

CHAPTER 3

GENERAL REGULATIONS

SECTION MC 301 GENERAL

301.1 Scope. This chapter shall govern the approval and installation of all equipment and appliances that comprise parts of the building mechanical systems regulated by this code in accordance with Section 101.2.

NYC 301.2 Energy utilization. Heating, ventilating, air-conditioning, and refrigeration systems of all structures shall be designed and installed for efficient utilization of energy in accordance with *the New York City Energy Conservation Code*.

NYC 301.3 Identification. All pipe and tubing and each pipe fitting utilized in a mechanical system shall bear the identification of the manufacturer.

NYC 301.4 Plastic pipe, fittings and components. Plastic pipe, fittings and components shall be third-party certified.

301.5 Third-party testing and certification. Piping, tubing and fittings shall comply with the applicable referenced standards, specifications and performance criteria of this code and shall be identified in accordance with Section 301.3. Piping, tubing and fittings shall either be tested by an approved third-party testing agency or certified by an approved third-party certification agency.

NYC 301.6 Fuel gas appliances and equipment. The approval and installation of fuel gas distribution piping and equipment, fuel gas-fired appliances and fuel gas-fired appliance venting systems shall be in accordance with the *New York City Fuel Gas Code*.

NYC 301.7 Listed and labeled. Appliances regulated by this code shall be listed and labeled for the application in which they are installed.

Exception: Listing and labeling of equipment and appliances used for refrigeration shall be in accordance with Section 1101.2.

NYC 301.8 Testing of materials. Refer to Section 28-113 of the *Administrative Code*.

NYC 301.9 Label information. A permanent factory-applied name-plate(s) shall be affixed to appliances on which shall appear in legible lettering, the manufacturer's name or trademark, the model number, serial number and the seal or mark of the approved agency. A label shall also include the following:

1. Electrical equipment and appliances: Electrical rating in volts, amperes and motor phase; identification of individual electrical components in volts, amperes or watts, motor phase; Btu/h (W) output; and required clearances.
2. Absorption units: Hourly rating in Btu/h (W); minimum hourly rating for units having step or automatic modulating controls; type of fuel; type of refrigerant;

cooling capacity in Btu/h (W); and required clearances.

3. Fuel-burning units: Hourly rating in Btu/h (W); type of fuel approved for use with the appliance; and required clearances.

4. Electric comfort heating appliances: Electric rating in volts, amperes and phase; Btu/h (W) output rating; individual marking for each electrical component in amperes or watts, volts and phase; and required clearances from combustibles. NYC

301.10 Electrical. Electrical wiring, controls and connections to equipment and appliances regulated by this code shall be in accordance with the *New York City Electrical Code*. NYC
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301.11 Plumbing connections. Potable water supply and building drainage system connections to equipment and appliances regulated by this code shall be in accordance with the *New York City Plumbing Code*. NYC

301.12 Fuel types. Fuel-fired appliances shall be designed for use with the type of fuel to which they will be connected and the altitude at which they are installed. Appliances that comprise parts of the building mechanical system shall not be converted for the usage of a different fuel, except where approved and converted in accordance with the manufacturer's instructions. The fuel input rate shall not be increased or decreased beyond the limit rating for the altitude at which the appliance is installed.

301.13 Reserved. NYC

301.14 Repair. Defective material or parts shall be replaced or repaired in such a manner so as to preserve the original approval or listing.

301.15 Wind resistance. Mechanical equipment, appliances and supports that are exposed to wind shall be designed and installed to resist the wind pressures determined in accordance with the *New York City Building Code*. NYC

301.16 Flood hazard. For structures located in flood hazard areas, mechanical systems, equipment and appliances shall comply with the additional requirements of Appendix G of the *New York City Building Code*. NYC
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301.16.1 High-velocity wave action. For buildings in coastal high-hazard areas and coastal A-zones as established in Section G102 of the *New York City Building Code*, mechanical systems and equipment shall not be mounted on or penetrate through breakaway walls. NYC
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301.17 Rodentproofing. Buildings or structures and the walls enclosing habitable or occupiable rooms and spaces in which persons live, sleep or work, or in which feed, food or foodstuffs are stored, prepared, processed, served or sold, shall be constructed to protect against the entrance of rodents in accordance with Appendix F of the *New York City Building Code*. NYC

301.18 Seismic resistance. Where earthquake loads are applicable in accordance with the *New York City Building Code*, mechanical system supports shall be designed and installed for the seismic forces in accordance with the *New York City Building Code*.

