

Marquette Township Fire and EMS

Fire and Life Safety Division

FIRE SPRINKLER SYSTEM SUBMITTAL CHECK LIST

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FIRE SPRINKLER SYSTEM

NFPA –13, 2013

Project Name : _____
 Project Address : _____
 Zoning Permit #: _____ Date : _____
 Code Edition: NFPA-13, 2013

All sprinkler plan submittals shall bear the seal of a Professional Fire Suppression Engineer or NICET level 3 or 4 certified technician. All supporting documentation showing items listed below are required for review. The checklist is based on the 2002 Edition of NFPA 13, (Per Marquette Township Fire) and the 2009 Edition of International Building Code, (Per Marquette County Building Code Department)

General (All submissions shall include the following): (NFPA-13, 14.1)

- A minimum of two copies of shop drawing, and submittal data shall be provided with the permit application permitting evaluation of the system **PRIOR TO** installation. The permit application shall clearly designate the system as being required for compliance with Michigan State wide Building Code, or installed as an **elective** system at the discretion of the owner.
- Name of the project/tenant and the address where system will be installed.
- Name, address, and telephone/fax numbers for the designer of the system.
- Drawings are to be uniform in size and drawn to a recognized scale. NFPA-13-14.1.3
- Plans and calculations shall clearly indicate the design standard(s) and edition (ex: NFPA 13, 2002 Edition) used to prepare the submission.
- Plans shall include a schematic drawing of the fire protection underground showing point of entry into building, size and length of pipe, point of connection to Township main and location of referenced water flow test. Schematic drawing shall also include the location and type of all valves, meters, and backflow prevention devices. 14.1.3

- Plans and calculations shall clearly show a floor plan of each story, indicating the location of all walls, partitions, and fire rated assemblies; and the intended use of each area, room, or void space. NFPA-13, 14.1.3
- Plans shall clearly indicate total area, protected by each system riser on each floor. NFPA-13, 14.1.3
- Plans shall include full height cross-section elevation detail(s) indicating construction, and vertical/horizontal distances of sprinklers relative to underside of roof/ceiling and structural members. (Obstructed or unobstructed) NFPA-13, 14.1.3
- Plans shall clearly indicate the type and location of all control valves, drain valves, test connections, hose outlets, proposed location of Fire Department FDC(s), and related equipment and piping. NFPA-13, 14.1.3
- Plans shall clearly indicate the location and type of audible and/or visual alarm devices located inside, and outside, of the building. NFPA-13, 14.1.3 (IBC – 2003 Edition, Section 903.4.2)
- Plans shall clearly indicate the manufacturer, temperature rating, orifice size, hydraulic K-factor, and quantity of each type of sprinkler to be installed. NFPA-13, 14.1.3
- Plans shall clearly indicate the location of special sprinklers (Example: extended coverage, sidewall, intermediate/high temperature sprinklers). NFPA-13, 14.1.3
- Plans shall clearly indicate pipe types and wall thickness, type of fittings and joints, and the type and locations of hangers, sleeves, braces, and methods to support sprinkler components.
NFPA-13, 14.1.3
- Plans shall clearly indicate nominal pipe size, and cutting lengths of pipe (center to center), including riser nipples, drop nipples, and armovers. NFPA-13, 14.1.3
- Plans shall clearly indicate method of protection for non-metallic piping as required by pipe manufacturer. NFPA-13, 14.1.3 (nailer plates and/or thermal insulation)
- Plans shall clearly indicate method of maintaining minimum temperature of 40° F for sprinkler system piping installed in unconditioned spaces. 5-14.3.1 (Special note: tenting method requires properly secured, minimum R-30 unfaced batt insulation.)

- Hydraulically designed systems:
 1. Hydraulic data nameplate information. 14.3.1
 - a. The minimum rate of water application (density).
 - b. The location and size of the design area.
 - c. Inside and outside hose stream allowances as actually provided.
 - d. Required flow and residual pressure at base of riser.
 - e. Occupancy classification.
 2. Hydraulic reference points shall be indicated on the plan corresponding with hydraulic calculation sheets. NFPA-13, 14.1.3
 3. Protection areas per sprinkler head.
 4. Provide a copy of the Marquette Township Department of Public Works water flow test results (dated within six months of plan submission date).

- Graph sheet. A graphic representation of the hydraulic demand shall be plotted on graph paper ($Q^{1.85}$) or computer generated hydraulic program based upon: 14.3.4 Marquette Township Department of Public Works flow data.
 - a. Total sprinkler system hydraulic demand including hose streams.

Tenant Upfit

- Where existing systems are to be modified, sufficient details of the existing system shall be shown on the plans to determine effect of proposed modification on total system.

- Provide shopping center key plan or building complete floor plan indicating the location of tenant space.

- Plans shall clearly indicate location and floor level of the hydraulic remote area and its design criteria.

- Work being performed in the hydraulic remote area shall include hydraulic calculations Marquette Township Department of Public Works water flow test results (dated within 6 months of plan submission date).

Limited area sprinkler system:

- Provide key plan showing the room to space to be suppressed. Provide location in the building and room number (s), floor, etc.

- Provide hydraulic calculations in accordance with NFPA 13: 14.4
 - a. Where sprinkler is supplied through domestic water meter contact Marquette Township Department of Public Works for proper Water Meter Sizing.
 - b. Where sprinkler is supplied through a separate fire line connection contact Marquette Township Department of Public Works for permit.

