

CHAPTER 3

GENERAL REGULATIONS

SECTION PC 301 GENERAL

301.1 Scope. The provisions of this chapter shall govern the general regulations regarding the installation of plumbing not specific to other chapters.

301.2 System installation. Plumbing shall be installed with due regard to preservation of the strength of structural members and prevention of damage to walls and other surfaces through fixture usage.

301.3 Connections to drainage system. Plumbing fixtures, drains, appurtenances and appliances used to receive or discharge liquid waste or sewage shall be directly connected to the sanitary drainage system of the building or premises, in accordance with the requirements of this code. This section shall not be construed to prevent indirect waste systems required by Chapter 8.

301.4 Connections to water supply. Every building intended for human habitation, occupancy or use shall be directly or indirectly connected to the water supply system in accordance with the provisions of this code. Every plumbing fixture, device or appliance requiring or using water for its proper operation shall be directly or indirectly connected to the water supply system in accordance with the provisions of this code.

301.5 Pipe, tube and fitting sizes. Unless otherwise indicated, the pipe, tube and fitting sizes specified in this code are expressed in nominal or standard sizes as designated in the referenced material standards.

301.6 Prohibited locations. Plumbing systems shall not be located in an elevator shaft and plumbing systems not related to elevator machinery shall not be located in elevator equipment rooms.

Exception: Floor drains, sumps and sump pumps shall be permitted at the base of the shaft, provided that they are indirectly connected to the plumbing system and comply with Section 1003.4.

301.7 Conflicts. In instances where conflicts occur between this code and the manufacturer's instructions, the more restrictive provisions shall apply.

SECTION PC 302 EXCLUSION OF MATERIALS DETRIMENTAL TO THE SEWER SYSTEM

302.1 Detrimental or dangerous materials. Ashes, cinders or rags; flammable, poisonous or explosive liquids or gases; oil, grease or any other insoluble material capable of obstructing, damaging or overloading the building drainage or sewer system, or capable of interfering with the normal operation of the sewage treatment processes; or any other substance or material prohibited from being discharged into the public sewers in accordance with the rules of the

Department of Environmental Protection, shall not be deposited, by any means, into such systems. NYC

302.2 Industrial wastes. Waste products from manufacturing or industrial operations shall not be introduced into the public sewer except in accordance with the rules of the Department of Environmental Protection. NYC

SECTION PC 303 MATERIALS

303.1 Identification. Each length of pipe and each pipe fitting, trap, fixture, material and device utilized in a plumbing system shall bear the identification of the manufacturer and any markings required by the applicable referenced standards.

303.2 Installation of materials. All materials used shall be installed in strict accordance with the standards under which the materials are accepted and approved. In the absence of such installation procedures, the manufacturer's instructions shall be followed. Where the requirements of referenced standards or installation instructions do not conform to minimum provisions of this code, the provisions of this code shall apply. NYC

303.3 Plastic pipe, fittings and components. Where permitted by this code, plastic pipe, fittings and components shall be third-party certified as conforming to NSF 14. NYC

303.4 Third-party certification. All plumbing products and materials shall be listed by a third-party certification agency as complying with the referenced standards. Products and materials shall be identified in accordance with Section 303.1.

SECTION PC 304 RODENTPROOFING

304.1 General. Plumbing systems shall be designed and installed in accordance with Sections 304.2 and 304.4 to prevent rodents from entering structures. NYC

304.2 Strainer plates. All strainer plates on drain inlets shall be designed and installed so that all openings are not greater than 1/2 inch (12.7 mm) in least dimension.

304.3 Reserved. NYC

304.4 Openings for pipes. In or on structures where openings have been made in walls, floors or ceilings for the passage of pipes, the annular space between the pipe and the sides of the opening shall be sealed with caulking materials or closed with gasketing systems compatible with the piping materials and locations.

**SECTION PC 305
PROTECTION OF PIPES AND PLUMBING SYSTEM
COMPONENTS**

NYC | **305.1 Corrosion.** Pipes passing through or encased in concrete or cinder walls and floors or other corrosive material shall be protected against external corrosion by a protective sheathing or wrapping or other means that will withstand any reaction from the lime and acid of concrete, cinder or other corrosive material. Sheathing or wrapping shall allow for movement including expansion and contraction of piping to prevent any rubbing action. Thickness of sheathing or wrapping material shall be not less than 0.025 inch (0.64 mm).