**SECTION MC 302
STRUCTURAL SAFETY**

302.1 Structural safety. The building or structure shall not be weakened by the installation of mechanical systems. Where floors, walls, ceilings or any other portion of the building or structure are required to be altered or replaced in the process of installing or repairing any system, the building or structure shall be left in a safe structural condition in accordance with the *New York City Building Code*.

302.1.1 Loading. Alterations resulting in the addition of loads to any member, such as HVAC equipment and water heaters, shall not be permitted without verification that the members are capable of supporting such additional loading.

302.2 Penetrations of floor/ceiling assemblies and fire-resistance-rated assemblies. Penetrations of floor/ceiling assemblies and assemblies required to have a fire-resistance rating shall be protected in accordance with Chapter 7 of the *New York City Building Code* and Chapter 6 of this code.

302.3 Cutting, notching and boring in wood framing. The cutting, notching and boring of wood framing members shall comply with Sections 302.3.1 through 302.3.5.

302.3.1 Solid non-engineered joist notches and holes. Notches on the ends of the solid, non-engineered joists shall not exceed one-fourth the joist depth. Notches in the top or bottom of joists shall not exceed one-sixth the depth, shall not be longer than one-third the depth and shall not be located in the middle third of the span. Holes bored in joists shall not be within 2 inches (50.8 mm) of the top or bottom of the joist, and the diameter of any such hole shall not exceed one-third the depth of the joist. Holes bored in the middle third of the span shall be located at the center of the joist depth. Clear distance between holes and notches shall be a minimum of 2 inches (50.8 mm). See Figure 2308.5.8 of the *New York City Building Code*.

302.3.2 Stud cutting and notching. In exterior walls and bearing partitions, wood studs are permitted to be cut or notched to a depth not exceeding $\frac{1}{4}$ 25 percent of the width of the stud. Cutting or notching of studs to a depth not greater than 40 percent of the width of the stud is permitted in nonbearing partitions supporting no loads other than the weight of the partition. See Figure 2308.5.8 of the *New York City Building Code*.

302.3.3 Bored holes in studs. Bored holes not greater than 40 percent of the stud width are permitted to be bored in any wood stud. Bored holes not greater than 60 percent of the stud width are permitted in nonbearing partitions or in any wall where each bored stud is doubled, provided not more than two such successive doubled studs are so bored. In no case shall the edge of the

bored hole be nearer than $\frac{5}{8}$ inch (15.9 mm) to the edge of the stud. Bored holes shall not be located at the same section of stud as a cut or notch. See Figure 2308.5.8 of the *New York City Building Code*.

302.3.4 Engineered wood products. Cuts, notches and holes bored in trusses, structural composite lumber, structural glue-laminated members or I-joists are prohibited except where permitted by the manufacturer's recommendations or where the effects of such alterations are specifically considered in the design of the member by a registered design professional.

302.3.5 Drilling and notching of top plate. When piping or ductwork is placed in or partly in an exterior wall or interior load-bearing wall, necessitating cutting, drilling or notching of the top plate by more than 50 percent of its width, a galvanized metal tie not less than 0.054 inch thick (1.37 mm) (16 ga) and 1 $\frac{1}{2}$ inches (38.1 mm) wide shall be fastened across and to the plate at each side of the opening with not less than eight 10d (0.148 inch diameter) nails having a minimum length of 1 $\frac{1}{2}$ inches (38.1 mm) at each side or equivalent. The metal tie must extend a minimum of 6 inches (152.4 mm) $\frac{1}{2}$ past the opening. See Figure 2308.5.8 of the *New York City Building Code*.

Exception: When the entire side of the wall with the notch or cut is covered by wood structural panel sheathing additional fastening is not required.

302.4 Trusses. Truss members of any material and components shall not be cut, drilled, notched, spliced or otherwise altered in any way without written concurrence and approval of a registered design professional.

302.5 Cutting, notching and boring in steel framing. The cutting, notching and boring of steel framing members shall comply with Sections 302.5.1 through 302.5.4.

302.5.1 Structural steel framing. The cutting, notching and boring of holes in structural steel framing members shall be as prescribed by the registered design professional.

302.5.2 Cold-formed steel framing. Flanges and lips of load-bearing, cold-formed steel framing members shall not be cut or notched. Holes in webs of load-bearing, cold-formed steel framing members shall be permitted along the centerline of the web of the framing member and shall not exceed the dimensional limitations, penetration spacing or minimum hole edge distance as prescribed by the registered design professional.