- When a valve is provided downstream from the domestic water control valve the limited area sprinkler system shall be supervised in accordance with Michigan Building Code 2006 Edition – Section 901.6.1.

Storage Occupancy:

Miscellaneous Storage ≤ Twelve Feet in Height:

- Plans shall clearly indicate commodity classification, maximum storage height, proposed storage arrangement, widths and locations of all aisles. 2002 NFPA 13: 12.2
- Plans shall clearly indicate roof/ceiling height within storage area.

Storage Commodities

- Plans shall clearly indicate fire control approach for storage commodities, such as NFPA 30. 4.1.
- Plans shall clearly indicate commodity classification, maximum storage height, proposed storage arrangement, widths and locations of all aisles.
- Plans shall clearly indicate minimum and maximum distance between the sprinkler deflector and the top of storage.
- Plans shall clearly indicate rack configuration (width and height) and flue spaces: (Single row, Double row, Multiple rows).
- Plans shall clearly indicate the method of storage, i.e.; wood pallets on racks, expanded plastic pallets on racks, solid shelving, open shelving; or encapsulated wrapping materials.
- Plans shall clearly indicate interior small hose stations or approved alternative.

Manufacturers Data Sheet: NFPA 13-2002 – 14.1.3

All submissions shall include the appropriate Manufacturers Data Sheets for the following:

- Pipe
- Fittings (Threaded, Grooved, Etc.)
- Valves (O.S. & Y., Butterfly, Etc.)
- Hangers/Rod/Fasteners/Clamps
- Alarm Check Valve/Retard Chamber/Water Motor Alarm
- Swing Check Valves
- Fire Department Connections (Locking Knox caps required)

- Sprinkler Heads/Spray Nozzles
- Inspectors Test Connections/Drain Assemblies
- Riser Manifolds
- Backflow Preventers/RPZ's/Detector Check Valves
- Pressure Regulating Valves
- Dry Pipe Valves/Accelerators/Exhausters/Actuation Devices and System/Trim
- Deluge Valves/Preaction Valves/Actuation Devices and Systems/Trim.
- Valve Supervisory Switches
- Waterflow Vane Switches
- Pressure Switches
- Fire Pumps/Accessories
- Fire Pump Drivers/Accessories
- Fire Pump Controllers
- Jockey Pumps
- Jockey Pump Controllers
- Relief Valves
- Fire Hose Valves
- Special System Components (Foam, Antifreeze, Water Mist, Etc.)
- Other _____
- Other _____

Where multiple contractors are involved in the system design/installation, plan approval requires concurrent submittals and review of the fire suppression and detection systems.

Special Notes

- Plans shall clearly indicate location of device used for flow tests at system demand downstream of all backflow prevention valves.
- Sprinkler systems required to be monitored off-site in accordance with MBC Section 901.6.
- Piping between the sprinkler system and a pressure actuated water flow alarm-initiating device shall be galvanized, nonferrous metal, or other approved corrosion resistant material. 2002 NFPA 13, 6.9.3.4
- Plans shall clearly indicate the make, type, model, and size of dry pipe, pre-action, or deluge valves. 2002 NFPA-13, 14.1.3
- Plans shall clearly indicate the water capacity in gallons of each dry pipe system. 2002 NFPA 13, 14.1.3
- Plans shall clearly indicate air pressure settings for valves and supervisory air functions at normal and abnormal conditions.

- Antifreeze systems should be prepared with minimum freezing point of -26° F, and a recommended maximum 40-gallon capacity.
- An approved reduced pressure principle backflow prevention device (RPZ-listed assembly) including approved indicating control valves shall be provided on all antifreeze systems. 2002 NFPA 13, 7.5.3.1.
- An approved listed expansion chamber shall be provided on all antifreeze systems. 7.5.3.3
- Fire pump and booster fire pump installations shall comply with NFPA 20.
- Alarm, supervisory and trouble signals shall be distinctly different and automatically transmitted to approved central station, remote supervising station or proprietary supervising station as defined in NFPA 72 or, when approved by the fire code official, shall sound an audible signal at a **constantly** attended location
- All FDC's (fire department connections) must be protected by KNOX locking caps. The proper form for ordering Knox caps must be obtained from the Fire Marshals office, please contact @ 906-228-4296, ask for Andrew or Ron.

Hydraulic Calculation Forms

Hydraulic calculations shall be prepared on form sheets that include a summary sheet, detailed work sheets, and a graph sheet. 14.3

- Calculation summary sheet shall indicate hazard classification. When multiple design are required to protect various hazards with a common system area, separate calculations shall be provided for each hazard area. 14.3
- Calculation summary sheet shall include:
 1. Design density and total design area (ex: .15gpm/ft²/1500 ft²). 14.3.2
 2. Maximum area of coverage per sprinkler. 8-3.2
 3. Total system demand at base of riser. Water for inside and outside hose streams shall be represented as actually provided. 14.3.2
- Graph sheet. A graphic representation of the hydraulic demand shall be plotted on graph paper (Q) or computer generated hydraulic program based upon: 14.3.4
 1. Marquette Township Department of Public Works flow data.
 2. Total sprinkler system hydraulic demand including hose streams.
- Provide hydraulic calculations (including domestic water demand if sprinkler is supplied through a common meter) in accordance with NFPA 13, 14.2