



FIRE PROTECTION GUIDELINE

COMMERCIAL BUILDING CONSTRUCTION

INCLUDING BUSINESSES, WAREHOUSES, MANUFACTURING, ETC.

Bureau of Fire Prevention

111 Basin ST / P.O. Box 884

Hebron, Ohio 43025

Telephone: 740-928-4721

Fax: 740-928-2726

fireprevention@hebronfd.org

<http://www.hebronfd.org>

**** PERMIT REQUIRED ****

This publication outlines the fire protection requirements for the design and development of any commercial or industrial occupancy within the Village of Hebron and Union Township. As a reminder, unless otherwise specified, anything that requires you to obtain a permit from the fire department will also require you to obtain a permit issued by the Licking County Building Code Department. Their office is located at 675 Price Road, Newark, OH 43055 and can be contacted at (740) 349-6671.

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

Questions regarding the content of this publication should be directed to the Bureau of Fire Prevention at (740) 928-4721 ext. 111 during regular office hours, Monday thru Friday

OVERVIEW. The proper design and installation of fire protection features is an important part of providing efficient and effective fire protection. Therefore, the design and installation of any new multi-family residential structure or development shall be :

- Approved by the Bureau of Fire Prevention of the Hebron Fire Department
- In accordance with the most current version of the Ohio Fire Code (OFC) as required by Ohio Revised Code (ORC) 3737.82.
- In accordance with all NFPA standards outlined in the OFC and within this guideline.
- For those within the corporation limits of the Village of Hebron, in accordance with the Codified Ordinances of the village.

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.

OCCUPANCY OF STRUCTURE. As outlined in 901.5.2 of the OFC, it is unlawful to occupy any portion of a building or structure until the required fire detection, alarm and suppression systems have been tested, inspected and approved by the fire code official in accordance with section 901.5 of the Ohio Building Code (OBC) as listed in rule 1301:7-7-47 of the Administrative Code.

NEED FOR A PERMIT. With any construction project, there is the potential need to obtain various types of permits from multiple different agencies. Additionally, there are agencies who may not require a permit, but an inspection by their agency is required by law. Since it can be difficult to ensure that all of these requirements are met, this guideline has listed the requirements necessary for the design, construction, and/or alteration of those types of work that are commonly found in the construction process. Please note that this may not constitute the complete list of requirements and, as such, the developer is responsible to ensure that all required permits are obtained.

GENERAL

LAND DEVELOPMENT

- Permits: Village of Hebron, Office of Community Development*
- Inspections: Community Development Coordinator*; Fire Marshal

BUILDING CONSTRUCTION (Any Type)

- Permits: Licking County Building Code Department
- Inspections: Building Code Inspector

OCCUPANCY OF BUILDING

- Permits: Village of Hebron, Office of Community Development*; Licking County Building Code Department; Hebron Fire Department, Bureau of Fire Prevention
- Inspections: Community Development Coordinator*; Building Code Inspector; Fire Marshal

SPECIFIC PROJECTS

FIRE SERVICE WATER MAINS & HYDRANTS

- Permits: Village of Hebron, Office of Community Development*; Licking County Building Code Department; Hebron Fire Department, Bureau of Fire Prevention
- Inspections: Village of Hebron Water Superintendent**; Building Code Inspector; Fire Marshal

FIRE DETECTION/SUPPRESSION/SPRINKLER/STANDPIPE SYSTEMS

- Permits: Licking County Building Code Department; Hebron Fire Department, Bureau of Fire Prevention
- Inspections: Building Code Inspector; Fire Marshal

* = *Only applies to those within the Village of Hebron Corp Limits*

** = *Only applies to those receiving service from the Village of Hebron*

WORK WITHOUT A PERMIT

The construction or alteration of a multi-family residential building or complex without the proper permits or inspections is ILLEGAL and as a result, may incur fines from any/all agencies that apply. Those violations that require a permit or inspection from the Bureau of Fire Prevention may be punishable by a fine of up to \$1,000/day until proper compliance is achieved.

INSPECTIONS

Throughout the construction process, multiple inspections of the site by the Fire Marshal may be necessary and is dependent upon the type of work that is being performed. These inspections are in addition to the final Life Safety Inspection, which is required by law in order to occupy a building. It is also important to note that receiving an inspection from only one of the agencies involved does not eliminate the need for an inspection from any other agency that requires it. This inspection must be scheduled by the responsible party for a date at least three business days prior to the desired date and time of inspection and should be coordinated with all agencies involved to reduce the need for multiple inspections. The approved construction plans must be available at the inspection location. To schedule an inspection, please call the Bureau of Fire Prevention at (740) 928-4721 Ext. 111 during business hours.

