THE COUNCIL

Minutes of the Proceedings for the
STATED MEETING
of
Tuesday, December 10, 2019, 2:01 p.m.

The Majority Leader (Council Member Cumbo)
presiding as the Acting President Pro Tempore

Council Members

Corey D. Johnson, *Speaker*

Adrienne E. Adams	Barry S. Grodenchik	Antonio Reynoso
Diana Ayala	Robert F. Holden	Donovan J. Richards
Joseph C. Borelli	Ben Kallos	Carlina Rivera
Justin L. Brannan	Peter A. Koo	Ydanis A. Rodriguez
Fernando Cabrera	Karen Koslowitz	Helen K. Rosenthal
Margaret S. Chin	Rory I. Lancman	Rafael Salamanca, Jr
Andrew Cohen	Bradford S. Lander	Ritchie J. Torres
Costa G. Constantinides	Stephen T. Levin	Mark Treyger
Robert E. Cornegy, Jr	Mark D. Levine	Paul A. Vallone
Laurie A. Cumbo	Farah N. Louis	James G. Van Bramer
Chaim M. Deutsch	Alan N. Maisel	Kalman Yeger
Ruben Diaz, Sr.	Steven Matteo	
Daniel Dromm	Carlos Menchaca	
Rafael L. Espinal, Jr	I. Daneek Miller	
Mathieu Eugene	Francisco P. Moya	
Vanessa L. Gibson	Bill Perkins	
Mark Gjonaj	Keith Powers	

Absent: Council Member Ampry-Samuel, Barron, King, Rose, and Ulrich.

The Majority Leader (Council Member Cumbo) assumed the chair as the Acting President Pro Tempore and Presiding Officer for these proceedings.

After consulting with the City Clerk and Clerk of the Council (Mr. McSweeney), the presence of a quorum was announced by the Majority Leader and Acting President Pro Tempore (Council Member Cumbo).

There were 46 Council Members marked present at this Stated Meeting held in the Council Chambers of City Hall, New York, N.Y.

INVOCATION

The Invocation was delivered by Rabbi Mark Kaiserman, Rabbi of the Reform Temple of Forest Hills located at 71-11 112 Street, Forest Hills, N.Y. 11375.

It is a season of giving.
Our lives shift towards presents and helping those in need.
How sad that January will soon arrive
and we will all go back to our selfish existence.
May this time of kindness stick with us everywhere we go,
when we walk down busy New York streets,
when we concern ourselves the needs of our family, friends, and coworkers,
when we consider laws and bills and how we might dispense justice,
when we look at each person and treat them
as if they were created in the image of God.
May the year ahead be a year of blessing, compassion, and caring.
Not for the presents we might get or simply to reflect the seasons,
but for the gifts we can give each day
and the season we can create throughout our lives.
May we each find the strength and love
to make this a better world
for everyone, every day,
throughout the entire year.
Amen.

Council Member Koslowitz moved to spread the Invocation in full upon the record.

During the Communication from the Speaker segment of this Meeting, the Speaker (Council Member Johnson) asked for a Moment of Silence in memory of the following individuals:

Jay L. Kriegel, considered a New York City urban affairs and public service giant, died on December 5, 2019 at the age of 79. He was a confidant to countless city leaders and impacted city government for six decades. At one point, he was chief-of-staff at the age of 25 to then Mayor John V. Lindsay. The Speaker (Council Member Johnson) noted that he and Council Members Torres and Lander had attended a Park Slope memorial service for Mr. Kriegel that had taken place the night before. He praised his late friend Mr. Kriegel as someone who had made New York City a better place and whose impact would be felt for generations.

Retired NYPD Deputy Chief Vincent A. DeMarino, 61, passed away on December 6, 2019 from 9/11-related cancer. On behalf of the Council, the Speaker (Council Member Johnson) offered his condolences to his wife Charlene, his family, and the entire Police Department.

NYPD tow-truck operator, Anthony Edegehill, 61, died while on duty on December 2, 2019. On behalf of the Council, the Speaker (Council Member Johnson) offered his condolences to his family.

At this point a Moment of Silence was observed in the Chambers.

*** * ***

ADOPTION OF MINUTES

On behalf of Council Member Eugene, Council Member Dromm moved to adopt the Minutes of the Stated Meetings of October 28, 2019 and October 30, 2019 as printed.

MESSAGES & PAPERS FROM THE MAYOR

M-196

Communication from the Mayor - Submitting the name of Kenneth J. Knuckles to the Council for its advice and consent regarding his appointment to the City Planning Commission, pursuant to Sections 192 of the City Charter.

December 5, 2019

The Honorable Corey Johnson
Speaker
New York City Council
City Hall
New York, NY 10007

Dear Speaker Johnson:

Pursuant to Section 192 of the New York City Charter, I am pleased to present the name of Kenneth J. Knuckles to the City Council for advice and consent regarding his appointment as a member of the City Planning Commission. If appointed, Mr. Knuckles will serve the remainder of a five-year term that will expire on June 30, 2020.

I send my thanks to you and all Council members for reviewing this CPC appointment.

Sincerely,

Bill de Blasio
Mayor

BDB:ml

cc: Kenneth J. Knuckles
Vicki Been, Deputy Mayor for Housing and Economic Development
Marisa Lago, Chair, New York City Planning Commission
Yurne Kitasei, Director, City Legislative Affairs

Referred to the Committee on Rules, Privileges and Elections.

M-197

Communication from the Mayor – Submitting the name of Thomas V. Nichols to the City Council for advice and consent concerning his appointment to the New York City Tax Commission, pursuant to Sections 31 and 153 of the New York City Charter.

December 5, 2019

The Honorable Corey Johnson
Speaker
New York City Council
City Hall
New York, NY 10007

Dear Speaker Johnson:

Pursuant to Sections 31 and 153 of the New York City Charter, I am pleased to present the name of Thomas V. Nichols to the City Council for advice and consent concerning his appointment to the New York City Tax Commission.

When appointed to the Commission, Mr. Nichols will serve for a six-year term that will begin on January 7, 2020, and expire on January 6, 2026.

I send my thanks to you and all Council members for reviewing this Tax Commission appointment.

Sincerely,

Bill de Blasio
Mayor

BDB:mI

cc: Thomas V. Nichols
Laura Anglin, Deputy Mayor for Operations
Ellen Hoffman, President, New York City Tax Commission
Yume Kitasei, Director, Mayor's Office of City Legislative Affairs

Referred to the Committee on Rules, Privileges and Elections.

M-198

Communication from the Mayor – Submitting the name of Frances Henn to the City Council for advice and consent concerning her appointment to the New York City Tax Commission, pursuant to Sections 31 and 153 of the New York City Charter.

December 5, 2019

The Honorable Corey Johnson
Speaker
New York City Council
City Hall
New York, NY 10007

Dear Speaker Johnson:

Pursuant to Sections 31 and 153 of the New York City Charter, 1 am pleased to present the name of Frances Henn to the City Council for advice and consent concerning her appointment as President of the New York City Tax Commission.

When appointed to the Commission, Ms. Henn will serve for a six-year term that will begin on January 7, 2020, and expire on January 6, 2026.

I send my thanks to you and all Council members for reviewing this Tax Commission appointment.