305.2 Stress and strain. Piping in a plumbing system shall be installed so as to prevent strains and stresses that exceed the structural strength of the pipe. Where necessary, provisions shall be made to protect piping from damage resulting from expansion, contraction and structural settlement.

NYC | **305.3 Pipes through or under footings or foundation walls.** Any pipe that passes under a footing or through a foundation wall shall be provided with a relieving arch, or a pipe sleeve pipe shall be built into the foundation wall. The sleeve shall be two pipe sizes greater than the pipe passing through the wall.

NYC | **305.4 Freezing.** Water, soil and waste pipes shall not be installed outside of a building, in attics or crawl spaces, concealed in outside walls, or in any other place subjected to freezing temperatures unless adequate provision is made to protect such pipes from freezing by insulation or heat or both. Exterior water supply system piping shall be installed not less than 48 inches (1219 mm) below grade.

NYC | **305.4.1 Building sewer and building drain depth.** Building drains that connect to private sewage disposal systems shall be a minimum of 36 inches (914 mm) below finished grade at the point of septic tank connection. Building sewers and drains shall be a minimum of 36 inches (914 mm) below grade.

305.5 Waterproofing of openings. Joints at the roof and around vent pipes, shall be made water tight by the use of lead, copper, galvanized steel, aluminum, plastic or other approved flashings or flashing material. Exterior wall openings shall be made water tight.

305.6 Protection against physical damage. In concealed locations where piping, other than cast-iron or galvanized steel, is installed through holes or notches in studs, joists, rafters or similar members less than 1½ inches (38 mm) from the nearest edge of the member, the pipe shall be protected by steel shield plates. Such shield plates shall have a thickness of not less than 0.0575 inch (1.463 mm) (No. 16 gage). Such plates shall cover the area of the pipe where the member is notched or bored, and shall extend not less than 2 inches (51 mm) above sole plates and below top plates.

305.7 Protection of components of plumbing system. Components of a plumbing system installed along alleyways, driveways, parking garages or other locations exposed to damage shall be recessed into the wall or otherwise protected in an approved manner.

305.8 Breakage. Pipes passing through or under walls shall be protected from breakage. NYC

305.9 Wind resistance. 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

**SECTION PC 306
TRENCHING, EXCAVATION AND BACKFILL**

306.1 Support of piping. Buried piping shall be supported throughout its entire length.

306.2 Trenching and bedding. Where trenches are excavated such that the bottom of the trench forms the bed for the pipe, solid and continuous load-bearing support shall be provided between joints. Bell holes, hub holes and coupling holes shall be provided at points where the pipe is joined. Such pipe shall not be supported on blocks to grade. In instances where the materials manufacturer's installation instructions are more restrictive than those prescribed by the code, the material shall be installed in accordance with the more restrictive requirement.

306.2.1 Overexcavation. Where trenches are excavated below the installation level of the pipe such that the bottom of the trench does not form the bed for the pipe, the trench shall be backfilled to the installation level of the bottom of the pipe with sand or fine gravel placed in layers not greater than 6 inches (152 mm) in depth and such backfill shall be compacted after each placement.

306.2.2 Rock removal. Where rock is encountered in trenching, the rock shall be removed to not less than 3 inches (76 mm) below the installation level of the bottom of the pipe, and the trench shall be backfilled to the installation level of the bottom of the pipe with sand tamped in place so as to provide uniform load-bearing support for the pipe between joints. The pipe, including the joints, shall not rest on rock at any point.

306.2.3 Soft load-bearing materials. If soft materials of poor load-bearing quality are found at the bottom of the trench, pipe shall be hung from slab above. NYC

306.3 Backfilling. Material used under and beside pipes shall be clean backfill, free of discarded construction material and debris. Loose earth free from rocks, broken concrete and frozen chunks shall be placed in the trench in 6-inch (152 mm) layers and tamped in place until the crown of the pipe is covered by 12 inches (305 mm) of tamped earth. The backfill under and beside the pipe shall be compacted for pipe support. Backfill shall be brought up evenly on both sides of the pipe so that the pipe remains aligned. In instances where the manufacturer's installation instructions for materials are more restrictive than those prescribed by the code, the material shall be installed in accordance with the more restrictive requirement. Backfilling is subject to progress inspection in accordance with Section 108. NYC

306.4 Tunneling. Where pipe is to be installed by tunneling, jacking or a combination of both, the pipe shall be protected from damage during installation and from subsequent uneven loading. Where earth tunnels are used, adequate sup-

porting structures shall be provided to prevent future settling or caving.

