
213000 FIRE SUPPRESSION SPRINKLER SYSTEMS

Part 1 – GENERAL

1.1 Description

A. This section details the guidelines and expectations for the installation and certification of fire suppression sprinkler systems on Johns Hopkins University Homewood Campus. Project conditions and requirements vary, thus precluding the absolute adherence to the items identified herein in all cases. However, unless there is adequate written justification and approval from the JHFRE Engineering and Energy Department, it is expected that these guidelines will govern the design and specifications.

B. Fire suppression systems shall be tied into the Fire Alarm Control Unit whenever available.

1.2 Submittals

A. Provide a plan for a complete zoned building fire suppression system that conforms to all local, state and Federal regulations.

B. Final contractor shop drawings and product submittals shall be submitted to Zurich for their approval prior to consultant approval.

C. Where Baltimore City does not require submission of shop drawings due to the limited nature of the modifications, the contractor shall request and obtain approval from Zurich to be relieved of the requirement for production of shop drawings.

D. Contract documents shall require that installing contractors maintain the existing fire protection facilities during the construction period. Zurich regulations regarding notification of sprinkler system shutdowns and modifications shall be followed.

E. Obtain a copy of the most recent hydrant flow test or fire pump test for the facility and list information on the contract documents. If information is more than a year old from the time shop drawings are submitted, a new test should be performed as part of the project. Coordinate new test with local fire department requirements.

F. A framed, color-coded map indicating the location of sprinkler system shutoff valves, drains, zones, and inspector test valves should be provided at the main sprinkler riser room. This will allow for quick identification of specific sprinkler sections in the event of a fire, sprinkler pipe break, system inspections, and testing.

G. Laminated floor plans, 8-1/2"x11" in size, shall be provided adjacent to each sprinkler valve to indicate the area served by that valve. The floor plans shall show the current partitions as well as smoke and fire barriers. Floor plans shall be updated whenever any modifications are made to a sprinkler system.

1.3 Quality Assurance

- A. Fire protection systems should be provided unless exempted by the local code and Zurich.
 - B. Systems shall be designed in accordance to the requirements of the local fire department, local code, NFPA standards and Zurich standards. All devices and equipment shall be UL listed and FM approved. Plans and specifications shall be submitted to Zurich prior to University approval.
 - C. Hazard classification shall be based on the applicable NFPA 101, Life Safety Code section.
 - D. Adhere to current MD State Fire Code and NFPA.
 - E. Plan reviews by the state fire marshal shall be scheduled through JHU's HSE Department.
 - F. Testing of sprinkler systems shall be conducted in the presence of Fire Control Personnel, (i.e. 2" main, inspector's tests, fire pump run etc.)
 - G. Training shall be conducted for Fire Control on all Fire and Life Safety Systems.
 - H. All system design, components, installation and testing shall conform to the current National Fire Code standards published by the NFPA for the applicable installation.
- 1.4 Delivery and storage
- A. Material deliveries and storage areas to be approved by Owner.
 - B. Material storage to comply with manufacturer's recommendations.

Part 2 – PRODUCTS

2.1 Sprinkler Heads

- A. Sprinkler Heads shall be FM listed quick response fusible element, type and style as indicated or required per the application. Heads shall be a nominal 1/2" discharge orifice, for "Ordinary" temperature range.
- B. High temperature heads shall be provided where a reasonable expectancy of elevated temperatures due to the normal operation of equipment are expected.
- C. Sprinkler heads in unfinished spaces shall be standard bronze finish. Provide head guards where they may be exposed to damage such as a mechanical room.
- D. Sprinkler heads where exposed to view shall be bright chrome with chrome plated escutcheon plate.
 - 1. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.
 - 2. Install escutcheons with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.
- E. Additional sprinkler heads shall be provided as required by NFPA 13 and a matching number of escutcheon plates shall also be provided.

F. Maintenance Material Requirement:

1. Include number of sprinklers required by NFPA 13 (or minimum of 6, whichever is larger) and sprinkler wrench. Include separate cabinet with sprinklers and wrench for each type of sprinkler used on Project.

2.2 Automatic Sprinkler Protection

A. Sprinkler systems shall be hydraulically designed, based on a performance specification and shall meet or exceed NFPA standards.

B. Each sprinkler zone shall be equipped with a check valve.

C. Wherever partial coverage sprinkler systems are installed, the sprinkled area shall be separated from the unprotected areas by means of a fire partition.

D. Sprinkler systems installations shall be of the wet type except the following:

1. Areas subject to freezing shall be covered by a Dry Pipe system.

2. High Value spaces as determined by JHU (computer rooms, historical areas, etc.) shall be protected by a double protection pre-action system.

2.3 Fire Pumps

A. Size any fire pumps as required by local fire department, local code, and Zurich standards, whichever is greater.

B. Fire pump heads shall include the pressure required at the top of the system, total system height, system friction and the minimum available suction pressure.

C. Provide fire pumps with a valved cross-connection between discharge and suction (inside the control valves) for testing.

2.4 Hangars and Supports

A. All components shall be NFPA approved, UL listed, or FM approved for fire-suppression piping support.

B. Pre-galvanized or hot-dip galvanized metallic coatings.

C. Hangar rods shall be continuous-thread rod, nuts, and washer made of carbon steel.

D. Powder-actuated fasteners shall be NFPA-approved, UL-listed, or FM-approved threaded-steel stud for use in hardened Portland cement concrete, with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

1. Indoor applications require zinc-coated or stainless-steel.

2. Outdoor applications require stainless-steel.

Part 3 – EXECUTION

- 3.1 Comply with installation requirements of approvals and listings. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.
- 3.2 Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories. Trim excess length of continuous-thread hanger and support rods to 1-1/2".
- 3.3 Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
- 3.4 Install lateral bracing with pipe hangers and supports to prevent swaying. Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- 3.5 Install hangers and supports, so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.