

Guidelines and Permit Information: **Fire Sprinklers**

Permit Required: 2020 MSFC 105.7.1 Automatic fire-extinguishing system(s)

A construction permit is required for the installation of or modification to an automatic fire-extinguishing system and related equipment.

Exception: Maintenance performed in accordance with this code is not considered to be a modification and does not require a permit.

Types of permit: *Inspections staff has final authority of selecting the required permit.*

Daywork: A daywork permit is meant to minimize the design time and allow sprinkler system remodeling to keep pace with small projects.

- Daywork projects cannot exceed more than 19 cumulative sprinkler heads
- Hydraulic calculations are generally not required
- The daywork permit form is available by clicking [here](#) and the form shall be completed in its entirety and uploaded to ePermits.

Emergency Work: An emergency work permit is to be utilized when emergent repair work is needed to return an impeded system back into service. Upon completion of this work, the system should be in normal condition, and a permit shall be applied for no less than two (2) business days after work completion:

- Emergency work projects shall only encompass needed repairs caused by damage or malfunction
- Hydraulic calculations are not required
- System design changes are not permitted without prior approval and a daywork or full-submittal permit
- The emergency work permit form is available by clicking [here](#) this form shall be completed in its entirety and uploaded to ePermits.

Full Submittal: A full submittal permit is required for all new systems, and modifications to systems that do not meet the parameters of the daywork or emergency work permits.

- A complete set of plans as described within this document are required
- Plan review time varies and is conducted on a first-submitted, first-served basis

Limited: A limited permit is meant to allow contractors to remain on schedule if plan review is not complete, at the contractor's risk.

- Each job will be considered separately for the issuance of a limited permit
- A complete set of plans shall be submitted prior to issuance of a limited permit
- A limited permit shall not be issued if work had started prior to the issuance of a permit
- A contractor or responsible party must come to the Maple Grove Government Center to sign a liability waiver prior to a limited permit being issued

Sprinkler Recall: A sprinkler recall permit is utilized for installing recalled or voluntarily replaced sprinkler heads.

- The Sprinkler Recall permit form is available on the city website and may be found by clicking [here](#). The form shall be completed in its entirety and uploaded to ePermits.

Conditions:

- Any work completed without a permit, shall result in the doubling of fees, and work shall be exposed if required for inspection
- Any material or installation deviation from the approved plans will require prior approval from MGF D Inspections staff.
- As-built plans shall be submitted before a Certificate of Occupancy will be issued.
- An approved permit shall be posted on site
- Approved stamped plans shall be used and available on site

Fees: The City of Maple Grove Fee Schedule is available for review on the city website and should be reviewed to ensure compliance.

Code Guidance/ General Requirements (not all inclusive): MSFC, NFPA, & MG Chapter 18

- The City of Maple Grove has adopted Chapter 1306, subpart 3., amending the MN Building code. As such, any new building (Group B, F, M, & S) with 2,000sqft or more, group E with 2,000sqft or more or with two or more stories, group E daycare with an occupant load of 30 or more, and any new assembly occupancy is required to be sprinklered throughout.
- All sprinkler systems shall be designed to the current MSFC and the 2016 edition of NFPA 13
 1. The most current edition of NFPA 13 may be used if it is used in its entirety
 - Plans must clearly identify the use of the newer NFPA 13
- Lockable FDC caps are required on all new buildings; allowable products include:
 1. Knox Style FDC Lock
 2. Potter “Cap-It” FDC lock
- Section 903 of the MSFC is amended by adding the following language:
 1. In multiple-story buildings, fire sprinkler systems are to be zoned by floor.
 2. Dry sprinkler systems shall only be utilized to protect areas that cannot be maintained above 40 degrees Fahrenheit.
 3. Approved Zone maps shall be provided next to the sprinkler riser and fire alarm panels for all systems.
 4. When the size of the domestic water main installed on combination fire sprinkler/domestic water line in the building exceeds 25% of the size of the combination water service line, the building water usage shall be designed into the hydraulic calculations of the sprinkler system and shall include the lawn irrigation system.
 - In lieu of hydraulically calculating the building domestic water usage and lawn irrigation system, an electric solenoid valve shall be installed on the main domestic side of the service
 - The electric solenoid valve shall be installed immediately after the main valve (before the meter). This valve shall be normally powered open and close on loss of electric power or signal from the automatic fire sprinkler system water flow switch.
 5. The retard setting on flow switch(s) shall be set between 40-50 seconds.

6. A monitored control valve shall be required on all flammable storage, hazardous materials storage, spray booths, hoods, atriums and other locations as required by the fire code official.
 7. All systems shall have monitored tamper devices on all valves
 - a. Any valve that is not currently monitored shall come into compliance retroactively.
 8. Different style sprinkler heads shall not be utilized within the same compartment.
 - Exception: Unless approved by the fire code official.
- Section 901.4.6 of the MSFC is amended by adding the following language:
 1. Fire sprinkler water mains shall be brought into a one-hour fire resistive room with exterior access, a floor drain, and a sidewalk to the public way.
 2. If the water main enters the basement, the main may be extended to the first floor into a room with the above requirements
 - If undue hardship exists, the fire code official may authorize the use of a yard or wall post indicator valve.
 - Section 507 of the MSFC is amended by adding the following language:
 1. An approved fire hydrant shall be installed within 100 feet of the FDC
 - The FDC shall be located directly beneath the exterior horn-strobe and key box
 - Dry type sprinkler selection shall be based upon the minimum anticipated temperature of -34°F
 - All new systems must include a means to conduct a forward flow test
 - All systems that are required to be monitored, shall be monitored by a U.L. Central Station
 1. All indicating valves, including PIV or WPV, shall be tampered and monitored