Sincerely,

Bill de Blasio
Mayor

BDB:ml

cc: Frances Henn
Laura Anglin, Deputy Mayor for Operations
Ellen Hoffman, President, New York City Tax Commission
Yume Kitasei, Director, Mayor's Office of City Legislative Affairs

Referred to the Committee on Rules, Privileges and Elections.

REPORTS OF THE STANDING COMMITTEES

Report of the Committee on Governmental Operations

Report for Int. No. 1095

Report of the Committee on Governmental Operations in favor of approving and adopting, a Local Law to amend the administrative code of the city of New York, in relation to notification of expiration of variances and special permits granted by the board of standards and appeals.

The Committee on Governmental Operations, to which the annexed proposed local law was re-assigned to on January 29, 2019 after originally being referred to the Committee on Land Use on September 12, 2018 (Minutes, page 3464), respectfully

REPORTS:

I. INTRODUCTION

On December 9, 2019 the Committee on Governmental Operations, chaired by Council Member Fernando Cabrera, held a second hearing and vote on Int. 1095, in relation to notification of expiration of variances and special permits granted by the board of standards and appeals; and Int. 1249-B, in relation to repealing the critical driver program and amending the persistent violators program relating to drivers of taxicabs and for-hire vehicles, both sponsored by Council Member Cabrera. The Committee first heard a prior version of Int. 1249-B on January 31, 2019. The Committee first heard Int. 1095 on February 25, 2019. The Committee approved the legislation on December 9, 2019.

II. BACKGROUND

a. The Board of Standards and Appeals

The BSA was originally established in 1916, when New York City adopted its first comprehensive zoning resolution, as an "independent board to grant 'relief' from the zoning code."[1] The BSA is comprised of five commissioners, each appointed by the Mayor for a term of six years.[2] Of these, one must be a professional planner, one a registered architect, and one a professional engineer, each with ten years of experience.[3] Both the chair and vice-chair of the BSA are designated by the Mayor, but must satisfy the requisite experience to serve as the planner, the architect, or the engineer.[4] No more than two of the BSA's commissioners may reside in any one borough.[5]

The BSA is empowered to interpret the meaning or applicability of the Zoning Resolution, Building Code, Fire Code, Multiple Dwelling Law, and Labor Law, with respect to the usage of private property.[6] This includes the ability to "vary" in certain instances the provisions of these regulations.[7] This ability to grant such relief on

[1] ABOUT BSA, BOARD OF STANDARDS AND APPEALS, https://www1.nyc.gov/site/bsa/about/about.page (last visited August 27, 2019). The 1916 zoning resolution stated, "Where there are practical difficulties or unnecessary hardships in the way of carrying out the strict letter of the provisions of this resolution the Board of Appeals shall have power in a specific case to vary any such provision in harmony with its general purpose and intent, so that the public health, safety and general welfare may be secured and substantial justice done." City of New York, Building Zone Resolution, adopted July 25, 1916, Art. 5 §20, *available at* https://www1.nyc.gov/assets/planning/download/pdf/about/city-planning-history/zr1916.pdf.
[2] NYC Charter § 659(a).
[3] NYC Charter § 659(b).
[4] *Id.*
[5] *Id.*
[6] NYC Charter § 666; ABOUT BSA, supra note 1.
[7] *See* NYC Charter § 666.

an individual basis is necessary in order to satisfy the "takings clause" of the United States Constitution.[8] In that role, the BSA can act "as a safety valve by releasing restrictions in certain instances from their possible confiscatory effect in depriving a property owner of a proper use of his property while at the same time requiring him to pay taxes thereupon."[9] Specifically, when the application of a provision of the Zoning Resolution to an individual property results in "practical difficulties or unnecessary hardship," provided specific findings are made,[10] the BSA may "vary or modify the provision so that the spirit of the law shall be observed, public safety secured and substantial justice done."[11]

The BSA is also empowered to grant "special permits" for specified uses, or for the modification of use and bulk regulations[12] in appropriate cases.[13] Special permits that affect use regulations are granted to permit a certain use in a district where that use might not otherwise be allowed, such as an auto service station in designated commercial districts,[14] or an electric or gas utility substation in a residence district.[15] The uses that may be permitted, and the conditions under which they may be permitted, are also enumerated within the Zoning Resolution.[16] Special permits that affect bulk regulations include the enlargement of single- and two-family residences in designated areas of Brooklyn, enlargement of non-residential buildings, and modification of

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[8] *See* ABOUT BSA, supra note 1.

[9] *New York City Hous. Auth. v. Foley*, 32 Misc. 2d 41, 47 (Sup. Ct. Kings Co. 1961).

[10] In order to grant such a variance the BSA must make five specific findings:

> (a) that there are unique physical conditions, including irregularity, narrowness or shallowness of lot size or shape, or exceptional topographical or other physical conditions peculiar to and inherent in the particular zoning lot; and that, as a result of such unique physical conditions, practical difficulties or unnecessary hardship arise in complying strictly with the use or bulk provisions of the Resolution; and that the alleged practical difficulties or unnecessary hardship are not due to circumstances created generally by the strict application of such provisions in the neighborhood or district in which the zoning lot is located;
>
> (b) that because of such physical conditions there is no reasonable possibility that a development, enlargement, extension, alteration or change of use on the zoning lot in strict conformity with the provisions of this Resolution will bring a reasonable return, and that the grant of a variance is therefore necessary to enable the owner to realize a reasonable return from such zoning lot; this finding shall not be required for the granting of a variance to a non-profit organization;
>
> (c) that the variance, if granted, will not alter the essential character of the neighborhood or district in which the zoning lot is located; will not substantially impair the appropriate use or development of adjacent property; and will not be detrimental to the public welfare;
>
> (d) that the practical difficulties or unnecessary hardship claimed as a ground for a variance have not been created by the owner or by a predecessor in title; however, where all other required findings are made, the purchase of a zoning lot subject to the restrictions sought to be varied shall not itself constitute a self-created hardship; and
>
> (e) that within the intent and purposes of this Resolution, the variance, if granted, is the minimum variance necessary to afford relief; and to this end, the Board may permit a lesser variance than that applied for.

NYC Zoning Resolution § 72-21, *available at* https://zr.planning.nyc.gov.

[11] *Id*. All determinations approving a variance must set forth each of the required findings and all determinations disapproving a variance must set forth which of the findings were not satisfied, and each finding must be "supported by substantial evidence or other data considered by the Board in reaching its decision." *Id*.

[12] "Bulk regulations are the combination of controls (lot size, floor area ratio, lot coverage, open space, yards, height and setback) that determine the maximum size and placement of a building on a zoning lot." GLOSSARY OF PLANNING TERMS, ABOUT ZONING, DEPARTMENT OF CITY PLANNING, https://www1.nyc.gov/site/planning/zoning/glossary.page (last visited September 3, 2019). *See also* NYC Zoning Resolution § 12-10 (defining "bulk").

[13] NYC Charter § 666(10).

[14] NYC Zoning Resolution § 73-211.

[15] NYC Zoning Resolution § 73-14.