**SECTION PC 307
STRUCTURAL SAFETY**

307.1 General. In the process of installing or repairing any part of a plumbing and drainage installation, the finished floors, walls, ceilings, tile work or any other part of the building or premises that must be changed or replaced shall be left in a safe structural condition in accordance with the requirements of the *New York City Building Code*.

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

307.3 Cutting, notching and boring. The cutting, notching and boring of structural elements shall be in accordance with the limitations specified in Appendix C.

307.4 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 the *New York City Building Code*.

307.5 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.

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

307.7 Piping materials exposed within plenums. Piping materials exposed within plenums shall comply with the provisions of the *New York City Mechanical Code*.

**SECTION PC 308
PIPING SUPPORT**

308.1 General. Plumbing piping shall be supported in accordance with this section.

308.2 Piping seismic supports. Where earthquake loads are applicable in accordance with the building code, plumbing piping supports shall be designed and installed for the seismic forces in accordance with the *New York City Building Code*.

308.3 Materials. Hangers, anchors and supports shall support the piping and the contents of the piping. Hangers and strapping material shall be of approved material that will not promote galvanic action.

308.4 Structural attachment. Hangers and anchors shall be attached to the building construction in an approved manner.

308.5 Interval of support. Pipe shall be supported in accordance with Table 308.5.

**TABLE 308.5
HANGER SPACING**

PIPING MATERIAL	MAXIMUM HORIZONTAL SPACING (feet)	MAXIMUM VERTICAL SPACING (feet)
Acrylonitrile butadiene styrene (ABS) pipe	4	10 ^b
Brass pipe	10	10
Cast-iron pipe	5 ^a	At base and at each story height no greater than 15
Copper or copper-alloy pipe	12	At each story height no greater than 12
Copper or copper-alloy tubing, 1 1/4-inch diameter and smaller	6	At each story height no greater than 10
Copper or copper-alloy tubing, 1 1/2-inch diameter and larger	10	At each story height no greater than 10
Polyvinyl chloride (PVC) pipe	4	10 ^b
Stainless steel drainage systems	10	10 ^b
Steel pipe	12	At base and at each story height no greater than 15

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

a. The maximum horizontal spacing of cast-iron pipe hangers shall be increased to 10 feet where 10-foot lengths of pipe are installed.

b. For sizes 2 inches and smaller, a guide shall be installed midway between required vertical supports. Such guides shall prevent pipe movement in a direction perpendicular to the axis of the pipe.

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NYC | **308.5.1 No-hub type cast iron soil pipe, fittings, and couplings.** Intervals of support for no-hub cast iron soil pipe, fittings, and couplings shall comply with CISPI 310.

NYC | **308.5.2 Movement.** Piping systems and supports shall be designed to account for thermal expansion and contraction, building movement, and seismic conditions.

308.6 Sway bracing. Rigid support sway bracing shall be provided at changes in direction greater than 45 degrees (0.79 rad) for pipe sizes 4 inches (102 mm) and larger.

NYC | **308.6.1 No-hub type cast iron soil pipe, fittings, and couplings.** Installation of sway bracing for no-hub cast iron soil pipe, fittings, and couplings shall comply with CISPI 310.

308.7 Anchorage. Anchorage shall be provided to restrain drainage piping from axial movement.

308.7.1 Location. For pipe sizes greater than 4 inches (102 mm), restraints shall be provided for drain pipes at all changes in direction and at all changes in diameter greater than two pipe sizes. Braces, blocks, rodding and other suitable methods as specified by the coupling manufacturer shall be utilized.

308.8 Expansion joint fittings. Expansion joint fittings shall be used only where necessary to provide for expansion and contraction of the pipes. Expansion joint fittings shall be of the typical material suitable for use with the type of piping in which such fittings are installed.

SECTION PC 309 FLOOD HAZARD RESISTANCE

NYC | **309.1 General.** Plumbing systems and equipment in structures erected in flood hazard areas shall be constructed in accordance with the requirements of this section and Appendix G of the *New York City Building Code*.

