
    - a. Installer shall be State and Locally Licensed.
- B. Equipment and components not specifically specified shall be listed by Underwriters Laboratories Inc. and FM Approved for fire protection systems installation.
- C. All fire sprinkler system components shall be installed free of any rust, corrosion or visible damage. All items not complying with this requirement shall be replaced without cost to the Owner.

1.06 PROJECT CONDITIONS

- A. Interruption of Existing Sprinkler Service: Do not interrupt sprinkler service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary sprinkler service according to requirements indicated:
  - 1. Notify Construction Manager and Owner in advance of proposed interruption of sprinkler service.
  - 2. Do not proceed with interruption of sprinkler service without Construction Manager's and Owner's written permission.
  - 3. Provide temporary piping, fittings and valves as required to maintain sprinkler service.

1.07 REGULATORY REQUIREMENTS

- A. All work shall meet the requirements of Section 1.03.
- B. The fire sprinkler contractor shall not pursue any approvals or interpretations of CCI's Construction Documents except through CCI.
- C. Sprinkler piping shall not be concealed where it is inaccessible unless it is first inspected and accepted by a representative of the authority having jurisdiction.
- D. Any work performed prior to the satisfactory review by CCI and approval by the authority having jurisdiction and the insurance underwriter, will be solely at the fire sprinkler contractor's risk.
- E. The system will not be acceptable until final testing and receipt of the Contractor's Material and Test Certificate has been obtained.

## 1.08 SUBMITTALS

- A. The engineering drawings have been prepared using Revit. The engineering drawings are 100% BIM. The hydraulic calculations have been prepared using HASS. These documents will be made available to the successful fire sprinkler contractor in either electronic form or hard copy. Utilization of these documents for the development of shop drawings and submittals does not relieve the fire sprinkler contractor from any of his responsibilities required herein.
- B. Submit the following:
  - 1. Shop drawings. Submit in .pdf format or two (2) hard copies of each drawing. Drawings will be returned in the same format received. Submittal must be comprehensive of entire project, complete in all detail and the same scale as the engineering drawings.
  - 2. Hydraulic calculations. Submit in .pdf format or two (2) hard copies of each calculation. Calculations will be returned in the same format received. Calculations shall include peaking information.
  - 3. Manufacturer's literature on all system equipment. Submit in .pdf format or two (2) hard copies of the literature. Literature will be return in the same format as received. Literature shall clearly identify exactly what components are being provided which shall include: finish, size, type, options, etc. Literature which is not clearly identified will be rejected.
- C. CCI will review this submittal for consistency with CCI's Construction Documents.
- D. After the satisfactory review by CCI, provide submittals to the authority having jurisdiction and the insurance underwriter for approval.
- E. The fire sprinkler contractor shall be responsible for responding, in writing, to any comments from the authority having jurisdiction or the insurance underwriter within ten (10) working days after the receipt of their comments. Copies of the response shall be sent to the General Contractor and CCI.

## 1.09 AS-BUILT DRAWINGS

- A. Provide as-built drawings in accordance with requirements of the General Conditions of the Contract and NFPA 13.

## 1.10 OPERATION AND MAINTENANCE DATA

- A. Provide operating and maintenance instructions to the Owner in accordance with requirements of the General Conditions of the Contract and NFPA 13.

## 1.11 WARRANTY

- A. Repair all defective workmanship or replace all defective materials for a period of one year from the date of acceptance by the Owner. Workmanship or equipment found to be defective during that period shall be replaced without cost to the Owner.

## **PART 2 - PRODUCTS**

### **2.01 PIPING**

- A. Underground Piping: None.
- B. Overhead Pipe: Per local requirements and NFPA 13 and FM. All pipe shall have a Corrosion Resistance Ratio (CRR) equal to or greater than 1.00. Refer to the current UL Fire Protection Equipment Directory - Steel Sprinkler Pipe for acceptable manufacturers, sizes, and joining methods.
- C. THAT ALL WET PIPE SYSTEM RISERS, FEED AND CROSS MAINS AND BRANCH LINES 1 1/2" AND LARGER SHALL HAVE HYDRAULIC CHARACTERISTICS EQUAL TO OR GREATER THAN SCHEDULE 10 PIPE.

