
SECTION 304 INSTALLATION

304.3 Elevation of ignition source. Equipment and appliances having an ignition source and located in hazardous locations and public garages, private garages, repair garages, automotive motor fuel-dispensing facilities and parking garages shall be elevated such that the source of ignition is not less than 18 inches (457 mm) above the floor surface on which the equipment or appliance rests. For the purpose of this section, rooms or spaces that are not part of the living space of a dwelling unit and that communicate directly with a private garage through openings shall be considered to be part of the private garage.

304.3.1 Parking garages. Connection of a parking garage with any room in which there is a fuel-fired appliance shall be by means of a vestibule providing a two-doorway separation, except that a single door is permitted where the sources of ignition in the appliance are elevated in accordance with Section 304.3.

Exception: This section shall not apply to appliance installations complying with Section 304.6.

304.4 Prohibited equipment and appliance location. Equipment and appliances having an ignition source shall not be installed in Group H occupancies or control areas where open use, handling or dispensing of combustible, flammable or explosive materials occurs.

Q: Does the requirement for elevating appliances in garages include dryers?

A: Yes. By definition, a clothes dryer is an appliance regulated by the IMC (gas dryers are regulated by the IFGC). An ignition source is a flame, spark, or hot surface capable of igniting flammable vapors or fumes, and the definition specifically includes electrical switching devices. Section 304.3

applies to all appliances, including dryers, having an ignition source and being located in a hazardous location or garage. The source of ignition for a dryer is the same as any other appliance, so it would not be justified to exclude dryers from this requirement. Most if not all of the dryer manufacturers require their products to be elevated in a garage location. Only the source of ignition needs to meet the 18-inch elevation requirement. The intent of the code is to elevate ignition sources in garages to prevent fires and provide a reasonable level of safety to the occupants. [3-6]

304.6 Public garages. Appliances located in public garages, motor fueling-dispensing facilities, repair garages or other areas frequented by motor vehicles, shall be installed a minimum of 8 feet (2438 mm) above the floor. Where motor vehicles are capable of passing under an appliance, the appliance shall be installed at the clearances required by the appliance manufacturer and not less than 1 foot (305 mm) higher than the tallest vehicle garage door opening.

Exception: The requirements of this section shall not apply where the appliances are protected from motor vehicle impact and installed in accordance with Section 304.3 and NFPA 30A.

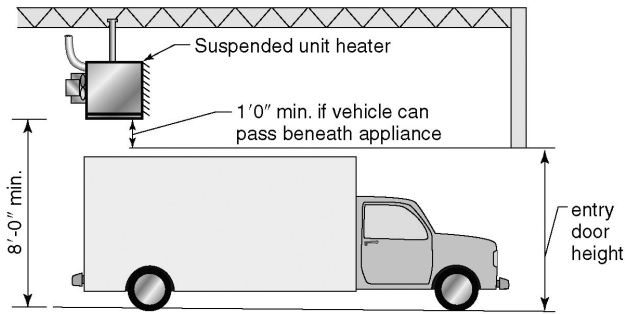
304.7 Private garages. Appliances located in private garages and carports shall be installed with a minimum clearance of 6 feet (1829 mm) above the floor.

Exception: The requirements of this section shall not apply where the appliances are protected from motor vehicle impact and installed in accordance with Section 304.3.

Q: A parking garage below an I-1 assisted-living facility has 19 parking spaces for use by the residents of the building. In determining the minimum height of a suspended unit heater, is this parking garage considered public or private?

A: Section 304.6 sets the minimum clearance requirement for appliances in public garages, which is 8 feet above the floor or 1 foot higher than the tallest garage door where vehicles can pass under the appliance. The code does not have a definition for a private or public garage. The intent of the code is that a private garage is used by an individual or a single family (see the definition for "private" in Section 202 of the IPC). The parking garage for the assisted-living facility is considered a public garage.

The clearance height may be reduced provided the appliance is protected from vehicle impact and the ignition source is elevated at least 18 inches in accordance with Section 304.3. See Figure 3-7. [3-7]

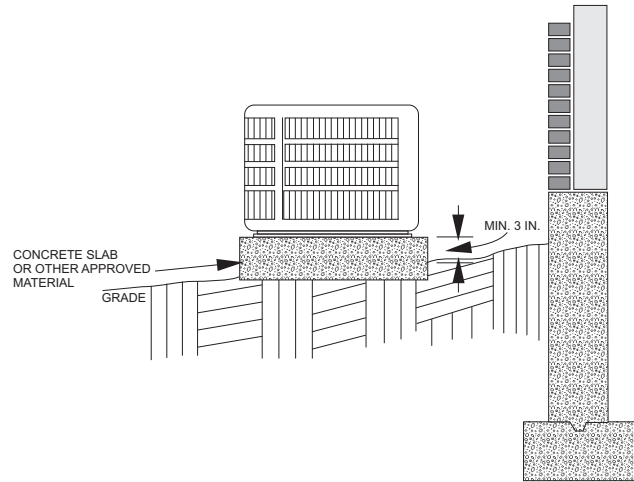


APPLIANCE INSTALLATION IN A PUBLIC GARAGE
FIGURE 3-7

304.10 Clearances from grade. Equipment and appliances installed at grade level shall be supported on a level concrete slab or other approved material extending not less than 3 inches (76 mm) above adjoining grade or shall be suspended not less than 6 inches (152 mm) above adjoining grade. Such support shall be in accordance with the manufacturer’s installation instructions.

Q: Does the code require exterior mechanical equipment to be elevated with supports or legs to maintain a clearance of 6 inches to grade even when the equipment is on a concrete slab that extends above grade?