NYC | **309.2 Flood hazard.** For structures located in flood hazard areas, the following systems and equipment shall be located and installed as required by Appendix G of the *New York City Building Code*:

1. Water service pipes.
2. Pump seals in individual water supply systems where the pump is located below the design flood elevation.
3. Covers on potable water wells shall be sealed, except where the top of the casing well or pipe sleeve is elevated to not less than 1 foot (305 mm) above the design flood elevation.
4. Sanitary drainage piping.
5. Storm drainage piping.
6. Manhole covers shall be sealed, except where elevated to or above the design flood elevation.
7. Other plumbing fixtures, faucets, fixture fittings, piping systems and equipment.
8. Water heaters.
9. Vents and vent systems.

Exception: In accordance with Appendix G of the *New York City Building Code*, the above systems are permitted to be located below the design flood elevation provided that the systems are designed and installed to prevent water from entering or accumulating within their components and the systems are constructed to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding to the design flood elevation.

309.3 Coastal high-hazard areas and coastal A zones. Structures located in coastal high-hazard areas and coastal A zones shall meet the requirements of Section 309.2. The plumbing systems, pipes and fixtures shall not be mounted on or penetrate through walls intended to break away under flood loads.

SECTION PC 310 WASHROOM AND TOILET ROOM REQUIREMENTS

310.1 Light and ventilation. Washrooms and toilet rooms shall be illuminated and ventilated in accordance with the *New York City Building Code* and *New York City Mechanical Code*.

310.2 Location of fixtures and compartments. The location of plumbing fixtures and the requirements for compartments and partitions shall be in accordance with Section 405.

310.3 Interior finish. Interior finish surfaces of toilet rooms shall comply with the *New York City Building Code*.

SECTION PC 311 TOILET FACILITIES FOR WORKERS

311.1 General. Toilet facilities shall be provided for construction workers and such facilities shall be maintained in a sanitary condition. Construction worker toilet facilities of the nonsewer type shall conform to ANSI Z4.3.

SECTION PC 312 TESTS AND INSPECTIONS

312.1 Required tests. The licensed master plumber shall make the applicable tests prescribed in Sections 312.2 through 312.11 to determine compliance with the provisions of this code. The licensed master plumber shall give two days notice to the commissioner when the plumbing work is ready for tests. The equipment, material, power and labor necessary for the inspection and test shall be furnished by the licensed master plumber and the licensed master plumber shall be responsible for determining that the work will withstand the test pressure prescribed in the following tests. All plumbing system piping shall be tested with either water or, for piping systems other than plastic, by air. After the plumbing fixtures have been set and their traps filled with water, the entire drainage system shall be submitted to final tests. The commissioner shall require the removal of any cleanouts if necessary to ascertain whether the pressure has reached all parts of the system.

Exceptions:

- 1. The repair, replacement or alteration to existing water, waste, vent, storm water piping or, building drain in an existing occupied building shall require only a visual inspection of waste, vent and storm water pipe roughing and finish in addition to a pressure test of water piping at available building water pressure.
- 2. The addition of no more than five (5) plumbing fixtures or roof drains to an existing floor of an existing occupied building shall require only a visual inspection of waste, vent and storm water pipe roughing and finish in addition to a pressure test of water piping at available building water pressure.

312.1.1 Test gauges. Gauges used for testing shall be as follows:

- 1. Tests requiring a pressure of 10 pounds per square inch (psi) (69 kPa) or less shall utilize a testing gauge having increments of 0.10 psi (0.69 kPa) or less.
- 2. Tests requiring a pressure of greater than 10 psi (69 kPa) but less than or equal to 100 psi (689 kPa) shall utilize a testing gauge having increments of 1 psi (6.9 kPa) or less.
- 3. Tests requiring a pressure of greater than 100 psi (689 kPa) shall utilize a testing gauge having increments of 2 psi (14 kPa) or less.

312.1.2 Witnessing tests. Tests in accordance with this code shall be witnessed by department plumbing inspectors or approved agencies. The department shall prescribe qualifications for individuals who are authorized to witness such tests on behalf of approved agencies, including but not limited to the requirement that such individuals shall be licensed master plumbers or registered design professionals with not less than 5 years experience in the inspection and testing of piping systems. Such tests may be conducted without any inspection or tests witnessed by the department, provided that verified statements and supporting inspectorial and test reports are filed with the department within two working days of such tests.