[16] *See* NYC Zoning Resolution § 73-01.

community facility uses.[17] The BSA can extend the term of variances and special permits, or modify previous approvals.[18]

The BSA can also renew, or "vest," building permits that have lapsed due to zoning changes or common law doctrine, if the work is determined to have commenced under validly-issued permits and tangible change occurred, or if economic loss would result due to significant expenditure or irrevocable financial commitment.[19] The BSA may grant waivers of certain provisions of the State General City Law, such as of the prohibition of building in the bed of any street identified on an official map[20] or to grant certificates of occupancy to buildings that do not front on a mapped street.[21] The BSA may also vary or modify certain provisions and requirements of the State Multiple Dwelling Law.[22]

Finally, one of the more often-used powers of the BSA is to hear and decide appeals to decisions rendered by the DOB, or any City agency that has jurisdiction over the use of land or bulks of buildings, for which the BSA may reverse, affirm, or modify such decisions.[23]

Public input is required for the exercising of certain powers of the BSA. Prior to the consideration of applications for variances or special permits, community boards ("CBs") and borough boards are to review such applications under a process codified in the City Charter.[24] CBs, borough boards, lessees, tenants, and owners have a right to appear before the BSA to submit arguments and evidence in support of or in opposition to an application, and the BSA must respond to them in its final written decision.[25] The City Planning Commission ("CPC") shall also be a party to any proceeding to vary the Zoning Resolution and may appear and be heard on any application.[26] The DCP must post on its website a copy of testimony it provides on applications for variances and special permits.[27] Because the BSA reviews orders from the DOB, the Fire Department, the Department of Transportation, or any other agency responsible for enforcement of the Zoning Resolution, Building Code, Fire Code, Multiple Dwelling Law, and Labor Law, with respect to the usage of private property,[28] such agencies may also appear before the BSA. The BSA rules provide that the chair may permit testimony of several people, including elected officials; CB representatives; any individual called by an applicant; any person who resides at, leases, or owns real property within an affected area, or such person's representative; neighborhood, civic, business, or industry association representatives; and members of the general public.[29] The BSA chair may also compel the attendance of witnesses.[30]

In 2017, the Council passed a package of nine local laws in relation to the BSA.[31] One of these was Local Law 84 of 2017, which requires the BSA to provide a notification to the owner of record when a variance issued after December 31, 2013 is about to expire.[32] Such notification must go out six months prior to the expiration.[33] Use of such property after the expiration of the variance may be a violation of the certificate of occupancy, and

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[17] *See* NYC Zoning Resolution § 73-60.
[18] *See* NYC Zoning Resolution § 11-40.
[19] *See* NYC Zoning Resolution § 11-30 *et seq*. *See also* BZY AND COMMON LAW CASES, FREQUENTLY ASKED QUESTIONS, BOARD OF STANDARDS AND APPEALS, https://www1.nyc.gov/site/bsa/about/frequently-asked-questions.page (last visited September 3, 2019).
[20] N.Y. Gen. City Law § 35.
[21] N.Y. Gen. City Law § 36(2).
[22] *See* N.Y. Multiple Dwelling Law §§ 277 and 310.
[23] NYC Charter § 666(6)(a); NYC Zoning Resolution § 72-11.
[24] NYC Charter § 668(c). This process begins with the BSA forwarding a copy of the application to the affected CB, and to the Borough Board if the application involves land in multiple districts in a borough, which then must either conduct a public hearing, submit a recommendation to the BSA, or waive the right to do so. *Id*.
[25] NYC Charter § 666(9). These written decisions are filed with the CPC and with the affected CB or borough board, and are made available on the BSA's website. NYC Charter § 668(e); BSA DECISIONS, BOARD OF STANDARDS AND APPEALS, https://www1.nyc.gov/site/bsa/applications/bsa-decisions.page (last visited September 17, 2019).
[26] NYC Charter § 668(h).
[27] NYC Charter § 191(b)(10). The BSA must post a link to such testimony on its website. Charter § 668(j).
[28] *See* NYC Charter §666; NYC Zoning Resolution § 72-11; ABOUT BSA, supra note 1.
[29] 2 RCNY § 1-11.7-.8.
[30] NYC Charter § 663.
[31] *See generally* Rey Mashayekhi, *City Council Seeks to Reform the 'Most Powerful Agency That No One Has Heard of,'* COMMERCIAL OBSERVER (Oct. 11, 2017), https://commercialobserver.com/2017/10/battle-over-nyc-board-of-standards-and-appeals.
[32] NYC Admin. Code § 25-209.
[33] *Id*.

the BSA's notification must inform the owner that the BSA may not extend the term of the variance until any penalties for such a violation are paid.[34]

b. The Taxi and Limousine Commission

Established in 1971, New York City's Taxi and Limousine Commission ('TLC') was created to license and regulate the City's yellow medallion taxicabs, street hail liveries ("boro or green taxis), for-hire vehicles (app-based services, liveries, black cars and luxury limousines) ("FHVs"), commuter vans, paratransit vehicles and wheelchair accessible vehicles.[35] More than 200,000 TLC licensees complete approximately 1,000,000 trips each day.[36] The TLC conducted 126,275 safety and emissions inspections at its Woodside, Queens inspection facility in fiscal year 2019, according to the 2019 Mayor's Management Report.[37] In addition to an unpaid board of nine members, the TLC has 600 employees.[38]

TLC has more than 170 officers who issue summonses to licensees.[39] The violations that TLC enforces range from compliance with generally applicable traffic laws, such as speeding or failure to yield,[40] to more TLC-specific violations. TLC-specific violations include relatively minor rules, such as vehicle cleanliness and proper display of a license, as well as service refusals or illegal pick-ups.[41] Since 2011, the adjudication of TLC violations has been the responsibility of OATH.[42]

c. TLC's Critical Driver Program and Persistent Violators Program

The TLC maintains two programs that relate to violations that result in points on a driver's licenses, the Persistent Violators Program and the Critical Driver Program.[43] Under the Persistent Violators Program, the TLC can suspend a driver's TLC license for up to 30 days after the driver has accumulated between six and 10 TLC-issued points in a 15-month period.[44] A driver's TLC license will be revoked after accumulating 10 or more TLC points in a 15-month period.[45] Drivers may be eligible to complete a TLC-approved course in order to reduce their points by up to three points.[46]

The Critical Driver Program operates in exactly the same manner—but only with regard to the number of New York State Department of Motor Vehicle points drivers accumulate on their state driver's licenses as a result of traffic violations. Under the Critical Driver Program a driver's TLC license will be suspended for up to 30 days after a driver accumulates six or more points in a 15-month period.[47] A driver's TLC license will be revoked after such driver accumulates 10 or more points in a 15-month period.[48] Drivers may also complete a DMV-approved vehicle accident prevention course provider to receive a three-point reduction on their license.[49]

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[34] *Id.*
[35] *See* New York City Taxi & Limousine Commission, About TLC, https://www1.nyc.gov/site/tlc/about/about-tlc.page (last accessed Nov. 29, 2019). *See also generally* New York City Taxi & Limousine Commission Fact Book 2018 at 3, *available at* https://www1.nyc.gov/assets/tlc/downloads/pdf/2018_tlc_factbook.pdf.
[36] About TLC, *supra* note 35.
[37] Mayor's Office of Operations, Mayor's Management Report (Sept. 2019) at 148, *available at* https://www1.nyc.gov/assets/operations/downloads/pdf/mmr2019/2019_mmr.pdf.
[38] *See* About TLC, *supra* note 35.
[39] Vision Zero, TLC Enforcement, http://www.nyc.gov/html/visionzero/pages/initiatives/tlc-enforcement.shtml (last accessed Nov. 29, 2019).
[40] *See id*.
[41] Relevant TLC rules and local laws may be found at https://www1.nyc.gov/site/tlc/about/tlc-rules.page.
[42] *See* Executive Order 148 of 2011. Pursuant to EO 148 of 2011, OATH issued proposed rules applicable to the TLC violations in 2013, available at http://rules.cityofnewyork.us/content/oath-taxi-and-limousine-tribunal-rules-0. *See generally* 48 RCNY § 5-01 *et seq.* (OATH's current rules applicable to violations enforced by the TLC).
[43]See generally NYC Admin. Code §§ 19-507.1 and 19-507.2(a); RCNY § 80-27.
[44] NYC Admin. Code § 19-507.1(b).
[45] NYC Admin. Code § 19-507.1(c).
[46] NYC Admin. Code § 19-507.1(a).
[47] NYC Admin. Code § 19-507.2(a).
[48] NYC Admin. Code § 19-507.2(b).
[49] NYC Admin. Code § 19-507.2(c)(1).