302.5.3 Nonstructural cold-formed steel wall framing. Flanges and lips of nonstructural cold-formed steel wall studs shall be permitted along the centerline of the web of the framing member, shall not exceed 1 $\frac{1}{2}$ inches (38.1 mm) in width or 4 inches (101.6 mm) in length, and the holes shall not be spaced less than 24 inches (609.6 mm) center to center from another hole or less than 10 inches (254 mm) from the bearing end.

302.5.4 Steel floor and roof decking. Cutting, notching and boring holes in steel floor and roof decking shall be as prescribed by the registered design professional.

NYC **302.6 Cutting, notching and coring into concrete.** The
 NYC cutting, notching or coring of concrete must comply with
 NYC provisions of Chapter 19 of the *New York City Building*
 NYC *Code* and is not permitted without prior approval of the reg-
 NYC istered design professional.

NYC **302.7 Protection of footings.** Trenching installed parallel to
 NYC footings and walls shall not extend into the bearing plane of
 NYC a footing or wall. The upper boundary of the bearing plane is
 NYC a line that extends downward, at an angle of 34 degrees
 NYC (1:1.5 slope) from horizontal, from the outside bottom edge
 NYC of the footing or wall.

NYC **302.8 Piping materials exposed within plenums.** Piping
 NYC materials exposed within plenums shall comply with this
 NYC code.

**SECTION MC 303
 EQUIPMENT AND APPLIANCE LOCATION**

303.1 General. Equipment and appliances shall be located
 as required by this section, specific requirements elsewhere
 in this code and the conditions of the equipment and appli-
 ance listing.

303.2 Hazardous locations. Appliances shall not be located
 in a hazardous location unless listed and approved for the
 specific installation.

NYC **303.3 Prohibited locations.** Appliances shall not be located
 NYC in sleeping rooms, bathrooms, toilet rooms, storage closets
 NYC or surgical rooms, or in a space that opens only into such
 NYC rooms or spaces, except where the installation complies
 NYC with one of the following exceptions:

Exceptions: This section shall not apply to the following
 appliances:

- NYC 1. In rooms other than those used for sleeping pur-
 NYC poses, direct-vent appliances that obtain all com-
 NYC bustion air directly from the outdoors and are
 NYC installed in accordance with the conditions of the
 NYC listing and manufacturer’s instructions.
- NYC 2. In rooms other than those used for sleeping pur-
 NYC poses, vented room heaters, wall furnaces, vented
 NYC decorative appliances, vented gas fireplaces, vented
 NYC gas fireplace heaters and decorative appliances for
 NYC installation in vented solid fuel-burning fireplaces
 NYC that are installed in rooms that meet the required
 NYC volume criteria of Section 702.
- NYC 3. In rooms other than those used for sleeping pur-
 NYC poses, appliances installed in a dedicated enclosure
 NYC in which all combustion air is taken directly from
 NYC the outdoors, in accordance with Section 703.
 NYC Access to such enclosure shall be through a solid
 NYC door, weather-stripped in accordance with the exte-
 NYC rior door air leakage requirements of the *New York*
 NYC *City Energy Conservation Code* and equipped with
 NYC an approved self-closing device.

NYC **303.4 Protection from physical damage.** Appliances shall
 NYC not be installed in a location where subject to physical dam-
 NYC age, including vehicular impact, unless protected by

approved barriers meeting the requirements of the *New*
York City Fire Code. NYC
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303.5 Indoor locations. Furnaces and boilers installed in
 closets and alcoves shall be listed for such installation.

303.6 Outdoor locations. Appliances installed in other than
 indoor locations shall be listed and labeled for outdoor
 installation.

303.7 Pit locations. Appliances installed in pits or excava-
 tions shall not come in direct contact with the surrounding
 soil. The sides of the pit or excavation shall be held back not
 less than 12 inches (304.8 mm) from the appliance. Where
 the depth exceeds 12 inches (304.8 mm) below adjoining
 grade, the walls of the pit or excavation shall be lined with
 concrete or masonry. Such concrete or masonry shall extend
 not less than 4 inches (101.6 mm) above adjoining grade and
 shall have sufficient lateral load-bearing capacity to resist
 collapse. The appliance shall be protected from flooding. NYC

303.8 Elevator shafts. Mechanical systems shall not be
 located in an elevator shaft.

**SECTION MC 304
 INSTALLATION**

304.1 General. Equipment and appliances shall be installed
 as required by the terms of their approval, in accordance
 with the conditions of the listing, the manufacturer’s instruc-
 tions and this code. Manufacturer’s instructions shall be
 available on the job site at the time of inspection. NYC
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304.2 Conflicts. Where conflicts between this code and the
 conditions of listing or the manufacturer’s instructions
 occur, the provisions of this code shall apply. NYC

Exception: Where a code provision is less restrictive
 than the conditions of the listing of the equipment or
 appliance or the manufacturer’s instructions, the condi-
 tions of the listing and the manufacturer’s instructions
 shall apply. NYC
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304.3 Elevation of ignition source. Equipment and appli-
 ances 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 (457.2 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. NYC

Exception: Elevation of the ignition source is not
 required for appliances that are listed as flammable vapor
 ignition resistant.