Life Safety Inspections. The ability to occupy the building, or portion thereof affected, is finalized through a final site inspection. Like other inspections, it is important to coordinate the life safety inspection with all parties involved. Like with those agencies requiring an inspection, it is important to ensure that the appropriate contractors are also present at the inspection.

DURING CONSTRUCTION

The fire marshal has full authority, per OFC 104.3, to enter the grounds or building to ensure the proper compliance of the fire code at any time. The Bureau of Fire Prevention understands that a visit from the fire marshal can cause delays during a construction project, so the bureau will only cause an interruption to your daily activities when it is deemed necessary. Otherwise, the Fire Marshal will coordinate their visit to your site with the project manager to ensure that your project runs smoothly.

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 the water mains shall be at the discretion of the fire code official. This is to ensure that the design of the system does not impede fireground operations.

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.
 - b. Two (2) two-and-one-half (2 1/2) inch outlets with National Standard Thread (NST)
 - 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.

- 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.

FIRE APPARATUS ACCESS ROADS

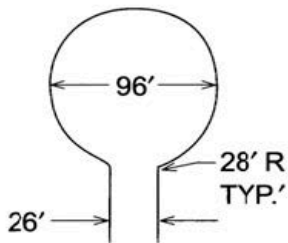
I. Where Required. The access provided for fire apparatus shall be designed so that it does not exceed 150 feet from any portion of the ground floor of a building. Should public access streets, parking lots, private drives, etc. not allow for this this to occur, fire apparatus access roads shall be constructed (OFC 503.1.1).

a. Additional Access. The fire code official is authorized to require additional access roads as necessary (OFC 503.1.2). An assessment for this need is not only based on the access distance described above, but also on such aspects as building design, contents, building use, exposures, etc.

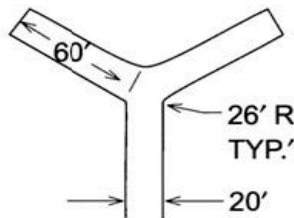
b. Dimensions. All fire apparatus access roads, including public roadways, shall have an unobstructed width of not less than 20 feet, exclusive of shoulder, except for approved security gates. An unobstructed vertical clearance of not less than 14 feet shall be maintained at all times (OFC 503.2.1).

c. Surface. All fire apparatus access roads shall be surfaced to allow for all weather driving and be constructed to handle the weight loads of the apparatus. The grade shall exceed 10%.

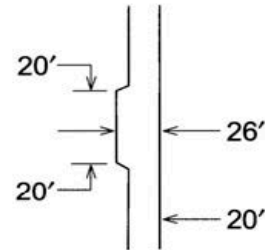
d. Dead End Roads. Fire apparatus access roads that exceed 150 feet in length shall be equipped with an area for the apparatus to turn around that meets the requirements displayed below (OFC 503.2.5).



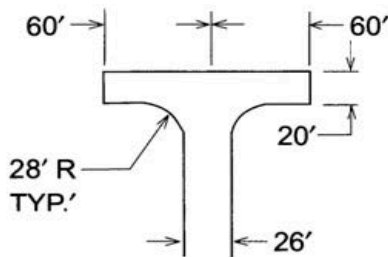
96' DIAMETER
CUL-DE-SAC



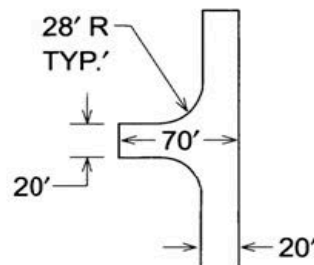
ACCEPTABLE ALTERNATIVE
TO 120' HAMMERHEAD



MINIMUM CLEARANCE
AROUND A FIRE
HYDRANT



120' HAMMERHEAD



ACCEPTABLE ALTERNATIVE
TO 120' HAMMERHEAD

- e. Bridges. Any bridge that is used as part of a fire apparatus access road shall be a minimum of 20' wide and designed to handle the weight of the apparatus. In the event that a bridge is not capable of being used by fire apparatus, barriers, approved signs, or both shall be installed (OFC 503.2.6).
- f. Gates. Any gate installed that requires access by fire apparatus shall be a minimum of 20' wide. A Knox Key Switch shall also be installed at the exterior entrance of each gate and within 3 feet of the main control panel.

