



FIRE PROTECTION REQUIREMENTS

WATER SUPPLIES

INCLUDING HYDRANTS, TANKS, PONDS, ETC.

Bureau of Fire Prevention

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*** PLEASE REVIEW THIS ENTIRE PUBLICATION BEFORE TAKING ACTION ***

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OVERVIEW. The proper design and installation of water supplies for the purpose of fire protection is an important part of providing efficient and effective fire suppression. Water systems that are not carefully planned and installed can have a devastating affect on the fire department's overall ability to protect life and property. Therefore, the design and installation of fire protection water systems shall adhere to the requirements within this document, so that this can be accomplished.

APPLICABLE CODES AND STANDARDS. All water supplies that may be used for the purposes of fire protection shall meet all requirements outlined within the applicable editions of the Ohio Building Code, Ohio Fire Code, and other applicable Ordinances/Resolutions of the authority having jurisdiction (AHJ), and be approved by those responsible for their enforcement prior to beginning any construction activities. Additionally, they must also be installed per the applicable NFPA standard in affect at the time of plan approval. The following NFPA standards shall be followed:

- NFPA 13
- NFPA 22
- NFPA 24

APPROVAL REQUIRED. As outlined in OFC Section 105.4.2.1, approved construction and site plans shall be submitted to ensure proper code compliance and that the fire protection needs are met. All construction documents shall be approved prior to the start of construction.

SPECIFICATIONS & REQUIREMENTS

FIRE SERVICE WATER MAINS

I. **General.** All aspects related to the construction of fire service water distribution systems shall comply with the following, unless otherwise specified within this document:

- a. Ohio Fire Code (*most current edition*)
- b. Ohio Building Code (*most current edition*)
- c. NFPA 24 - Standard for the Installation of Private Fire Service Mains and Their Appurtenances (*2013 Edition*)**
- d. Codified Ordinances of the Village of Hebron (HCO)*
- e. NFPA 1142 - Standard on Water Supplies for Suburban and Rural Fire Fighting (*2012 Edition*), Chapter 7 & 8 as applicable
- f. American Water Works Association (AWWA) Manual M31 - Distribution Requirements for Fire Protection (*4th Edition*)

II. **System Design.** At a minimum, the water distribution system shall be designed to provide enough water necessary to protect the building requiring the greatest fire flow for a minimum duration of 2 hours, as required by OFC 507.1. The fire flow shall be calculated for every building that the system is designed to protect using the Insurance Services Organization (ISO) Fire Flow Formula. Engineering design calculations shall be provided to the Fire Marshal to confirm that the system is designed to meet the necessary demand.

III. **Water Main Layout.** Fire service water mains shall be installed as outlined.

- a. Water Main Loop. Based on an analysis of the hazard protected and of the existing or proposed water system, the Fire Department may require that the hydrants mains be served from two directions (looped) or two sources of water supply.
- b. Placement. The location of all private fire protection water mains shall be at the discretion of the fire code official. The location of all public fire protection water mains shall be jointly agreed upon by the fire code official and the Hebron Water Superintendent. This is to ensure that the design of the system does not impede fireground operations and that its design conforms to the requirements of the Village.

FIRE HYDRANTS

- I. **Specifications.** All fire hydrants installed shall meet the following design specifications.
 - a. **Paint.** All paint utilized on a fire hydrant shall be oil-based paint and be of the appropriate OSHA Safety color. Any hydrant received from the manufacturer that is of the correct color, but not of the correct shade, shall be repainted the correct OSHA Safety color.
 - b. **Barrel Color.** All fire hydrant barrels shall be painted using the color scheme outlined to aid in identification (HCO 1189.04).
 - i. OSHA Safety Yellow - Village of Hebron municipal hydrants
 - ii. OSHA Safety Red - All privately owned/industrial hydrants
 - c. **Bonnet Color.** All fire hydrant bonnets, regardless of ownership, shall be painted to meet those requirements outlined in NFPA 291 - Recommended Practice for Fire Flow Testing and Marking of Hydrants (2013 Edition). The bonnet color shall be painted the appropriate color to match it's flow rating at 20 PSI.
- II. **Style.** All fire hydrant barrels shall be manufactured by the Mueller Company and shall be designed with the following.
 - a. One (1) four-and-one-half (4 1/2) inch outlet with a five (5) inch Storz connection and cap.
 - b. Two (2) two-and-one-half (2 1/2) inch outlets with National Standard Thread (NST) and caps
 - c. Have a six (6) inch mechanical joint inlet connection
 - d. A five-and-one-half (5 ½) inch main valve opening
 - e. A one (1) inch to seven-eighths (7/8) inch square tapered
 - f. Hydrants will be furnished with a 5-foot bury depth unless otherwise shown on the plans
 - g. Hydrants shall be self-draining



III. **Installation.**

- b. Spacing. The minimum distance separating two (2) municipal hydrants or two (2) private hydrants shall not exceed 300 feet.
- c. Distance of Travel. The minimum distance of travel on a fire apparatus access road from the closest fire hydrant to any portion of any structure shall not exceed 400 feet.

c. Height. The height of the fire hydrant shall be less than 18 inches, measured from the center of the Storz outlet to the final finished grade.



- d. Obstructions. Fire hydrants shall be visible from the fire lane approach unless specifically approved by the fire code official (OFC 507.5.4). A clear, unobstructed space of 3 feet around the fire hydrants shall be maintained at all times (OFC 507.5.5). This includes trees, shrubs, chained bicycles, parking of vehicles and temporary signs.

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- e. Fire Department Connection. In those buildings equipped with a fire department connection (FDC), a fire hydrant shall be located within 20 feet of the connection.
- f. Impact Protection. When a fire hydrant's location increases the chance of being damaged by an outside force, impact protection shall be installed that meets the requirements of OFC 312.



- g. Shut Off Valve. The shut off valve for a hydrant shall be located within 5 feet of the hydrant it controls.
- h. Cap Chains. All outlet cap retainer chains and their respective hardware shall be removed from the hydrant.
- i. Set Back. Fire hydrants shall be placed two (2) feet clear behind the back of the curb or eight (8) feet from the edge of the pavement on uncurbed streets (HCO 1189.04)
- j. Fire Pump Support Hydrants. Any private fire hydrant located between the municipal water connection and a fire pump shall have a 5" Knox Locking Cap installed on the 5" Storz outlet. This is to prevent accidental use while the fire pump is in operation.