304.3.1 Parking garages. Connection of a parking
 garage with any room in which there is a fuel-fired appli-
 ance 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 ele-
 vated in accordance with Section 304.3.

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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.

NYC **304.5 Hydrogen generating and refueling operations.**
NYC Hydrogen generating and refueling operations shall be pro-
NYC hibited except as permitted by the Commissioner of the Fire
NYC Department.

NYC **304.6 Public garages.** Appliances located in public garages,
motor fueling-dispensing facilities, repair garages or other
NYC areas frequented by motor vehicles, shall be installed not
less than 8 feet (2438.4 mm) above the floor. Where motor
vehicles are capable of passing under an appliance, the
NYC appliance shall be installed at the clearances required by the
appliance manufacturer and not less than 1 foot (304.8 mm)
higher than the tallest vehicle garage door opening.

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

NYC **304.7 Private garages.** Appliances located in private
garages and carports shall be installed with a minimum
NYC clearance of 6 feet (1828.8 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.

NYC **304.8 Construction and protection.** Boiler rooms and fur-
NYC nace rooms shall be protected as required by the *New York
City Building Code*.

304.9 Clearances to combustible construction. Heat-pro-
ducing equipment and appliances shall be installed to main-
tain the required clearances to combustible construction as
specified in the listing and manufacturer's instructions. Such
clearances shall be reduced only in accordance with Section
308. Clearances to combustibles shall include such consider-
ations as door swing, drawer pull, overhead projections or
shelving and window swing, shutters, coverings and drapes.
Devices such as doorstops or limits, closers, drapery ties or
guards shall not be used to provide the required clearances.

NYC **304.10 Clearances from grade.** Equipment and appliances
NYC installed at grade level shall be supported on a level concrete
slab or other approved material extending not less than 3
inches (76.2 mm) above adjoining grade or shall be sus-
pended not less than 6 inches (152.4 mm) above adjoining

grade. Such support shall be in accordance with the manu-
facturer's instructions. NYC
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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
NYC hatch openings and the top of the guard shall be located not
NYC less than 42 inches (1066.8 mm) above the elevated surface
NYC adjacent to the guard. The guard shall be constructed so as to
prevent the passage of a 21-inch-diameter (533.4 mm) |
NYC sphere and shall comply with the loading requirements for
guards specified in the *New York City Building Code*. NYC

304.12 Area served. Appliances serving different areas of a
building other than where they are installed shall be perma-
nently marked in an approved manner that uniquely identi-
fies the appliance and the area it serves.

304.13 Rooftop access and obstructions. Equipment and
NYC appliances installed on rooftops of buildings shall be
NYC installed in accordance with the requirements of the *New
NYC York City Fire Code* regarding rooftop access and obstruc-
NYC tions, and shall not obstruct or interfere with firefighting
NYC operations or the operation of any doors, windows, fire
NYC escapes, or other means of egress or other building compo-
NYC nents requiring operation or access. NYC

SECTION MC 305 PIPING SUPPORT

305.1 General. Mechanical system piping shall be sup-
ported in accordance with this section.

305.2 Materials. Pipe hangers and supports shall have suffi-
cient strength to withstand all anticipated static and specified
dynamic loading conditions associated with the intended
use. NYC

Pipe hangers and supports that are in direct contact with
piping shall be of materials that are compatible with the pip-
ing and that will not promote galvanic action. NYC
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305.3 Structural attachment. Hangers and anchors shall be
attached to the building structure. Post-installed anchors
shall be subject to special inspection in accordance with Sec-
tion 1705.37 of the *New York City Building Code*. NYC
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305.4 Interval of support. Piping shall be supported at dis-
tances not exceeding the spacing specified in Table 305.4, or
in accordance with ANSI/MSS SP-58. |

