



CODE GUIDE

BUREAU OF DEVELOPMENT SERVICES



TOPIC: Parking Garage Ventilation - IMC/4/#1

CODE: Mechanical Specialty Code: 2005 Edition

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REFERENCE: Sections 404.2 – Mechanical Specialty Code

SUBJECT: Alternate Method For Determining Exhaust Ventilation Rates At Enclosed Parking Garages

QUESTION: Is there an alternate to providing the prescriptive 1.5 CFM per square foot exhaust ventilation that is specified in the code for enclosed parking garages?

RESPONSE: The ASHRAE applications method for public garages as detailed in Chapter 13.10 of the ASHRAE Applications Handbook, 2003 Editions, may be used to calculate the required exhaust ventilation rate for parking garages that are used exclusively to park the private motor vehicles of residential tenants of a structure provided all of the following conditions are met.

1. Parking garages serving three or more dwelling units or which include a mixture of parking for commercial occupancies and residential occupancies are considered to be "public garages".
2. Parking garages used exclusively for the parking of private motor vehicles of residential tenants of a structure may use the ASHRAE methodology to determine the exhaust ventilation required.
3. In mixed use parking garages where a mixture of parking for commercial occupancies and residential occupancies occurs, the following methodology is to be used.
 - a. The ASHRAE methodology may be used for the portion of the garage used for the parking of private motor vehicles of residential tenants of a structure provided the area designated for the parking of residential tenants is separated from the other parking areas and is provided with controlled access to limit use to only residential tenants.
 - b. For areas where access to the parking is not controlled for the exclusive use of residential tenants, the code required 1.5 CFM exhaust ventilation rate shall be provided.

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4. The following data shall be used when using the ASHRAE methodology.
 - a. The number of vehicles in operation during peak hour use shall not be less than 40% of the total number of spaces designated for the exclusive use of residential tenants.
 - b. The average CO emission rate used shall not be less than 2.5 lbs./hr. per vehicle in operation.
 - c. The average length of operation and travel time for a vehicle in operation shall be determined based on the average distance traveled from the furthestmost parking space to the point where the vehicle exits the space under consideration using a rate of travel of 5.6 ft./sec. plus 30 seconds. The distance traveled shall be measured along the centerline of the path of vehicle travel.
 - d. The acceptable maximum CO level in the garage shall not exceed 25 ppm.
 - e. The minimum ventilation rate shall be as determined by calculation but shall not be less than 0.5 cfm/sf.
 - f. CO sensors shall be provided at a rate of 1 sensor per 6,000 square feet or as allowed by the manufacturer's product listing.
 - g. Outside air shall be continuously provided to the garage at a ventilation rate of not less than 0.05 cfm/sf as specified in Section 404.2 of the mechanical code.

5. Calculations for the alternate exhaust ventilation shall be prepared by or under the direct supervision of an Oregon registered engineer.

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