

Minnesota Department of Public Safety State Fire Marshal Division

Group I-1, I-2 and R Occupancy 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.
- This flow chart applies to new and existing Group I-1, I-2 and R dwelling and sleeping units.
- **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 alarm requirements

- CO alarms: Shall only be installed within sleeping and dwelling units.
- Power supply: Hardwired with battery backup.
 - Exception 1: Battery only approved if no commercial power present.
 - Exception 2 (Existing): Battery only approved if CO alarms not required at time of construction.
- Listing: UL 2034.
- Combination alarms: Combination smoke and CO alarms listed to UL 217 and UL 2034 approved.

CO detection system requirements

- CO detectors: Shall be installed in alternate locations in lieu of CO alarms.
- Standard: NFPA 720, CO detectors listed to UL 2034.
- 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.



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General CO detection location requirements

- Dwelling unit: Within 10 feet of bedrooms **or** within bedrooms containing fuel-burning appliances.
- Sleeping unit: Within sleeping unit.
 - *Alternate 1:* Detector located within 10 feet of sleeping units when units do not contain fuel-burning appliances or are served by forced air fuel-burning appliances.
- In multi-family dwellings without fuel-burning appliances within the dwelling units, detection may be placed 15 to 25 feet from the central fuel-burning appliances when a centralized alarm system or other method to notify responsible parties is present at all times.

When required and alternate CO detection location requirements

Note: More than one condition may apply

- When a dwelling unit or sleeping unit is served by a forced air fuel-burning appliance.
 - *Alternate:* Single detector approved in first room or area served by the main supply duct from the furnace.
- When a dwelling unit or sleeping unit building containing a fuel-burning appliance.
 - Exception 1: CO detection not required when no communicating openings between the fuel-burning appliance(s) and sleeping/dwelling units.
 - *Alternate 1:* Detector in approved location between the fuel-burning appliance(s) and sleeping/dwelling units.
 - *Alternate 2:* Detector located on the ceiling of rooms containing the fuel-burning appliance(s).
- When a dwelling unit or sleeping unit building has an attached garage.
 - Exception 1: CO detection not required when no communicating openings between garage and sleeping/dwelling units.
 - Exception 2: CO detection not required when sleeping/dwelling units are more than 1-story above or below the garage.
 - Exception 3: CO detection not required when the garage is attached to sleeping/dwelling units by open-ended corridor (breezeway).
 - *Alternate:* Detector in approved location between garage and sleeping/dwelling units.
 - 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.