TABLE 305.4
PIPING SUPPORT SPACING^a

PIPING MATERIAL	MAXIMUM HORIZONTAL SPACING (feet)	MAXIMUM VERTICAL SPACING (feet)
ABS pipe	4	10 ^c
Aluminum pipe and tubing	10	15
Brass pipe	10	10
Brass tubing, 1 ¹ / ₄ -inch diameter and smaller	6	10
Brass tubing, 1 ¹ / ₂ -inch diameter and larger	10	10
Cast-iron pipe ^b	5	15
Copper or copper-alloy pipe	12	10
Copper or copper-alloy tubing, 1 ¹ / ₄ -inch diameter and smaller	6	10
Copper or copper-alloy tubing, 1 ¹ / ₂ -inch diameter and larger	10	10
CPVC pipe or tubing, 1 inch and smaller	3	10 ^c
CPVC pipe or tubing, 1 ¹ / ₄ -inch and larger	4	10 ^c
Lead pipe	Continuous	4
PB pipe or tubing	2 ² / ₃ (32 inches)	4
PE-RT < 1 inches	2 ² / ₃ (32 inches)	10 ^c
PE-RT > 1 ¹ / ₄ inches	4	10 ^c
PEX tubing	2 ² / ₃ (32 inches)	10 ^c
Polypropylene (PP) pipe or tubing, 1 inch or smaller	2 ² / ₃ (32 inches)	10 ^c
Polypropylene (PP) pipe or tubing 1 ¹ / ₄ inches or larger	4	10 ^c
PVC pipe	4	10 ^c
Steel tubing	8	10
Steel pipe	12	15

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. See Section 301.18.

b. The maximum horizontal spacing of cast-iron pipe hangers shall be increased.

c. Mid-story guide.

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305.5 Protection against physical damage. In concealed locations where piping, other than cast-iron or steel, is installed through holes or notches in studs, joists, rafters or similar members less than 1¹/₂ inches (38.1 mm) from the nearest edge of the member, the pipe shall be protected by shield plates. Protective steel shield plates having a minimum thickness of 0.0575 inch (1.463 mm) (No. 16 gage) shall cover the area of the pipe where the member is notched or bored, and shall extend not less than 2 inches (50.8 mm) above sole plates and below top plates.

**SECTION MC 306
ACCESS AND SERVICE SPACE**

306.1 Access. Appliances, control devices, heat exchangers and HVAC system components that require maintenance shall be accessible for inspection, service, repair and replacement without disabling the function of a fire-resistance-rated assembly or removing permanent construction, other appliances, venting systems or any other piping or ducts not connected to the appliance being inspected, serviced, repaired or replaced. A level working space not less than 30 inches deep and 30 inches wide (762 mm by 762

mm) shall be provided in front of the control side to service an appliance. Clearance shall also be provided as required by the *New York City Electrical Code*.

306.1.1 Central furnaces. Central furnaces within compartments or alcoves shall have a minimum working space clearance of 3 inches (76.2 mm) along the sides, back and top with a total width of the enclosing space being not less than 12 inches (304.8 mm) wider than the furnace. Furnaces having a firebox open to the atmosphere shall have not less than 6 inches (152.4 mm) working space along the front combustion chamber side. Combustion air openings at the rear or side of the compartment shall comply with the requirements of Chapter 7.

Exception: This section shall not apply to replacement appliances installed in existing compartments and alcoves where the working space clearances are in accordance with the equipment or appliance manufacturer's instructions.

306.2 Appliances in rooms. Rooms containing appliances shall be provided with a door and an unobstructed passage-

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NYC way measuring not less than 36 inches (914.4 mm) wide and 80 inches (2032 mm) high.

Exception: Within a dwelling unit, appliances installed in a compartment, alcove, basement or similar space shall be accessed by an opening or door and an unobstructed passageway measuring not less than 24 inches (609.6 mm) wide and large enough to allow removal of the largest appliance in the space, provided that a level service space of not less than 30 inches (762 mm) deep and the height of the appliance, but not less than 30 inches (762 mm), is present at the front or service side of the appliance with the door open.

NYC **306.3 Appliances in attics.** Attics containing appliances shall be provided with an opening and unobstructed passageway large enough to allow removal of the largest appliance. The passageway shall be not less than 30 inches (762 mm) high and 22 inches (558.8 mm) wide and not more than 20 feet (6096 mm) in length measured along the centerline of the passageway from the opening to the appliance. The passageway shall have continuous solid flooring not less than 24 inches (609.6 mm) wide. A level service space not less than 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present at the front or service side of the appliance. The clear access opening dimensions shall be not less than 20 inches by 30 inches (508 mm by 762 mm), and large enough to allow removal of the largest appliance.