### **2.02 JOINING OF PIPE AND FITTINGS**

- A. All pipe shall be joined in accordance with NFPA 13 and FM and manufacturer's recommendations.
- B. Fittings shall be 175 psi screwed or flanged black cast iron or approved equal such as mechanical, grooved, plain end or welded connections. Where GROOVED FITTINGS AND COUPLINGS are used together they shall be of the same manufacturer.
- C. BUSHINGS SHALL NOT BE USED.
- D. Flexible couplings shall be identified on the Shop Drawings.

### **2.03 HANGERS AND SLEEVES**

- A. Sleeves shall be set for all pipes passing through concrete floors, foundations and masonry walls.
- B. Provide primed escutcheon plates at all wall penetrations where the hole would otherwise be exposed to view.
- C. All hangers to be of approved materials and spaced in accordance with NFPA 13 and the piping manufacturer's specifications.
- D. The section modulus required by NFPA 13 shall be provided for all trapeze members supporting piping.
- E. Sprigs 4 ft or longer shall be restrained against lateral movement.

### **2.04 BACKFLOW PREVENTION**

- A. 8 in. double check backflow preventer with two supervised O.S. & Y. valves and pressure gauges.
  - 1. Acceptable Manufacturers: Ames, Febco, Watts, Wilkins or approved equal.

### **2.05 VALVES**

- A. Exterior Valves: None.

- B. Interior Valves:
  - 1. Control valve: indicating type; 175 psi rated working pressure.
    - a. Acceptable Manufacturers: Gruvlok, Milwaukee, Mueller, Nibco, Stockham, Tyco, Victaulic, Viking or approved equal.
  - 2. Butterfly valve: indicating type; 175 psi rated working pressure.
    - a. Acceptable Manufacturers: Gruvlok, Nibco, Tyco, Victaulic, Viking or approved equal.
  - 3. Check valve: horizontal swing or wafer; 175 psi rated working pressure.
    - a. Acceptable Manufacturers: Gruvlok, Mueller, Stockham, Tyco, United or approved equal.
  - 4. Globe valve: bronze threaded; renewable composition disc; 175 psi rated working pressure.
    - a. Acceptable Manufacturers: Crane, Milwaukee, Nibco, Stockham or approved equal.

2.11 WATERFLOW SWITCHES

- A. Vane Type: Shall be mounted in accordance with its listing and the manufacturer's instructions; designed to signal any flow of water that equals or exceeds 10 gpm; detector switch mechanism shall incorporate an instantly recycling pneumatic retard element with an adjustable range of 0 to 60 seconds; two single pole, double throw switches shall be provided suitable for operation on 24-volt D.C. or 110-volt A.C.; dust tight construction; tamper resistant screws on enclosure; corrosion resistant components within waterway.
  - 1. Acceptable Manufacturers: Guardian, Potter Electric, Starfire, System Sensor or approved equal.
- B. The detector shall be furnished and installed by the fire sprinkler contractor and wired complete by the fire alarm or electrical contractor.

2.12 SUPERVISORY SWITCHES

- A. Switches shall be mounted so as not to interfere with the normal operation of the valve; adjust to operate within two revolutions of the valve control or when the stem has moved no more than one-fifth of the distance from its normal position; two single pole, double throw switches shall be provided suitable for operation on 24-volt D.C. or 110-volt A.C.; dust tight construction; tamper resistant screws on enclosure.
  - 1. Acceptable Manufacturers: Guardian, Potter Electric, Starfire, System Sensor or approved equal.
- B. The supervisory switch shall be furnished and installed by the fire sprinkler contractor and wired complete by the fire alarm or electrical contractor.

