



WOODSIDE FIRE PROTECTION DISTRICT

Design and Installation Standard

Carbon Dioxide Systems for Beverage Dispensing

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PURPOSE. Due to asphyxiation risks associated with carbon dioxide stored on site for beverage dispensing, WFPD requires any CO₂ gas system with a capacity greater than 100 pounds to be provided with ventilation or be protected by a detection and alarm system. This system shall be designed to protect the storage area in addition to the points of use of the system throughout the facility and shall alert the occupants of a hazardous condition within the space.

SCOPE. This has established the following requirements for the submittal of all carbon dioxide monitoring and emergency warning systems installed within the Woodside Fire Protection District. These guidelines apply to all new CO₂ tank installations and alterations to existing CO₂ tank systems of 100 lbs. or greater. Submittals shall comply with current editions of the California Fire Code (CFC), California Mechanical Code (CMC), NFPA 55, Woodside Fire Protection District Ordinance, and other applicable national standards including manufacturer recommendations.

DEFINITIONS.

Carbon Dioxide Gas System: A system that utilizes a supply of carbon dioxide or inert gas for the purposes of beverage carbonation, atmospheric enrichment, or other purposes.

Local Alarm: An alarm, generally designed for awareness alerts and built into the detectors and/or CO₂ control panel, that is located in the vicinity of a point of detection to alert those in the immediate area of an elevated gas level. There is usually a local alarm at the gas supply location and at each point of use.

Point Of Use: The location at which the gas supply lines connect to equipment for direct use, mixing, or dilution, where a leak could cause a large amount of gas to escape into the space. This is generally the place where a 100% gas concentration supply lines meets equipment for direct use, or where the gas is mixed such that any downstream distribution will be at concentrations too low to be hazardous, such as a Bag-in-Box (BiB) system for beverage dispensing.

PERMITTING

A construction permit is required to be issued prior to installation of a carbon dioxide system with a capacity greater than 100 pounds; systems with a capacity of 100 pounds or less do not require a permit. **An annual, operational permit is required to be issued for use of**

the system after installation.

SUBMITTAL REQUIREMENTS. All plan submittals and revisions must be electronically submitted through [WFPD Citizen Access Portal](#). These plans shall contain the following information and items:

1. **Project Information:** Provide the Project Name and address, Contractor/Owner contact information and Scope of work (CFC 106.2.1)
2. **Plans:** Provide a scaled plan of the building indicating where the installation will occur. (CFC 106.2.1)
3. **Tank{s):** Include make and model of tank(s) including quantity of CO2 in pounds. Show tank location(s) on floor plan including tank's method(s) of restraint. (CFC 5303.3)
4. **Signage:** An NFPA 704 placard/hazard identification sign is required on the exterior door(s). Please see example "A" for details. A warning sign shall be posted at the entrance to the building, room, enclosure, or confined area where the container is located. The warning sign shall be at least 8 in. wide and 6 in. high and state the following: **"CAUTION - Carbon Dioxide Gas. A high carbon dioxide gas concentration in the area can cause suffocation."** Please see example "B" for details. (NFPA 55: 13.7.3.1, 13.7.3, and CFC 5003.5, and NFPA 704)
5. **Piping:** Indicate piping routing used for system to include CO2 supply line(s) for bulk CO2 tank to soft drink dispensing locations and remote fill connection in accordance with NFPA 55. Provide piping details of container venting, vent line size, and termination location. The piping that is to be used shall be suitable for gaseous/liquid carbon dioxide service. (CFC 5003.2, CFC 5003.2.2, NFPA 55: 13.4.3, 13.4.1.2, 13.10.1.1)
6. **Gas Detection System:** Indicate locations of proposed CO2 gas detectors and system horn/strobe(s) on floor plan installed per manufacturer's specifications. CO2 gas system detectors shall initiate an audio/visual supervisory alarm at detecting 5,000 parts per million and a complete audio/visual alarm area notification at detecting 30,000 parts per million. The gas detection system's power shall be provided by the building electrical power supply or cord connected to an unstitched receptacle using approved means to secure the plug to the receptacle. The gas detection system shall also be provided with secondary power, or the system shall initiate a trouble signal at an approved location when primary power supply is interrupted. (CFC 5307.3.2, CFC 916.4, and CFC 916.5)
7. **Data Specification Sheets** - Provide the following data specification sheets for review:
 - a. Piping and pipe restraints.
 - b. Tank and tank anchoring/restraints.
 - c. Gas detection system detectors and horn strobes.

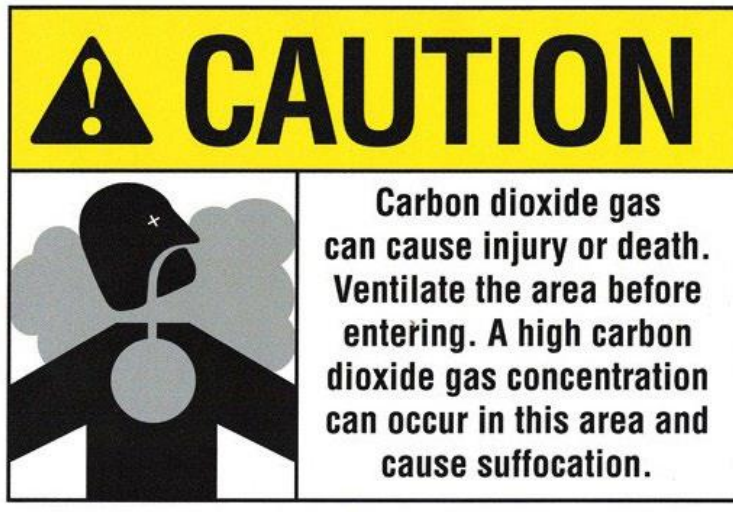
Note: Permit applications submitted without the required information listed above may be returned and/or not accepted. Permit applications, including required plans and supplemental information must be submitted to the Fire Prevention Department a minimum of five working days prior to the desired inspection date. Failure to do so may cause system start up and use to be delayed until the permit is acceptable or additional fees may be paid to expedite the plan review. The applicant will be notified either by phone and/or email the status of the application once the review has been completed. **Any CO2 tanks for beverage dispensing systems installed without a permit will be billed additional fees at the time of permit**

application.

Example A: CO2 NFPA 704 Sign



Example B: CO2 Caution Sign



NOTE: Additional signage may be required per gas detection system's manufacturer specifications.