Exceptions:

1. The passageway and level service space are not required where the appliance is capable of being serviced and removed through the required opening.
2. Where the passageway is unobstructed and not less than 6 feet (1828.8 mm) high and 24 inches (609.6 mm) wide for its entire length, the passageway shall be not greater than 50 feet (15 250 mm) in length.

NYC **306.3.1 Electrical requirements.** A luminaire controlled by a switch located at the required passageway opening and a receptacle outlet shall be provided at or near the appliance location in accordance with the *New York City Electrical Code*.

NYC **306.4 Appliances under floors.** Under-floor spaces containing appliances shall be provided with an access opening and unobstructed passageway large enough to remove the largest appliance. The passageway shall be not less than 30 inches (762 mm) high and 22 inches (558.8 mm) wide, nor more than 20 feet (6096 mm) in length measured along the centerline of the passageway from the opening to the appliance. A level service space not less than 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present at the front or service side of the appliance. If the depth of the passageway or the service space exceeds 12 inches (304.8 mm) below the adjoining grade, the walls of the passageway shall be lined with concrete or masonry. Such concrete or masonry shall extend not less than 4 inches (101.6 mm) above the adjoining grade and shall have sufficient lateral-bearing capacity to resist collapse. The clear access opening dimensions shall be not less than 22 inches by 30 inches

(558.8 mm by 762 mm), and large enough to allow removal of the largest appliance. NYC

Exceptions:

1. The passageway is not required where the level service space is present when the access is open and the appliance is capable of being serviced and removed through the required opening.
2. Where the passageway is unobstructed and not less than 6 feet (1828.8 mm) high and 22 inches (558.8 mm) wide for its entire length, the passageway shall not be limited in length. NYC

306.4.1 Electrical requirements. A luminaire controlled by a switch located at the required passageway opening and a receptacle outlet shall be provided at or near the appliance location in accordance with the *New York City Electrical Code*. NYC

306.5 Equipment and appliances on roofs or elevated structures. Where equipment or appliances requiring access are located on an elevated structure or the roof of a building such that personnel will have to climb higher than 16 feet (4876.8 mm) above grade, roof or floor level to access such equipment or appliances, an interior or exterior means of access shall be provided. Such access shall not require climbing over obstructions greater than 30 inches (762 mm) in height or walking on roofs having a slope greater than 4 units vertical in 12 units horizontal (33-percent slope). Such access to the roof or elevated structure and access from the roof or elevated structure to equipment requiring maintenance shall not require the use of portable ladders. Where access involves climbing over parapet walls, the height shall be measured to the top of the parapet wall. NYC

Permanent ladders installed to provide the required access shall comply with the following minimum design criteria:

1. The side railing shall extend above the parapet or roof edge not less than 30 inches (762 mm).
2. Ladders shall have rung spacing not to exceed 12 inches (304.8 mm) on center. The uppermost rung shall be not more than 24 inches (609.6 mm) below the upper edge of the roof hatch, roof or parapet, or equipment access platform, as applicable. NYC
3. Ladders shall have a toe spacing not less than 7 inches (177.8 mm) deep. NYC
4. There shall be not less than 18 inches (457.2 mm) between rails. NYC
5. Rungs shall have a diameter not less than 0.75-inch (19 mm) and be capable of withstanding a 300-pound (136.1 kg) load. NYC
6. Where a cage, well or ladder safety device is prohibited, ladders over 20 feet (6096 mm) in height shall be provided with landing platforms for each 30 feet (9144 mm) of height. Where a cage, well or ladder safety device is not provided, ladders over 20 feet (6096 mm) in height shall be provided with landing platforms for each 20 feet (6096 mm) of height. Landings shall be capable of withstanding 100 NYC

NYC | pounds (488.2 kg/m²) per square foot. A guard rail
 NYC | and toeboard shall be provided on all open sides of
 the landing.

7. Climbing clearance. The distance from the centerline of the rungs to the nearest permanent object on the climbing side of the ladder shall be not less than 30 inches (762 mm) measured perpendicular to the rungs. This distance shall be maintained from the point of ladder access to the bottom of the roof hatch. A minimum clear width of 15 inches (381 mm) shall be provided on both sides of the ladder measured from the midpoint of and parallel with the rungs except where cages or wells are installed.

NYC | 8. Landing required. The ladder shall be provided with
 NYC | a clear and unobstructed bottom landing area having
 a minimum dimension of 30 inches by 30 inches
 (762 mm by 762 mm) centered in front of the ladder.