II. Fire Lanes. The Fire Marshal has the authority to require the installation of fire lanes. These lanes shall be marked by approved signs or markings on the ground and read "NO PARKING - FIRE LANE" (OFC 503.3). Ground marking requirements shall be determined by the Fire Marshal at the time of plan review. Signs approved for use shall meet the following requirements:

- Sign shall be made of aluminum
- Reflective red block lettering on a white background

Examples of Approved Fire Lane Signs



KEY BOXES

I. Where Required.

- a. Commerical/Multi-family Residential Occupancies. A minimum of one (1) Knox Box shall be installed on the exterior of each multi-family occupancy (OFC 506.1).
Exception: For those complexes or developments where multiple structures of the same design exist, the Fire Marshal may require Knox Box/s at strategic locations to help reduce the amount of boxes needed.
- b. Elevators. Any occupancy equipped with a passenger or freight elevator shall install a Knox Elevator/Lobby Box within 3 feet of all elevator doors on the ground floor. All keys relating to the elevator, such as the elevator door key, fire department control key, and key to the elevator control room, shall be contained within it.
- c. Apartment Access. For R-1, R-2, and R-4 occupancies that do not have the ability to provide a single master key to access all individual rooms/apartments, a Knox Elevator/Lobby Box shall be installed inside the main lobby or other location directed by the Fire Marshal. For occupancies that already have this box for an elevator, an additional box is not required.

II. Specifications. The Knox Box shall have a hinged door and be large enough that the door can be shut with ease. Any Knox Box that is too small for the amount of keys required shall be required to be replaced. Other options, such as the color or alarm integration, recessed versus flush mount, etc. is at the discretion of the building owner. The Knox Box is not permitted to be painted (OFC 506.1).

III. Mounting.

- a. Height. Knox Boxes shall be mounted 24" - 60" from the bottom of the box to the finish grade below, unless otherwise directed by the Fire Marshal. This is to ensure that its visibility is not obstructed by snow or vegetation and is easily reachable.
- b. Method of Mounting. It is at the discretion of the building owner as to the method in which the Knox Box is mounted, pending it does not impede the operation, visibility, or access of the box. When the mounting of the box to the building is not desired, it is acceptable to mount the box to a post in the ground. All other mounting requirements shall apply.
- c. Location. Unless otherwise directed by the Fire Marshal, the Knox Box shall be located within five (5) feet of the main entrance to the structure. When the typical main entrance is not primarily used or when placing it at the main entrance is not practical, the Fire Marshal may alter the box's required location. The box must be visible from the normal driving path, unless otherwise directed by the Fire Marshal.



Instructions for ordering Knox Boxes and other components

1. Go to <http://www.knoxbox.com> and mouse over "Rapid Entry System" on the navigation bar.
2. Select "Property Owner" from the drop down list.
3. Type "Hebron" in the "DEPARTMENT NAME OR CITY" field and select "OHIO" from the STATE drop down.
4. Ensure that the fire department you are choosing is "Hebron Fire Dept" and click "SELECT" under our department logo.
5. Place your order for the items needed.

Handwritten order forms are also available from the Bureau of Fire Prevention if needed. All Knox items will be shipped directly to the address that is provided by the ordering party. Please note that the only key that is capable of accessing the box is possessed by the Hebron Fire Department. The building owner will not be able to access the box. Once a Knox item is installed, a fire department representative will meet with the building owner to secure the device.



FIRE ALARM SYSTEMS

I. Where Required. Fire alarm systems shall be installed as required by the Licking County Building Code Department.

II. Fire Alarm Control Panels. The primary fire alarm control panel shall be located near the main entrance to the building or just inside the entrance in the common lobby area, unless otherwise indicated by the Fire Marshal. The panel shall be easily identifiable and shall not blend in with the surroundings, be located inside a closet/room/cabinet, or be hidden in any other way.

a. Annunciator Panels. The Fire Marshal may require additional annunciator panels to be placed in other parts of the building. These panels shall, at a minimum, have the ability to reset the alarm system, identify the location and type of the fire alarm, and silence the system. With the exception of the main entrance door, all interior and exterior doors leading to a fire alarm control panel or annunciator shall have an approved sign that meets the following requirements:

- Exterior mounted signs shall be constructed of aluminum.
- Interior mounted signs shall be constructed of plastic or aluminum.
- Signs shall either be red on white or white on red
- Signs shall contrast with the background.
- Lettering/Numbering shall be block
- Sign shall be a minimum of 10" wide

Examples of Approved Sign Designs



b. Alarm Points. All fire alarm panels with a digital display shall clearly indicate the location and type of alarm. A map of all alarm points shall be provided at each alarm panel. System trouble alarms shall not transmit as fire alarms for fire department response.

Fire Protection Guideline: *Commercial Building Construction*

c. Identification.

- i. Systems using device addresses shall have a list of all alarm points and their locations posted at each alarm panel/annunciator. Additionally, all alarm devices, such as smoke heads, pull stations, water flow switches, heat sensors, etc., shall have their respective alarm address clearly visible on the device.
- ii. When duct detectors are present within the alarm system, the corresponding HVAC unit shall be clearly labeled. The label identifying the unit shall contrast with the background and be legible at least 50 feet away.
- iii. In addition to the alarm point devices, all annunciator/control panels shall be identified and labeled.



