

Chesapeake Fire Department
Fire Prevention Division
Office of the Fire Marshal
304 Albemarle Drive
Chesapeake, Virginia 23322
(757)382-6566 phone
(757)382-8313 fax

FIRE PREVENTION DIVISION
PUBLIC FACILITIES MANUAL – APPENDIX XVIII-E
DRY HYDRANT SYSTEMS – DRAFTING BASIN & CONNECTION

DESIGN, INSTALLATION, INSPECTION, TESTING AND MAINTENANCE

The Virginia Statewide Fire Prevention Code (SFPC) requires that adequate fire protection water must be provided to premises upon which facilities, buildings or portions of buildings are constructed or moved into within the City of Chesapeake. The SFPC states that a good water supply consists of an adequate source of water such as ponds, lakes and rivers, or above ground water storage tanks, a distribution system and proper pressure for delivery. The SFPC further states “If the water source is not reliable, it should not be considered as an acceptable water supply.” Where city water supply is available it must be used as the sole source for fire protection. Alternative water supplies will only be considered in rural and suburban areas in which city water is not available. The SFPC references NFPA 1142 and authorizes the Fire Code to utilize this standard which provides guidance on establishing alternate methods of supplying water for fire protection. However to ensure the performance and reliability of drafting basin water supply sources, the city has developed a design and construction standard which is posted in the Public Facilities Manual – Appendix XVIII-E.

The most common method of providing alternative firefighting water is from static water sources which utilize a method for a fire engine to hook up to and suction firefighting water into the fire engine utilizing a “dry hydrant.” The supply of firefighting water is entirely dependent upon the arriving fire apparatus to pump the water into firefighting hoses and appliances. The supply of firefighting water available is thereby limited by the pumping capacity of the arriving fire apparatus.

When firefighting water flow demands exceed 1,500 gallons per minute (GPM) which is the basic pumping capacity of a single fire engine, more than one fire engine must be utilized to supply the required fire flow. With every fire engine used to supply the needed fire flow utilizing a dry hydrant the number of fire apparatus and crews available to adequately fight a fire is diminished. Hooking a fire engine to a dry hydrant is a time consuming and manpower intensive task.

Because fire flows utilizing a dry hydrant greatly impacts the ability and safety of the responding firefighters, safety of the citizens and endangers the property to be protected, a means of automatically providing firefighting water will be required when needed fire flows in excess of 1,500 GPM are identified. This may be accomplished by utilizing a diesel fire pump or an electric fire pump connected directly to a private fire main utilizing a city standard fire hydrant(s) as needed to satisfy fire-flow requirements and distance requirements. Please note that an electric fire pump may only be used if an emergency generator is provided to ensure a reliable source of backup power and the fire pump must be electronically monitored.

1. Purpose

To provide adequate fire protection for residential developments and private commercial facilities located in rural and suburban areas in which city water is not available. NFPA 1142 provide guidance on establishing alternate methods of supplying water for fire protection.

2. Scope

The land developer is responsible for the engineering design, installation and performance testing of drafting basin hydrants. Drafting basin hydrant systems for residential subdivisions will be dedicated to the City of Chesapeake for maintenance once the facility meets performance testing and activation.

3. Design Standards

Public and private drafting basin hydrant systems shall meet the following design criteria;

- a. The drafting basin hydrant system shall be designed in accordance with PFM volume II MH2-FDC, "Drafting Basin". See links to this section: [MH2-DHC - Page 1](#) [MH2-DHC - Page 2](#)
- b. The Drafting Basin shall be designed to be submerged at all times.
- c. The Drafting Basin shall be a City Standard 48" MH-2.
- d. Minimum in-flow pipe size shall be 24" HDPE, and shall not exceed 400' in length. Requests to exceed 400' limit shall include all necessary calculations to support alternative design.
- e. The in-flow pipe shall be located a minimum of 2' off the bottom of the water source pond or lake.
- f. Each Drafting Basin shall have one 6" dry hydrant connection (see detail).
- g. The in-flow pipe shall have a minimum of 2' of water (head) above the top of the pipe during drought conditions.
- h. Water source volume and depth calculations that meet the fire flow demand and duration shall be in accordance with PFM appendix 18.
- i. The required Fire Flow Volume shall not include the 2' of head above the top of the inflow pipe.
- j. Static lift shall not exceed 10 feet.
- k. When firefighting demand exceeds 1,500 gpm, the engineer must provide an alternative design capable of delivering the balance of the required fire flow. The engineer must submit alternative design (such as a fire pump) for approval by the Fire Code Official.

4. Construction, Inspection, Testing & Acceptance

- a. A Fire Permit must be obtained prior to the installation of the drafting basin hydrant facility.
- b. All tests and inspections for public systems are to be coordinated with Development Construction inspector. Call 382-6384 to schedule inspection. All tests and inspections for private systems shall be coordinated with the Fire Department by calling 757-382-6566.
- c. Fire Department performance test is required prior to final approval.
- d. Any required drafting basin hydrant system shall be; permitted, constructed, successfully tested and have final approval prior to issuance of any Certificate of Occupancy. The drafting hydrant system shall be bonded prior to plat recordation.
- e. Final Testing;
 1. The developer shall provide testing and certification by an independent third party agency using a Centrifugal pump.
 2. Drafting basin hydrant shall be flushed before testing.
 3. The drafting basin hydrant must deliver the required fire flow for a minimum of 30 minutes.
 4. Water flow must reach the pump within 1 minute. No more than 3 attempts shall be made to draw water to the pump.
 5. After successful centrifugal pump testing, the dry hydrant shall be tested by a Fire Department pumper.