9. Ladders shall be protected against corrosion by approved means.

NYC | 10. Service personnel shall have access to ladders at all
 times.

NYC | 11. Where ladder extensions are installed, the side rails
 NYC | of through or side-step ladder extensions shall extend
 NYC | 3½ feet (1066.8 mm) above the parapets and land-
 NYC | ings. For through ladder extensions, the rungs shall
 NYC | be omitted from the extensions and shall have not
 NYC | less than 18 inches (457.2 mm) nor more than 24
 NYC | inches (609.6 mm) of clearance between rails. For
 NYC | side-step or offset fixed ladder sections, at landings,
 NYC | the side rails and rungs shall be carried to the next
 NYC | regular rung beyond or above the 3½ feet (1066.8
 NYC | mm) minimum.

NYC | Catwalks installed to provide the required access shall be
 not less than 24 inches (609.6 mm) wide and shall have rail-
 ings as required for service platforms.

Exception: This section shall not apply to Group R-3 occupancies.

NYC | **306.5.1 Sloped roofs.** Where appliances, equipment, fans
 | or other components that require service are installed on a
 | roof having a slope of three units vertical in 12 units hori-
 | zontal (25-percent slope) or greater and having an edge
 | more than 30 inches (762 mm) above grade at such edge,
 | a level platform shall be provided on each side of the
 | appliance or equipment to which access is required for
 | service, repair or maintenance. The platform shall be not
 | less than 30 inches (762 mm) in any dimension and shall
 | be provided with guards. The guards shall extend not less
 NYC | than 42 inches (1066.8 mm) above the platform, shall be
 | constructed so as to prevent the passage of a 21-inch
 NYC | (533.4 mm) diameter sphere and shall comply with the
 NYC | loading requirements for guards specified in the *New*
 NYC | *York City Building Code*. Access shall not require walk-
 | ing on roofs having a slope greater than four units vertical
 | in 12 units horizontal (33-percent slope). Where access
 | involves obstructions greater than 30 inches (762 mm) in
 | height, such obstructions shall be provided with ladders
 | installed in accordance with Section 306.5 or stairways

installed in accordance with the requirements specified in the *New York City Building Code* in the path of travel to and from appliances, fans or equipment requiring service. NYC

306.5.2 Electrical requirements. A receptacle outlet shall be provided at or near the equipment location in accordance with the *New York City Electrical Code*. NYC

**SECTION MC 307
 CONDENSATE DISPOSAL**

307.1 Fuel-burning appliances. Liquid combustion by-products of condensing appliances shall be collected and discharged to an approved plumbing fixture or disposal area in accordance with the manufacturer’s instructions. Condensate piping shall be of approved corrosion-resistant material in accordance with Section 803 of the *New York City Plumbing Code* and shall not be smaller than the drain connection on the appliance. Such piping shall maintain a minimum horizontal slope in the direction of discharge of not less than one-eighth unit vertical in 12 units horizontal (1-percent slope). Piping shall be configured to permit clearing of blockages and performance of maintenance without requiring the drain line to be cut. NYC
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307.1.1 Condensate disposal. Condensate from all fuel-burning appliances and associated flues shall be neutralized to a pH of at least 6 and no more than 8 prior to disposal to a sanitary system. NYC
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307.2 Evaporators and cooling coils. Condensate drain systems shall be provided for equipment and appliances containing evaporators or cooling coils. Condensate drain systems shall be designed, constructed and installed in accordance with Sections 307.2.1 through 307.2.6. NYC

Exception: Evaporators and cooling coils that are designed to operate in sensible cooling only and not support condensation shall not be required to meet the requirements of this section.

307.2.1 Condensate disposal. Condensate from all cooling coils and evaporators shall be conveyed from the drain pan outlet to an approved place of disposal. Such piping shall maintain a minimum horizontal slope in the direction of discharge of not less than one-eighth unit vertical in 12 units horizontal (1-percent slope). Condensate shall not discharge into a street, alley or other areas so as to cause a nuisance.

307.2.2 Drain pipe materials and sizes. Components of the condensate disposal system shall be cast iron, galvanized steel, copper, cross-linked polyethylene, polyethylene, ABS, CPVC, or PVC pipe or tubing. Polypropylene tubing may be used in lengths that do not exceed 12 inches (304.8 mm) for an individual drain application. Components shall be selected for the pressure and temperature rating of the installation. Joints and connections shall be made in accordance with the applicable provisions of Chapter 7 of the *New York City Plumbing Code* relative to the material type. Condensate waste and drain line size shall be not less than ¾-inch (19.1 mm) internal diameter and shall not decrease in size from the drain pan connection to the place of condensate NYC
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disposal. Where the drain pipes from more than one unit are manifolded together for condensate drainage, the pipe or tubing shall be sized in accordance with Table 307.2.2.

