
211000 WATER BASED FIRE SUPPRESSION SYSTEMS

Part 1 – GENERAL

1.1 Description

A. This section details the guidelines and expectations for the design, installation and certification of water-based fire suppression 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 possible.

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.

1.3 Quality Assurance

A. Fire protections 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 Wall Type Fire Department Connection

A. Siamese Connections shall be provided on new systems and location shall be coordinated with the local Fire Marshall, Zurich and JHU.

B. Provide a sign for FDC; coordinate size and location with JHU.

C. Fire Department Valves shall be 2-1/2" chrome plated brass. Provided pressure reducing device shall be capable of handling inlet pressures up to 300psi where required.

D. Coordinate alarm devices with fire alarm system when new systems are being installed.

2.2 Piping

A. All piping 3" and below shall be black steel schedule 40 pipe. Piping 4" and above shall be a minimum schedule 20. Mechanical joints (Victaulic) may be used in piping less than schedule 40.

B. Fittings shall be grooved, shop welded or threaded only.

C. Piping shall be properly sloped to allow for proper drainage.

D. Dry pipe systems shall use all galvanized pipe.

E. Piping subject to alternate wetting and drying, such as drain piping, shall be galvanized.

Part 3 – EXECUTION

- 3.1 All valves are required to be supervised, preferably by the Fire Alarm Control Unit.
- 3.2 Pressure gages should be installed at the top and bottom of sprinkler standpipes. If freezing is a potential issue, then the gage should be protected from external climate conditions.
- 3.3 Sprinkler heads shall not be obstructed by lights, walls, pipes, ducts, etc. so as to allow for proper water discharge of sprinkler head.
- 3.4 Inspectors test drains should be piped directly to the outside, or to an area that has capability of handling flow of water and provide 1/2" orifice at the end of the drain.
- 3.5 The 2" main drain should be placed on the discharge side of the fire pump so that standard drain test can be conducted.
- 3.6 Spare sprinklers with wrench shall be provided in the main sprinkler room.
- 3.7 Installation of vane detectors is recommended on wet sprinkler systems.
- 3.8 Trash dumpsters should be located at least 10' from a building or a dry pipe side wall sprinkler provided over the dumpster.
- 3.9 On dry pipe systems, the ball valve should be supervised by the fire alarm system. Installation of pressure switches is recommended on dry pipe sprinkler systems.
- 3.10 When a new building is constructed and is protected by an automatic sprinkler system, or if a sprinkler system is being retrofitted into an existing building, one of the following options must be used:
 - A. An exterior door leading directly into the sprinkler control room for fire department access.
 - B. A yard mount or wall mount post indicator valve, (PIV), must be installed. The requirements for location/placement and physical properties of the PIV are found in NFPA 13. Regardless of the scenario used, all shut off valves must be electronically monitored into the fire alarm panel if a fire alarm system has been installed.
 1. The PIV must have a lockable handle with a window indicating the "open" or "closed" status of the valve. PIVs installed in buildings where a fire alarm system is not in place will have the valve pad-locked with the key placed in the building's Knox Box.
 2. The top of the PIV must be 36" above grade and shall be physically secured to an underground concrete anchor block.
 3. Yard PIVs shall be protected by bollards and shall also have a secure tag indicating what building they serve.
- 3.11 All control, drain, inspectors and test connection valves should be provided with permanent weather-proof metal or rigid plastic ID signs. All valves located in the mechanical room, pump room, crawl spaces, etc. should be properly identified with the purpose and function stamped on the tag. Hydraulic calculations should be posted at the main sprinkler riser.