

# **WVU DESIGN GUIDELINES & CONSTRUCTION STANDARDS**

## **DIVISION 21 – FIRE SUPPRESSION**

### SECTION 211000 – WATER BASED FIRE SUPPRESSION SYSTEMS

#### **PART 1 - GENERAL**

- 1.1 Any deviances from the following instructions must be approved during design by WVU Facilities Management Personnel.
- 1.2 DEFINITIONS
  - A. (EH&S) Environmental Health and Safety: This is a WVU department within Facilities Management
  - B. (NFPA) National Fire Protection Association
- 1.3 Adhere to current WV State Fire Code, Title 87, Series 1, and NFPA
- 1.4 Plan reviews by the state fire marshal shall be scheduled through WVU's EH&S Department.
- 1.5 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.)
- 1.6 Training shall be conducted for Fire Control on all Fire and Life Safety Systems.
- 1.7 All system design, components, installation and testing shall conform to the current National Fire Code standards published by the National Fire Protection Association for the applicable installation. (See WV State Fire Code Title 87-1-4)

#### **PART 2 - PRODUCTS**

- 2.1 For more detail, reference section 222000, Mechanically Grooved Piping
- 2.2 A dry pipe system shall use all galvanized pipe.
- 2.3 Piping subject to alternate wetting and drying, such as drain piping, shall be galvanized

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**PART 3 - EXECUTION**

3.1 WALL TYPE FIRE DEPARTMENT CONNECTION

A. Thread Data Sheet, Morgantown Fire Department

1. Thread Designation: Morgantown, West Virginia
2. Size: Nominal 2 ½" Basic 3.058"
3. Tolerance: Plus 0.0" Minus 0.032"
4. Threads/Inch: 6
5. Thread Form: American National
6. Class: N/A
7. Pitch: 0.1667"
8. Basic Thread Height: 0.1083"
9. Basic Flat/Radius: Crest 0.0208"
10. Root: 0.0208"
11. Clearance: Maximum 0.0751" Minimum 0.0461"
12. Included Angle: 60 degrees
13. Type Lead: Single Fit C Lead Error and Flank-Angle Deviation\*

B. Limits of Size

External	Limits of Size	Internal
3.058"	Maximum Major Diameter	
3.026"	Minimum Major Diameter	3.1040"
2.9497"	Maximum Pitch Diameter	3.0088"
2.9337"	Minimum Pitch Diameter	2.9957"
2.8415"	Maximum Minor Diameter	2.9165"
	Minimum Minor Diameter	2.8875"

1. \*The diameter equivalent of the variation in any given element, (except pitch diameter), shall not exceed one-half of the pitch diameter tolerance. Lead and flank-angle are thread elements.

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- 3.2 All valves are required to be supervised.
- 3.3 Pressure gages should be installed at the top and bottom of sprinkler standpipes. If freezing is an issue then the gage should be protected from external climate conditions.
- 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 ½" orifice at the end of the drain.
- 3.5 Sprinkler heads shall not be obstructed by lights, walls, pipes, ducts, etc. so as to allow for proper water discharge of sprinkler head.
- 3.6 On dry pipe systems, the ball valve should be supervised by the fire alarm system.
- 3.7 The 2" main drain should be placed on the discharge side of the fire pump so that standard drain test can be conducted.
- 3.8 All control, drain, inspectors and test connection valves should be provided with permanent weather-proof metal or rigid plastic identification signs. All valves located in the mechanical room, pump room, crawl spaces, attics, etc. should be properly identified. The valves purpose and function shall be stamped on the valve's tag.
- 3.9 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. The will allow for quick identification of specific sprinkler sections in the event of a fire, sprinkler pipe break, system inspections, and testing.
- 3.10 Hydraulic calculations should be posted at the main sprinkler riser.
- 3.11 Spare sprinklers with wrench shall be provided in the main sprinkler room.
- 3.12 Installation of vane detectors is recommended on wet sprinkler systems.

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- 3.13 Trash dumpsters should be located at least 10' from a building or a dry pipe side wall sprinkler provided over the dumpster.
- 3.14 Installation of pressure switches is recommended on dry pipe sprinkler systems.
- 3.15 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 must be installed or,
  - 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 of the WV State Fire Code. 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. The PIV must have a lockable handle with a window indicating the "open" or "closed" status of the valve. Yard PIV's shall be protected by bollards. The top of the PIV must be 36" above grade and shall be physically secured to an underground concrete anchor block. PIV's 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. Yard PIV's shall also have a secure tag indicating what building they serve.

**END OF SECTION 211000**