City of Maple Grove

Guidelines and Permit Information: Gas Detection Systems

Permit Required: 2020 MSFC 105.7.11 Gas Detection Systems

A construction permit is required for the installation of or modification to gas detection systems.

> *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.*

Full Submittal: A full submittal permit is required for all new gas detection systems, and modifications to systems.

- 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.

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

- Daywork permit is allowed for carbon dioxide detection systems where insulated liquid carbon dioxide systems are used in beverage dispensing applications.
- Full submittal plans are generally not required.
- The daywork permit form is located below and the form shall be completed in its entirety and uploaded to ProjectDox.

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 MGFD 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

- Insulated liquid carbon dioxide systems used in beverage dispensing applications - Carbon Dioxide (CO2) Detection (MSFC 5307.3)
    - Insulated liquid carbon dioxide systems with more than 100 pounds of CO2 used in beverage dispensing applications.
    - Shall be provided with ventilation in accordance with MSFC 5307.1 or gas detection in accordance with MSFC 5307.3.2.
    - Carbon dioxide sensors shall be provided within 12 inches of the floor in the area where the gas is expected to accumulate or other approved locations.
    - The system shall be designed as follows:
        - Activates an audible and visible supervisory alarm at a normally attended location upon detection of a carbon dioxide concentration of 5,000 ppm.
        - Activates an audible and visible alarm within the room or immediate area where the system is installed upon detection of a carbon dioxide concentration of 30,000 ppm.

- Gas Detection Systems (all other gas detection systems)
    - Gas detection system equipment shall be designed for use with the gases being detected and shall be installed in accordance with manufacturer's instructions.
    - Gas detection systems shall be permanently connected to the building electrical power supply or shall be permitted to be cord connected to an unswitched receptacle using an approved restraining means that secures the plug to the receptacle.
    - Standby or emergency power shall be provided or the gas detection system shall initiate a trouble signal at an approved location if the power supply is interrupted.
    - A gas detection alarm shall be initiated where any sensor detects a concentration of gas exceeding the following thresholds:
        - For flammable gases, a gas concentration exceeding 25 percent of the lower flammability limit (LFL).
        - For nonflammable gases, a gas concentration exceeding one-half of the IDLH, unless a different threshold is specified by the section of this code requiring a gas detection system.
    - Audible and visible alarm signals associated with a gas detection alarm shall be distinct from fire alarm and carbon monoxide alarm signals.
    - Signs shall be provided adjacent to gas detection system alarm signaling devices that advise occupants of the nature of the signals and actions to take in response to the signal.
    - Gas sensors and gas detection systems shall not be connected to fire alarm systems unless approved and connected in accordance with the fire alarm equipment manufacturer's instructions and NFPA 72.
    - Inspection and testing of gas detection systems shall be conducted not less than annually. Sensor calibration shall be confirmed at the time of sensor installation and calibration shall be performed at the frequency specified by the sensor manufacturer.

- MSFC Chapters (including but not limited to):
  - 916 – Gas Detection Systems
  - 12 – Energy Systems
  - 23 – Repair Garages
  - 27 – Semiconductor Fabrication
  - 39 – Processing & Extraction Facilities
  - 53 – Compressed Gases
  - 58 – Flammable Gases
  - 60 – Highly Toxic & Toxic Materials

- NFPA (including but not limited to):
  - 2 – Hydrogen Technologies
  - 55 – Compressed Gasses & Cryogenic Fluids
  - 70 – Electrical
  - 72 – Fire Alarm

Plan Submittal Requirements

- ☐ Floor plans showing the location of the gas detection system in the building 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 and building construction features shall be clearly legible.
  - Identify the type of gas detection system or equipment being installed or modified:
    - Type of gas being detected
    - Gas alarm threshold limits
    - Sensor locations
    - Alarm notification appliances
- ☐ Submit Safety Data Sheets (SDS) for all gases being detected.
- ☐ Plans on any interlock systems (safety features) as required.
- ☐ Adequate, concise, and sufficient information as required by MSFC and NFPA shall be clearly indicated on the plans.
- ☐ Manufacturer's data sheets shall be provided for all equipment.
- ☐ Designers name, business name, contact information, and proof of licensure (if required).
- ☐ Hazardous materials statement (if applicable):
  - If hazardous materials are being stored or used, a Maple Grove Hazardous Materials Inventory Statement form shall be completed. This form is available by contacting the fire prevention staff at fireinspections@maplegrovemn.gov
  - MGFD inspections staff shall pre-approve who may fill out this form.
  - Floor plans showing compliance to MSFC 5003 for any control areas or cabinets may be required if flammable or combustible liquids (paint thinners, etc.) are used or stored in the building.

- ☐ 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.

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.
- *Function test*
  - All functions of the installation will be tested in accordance with MSFC, NFPA, and the manufacturer's instructions.
- *Interlock Test*
  - All safety interlock systems will be tested.
- *Final Inspection and testing of the system*
  - All fire protection must be approved and required signage must be in place including zone maps.
  - Monitoring of the detection system (if connected) shall be in service and signals shall be verified at Central Station during testing.

Zone Map Requirements:

Pursuant to Maple Grove Chapter 18 updated fire alarm zone maps shall be provided:

- Please see the Fire Alarm guide located on our website for detailed requirements.
- When systems are remodeled, extended, altered, or modified, the existing zone maps shall be updated.

Click HERE to go to the ePermits website.

Guidelines and Permit Information:

City of Maple Grove

ePermits Day Work Gas Detection

Contractor Info. Required:

Contractor Company Name:
Person in charge Name:
Email Address:
Phone:
Business Name: (Location of work)
Business Address: (Location of work)

Use below for Day Work only

Provide a specific description and location of the work being performed:
Provide a brief description of what happened to cause this work to be necessary:
Provide the make, type, model, of components installed and/or replaced:

Fees: The fee schedule is available on the Maple Grove City website.

Fire Alarm Plan Submittal:

All plans shall be submitted electronically through ProjectDox online.
This document serves as your plan; however, additional information or documentation may be requested by the Inspector.

Provide manufacturer data sheets for all equipment.

Click HERE to go to the E-Permits website.

12800 Arbor Lakes Pkwy., Maple Grove, MN 55369 | Phone: 763-494-6300 | Fax: 763-494-6425 | fireinspections@maplegrovemn.gov