

Minnesota Department of Public Safety State Fire Marshal Division

Group E and I-4 Carbon Monoxide (CO) Detection- Flow Chart

State Fire Marshal Division Notes

- This flow chart is designed to aid Code Officials, Architects, Design Professionals and similar in the navigation through the Minnesota State Fire Code (MSFC).
- This flow chart applies to new Group E and I-4 child daycare and K-12 school classrooms.
- **CARBON MONOXIDE ALARM.** A single- or multiple station alarm intended to detect carbon monoxide gas and alert occupants by a distinct audible signal. It incorporates a sensor, control components and an alarm notification appliance in a single unit.
- **CARBON MONOXIDE DETECTOR.** A device with an integral sensor to detect carbon monoxide gas and transmit an alarm signal to a connected alarm control unit.

CO detection system requirements

- CO detectors shall be installed in Group E and I-4 occupancies except as allowed per FMCAP 20-008-I which is found at the end of this flow chart. It is important to note that single- or multiple station CO alarms are prohibited in any other instance within these occupancies.
- Standard: NFPA 720, CO detectors listed to UL 2075.
- Locations: As specified in MSFC Section 915.2.
- Combination detectors: Listed to UL 268 and UL 2075.
- Notification appliances shall be installed in the area(s) where the detection devices are installed.
- The system shall annunciate to a constantly attended location or supervising station.

General CO detection location requirements

- Detectors within each classroom and automatically transmitted to an on-site staffed location.
 - Exception: Not required to be transmitted when total occupant load is 30 or less.

When required and alternate CO detection location requirements for Group E and I-4 child daycare and K-12 school classrooms.

Note: More than one condition may apply

- When such buildings are served by a forced air fuel-burning appliance.
 - *Alternate:* Single point detection approved in first room or area served by the main supply duct from the furnace.



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- When such buildings contain a fuel-burning appliance.
 - Exception 1: CO detection not required when there are no communicating openings between the fuel-burning appliance(s) and the rest of the building.
 - *Alternate 1*: Detector in approved location between the fuel-burning appliance(s) and classrooms.
 - *Alternate 2*: Detector located on the ceiling of rooms containing the fuel-burning appliance(s).
- When such buildings have an attached garage.
 - Exception 1: CO detection not required when no communicating openings between garage and classrooms.
 - Exception 2: CO detection not required when the classrooms are more than 1-story above or below the garage.
 - Exception 3: CO detection not required when the garage attached to classrooms by open-ended corridor (*breezeway*).
 - *Alternate*: Detector in approved location between garage and classrooms.
 - Exempt garages: Open parking garages or enclosed garages complying with Minnesota Building Code Section 406.4.

Maintenance

- Enclosed garage detection: Maintained in accordance with Minnesota Mechanical Code Section 404.1, manufacturer instructions and listing.
- End-of-life: Devices that become inoperable or sound end-of-life signals shall be replaced.

Group E occupancies (FMCAP 20-008-I)

- Where such conditions require the installation of CO detection in Group E occupancies and:
 1. The Group E occupancy is required or provides an NFPA 72 fire alarm system, CO detectors shall be provided in accordance with the requirements of MSFC Section 915, or
 2. The Group E occupancy is not required and doesn't provide an NFPA 72 fire alarm system, CO alarms shall be permitted when:
 - CO alarms complying with the requirements of MSFC 915.4.1 and 915.4.2 are installed in every room or area providing care or instruction,
 - The required fire safety plan includes manufacturer information regarding the testing, inspection and maintenance of such CO alarms,
 - The fire inspection report issued by the Authority Having Jurisdiction shall detail such requirements per MSFC 104.8.