Plan Submittal Requirements

- Floor plans showing the proposed system design that is fully dimensioned and to scale
 - The minimum drawing size scale is 1/8th inch = one foot
 - Details shall be a minimum of ¼ inch = one foot or large enough to be legible if not to scale
 - All details on system components, building construction features, and obstructions shall be clearly legible
- Adequate, concise, and sufficient information as required by MSFC and NFPA 13 shall be clearly indicated on the plans, this may include but is not limited to:
 - Racking systems
 - Hazardous materials
 - Soffits
 - Equipment schedules
 - Etc.
- Hydraulic calculations
- Manufacturer's data sheets shall be provided for all equipment
- Designer's name, business name, contact information, and proof of licensure
- A signed copy of a properly completed owners' certificate
- If corrections are continually not made as addressed by inspections staff, additional plan review time may be charged to the applicant pursuant to the MG Fee Schedule.

All plans shall be submitted electronically through ePermits online. No paper plans will be accepted.

Inspection Requirements and Procedures:

General Criteria:

- All work shall remain exposed and accessible for inspection purposes until approved by FD inspections staff, including prior to hydrostatic testing
 - Exception: unless hydrostatic testing is prohibited by cold weather and approved by inspections staff. A hydro test must then be completed as soon as weather permits.

Required Inspections:

- *Rough-In*
 - All components must remain visible, anything covered will be required to be exposed, not at the City of Maple Grove expense
 - Verify proper installation
- *Hydrostatic test*
 - All fire sprinkler components must be in place and remain visible for the hydrostatic test
 - If contractors wish to perform the hydrostatic after components are covered the MGF and the City of Maple Grove are not liable for any damage
 - In large buildings this may be done by; sections, zones, floors, etc.
 - All new systems shall be tested at 200psi for 2 hours or 50psi over operating pressure if standard pressure is greater than 151psi
 - Alterations of combined systems impacting less than 20 heads shall have a 2-hour test at normal operating pressure
 - Alterations of combined systems impacting greater than 20 heads shall be isolated and tested at 200psi or 50psi over operating pressure if standard pressure is greater than 151psi
- *Air Test*
 - All dry systems shall have a 24-hour air test
 - Wet systems may be air tested in below-freezing conditions upon inspector approval, however, the system shall complete a traditional hydrostatic test when weather conditions improve
- *Trip Test*
 - A full trip test of the dry pipe valve to verify water delivery time in accordance with NFPA 13.
- *Retard Test*
 - Retard test to verify water flow switch delay is between 40-50 seconds
- *Main Drain Test*
 - Verify static and residual pressures
- *Forward Flow Test*
 - Verify the flow rate meets the system demand including hose streams (where applicable)
- *Standpipe Flow Test*
 - For combination standpipe systems no additional testing is required
 - Standalone standpipe systems shall be tested with one of the approved means identified in NFPA 14
- *Final Inspection and testing of the system*
 - All sprinkler heads and signage must be in place including zone maps
 - Hydraulic Design & General Information signs shall be properly filled out and posted.

- Monitoring of the alarm system shall be in service and signals shall be verified at Central Station during testing
- A copy of aboveground and underground test papers shall be provided
- Spare headboxes must be properly stocked and labeled with the correct type and number of spare heads

Zone Map Requirements:

Pursuant to Maple Grove Chapter 18-89.3 sprinkler zone maps shall be provided

- An acceptable zone map shall include the following:
 - A size large enough to be clear and legible but no smaller than 8½" X 11".
 - The zone map shall be on a simple floor plan with NO other markings other than wall, stairwell, and door locations. Sprinkler plans are not acceptable as a zone map.
 - Zone maps shall either be mounted in a frame or laminated with rings attached and hung on the wall or by other approved means.
 - One additional zone map shall be provided at the fire alarm panel; if in a separate location.
 - The zone map shall show the general location of:
 - each zone
 - F.D. Connection
 - PIV or WPIV
 - Riser controls
 - Inspector test valves/drains
 - Other system control valves and auxiliary drains
 - A North symbol and building address shall be included on the plan.
 - When systems are remodeled, extended, altered, or modified, the existing zone maps shall be updated.

High-Piled Storage/ Racking:

Any systems designed to support buildings with high-piled storage/ racking should include the following items:

- Completed storage questionnaire is available on the city website, you may find it by clicking [here](#). Once complete, the form should be submitted through ePermits with your plans.
 - Exception: If the system is for a speculative building where the tenants and commodities are unknown, the system design and its limitations must be clearly stated on the sprinkler plans.
- Plans should include the following:
 - Floor plan of the building showing locations and dimensions of storage areas
 - Useable storage height for each area
 - Number of tiers within each rack, if applicable
 - Clearance between top of storage and the sprinkler deflector
 - Aisle dimensions for each storage array
 - Maximum pile volume for each storage array
 - Location and type of commodities
 - Identify which are encapsulated or banded
 - A list of all commodities with their storage configuration shall be provided
 - A person knowledgeable in classifying commodities per the MSFC shall complete

this list and be pre-approved by the MGF D inspections staff.

- Dimension and location of transverse and longitudinal flue spaces
- Hazardous materials statement if applicable
 - If hazardous materials are being stored a Maple Grove Hazardous Materials Inventory Statement form shall be completed. This form is available by contacting the fire prevention staff at fireinspections@maplegrovern.gov
 - MGF D inspections staff shall pre-approve who may fill out this form

Click [HERE](#) to go to the ePermits website.