

Fire Sprinkler System Installation Requirements

Where Fire Sprinkler Systems are Required

Wheeling Municipal Code Chapter 14.05 - Section 14.05.010 through Section 14.05.100.

New Construction

- Commercial (i.e., Retail Sales)
- Industrial (i.e., Manufacturing/Warehousing)
- Business (i.e., Professional offices)
- Multifamily (including townhomes)
- Single Family (including detached and pre-manufactured single family homes)

Exception: Buildings used for transmission and/or distribution of electrical power, detached accessory building and/or structures

(Use Group R, B, F, I, M, S and V - see Ordinance for specific limitations), picnic shelters, gazebos, and public restrooms
(detached and less than 400 square feet in size)

Existing Commercial, Industrial, Business or Multifamily Buildings or Structures

Must be retrofitted if:

- Degree of fire hazard is increased (defined by The Village of Wheeling Building Code);
- Occupancy load is increased;
- Building area is increased (Note: A *fire wall* is not considered as an exterior wall when calculating the total building area).

Existing Detached Single Family Homes

Must be retrofitted if:

- Overall square footage is increased by 110%; or
- Any combination of additions within a 5 year period cumulatively equal an increase of 100% or more in the overall square footage

Permit Application Process

All fire sprinkler installations and/or modifications require the following information to be submitted for review:

- Complete set of engineering drawings.
- Complete set of hydraulic calculations out to the connection to the Village of Wheeling water supply system (including the proposed reduced pressure backflow prevention device.)
- Equipment cut-sheets on
(A) proposed sprinkler heads.

- (B) Reduced pressure backflow prevention device.
- (C) Fire pump with design curve (if applicable).
- (D) Fire pump controller (if applicable).
- (E) Tamper and flow switches.
- (F) Alarm monitoring panel (if applicable).

Plan Review Process

Once received by the Wheeling Fire Department Fire Prevention Bureau, the plan review process can take up to 10 working days. On larger or more complex systems, this review can take up to 20 working days. All plan reviews are completed in the order in which they are received.

Water Flow Information

Water flow data can be obtained from the Wheeling Fire Department Fire Prevention Bureau during regular business hours. In the event that a new water flow test is required, please allow three (3) working days to process your request. Water flow tests may only be done when the outside temperature is above 32 degrees Fahrenheit and rising

Fire Sprinkler System Design Criteria

The following industry standards are required to be used, when designing fire sprinkler system installations:

Industrial/Commercial/Business:

- NFPA #13: "Installation of Sprinkler Systems"
- NFPA #15: "Water Spray Fixed Systems for Fire Protection"
- NFPA #16: "Installation of Foam-Water Sprinkler and Foam-Water Spray Systems"
- NFPA #230: "Fire Protection of Storage"
- NFPA #20: "Installation of Stationary Fire Pumps"

Residential:

- NFPA #13: "Installation of Sprinkler Systems"
- NFPA #13D: "Sprinkler Systems in One & Two Family Dwellings"
- NFPA #13R: "Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height"

Hydraulic Calculation Minimum Safety Factor

- Commercial, Industrial, Multifamily = 5 PSI
- Detached Single Family, Attached Single Family, Pre- Manufactured Single Family = 2 PSI

Back Flow Prevention Device Requirements

The Illinois Plumbing Code and the Village of Wheeling Plumbing Code both require the

installation of a *certified reduced pressure backflow device with metered bypass* on all fire sprinkler systems. All backflow prevention devices must be UL listed, FM approved, and/or ASSE listed for use with Fire Sprinkler Systems. For specific requirements, contact the Village of Wheeling Plumbing Inspector at (847) 459-2620 (Community Development Department).

Fire Pump Requirements

When sprinkler requirements dictate the need for a fire pump, the installation must comply with the following standard:

- NFPA #20: "Installation of Stationary Fire Pumps"

Fire Department Connection Requirements

When required, based upon the type of system installed, the fire department connection shall consist of:

- A single 5 inch Storz fitting and chained cap.
- All associated piping must be sized to hydraulically supply the designed flow requirements at 100 PSI or less inlet pressure

System Monitoring Requirements

All fire sprinkler systems (except for attached single family homes, townhouses, detached single family homes, and pre-manufactured single family homes) are required by local ordinance to be monitored 24 hours a day by an appropriate alarm monitoring service. The following pieces of equipment are required to be monitored:

- Isolation Valves (i.e., OS & Y's)
- Flow Switch
- Fire Pump (if applicable)

All monitoring equipment must comply with NFPA #72: "National Fire Alarm Code"

Requirements for Certificate of Occupancy (Fire Sprinkler System Only)

The following fire sprinkler system requirements must be completed in order to obtain a "Certificate of Occupancy":

1. All system components are installed according to the approved plans and hydraulic calculations.
2. The entire system is hydrostatically tested at 200 psi for 2 or more hours.
3. Underground piping is pressure tested, chlorinated, and flushed in accordance with Public Works/Engineering Department criteria.
4. Fire pump (if applicable) if flow tested and meets design criteria.
5. Alarm devices are installed and connected to a central station alarm monitoring facility.