However, TLC will only reduce points accumulated within 15 months prior to the date of the completion of the course and they will not reduce points more than once in any 18-month period.[50]

The TLC provides driver education resources, including information for approved driver courses and a study guide on its website.[51] According to its study guide,[52] the top ten reasons drivers get Critical Drive Points are:

1.	Moving violations like unsafe lane changes
2.	Using cell phones including hands free while driving
3.	Disobeying traffic signals
4.	Speeding
5.	Making improper turns
6.	Failing to use signals
7.	Failing to stop at stop signs
8.	Running red lights
9.	Failing to give pedestrians and cyclists the right of way
	Making illegal U-turns

In 2014, as part of the safety goals of the Mayor's Vision Zero Action Plan, the Council passed Local Law 30, which allowed the TLC to combine DMV license points assessed against a license under the Critical Driver Program for traffic violations with TLC license points assigned under the Persistent Violators Program for safety violations in determining when a TLC-issued driver's license must be suspended or revoked.[53] The law also increased the number of points deducted from a TLC license after a driver completes a point reduction class.[54]

TLC's license point enforcement programs serve to ensure that TLC-licensed drivers operate their vehicles safely by providing for license suspension or revocation for drivers with a demonstrated record of unsafe driving. While these programs existed prior to 2014 and are important tools for ensuring street and driver safety, having the two enforcement programs and allowing the TLC to combine the points has caused some confusion in the industry. At a March 2018 hearing of the Committee on For-Hire Vehicles, now-former TLC Commissioner Meera Joshi said the Critical Driver Program is "very confusing and doesn't do what it's intended to do," and that drivers often "feel like they are getting two tickets for the same act."[55] This confusion has led some drivers to complain about overzealous enforcement practices taken by the TLC and prompted drivers to call for the elimination of the Critical Driver Program.[56]

[50] YC Admin. Code § 19-507.2(c)(1)-(2).
[51] *See* New York City Taxi & Limousine Commission, Driver Education, https://www1.nyc.gov/site/tlc/drivers/driver-education.page (last accessed Nov. 29, 2019).
[52] NYC Taxi & Limousine Commission Driver Education Study Guide (Aug. 4, 2016), *available at* https://www1.nyc.gov/assets/tlc/downloads/pdf/driver_education_study_guide.pdf.
[53] NYC Admin. Code § 19-507.1(e).
[54] Local Law 30 of 2014 (amending NYC Admin. Code § 19-507.2(c) to allow for the current three-point reduction, up from two).
[55] Hearing Transcript, p. 37, Committee on For-Hire Vehicles, Fiscal Year 2019 Preliminary Budget and on the Fiscal Year 2018 Preliminary Mayor's Management Report, March 8, 2018, *available at* https://nyc.legistar.com/View.ashx?M=F&ID=6158673&GUID=D1CD81FC-6135-4A26-B723-7DE2451C78CF.
[56] *See e.g.* Hearing Transcript, p. 119, Committee on For-Hire Vehicles, Oversight: TLC Enforcement Practices, Feb. 12, 2018, *available at* https://nyc.legistar.com/View.ashx?M=F&ID=5827936&GUID=21ADE568-BFE8-4717-A21E-81E39F8993F2.

III. LEGISLATIVE ANALYSIS

Int. 1095

Int. 1095-2018 would amend Local Law 84 of 2017, which currently requires the BSA to provide a notification to the owner of record when a variance issued after December 31, 2013 is about to expire,[57] to also require the BSA to provide a notification to the owner of record when a special permit issued after December 31, 2013 is about to expire. Such notification must go out six months prior to the expiration of the special permit. Use of such property after the expiration of the special permit may be a violation of the certificate of occupancy, and the BSA's notification must inform the owner that the BSA may not extend the term of the special permit until any penalties for such a violation are paid. Int. 1095 would also require that such notification additionally be sent to the CB for the community district where the subject property is located. This local law would take effect 30 days after it becomes law.

Int. 1249-B

To eliminate driver confusion, Int. 1249-B would repeal the Critical Driver Program and update the Persistent Violator Program to include provisions from the Critical Driver Program related to motor vehicle accident prevention courses approved by the DMV. Under Int. 1249-B, the single, consolidated Persistent Violator Program would retain the TLC's ability to suspend or revoke a TLC-regulated driver's license for accumulating points issued by either the TLC or DMV. Drivers would also be able to reduce accumulated points through either DMV- or TLC-approved accident prevention courses.

Since it was heard by the Committee on Governmental Operations in January 2019, the bill was only edited to clarify references to the "department of motor vehicles" by changing them to "*New York state* department of motor vehicles" throughout.

(The following is the text of the Fiscal Impact Statement for Int. No. 1095:)

THE COUNCIL OF THE CITY OF NEW YORK

FINANCE DIVISION

LATONIA MCKINNEY, DIRECTOR

FISCAL IMPACT STATEMENT

PROPOSED INTRO. NO. 1095

COMMITTEE: Governmental Operations

TITLE: A Local Law to amend the administrative code of the city of New York, in relation to notification of expiration of variances and special permits by the Board of Standards and Appeals.	**SPONSORS:** Council Member Cabrera, Cumbo, Holden and Kallos.

[57] *See* NYC Admin. Code § 25-209.

SUMMARY OF LEGISLATION: This bill would require the Board of Standards and Appeals (BSA) to provide notification to the owner of record and the Community Board of the district in which the property is located when a special permit will expire, no later than six months prior to the expiration of the term of such variance or special permit.

EFFECTIVE DATE: This local law would take effect 30 days after it becomes law.

FISCAL YEAR IN WHICH FULL FISCAL IMPACT ANTICIPATED: Fiscal 2021

FISCAL IMPACT STATEMENT:

	Effective FY20	FY Succeeding Effective FY21	Full Fiscal Impact FY21
Revenues (+)	$0	$0	$0
Expenditures (-)	$0	$0	$0
Net	$0	$0	$0

IMPACT ON REVENUES: It is estimated that there would be no impact on revenues resulting from the enactment of this legislation.

IMPACT ON EXPENDITURES: It is estimated that there would not be an impact on expenditures resulting from the enactment of this legislation, because the relevant City agencies would utilize existing resources to fulfill its requirements.