A: No. Section 304.10 covers the requirements for minimum clearances to grade. If the equipment is suspended, supported on a wall-mounted platform for example, the minimum clearance to grade is 6 inches. If the equipment is on a concrete slab or other approved material that extends 3 inches above the grade level, additional elevation is not necessary. Supports must also comply with the manufacturer’s installation instructions. See Figure 3-8. [3-8]



MECHANICAL APPLIANCE INSTALLATION
FIGURE 3-8

[B] 304.11 Guards. Guards shall be provided where appliances, equipment, fans or other components that require service and roof hatch openings are located within 10 feet (3048 mm) of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches (762 mm) above the floor, roof or grade below. The guard shall extend not less than 30 inches (762 mm) beyond each end of such appliances, equipment, fans, components and roof hatch openings and the top of the guard shall be located not less than 42 inches (1067 mm) above the elevated surface adjacent to the guard. The guard shall be constructed so as to prevent the passage of a 21-inch-diameter (533 mm) sphere and shall comply with the loading requirements for guards specified in the *International Building Code*.

Q: There is mechanical equipment located approximately 6 feet from the edge of the roof on a one-story commercial building. Section 304.11 requires guards to be installed on the roof if the equipment is located within 10 feet of a roof edge. A building owner wishes to install a safety harness for workmen in lieu of the guard. Is this acceptable?

A: No. The guard is a permanently installed safety feature for protection of maintenance and repair workers. The use of harnesses depends on the actions of the workers, and they might choose not to use them. A safety harness is not equivalent to a guard and does not satisfy the provisions of Section 304.11. [3-9]

Q• Do the guard requirements in Sections 304.11 and 306.5.1 apply to solar panels that are attached to roofs?

A• The key point to consider is whether the solar panels require service. Roof-mounted solar panels that are part of a solar energy system regulated by Chapter 14 of the IMC and that require service are subject to the guard provisions in Sections 304.11 and 306.5.1. If there are no moving parts and there are no connections or components that require routine replacement, then service is typically not required. In this case, the guard requirements do not apply to solar panels. [3-10]

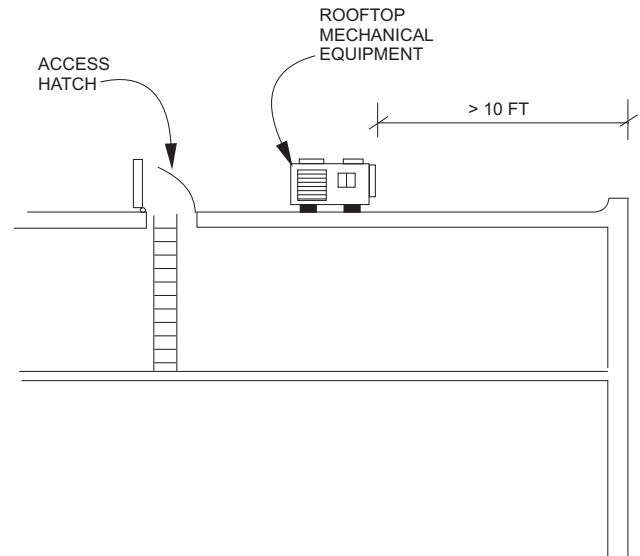
Q• We are placing a commercial kitchen hood exhaust fan on a roof. The fan will be within 10 feet of the roof edge. There will be no normal servicing of the fan (filter changing, adjusting). Filter cleaning or replacement will be accomplished from within the kitchen. Obviously, if the fan breaks down it will have to be repaired, but is that considered servicing as intended by Section 304.11? Is a guard required along the roof edge?

A• Section 304.11 applies to appliances and equipment that require service. This section specifically mentions fans. Because exhaust fans have moving parts and motors, they presumably require periodic inspection, maintenance, or repair similar to HVAC equipment. The intent of this section is that guards are required for commercial kitchen exhaust fans that are closer than 10 feet to the edge of a roof. [3-11]

Q• A building with a flat roof has a roof hatch for access to the roof-mounted mechanical equipment. The roof elevation at the hatch is approximately 9 feet above the floor below. The roof hatch is more than 10 feet from the edge of the roof. Is the intent of the code to require guards on the open side of roof hatches when either the hatch is within 10 feet of the roof edge or the hatch is more than 30 inches above the floor?

A• The guard requirements of Section 304.11 are not based on the measurement of the roof hatch above the floor below. The 30-inch vertical measurement applies to the edge of the roof above the grade, roof, or floor below. The code provisions for installation of the guard intend to prevent falls off the edge of the roof where the access hatch or the equipment being serviced is located near the roof

edge. See Figure 3-12. The code does not intend to protect all walking surfaces of a roof that are adjacent to access openings or edges with guards. [3-12]



GUARDS NOT REQUIRED
FIGURE 3-12

Q• Must a 42-inch high guard be installed on the top of an 8-foot by 12-foot coffee kiosk that is equipped with a rooftop-mounted (RV-type) air conditioner/heating unit? The unit is already screened in with a 25-inch-high metal canopy that is bolted to the building. The addition of a guard would create hazards due to the limited work space.

A• Section 304.11 does not give any exception to the 42-inch-high guard requirement. The appliance installation must also comply with the access and service provisions of Section 306.1. A 30-inch by 30-inch level working space is required at the control side of the appliance. Any consideration by the code official of an alternative under Section 105.2 would require compelling evidence that the screen was equivalent to the guard. In this case, the code is clear about the minimum height requirement. Section 304.11 applies to appliances requiring service. Presumably, this rooftop unit requires periodic inspection, maintenance, or repair similar to other HVAC equipment. [3-13]