312.2 Drainage and vent water test. A water test shall be applied to the drainage system either in its entirety or in sections. If applied to the entire system, all openings in the piping shall be tightly closed, except the highest opening, and the system shall be filled with water to the point of overflow. If the system is tested in sections, each opening shall be tightly plugged except the highest openings of the section under test, and each section shall be filled with water, but no section shall be tested with less than a 10-foot (3048 mm) head of water. In testing successive sections, at least the upper 10 feet (3048 mm) of the next preceding section shall be tested so that no joint or pipe in the building, except the uppermost 10 feet (3048 mm) of the system, shall have been submitted to a test of less than a 10-foot (3048 mm) head of water. This pressure shall be held for not less than 15 minutes. The system shall then be tight at all points.

312.3 Drainage and vent air test. Plastic piping shall not be tested using air. An air test shall be made by forcing air into the system until there is a uniform gauge of 5 psi (34.5 kPa). This pressure shall be held for a test period of not less than 15 minutes. Any adjustments to the test pressure required because of changes in ambient temperatures or the seating of gaskets shall be made prior to the beginning of the test period.

312.4 Drainage and vent final inspection. The final inspection of the completed drainage and vent systems shall be visual and in sufficient detail to determine compliance with the provisions of this code. Where a smoke test is utilized, it shall be made by filling all traps with water and then introducing into the entire system a pungent, thick smoke produced by one or more smoke machines. When the smoke appears at stack openings on the roof, the stack openings shall be closed and a pressure equivalent to a 1-inch water column (248.8 Pa) shall be held for a test period of not less than 15 minutes.

312.5 Water supply system test. Upon completion of a section of or the entire water supply system, the system, or portion completed, shall be tested and proved tight under a water pressure of 50 psi (344 kPa) above its normal working pressure but not less than 150 psi (1033 kPa). This pressure shall be held for not less than 15 minutes. The water utilized for tests shall be obtained from a potable source of supply. The required tests shall be performed in accordance with this section and Section 108.

312.5.1 Water service pipe. In addition to any requirements of Section 312.5, tests for water service pipes shall comply with the following:

- 1. In the presence of the tapper or inspector of the Department of Environmental Protection, each new service pipe or repaired service pipe shall be subjected to a water test made under the street main pressure.
- 2. All such pipes and appurtenances shall remain uncovered for the duration of the test and shall show no sign of leakage.
- 3. When any question arises as to the installation conforming with these regulations, an internal hydrostatic test as specified for materials may be applied, subject to the approval of the Department of Environmental Protection.

312.6 Reserved.

312.7 Forced drain test. Forced drain tests shall consist of plugging the end of the pump discharge at the point of connection with the building drain and applying a pressure of 5 psi (34.5 kPa) greater than the shut off pump rating, and maintaining such pressure for 15 minutes.

312.8 Storm drainage system test. Storm drain systems shall be tested by water or air in accordance with Section 312.2 or 312.3. Where storm drainage piping is designed to run full, the system shall be tested to withstand the head of 10 feet (3048 mm) of water above the anticipated high water level.

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NYC | **Exception:** Storm drainage piping installed outside of a
NYC building shall be tested to withstand the head of water
NYC equal to grade, but such testing may be conducted after
NYC inspection and backfilling.

312.9 Shower liner test. Where shower floors and receptors are made water tight by the application of materials required by Section 417.5.2, the completed liner installation shall be tested. The pipe from the shower drain shall be plugged water tight for the test. The floor and receptor area shall be filled with potable water to a depth of not less than 2 inches (51 mm) measured at the threshold. Where a threshold of at least 2 inches (51 mm) high does not exist, a temporary threshold shall be constructed to retain the test water in the lined floor or receptor area to a level not less than 2 inches (51 mm) deep measured at the threshold. The water shall be retained for a test period of not less than 15 minutes, and there shall not be evidence of leakage.

NYC | **312.10 Inspection and testing of backflow prevention assemblies.** Inspection and testing of secondary backflow
NYC prevention assemblies shall comply with Sections 312.10.1
and 312.10.2.

NYC | **312.10.1 Inspections.** Annual inspections shall be made
NYC of all backflow prevention assemblies, air gaps, spill-
NYC proof vacuum breakers, pressure vacuum breaker assem-
NYC blies, and hose connection backflow preventers to deter-
NYC mine whether they are operable on forms provided by the
NYC department. Such forms shall be retained by the owner
NYC and shall be made available upon request to the depart-
NYC ment for a period of five years.