SOURCE OF FUNDS TO COVER ESTIMATED COSTS: N/A

SOURCES OF INFORMATION: New York City Council Finance Division
Mayor's Office of Legislative Affairs

ESTIMATE PREPARED BY: Sebastian Palacio Bacchi, Financial Analyst

ESTIMATE REVIEWED BY: Nathaniel Toth, Deputy Director
Regina Poreda Ryan, Deputy Director
John Russell, Unit Head
Noah Brick, Assistant Counsel

LEGISLATIVE HISTORY: This legislation was introduced to the Council as Intro. No. 1095 on September 12, 2018 and was referred to the Committee on Governmental Operations (Committee). The Committee heard the legislation on February 25, 2019, and the legislation was laid over. The legislation will be considered by the Committee on December 9, 2019. Upon a successful vote by the Committee, Proposed Intro. 1095 will be submitted to the full Council for a vote on December 10, 2019.

DATE PREPARED: December 3, 2019.

(For text of Int. No. 1249-B and its Fiscal Impact Statement, please see the Report of the Committee on Governmental Operations for Int. No. 1249-B, printed in these Minutes; for text of Int. No. 1095, please see below)

Accordingly, this Committee recommends the adoption of Int. Nos. 1095 and 1249-B.

(The following is the text of Int. No. 1095:)

Int. No. 1095

By Council Members Cabrera, Cumbo, Holden, Kallos, Vallone and Rivera.

A Local Law to amend the administrative code of the city of New York, in relation to notification of expiration of variances and special permits granted by the board of standards and appeals

Be it enacted by the Council as follows:

Section 1. Section 25-209 of the administrative code of the city of New York, as added by local law 84 for the year 2017, is amended to read as follows:

§ 25-209 Notice of expiration of a variance *or special permit.* For any variance *or special permit* granted by the board after December 31, 2013 pursuant to sections 666 and 668 of the charter for which such board imposed a term, the board shall notify, no later than six months prior to the expiration of the term of such variance *or special permit*, the owner of record of the subject property *and the community board for the community district in which the subject property is located* that the term of such variance *or special permit* will expire. Such notification shall be sent via first class mail and, if practicable, via email. Use of such subject property after the expiration of such term in a manner that is inconsistent with the certificate of occupancy or with records of the department of buildings shall subject such property to a violation of section 28-118.3.2 of this code. Such notification shall also inform the owner of record of the subject property that the board may not approve an application to extend the term of a variance *or special permit* until penalties imposed pursuant to a violation of such section are paid in full.

§ 2. This local law takes effect 30 days after it becomes law.

FERNANDO CABRERA, *Chairperson*; YDANIS A. RODRIGUEZ, BEN KALLOS, BILL PERKINS, KEITH POWERS, KALMAN YEGER; Committee on Governmental Operations, December 9, 2019.

On motion of the Speaker (Council Member Johnson), and adopted, the foregoing matter was coupled as a General Order for the day (see ROLL CALL ON GENERAL ORDERS FOR THE DAY).

Report for Int. No. 1249-B

Report of the Committee on Governmental Operations in favor of approving and adopting, as amended, a Local Law to amend the administrative code of the city of New York, in relation to repealing the critical driver program and amending the persistent violators program relating to drivers of taxicabs and for-hire vehicles.

The Committee on Governmental Operations, to which the annexed proposed amended local law was referred on November 28, 2018 (Minutes, page 4524), respectfully

REPORTS:

(For text of report, please see the Report of the Committee on Governmental Operations for Int. No. 1095 printed in these Minutes)

The following is the text of the Fiscal Impact Statement for Int. No. 1249-B:

THE COUNCIL OF THE CITY OF NEW YORK
FINANCE DIVISION

LATONIA MCKINNEY, DIRECTOR
FISCAL IMPACT STATEMENT

PROPOSED INTRO. NO. 1249-B

COMMITTEE: Governmental Operations

TITLE: A Local Law to amend the administrative code of the city of New York, in relation to repealing the critical driver program and amending the persistent violators program relating to drivers of taxicabs and for-hire-vehicles.

SPONSORS: Council Member Cabrera.

SUMMARY OF LEGISLATION: This bill would streamline the Taxi and Limousine Commission's (TLC) programs related to violations that result in points on driver's TLC-issued licenses. This bill would consolidate the Critical Driver Program under the Persistent Violator Program, and update the Persistent Violator Program to include provisions from the Critical Driver Program related to motor vehicle accident prevention courses approved by the Department of Motor Vehicles (DMV). Specifically, upon proof of satisfactory completion of a motor vehicle accident prevention course approved by the DMV, three points shall be deducted from the number of points accrued under the Persistent Violator Program for points assessed by the DMV or an equivalent licensing agency of the driver's state of residence against the driver's licenses issued to such taxicab or for-hire vehicle driver. Furthermore, a taxicab or for-hire vehicle shall be eligible for a point reduction for points assessed by the DMV or an equivalent licensing agency of the driver's state of residence only once within an eighteen-month period.

EFFECTIVE DATE: This local law would take effect 60 days after it becomes law, except that the TLC take such measures as are necessary for the implementation of this local law, including the promulgation of rules before such date.

FISCAL YEAR IN WHICH FULL FISCAL IMPACT ANTICIPATED: Fiscal 2021

FISCAL IMPACT STATEMENT:

	Effective FY20	FY Succeeding Effective FY21	Full Fiscal Impact FY21
Revenues (+)	$0	$0	$0
Expenditures (-)	$0	$0	$0
Net	$0	$0	$0

IMPACT ON REVENUES: It is estimated that there would be no impact on revenues resulting from the enactment of this legislation.

IMPACT ON EXPENDITURES: It is estimated that there would not be an impact on expenditures resulting from the enactment of this legislation, because the relevant City agencies would utilize existing resources to fulfill its requirements.

SOURCE OF FUNDS TO COVER ESTIMATED COSTS: N/A

SOURCES OF INFORMATION: New York City Council Finance Division
Mayor's Office of Legislative Affairs

ESTIMATE PREPARED BY: Sebastian Palacio Bacchi, Financial Analyst

ESTIMATE REVIEWED BY: Nathaniel Toth, Deputy Director
Regina Poreda Ryan, Deputy Director
John Russell, Unit Head
Noah Brick, Assistant Counsel

LEGISLATIVE HISTORY: This legislation was introduced to the Council as Intro. No. 1249 on November 28, 2018 and was referred to the Committee on Governmental Operations (Committee). The Committee heard the legislation on January 31, 2019, and the legislation was laid over. The legislation was subsequently amended twice and the most recently-amended version, Proposed Int. No. 1249-B, will be considered by the Committee on December 9, 2019. Upon a successful vote by the Committee, Proposed Intro. 1249-B will be submitted to the full Council for a vote on December 10, 2019.

DATE PREPARED: December 3, 2019.

Accordingly, this Committee recommends its adoption, as amended.

(The following is the text of Int. No. 1249-B:)

Int. No. 1249-B

By Council Members Cabrera and Louis.

A Local Law to amend the administrative code of the city of New York, in relation to repealing the critical driver program and amending the persistent violators program relating to drivers of taxicabs and for-hire vehicles

Be it enacted by the Council as follows:

Section 1. Subdivisions a, b and c of section 19-507.1 of the administrative code of the city of New York, as amended by local law number 51 for the year 2016, are amended to read as follows:

a. (1) Any taxicab or for-hire vehicle driver may attend a remedial or refresher course approved by the commission *or a motor vehicle accident prevention course approved by the New York state department of motor vehicles.* Upon presentation to the commission of proof of satisfactory completion of a commission-approved *remedial or refresher* course by such driver, three points shall be deducted from the number of points assessed under the persistent violators program against his or her commission-issued driver's license, except as otherwise provided in this paragraph. A taxicab or for-hire vehicle driver shall be eligible for a point reduction pursuant to this [subdivision] paragraph *for points assessed by the commission against his or her commission-issued driver's license* only once within a five-year period.