## 2.13 SPRINKLERS

- A. Types:
  - 1. Brass Upright Extended Coverage – Fusible Solder Link Extended Coverage Brass Upright Sprinkler.
  - 2. Brass Upright Extended Coverage - Glass Bulb Quick Response Upright Sprinkler.
  - 3. White Recessed Pendent Extended Coverage – Glass Bulb Quick Response White Recessed Pendent Sprinkler on white recessed escutcheon.
  - 4. Brass Upright - Glass Bulb Quick Response Upright Sprinkler.
  - 5. White Recessed Pendent – Glass Bulb Quick Response White Recessed Pendent Sprinkler with white recessed escutcheon.
  - 6. White Concealed Pendent – Glass Bulb Quick Response Concealed Pendent Sprinkler with white cover plate.
  - 7. Chrome Pendent - Glass Bulb Quick Response Pendent Sprinkler.
  - 8. Dry Horizontal Sidewall - Standard Response Dry Horizontal Sidewall Sprinkler.
- B. Acceptable Manufacturers: Globe, Reliable, Tyco, Victaulic and Viking.
- C. Only sprinklers manufactured after January 1, 2024 will be accepted for use.
- D. Only sprinklers manufactured utilizing Belleville spring seals will be acceptable for use.
- E. Provide within the fire sprinkler riser room one (1) spare sprinkler cabinet stocked with sprinklers and escutcheon assemblies proportionate to those provided in the building and all necessary sprinkler wrenches.
- F. If Flexhead, or a similar product, is used, hydraulic calculations shall be revised to include the additional friction loss, and pipe sizes adjusted if required at no additional cost.

## 2.14 SIGNS

- A. Approved enameled metal signs shall be securely attached at all main drains, auxiliary drains alarm test connections and control valves. (Signs shall indicate which zone they serve.)
- B. Provide a permanently attached placard indicating hydraulic design information in accordance with NFPA 13 and placed within the fire sprinkler riser room. A mock-up of placard shall be included with equipment literature.
- C. Provide a permanently attached placard indicating general information in accordance with NFPA 13 and placed within the fire sprinkler riser room. A mock-up of placard shall be included with equipment literature.

- D. Provide in fire sprinkler riser room a plan indicating the areas served by each control valve. The plan shall also include the location of each low point or auxiliary drain valve. The plan shall clearly identify the system associated with each low point (and) auxiliary drain valve, and automatic air vent. This plan shall be framed with a plexiglass cover and shall be permanently attached to a wall. Plan shall be large enough to clearly define the areas protected by each system.

#### 2.15 TEST AND DRAIN CONNECTIONS

- A. Provide combination alarm test/main drain valve with pressure relief equal to the AGF Manufacturing Co. Model 1011A, 2 in. size with ½ in. test orifice where indicated on drawings.
- B. Auxiliary drains consisting of plugs, or globe valves and plugs where capacity of trapped pipe section exceeds 5 gallons, shall be provided to drain all points in the system that cannot be drained back to main riser.

#### 2.16 CORROSION MANAGEMENT

- A. Automatic Air Vents
1. Provide Automatic Air Vents; 175 psi rated working pressure where indicated on drawings mounted in accordance with the manufacturer's instructions.
  2. The fire sprinkler contractor shall leave the isolation valve in the open position after installation.
  3. Acceptable Manufacturers:
    - Engineered Corrosion Solutions

### **PART 3 - EXECUTION**

#### 3.01 COORDINATION WITH OTHER TRADES

- A. Coordinate closely with all other trades to expedite construction and avoid interference.

#### 3.04 PAINTING AND PATCHING

- A. Painting of sprinkler piping is not included in this contract.
- B. Holes in walls or floors cut during the performance of this work shall be patched if the holes cannot be covered by standard escutcheon plates so as to completely conceal the cuts where they would otherwise be exposed to view.
- C. Fire stop all penetrations of fire rated assemblies.

#### 3.05 SYSTEM TESTS

- A. Hydrostatically test entire all systems in accordance with NFPA 13.
- B. Tests shall be witnessed by the authority having jurisdiction, and Owner's authorized agent.

- C. Preliminary testing procedures shall be conducted as mentioned above to assure proper operation when the final testing is performed.
- D. The Contractor's Material and Test Certificates as shown in NFPA 13 must be completed and submitted to the Engineer before final acceptance may be given.

END OF SECTION