NYC | **312.10.2 Testing.** Reduced pressure principle, double
check, pressure vacuum breaker, reduced pressure detec-
tor fire protection, double check detector fire protection,
and spill-resistant vacuum breaker backflow preventer
assemblies and hose connection backflow preventers
shall be tested at the time of installation, immediately
after repairs or relocation and annually thereafter. The
testing procedure shall be performed in accordance with
one of the following standards: ASSE 5013, ASSE 5015,
ASSE 5020, ASSE 5047, ASSE 5048, ASSE 5052,
ASSE 5056, CSA B64.10 or CSA B64.10.1. Refer to
Section 608.13 and the Department of Environmental
Protection for additional testing requirements.

NYC | **312.11 Joint inspection.** Inspections of welded joints shall
NYC consist of visual examination, during or after manufacture,
NYC fabrication, assembly, or pressure tests as appropriate. Sup-
NYC plementary types of nondestructive inspection techniques,
NYC such as magnetic-particle, radiographic, ultrasonic, etc.,
NYC shall not be required unless specifically listed herein or in
NYC the engineering design.

NYC | **312.11.1 Welder’s qualifications.** Welders installing
NYC domestic water piping within buildings at any pressure
NYC shall comply with the following:

- 1. Welders shall be qualified for all pipe sizes, wall thicknesses and all positions in accordance with the ASME Boiler and Pressure Vessel Code, Section IX. Requalification of a welder is required should the welder fail to maintain welder’s continuity every 6 months. The licensed master plumber

employing the welder shall maintain a welder continuity log and the log shall be made available to the department upon request.

- 2. Welder qualification testing shall be performed by an approved agency and the inspector witnessing the test shall be an authorized AWS Certified Welding Inspector.
- 3. Copies of the certified welder qualification reports shall be maintained by both the approved agency and the licensed master plumber employing the welder for at least six years and shall be made available to the department upon request.

**SECTION PC 313
EQUIPMENT EFFICIENCIES**

313.1 General. Equipment efficiencies shall be in accordance with the *New York City Energy Conservation Code*.

**SECTION PC 314
CONDENSATE DISPOSAL**

314.1 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 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).

314.1.1 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.

314.2 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 314.2.1 through 314.2.5.

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.

314.2.1 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.

314.2.2 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.

NYC Polypropylene tubing may be used in lengths that do not
 NYC exceed 12 inches (304.8 mm)‡ for an individual drain
 NYC application. Components shall be selected for the pres-
 sure and temperature rating of the installation. Joints and
 connections shall be made in accordance with the appli-
 cable provisions of Chapter 7 relative to the material
 type. Condensate waste and drain line size shall be not
 less than 3/4-inch (19.1 mm) internal diameter and shall
 not decrease in size from the drain pan connection to the
 place of condensate disposal. Where the drain pipes from
 more than one unit are manifolded together for conden-
 sate drainage, the pipe or tubing shall be sized in accor-
 dance with Table 314.2.2.

**TABLE 314.2.2
 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

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

314.2.3 Auxiliary and secondary drain systems. In addition to the requirements of Section 314.2.1, 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 mm), shall be not less than 3 inches (76 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 inches (0.4546 mm) (No. 26 gage) for stainless steel pans, or 0.0320 inches (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.‡

314.2.3.1 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.

314.2.3.2 Appliance, equipment and 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 and insulation shall be installed above the flood level rim of the pans. Supports located inside of the pans to support the appliance or equipment or insulation shall be water resistant and approved.

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

314.2.5 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.

314.2.6 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.

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**SECTION PC 315
PENETRATIONS**

315.1 Sealing of annular spaces. The annular space between the outside of a pipe and the inside of a pipe sleeve or between the outside of a pipe and an opening in a building envelope wall, floor, or ceiling assembly penetrated by a pipe shall be sealed in an approved manner with caulking material, foam sealant or closed with a gasketing system. The caulking material, foam sealant or gasketing system shall be designed for the conditions at the penetration location and shall be compatible with the pipe, sleeve and building materials in contact with the sealing materials. Annular spaces created by pipes penetrating fire-resistance-rated assemblies or membranes of such assemblies shall be sealed or closed in accordance with Section 714 of the *New York City Building Code*.

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**SECTION PC 316
RESERVED**

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