(2) Upon presentation to the commission of proof of satisfactory completion of a motor vehicle accident prevention course approved by the New York state department of motor vehicles, three points shall be deducted from the number of points accrued under the persistent violator program for points assessed by the New York state department of motor vehicles or an equivalent licensing agency of the driver's state of residence against the driver's license issued to such taxicab or for-hire vehicle driver by such department or agency, except as otherwise provided in this paragraph. A taxicab or for-hire vehicle driver shall be eligible for a point reduction pursuant to this paragraph for points assessed by the New York state department of motor vehicles or an equivalent licensing agency of the driver's state of residence only once within an eighteen-month period.

(3) In the event no [such approved] *commission-approved remedial or refresher* course is available at the time such driver seeks to enroll, [such driver may take a course provided for in paragraph one of subdivision c of section 19-507.2 of this chapter. In such instance, completion] *completion* of a *New York state department of motor vehicles-approved* course taken pursuant to [this] paragraph [or pursuant to paragraph one of subdivision c of section 19-507.2] *two of this subdivision* shall result in the removal of three points from [either] the number of points accrued under the persistent violators program [or from the number of points accrued under the critical drivers program, but not from both, upon the election of the driver who completes such course], *whether such points are assessed against such driver's commission-issued license or such driver's license issued by the New York state department of motor vehicles or an equivalent licensing agency of the driver's state of residence.*

[(2)] *(4)* Notwithstanding the provisions of [paragraph] *paragraphs* one, *two or three* of this subdivision, no point reduction shall affect any suspension or revocation action which may be taken by the commission pursuant to this program prior to the completion of [the] *a commission-approved or department of motor vehicles-approved* course and no taxicab or for-hire vehicle driver shall receive a point reduction unless attendance at [the] *such* course is voluntary on the part of the driver.

b. Any taxicab or for-hire vehicle driver who has been found guilty of violations [of the commission's rules] such that *a total of* six or more points but fewer than ten points have been assessed *by the commission* against his or her commission-issued driver's license *or by the New York state department of motor vehicles or an equivalent licensing agency of the driver's state of residence against the driver's license issued to such taxicab or for-hire vehicle driver by such department or agency* within any fifteen-month period and whose license has not been revoked shall have his or her commission-issued driver's license suspended for up to thirty days.

c. Any taxicab or for-hire vehicle driver who has been found guilty of violations [of the commission's rules] such that *a total of* ten or more points have been assessed *by the commission* against his or her commission-issued driver's license *or by the New York state department of motor vehicles or an equivalent licensing agency of the driver's state of residence against the driver's license issued to such taxicab or for-hire vehicle driver by such department or agency* within any fifteen-month period shall have his or her commission-issued driver's license revoked.

§2. Subdivision e of section 19-507.1 of the administrative code of the city of New York, as amended by local law number 51 for the year 2016, is amended to read as follows:

e. A taxicab or for-hire vehicle driver shall not be subject to an assessment of points against his or her commission-issued driver's license or the imposition of duplicate penalties where the same act is a violation under provisions of law other than commission rules and where such violations duplicate each other or are substantively the same and any such driver may be issued only one summons or notice of violation for such violation. [Points assessed pursuant to section 19-507.2 of this chapter may, pursuant to subdivisions i and j of this section, be added to points assessed by the commission under this section for violations of commission rules.]

§3. Subdivisions i and j of section 19-507.1 of the administrative code of the city of New York are REPEALED.

§ 4. Section 19-507.2 of the administrative code of the city of New York is REPEALED.

§ 5. This local law takes effect 60 days after it becomes law, except that the taxi and limousine commission shall take such measures as are necessary for the implementation of this local law, including the promulgation of rules, before such date.

FERNANDO CABRERA, *Chairperson*; YDANIS A. RODRIGUEZ, BEN KALLOS, BILL PERKINS, KEITH POWERS, KALMAN YEGER; Committee on Governmental Operations, December 9, 2019.

On motion of the Speaker (Council Member Johnson), and adopted, the foregoing matter was coupled as a General Order for the day (see ROLL CALL ON GENERAL ORDERS FOR THE DAY).

Report of the Committee on Housing and Buildings

Report for Int. No. 1481-A

Report of the Committee on Housing and Buildings in favor of approving and adopting, as amended, a local law to amend the administrative code of the city of New York and the New York city plumbing code in relation to bringing such code up to date with the 2015 edition of the international plumbing code with differences that reflect the unique character of the city and repealing chapter 11 and appendices C, F, and G of the New York city plumbing code in relation thereto.

The Committee on Housing and Buildings, to which the annexed proposed amended local law was referred on March 28, 2019 (Minutes, page 979), respectfully

REPORTS:

Introduction

On December 9, 2019, the Committee on Housing and Buildings, chaired by Council Member Robert E. Cornegy, Jr., held a hearing on Int. No. 1481-A and Int. No. 1482-B, which were first heard on September 10, 2019. More information about these bills along with the materials for that hearing can be found at https://bit.ly/2Odu7UQ.

Int. No. 1481-A

Int. No. 1481-A would implement section 28-601.1 of the Administrative Code, which requires triennial updates of the Plumbing Code to reflect changes in the International Plumbing Code (IPC). These amendments would bring the Plumbing Code up to date with the 2015 IPC published by the International Code Council, with differences to accommodate the unique nature of construction, design, installation, alteration, repair, use, or maintenance of plumbing systems in the City.

This local law would take effect on the same date as the effective date of a local law amending the administrative code of the city of New York in relation to bringing the New York city building code up to date with the 2015 edition of the International Building Code published by the International Code Council.

Int. No. 1482-B

Int. No. 1482-B would require that 90% of the external building envelope for the first 75 feet of new constructions and major alterations consist of bird friendly materials – which can include glass treated to make it more apparent to birds. Example of glass treatments include ceramic "frits", etchings, and frosted patterns applied to glass.

In order to determine whether a material is bird friendly, this legislation would require the installation of materials that comply with a specified "threat factor" determined by the American Bird Conservancy Bird Collision Deterrence Material Threat Factor Reference Standard or the American Bird Conservancy Bird-friendly Materials Evaluation Program at Carnegie Museum's Avian Research Center Test Protocol. Materials may also comply with a relevant ASTM standard.

Int. No. 1482-B further requires the installation of bird friendly materials on the entirety of the first 12 feet of a building's exterior wall envelope where such envelope is adjacent to a green roof system, on the entirety of the first 75 feet of fly-through conditions, which include parallel glass elements 17 feet or less apart, and on the entirety of bird hazard installations, regardless of height. Bird hazard installations include glass awnings, glass handrails, glass wind break panels, and glass acoustic barriers.

This local law would take effect one year after it becomes law but not apply to applications for construction document approval filed prior to such effective date.

Update

On Monday, December 9, 2019, the Committee adopted Int. No. 1481-A and Int. No. 1482-B by a vote of eight in the affirmative, zero in the negative, and zero abstentions.