**TABLE 307.2.2
CONDENSATE DRAIN SIZING**

EQUIPMENT CAPACITY	MINIMUM CONDENSATE PIPE DIAMETER
Up to 20 tons of refrigeration	3/4 inch
Over 20 tons to 40 tons of refrigeration	1 inch
Over 40 tons to 90 tons of refrigeration	1 1/4 inches
Over 90 tons to 125 tons of refrigeration	1 1/2 inches
Over 125 tons to 250 tons of refrigeration	2 inches

NYC For SI: 1 inch = 25.4 mm, 1 ton = 3.517 kW.

307.2.3 Auxiliary and secondary drain systems. In addition to the requirements of Section 307.2.1, where damage to any building components could occur as a result of overflow from the equipment primary condensate removal system, one of the following auxiliary protection methods shall be provided for each cooling coil or fuel-fired appliance that produces condensate:

1. An auxiliary drain pan with a separate drain shall be provided under the coils on which condensation will occur. The auxiliary pan drain shall discharge to a conspicuous point of disposal to alert occupants in the event of a stoppage of the primary drain. The pan shall have a depth of not less than 1 1/2 inches (38.1 mm), shall be not less than 3 inches (76.2 mm) larger than the unit, or the coil dimensions in width and length and shall be constructed of corrosion-resistant material. Metallic pans shall have a thickness of not less than 0.0236 inch (0.6010 mm) (No. 24 gage) for galvanized sheet metal pans, 0.0179 inch (0.4546 mm) (No. 26 gage) for stainless steel pans, or 0.0320 inch (0.8128 mm) (No. 20 gage) for aluminum pans. Nonmetallic pans shall have a thickness of not less than 0.0625 inch (1.6 mm).
2. A separate overflow drain line shall be connected to the drain pan provided with the equipment. Such overflow drain shall discharge to a conspicuous point of disposal to alert occupants in the event of a stoppage of the primary drain. The overflow drain line shall connect to the drain pan at a higher level than the primary drain connection.
3. An auxiliary drain pan without a separate drain line shall be provided under the coils on which condensate will occur. Such pan shall be equipped with a listed water-level detection device that will shut off the equipment served prior to overflow of the pan. The auxiliary drain pan shall be constructed in accordance with Item 1 of this section.

4. A listed water-level detection device shall be provided that will shut off the equipment served in the event that the primary drain is blocked. The device shall be installed in the primary drain line, the overflow drain line, or in the equipment-supplied drain pan, located at a point higher than the primary drain line connection and below the overflow rim of such pan.

Exceptions:

1. An auxiliary drain protection method shall not be required for fuel-fired appliances that automatically shut down operation in the event of a stoppage in the condensate drainage system.
2. An auxiliary drain protection method shall not be required where a suitably sized and located floor drain is provided.

307.2.3.1 Water-level monitoring devices. On down-flow units and all other coils that do not have a secondary drain or provisions to install a secondary or auxiliary drain pan, a water-level monitoring device shall be installed inside the primary drain pan. This device shall shut off the equipment served in the event that the primary drain becomes restricted. Devices installed in the drain line shall not be permitted.

307.2.3.2 Appliance, equipment or insulation in pans. Where an appliance, equipment or insulation is subject to water damage when auxiliary drain pans fill, that portion of the appliance, equipment or insulation shall be installed above the rim of the pans. Supports located inside of the pans to support the appliance or equipment or insulation shall be water resistant and approved.

307.2.4 Traps. Condensate drains shall be trapped as required by the equipment or appliance manufacturer.

307.2.5 Drain line maintenance. Condensate drain lines shall be configured to permit the clearing of blockages and performance of maintenance without requiring the drain line to be cut.

307.2.6 Condensate discharge. Where multiple evaporators and/or condensate pumps discharge into the same piping system, it shall be piped to prevent the discharge of condensate from one appliance to another.

307.3 Exceptions. This section applies to permanently installed equipment. Window units and through-the-wall air-conditioning units are exempt from the requirements of this section.

**SECTION MC 308
CLEARANCE REDUCTION**

308.1 Scope. This section shall govern the reduction in required clearances to gypsum board, combustible materials and combustible assemblies for chimneys, vents, kitchen exhaust equipment, mechanical appliances, and mechanical devices and equipment.