FIRE SPRINKLER SYSTEMS

I. Where Required. Fire sprinkler systems shall be installed as required by the Licking County Building Code Department. The Bureau of Fire Prevention will accept the most current edition of NFPA 13 as the standard for a project, if desired.

II. Fire Department Connections. The fire department connection (FDC) shall be installed remotely in a location indicated by the Fire Marshal. This is generally determined by the means of access and proximity to a water supply.

- a. Connection Type. All FDCs shall have a 5" Storz fitting.
- b. Location. The FDC shall be mounted 36" - 40" above the finished grade and be clearly visible to approaching fire apparatus. Where locations may prevent the FDC from being immediately visible to approaching fire apparatus, an approved sign shall be installed to direct fire apparatus. The FDC shall be located within 10 feet of a fire hydrant.
- c. Support Area ID. When an FDC does not provide support to the entire building's sprinkler system, may be confused with locations it services, or when the FDC provides support to multiple different locations, an approved sign shall be mounted at or on the FDC indicating the areas that it supports. If more than one (1) FDC is present on the property, all FDCs shall have a sign indicating their support areas. This includes those that protect the entire structure.
- d. Protection. Any remote FDC that the Fire Marshal feels may be struck by an outside force, such as that of a vehicle or machine, shall have impact protection installed per Section 312 of the OFC.
- e. Color. Any galvanized piping on the exterior of a structure servicing an FDC shall be painted OSHA Safety Red with oil-based paint, unless otherwise approved by the Fire Marshal.
- f. Security. Any FDC that is located in an area that is accessible to the public, but may also be in an area that is rarely visited, shall have a Knox Locking 5" Storz FDC Cap installed. This locking cap shall also be installed on all remote FDCs that are not accessible to the public and are greater than 300 feet from the structure that it services. The Fire Marshal has the authority to require a locking cap, even if the above do not apply, if he/she feels that there is a risk of tampering.

III. Sprinkler Risers.

- a. Identification. All sprinkler risers shall have its ID number/letter permanently affixed to the pipe above the valve. The marking should be a minimum of 4" tall and placed high enough on the riser that it will be visible over any anticipated obstructions at a distance of 50 feet or more. Additionally, the fire alarm system shall be programmed to correspond with this identification, along with all other components that relate to it, such as tamper and flow switches.
- b. Signs. If a sprinkler riser or control valve is located within a room, closet, or any other location that obstructs its visibility, a sign shall be located on each entry door indicating such. For those that are hidden behind walls or partitions, an approved sign that is clearly visible shall be placed on the wall indicating its location.

IV. Identification.

a. Plumbing Identification. All sprinkler/suppression system plumbing shall be easily identifiable. Unless specifically requested during the building's design, all sprinkler plumbing shall be OSHA Safety Red in color. No other plumbing is permitted to be red in color.

All sprinkler system plumbing that supplies water to a branch line shall be labeled to identify it as a sprinkler line and to indicate water's direction of travel. These labels shall be not more than 20 feet (6 m) apart on straight runs including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, at each obstruction, and within 2 feet of each change of direction.

b. Riser Identification. Any sprinkler pipe, including the riser itself, that penetrates through a wall, floor, or ceiling shall have a label on each side of the penetration indicating the sprinkler riser that supplies it.

c. Exterior Sprinkler Components. All components of the sprinkler system that are located on the exterior of the building shall be painted red in color. Additionally, each component shall be labeled with an approved sign that identifies it and what portion of the system that it controls.

BUILDING IDENTIFICATION

I. Address.

- a. Numbers. The address numbers shall be affixed to the street side of a structure and be equal to or greater than 4" tall, contrast with the background, and be clearly visible from the roadway of the address assigned. For structures that are not visible from the roadway, a monument, pole, or sign shall be installed alongside the roadway. (OFC 505.1)
- b. Multiple Addresses. In the event that a single entry point from the public access roadway is used to access multiple addresses, a sign shall be placed at the roadway identifying the addresses that the access services. Additionally, any business located on that access shall also be indicated. The address numbers shall be applied to the access side of the building and be visible.
- c. Multiple Buildings with same address. When multiple buildings exist on the same property, each building shall be uniquely identified and easily identifiable from the main access road. Additionally, if multiple apartments/suites exist within a building that are uniquely identified from those of other buildings, a sign shall be posted on the street/main access side of the building indicating which apartments/suites are located in that specific building.

II. Other Identification.

- a. Roof Access. Any room containing a roof access point shall have an approved sign indicating such on the door. Additionally, any structure containing a fire alarm shall have all roof accesses indicated on a map at each alarm panel.
- b. Building Service Equipment. All rooms that contain building service equipment, such as electrical panels, HVAC, hot water tanks, etc. shall have a sign indicating such on the door.