(**The following is the text of the Fiscal Impact Statement for Int. No. 1481-A:)**

THE COUNCIL OF THE CITY OF NEW YORK
FINANCE DIVISION
LATONIA MCKINNEY, DIRECTOR
FISCAL IMPACT STATEMENT

PROPOSED INTRO. NO: 1481-A

COMMITTEE: Housing and Buildings

TITLE: A Local Law to amend the administrative code of the city of New York and the New York city plumbing code in relation to bringing such code up to date with the 2015 edition of the international plumbing code with differences that reflect the unique character of the city and repealing chapter 11 and appendices C, F, and G of the New York city plumbing code in relation thereto.

SPONSORS: Council Members Cornegy and Grodenchik (by request of the Mayor).

SUMMARY OF LEGISLATION: Proposed Int. No. 1481-A would implement section 28-601.1 of the Administrative Code, which requires triennial updates of the Plumbing Code to reflect changes in the International Plumbing Code (IPC). These amendments would bring the Plumbing Code up to date with the 2015 IPC published by the International Code Council (ICC), with differences to accommodate the unique nature of construction, design, installation, alteration, repair, use or maintenance of plumbing systems in the City.

EFFECTIVE DATE: This local law would take effect on the same date of a local law amending the administrative code of the city of New York in relation to bringing the New York City building code up to date with the 2015 edition of the International Building Code.

FISCAL YEAR IN WHICH FULL FISCAL IMPACT ANTICIPATED: 2020

FISCAL IMPACT STATEMENT:

	Effective FY20	FY Succeeding Effective FY21	Full Fiscal Impact FY20
Revenues	$0	$0	$0
Expenditures	$0	$0	$0
Net	$0	$0	$0

IMPACT ON REVENUES: It is anticipated that there would be no impact on revenues resulting from the enactment of this legislation.

IMPACT ON EXPENDITURES: It is anticipated that there would be no impact on expenditures resulting from the enactment of this legislation.

SOURCE OF FUNDS TO COVER ESTIMATED COSTS: N/A

SOURCE OF INFORMATION: New York City Council Finance Division
Mayor's Office of City Legislative Affairs
New York City Department of Buildings

ESTIMATE PREPARED BY: Luke Zangerle, Financial Analyst

ESTIMATED REVIEWED BY: Chima Obichere, Unit Head
Stephanie Ruiz, Assistant Counsel

LEGISLATIVE HISTORY: This legislation was introduced to the full council on March 28, 2019 as Int. No. 1481 and was referred to the Committee on Housing and Buildings (Committee). A hearing was held by the Committee on September 10, 2019 and the legislation was laid over. The legislation was subsequently amended, and the amended version, Proposed Int. No. 1481-A, will be considered by the Committee on December 9, 2019. Upon a successful vote by the Committee, the legislation will be submitted to the full Council for a vote on December 10, 2019.

DATE PREPARED: December 5, 2019.

(For text of Int. No. 1482-B and its Fiscal Impact Statement, please see the Report of the Committee on Housing and Building for Int. No. 1482-B printed in these Minutes; for text of Int. No. 1481-A, please see below)

Accordingly, this Committee recommends the adoption of Int. Nos. 1481-A and 1482-B.

(The following is the text of Int. No. 1481-A:)

Int. No. 1481-A

By Council Members Cornegy and Grodenchik (by request of the Mayor).

A local law to amend the administrative code of the city of New York and the New York city plumbing code in relation to bringing such code up to date with the 2015 edition of the international plumbing code with differences that reflect the unique character of the city and repealing chapter 11 and appendices C, F, and G of the New York city plumbing code in relation thereto.

Be it enacted by the Council as follows:

Section 1. Legislative intent. This local law implements section 28-601.1 of the administrative code, which requires triennial updates of the New York city plumbing code to reflect changes in the International Plumbing Code. These amendments will bring the New York city plumbing code up to date with the 2015 International Plumbing Code published by the International Code Council, with differences to accommodate the unique nature of construction in the city. The local law is divided into parts from A through P with each part comprising amendments to a separate chapter or appendix of the code in separately numbered sections within the part.

§2. Section 28-601.2 of the administrative code of the city of New York, as amended by local law number 141 for the year 2013, is amended to read as follows:

§28-601.2 Enactment of the New York city plumbing code. The New York city plumbing code based on the 2003 edition of the International Plumbing Code published by the International Code Council, with changes that reflect the unique character of the city and amendments that bring it up to date with the [~~2009~~]2015 edition of such International Plumbing Code, is hereby adopted to read as follows:

PART A
CHAPTER 1

§1. Chapter 1 of the New York city plumbing code, as added by local law number 8 for the year 2008, section 106.10 as amended by local law number 85 for the year 2009, section 101.3 as amended by local law number 49 for the year 2010, sections 102.1, 102.2, 102.3, 102.4, 102.10, 104.10, 105.6, 106.9 and PC 107 as amended by local law number 41 for the year 2012, sections 102.4.2 and 102.8.1 as added by local law number 141 for the year 2013, and sections 106.6 and 106.6.3 as amended by local law number 97 for the year 2017, is amended to read as follows:

CHAPTER 1
ADMINISTRATION

SECTION PC 101
GENERAL

101.1 Title. This code shall be known and may be cited as the "*New York City Plumbing Code*," "NYCPC" or "PC." All section numbers in this code shall be deemed to be preceded by the designation "PC."

101.2 Scope. The provisions of this code shall apply to the erection, installation, alteration, repair, relocation, replacement, addition to, use or maintenance of plumbing systems. This code shall also regulate nonflammable medical gas, inhalation anesthetic, vacuum piping, nonmedical oxygen systems and sanitary and condensate vacuum collection systems. The installation of fuel-gas distribution piping and equipment, fuel gas-fired water heaters, and water heater venting systems shall be regulated by the *New York City Fuel Gas Code*.

101.3 Intent. The purpose of this code is to provide minimum standards to safeguard life or limb, health, property, public welfare and the environment by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of plumbing systems.

101.4 Severability. If a section, subsection, sentence, clause or phrase of this code is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this code.

SECTION PC 102
APPLICABILITY

102.1 General. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

102.2 Existing installations. Except as otherwise specifically provided, plumbing systems lawfully in existence [~~at the time of the adoption or~~] on July 1, 2008 or on the effective date of a subsequent amendment of this code shall be permitted to have their use and maintenance continued if the use, maintenance or repair is in accordance with the original design and no hazard to life, health or property is created by such plumbing system.

102.2.1 Existing buildings. Additions, alterations, renovations or repairs related to building or structural issues shall be governed by Chapter 1 of Title 28 of the *Administrative Code*, the *New York City Building Code* and the *1968 Building Code*, as applicable.

102.2.2 References to the *New York City Building Code*. For existing buildings, a reference to a section of the *New York City Building Code* in this code shall also be deemed to refer to the equivalent provision of the *1968 Building Code*, as applicable in accordance with Chapter 1 of Title 28 of the *Administrative Code*.

102.3 Maintenance. Installations, both existing and new, and parts thereof shall be maintained in proper operating condition in accordance with the original design and in a safe and sanitary condition. Devices or safeguards that are required by this code shall be maintained in compliance with the applicable provisions under which they were installed. [~~The owner or the owner's designated agent shall be responsible for maintenance of plumbing systems. To determine compliance with this provision, the commissioner shall have the authority to require any plumbing system to be inspected.~~]

102.3.1 Owner responsibility. The owner or the owner's designated agent shall be responsible for maintenance of plumbing systems. To determine compliance with this provision, the commissioner shall have the authority to require any plumbing system to be inspected.

102.4 Additions, alterations or repairs. Additions, alterations, renovations or repairs to installations shall conform to that required for new installations without requiring the existing installation to comply with all of the requirements of this code. Additions, alterations or repairs shall not cause an existing installation to become unsafe, hazardous or overloaded. [~~Minor additions, alterations, renovations and repairs to existing installations shall meet the provisions for new construction, unless such work is done in the same manner and arrangement as was in the existing system, is not hazardous and is approved.~~]

102.4.1 Minor additions, alterations, renovations and repairs. Minor additions, alterations, renovations and repairs to existing installations shall meet the provisions for new construction, unless such work is done in the same manner and arrangement as was in the existing system, is not hazardous and is approved.

102.4.2 Special provisions for prior code buildings. In addition to the requirements of [~~sections~~] <u>Sections</u> 102.4 and 102.4.1, the provisions of Sections [~~102.4.1.1~~] <u>102.4.2.1</u> through [~~102.4.1.3~~] <u>102.4.2.3</u> shall apply to prior code buildings.

102.4.2.1 Number of plumbing fixtures. For prior code buildings, the number of required plumbing fixtures shall be permitted to be calculated based on the *1968 Building Code* utilizing the occupant load figures from the *1968 Building Code*, or shall be permitted to be calculated based on the *New York City Plumbing Code* utilizing the occupant load figures from the *New York City Plumbing Code.*

102.4.2.2 Seismic supports. For prior code buildings, the determination as to whether seismic requirements apply to an alteration shall be made in accordance with the *1968 Building Code* and interpretations by the department relating to such determinations. Any applicable seismic loads and requirements shall be permitted to be determined in accordance with Chapter 16 of the *New York City Building Code* or the *1968 Building Code* and Reference Standard RS 9-6 of such code.

102.4.2.3 Wind resistance. For prior code buildings, equipment, appliances and supports that are exposed to wind shall be designed and installed to resist the wind pressures determined in accordance with Chapter 16 of the *New York City Building Code*.

102.5 Change in occupancy. Refer to Chapter 1 of Title 28 of the *Administrative Code*.

102.6 Reserved.

102.7 Reserved.

102.8 Referenced standards. The standards referenced in this code shall be those that are listed in [~~Chapter 13~~] <u>Chapter 15</u> and such standards shall be considered as part of the requirements of this code to the prescribed extent of each such reference. Where differences occur between the provisions of this code and the referenced standards, the provisions of this code shall [~~be the minimum requirements~~] <u>apply</u>. Refer to Article 103 of Chapter 1 of Title 28 of the *Administrative Code* for additional provisions relating to referenced standards.

102.8.1 Editions of referenced standards. References to standards in this code shall be to the editions of those standards provided for in [~~Chapter 13 of this code~~] <u>Chapter 15</u>, or as otherwise provided by rule.

102.9 Requirements not covered by code. Requirements necessary for the strength, stability or proper operation of an existing or proposed plumbing system, or for the public safety, health and general welfare, not specifically covered by this code, shall be determined by the commissioner.

102.10 Application of references. Reference to chapter or section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

SECTION PC 103
DEPARTMENT OF BUILDINGS

103.1 Enforcement agency. Refer to the New York City Charter and Chapter 1 of Title 28 of the *Administrative Code*.

SECTION PC 104
DUTIES AND POWERS OF THE COMMISSIONER OF BUILDINGS

104.1 General. The commissioner shall have the authority to render interpretations of this code, [~~and to~~] adopt rules, and establish policies[~~,~~] and procedures in order to clarify and implement its provisions. Such interpretations, policies, procedures, and rules shall be in compliance with the intent and purpose of this code. See the New York City Charter and Chapter 1 of Title 28 of the *Administrative Code* for additional provisions relating to the authority of the Commissioner of Buildings.

104.2 Remedies for nonfunctioning storm water disposal systems. If the commissioner determines that a system of storm water disposal which has been previously approved under the provisions of this code or of previous codes is no longer providing adequate drainage of storm water from a lot or development, the commissioner shall order repair of such system as required by Section 28-301.1 of the *Administrative Code*; or if, in the judgment of the commissioner, repair of such system is not sufficient to ensure adequate drainage of storm water from such lot or development, the commissioner shall order that one of the methods of storm water disposal set forth in Chapter 11 shall be used to provide such drainage. The commissioner may apply to the Board of Standards and Appeals for modification of the Certificate of Occupancy of any building constructed on such lot or development to require the use of such method.

SECTION PC 105
APPROVALS

105.1 Approvals. Refer to Chapter 1 of Title 28 of the *Administrative Code*.

SECTION PC [~~105~~] 106
PERMITS

[~~105.1~~] 106.1 General. Permits shall comply with this section, with Article 105 of Chapter 1 of Title 28 of the *Administrative Code*, and with requirements found elsewhere in this code.

[~~105.2~~] 106.2 Required. Any owner or authorized agent who intends to construct, add to, alter, repair, move, demolish, or change the occupancy of a building or structure, or to erect, install, add to, alter, repair, remove, convert or replace any gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be done, shall first make application for construction document approval in accordance with Chapter 1 of Title 28 of the *Administrative Code* and this chapter and obtain the required permit.

[~~105.3~~] 106.3 Work exempt from permit. Exemptions from permit requirements of this code as authorized in Chapter 1 of Title 28 of the *Administrative Code* and the rules of the department shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or rules.

[~~105.4~~] 106.4 Validity of permit. The issuance or granting of a permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other law. Permits presuming to give authority to violate or cancel the provisions of this code or other law shall not be valid. The issuance of a permit based on construction documents and other data shall not prevent the commissioner from requiring the correction of errors in the construction documents and other data. The commissioner is also authorized to prevent occupancy or use of a structure where in violation of this code or of any other law.

[~~105.5~~] 106.5 Mandatory sewer and catch basin work required by Section 24-526 of the *Administrative Code*. An applicant for a permit who is required pursuant to Section 24-526 of the *Administrative Code* to construct or repair defects in sewers or catch basins that lie outside the property shall submit certification from the Department of Environmental Protection in accordance with Section 105.9 of the *New York City Building Code*.

[~~105.6~~] 106.6 Other permits. In addition to any permits required by the provisions of this code, the following permits shall also be required:

1. Permits for all water supplies and backflow devices for all buildings shall be obtained from the Department of Environmental Protection, and the installation of the water service system from the street main up to and including the meter outlet control valve shall be subject to inspection and approval by such department. All backflow devices shall be acceptable to the New York State Department of Health.
2. Permits for the installation of the building [~~house~~] sewer [~~or drain from the street line to, and including, the spur connection at the street sewer~~] shall be obtained from the Department of Environmental Protection[~~, except that, in conjunction with the issuance of a permit for the construction or alteration of a structure within the curb line, the commissioner may issue a permit for connection with a sewer or drain~~].
3. Permits for sidewalk and street openings shall be obtained from the Department of Transportation.
4. Where groundwater discharge permits are required by the rules of the Department of Environmental Protection for the discharge of groundwater, such permits shall be obtained from the Department of Environmental Protection in accordance with such rules.
5. Permits for the installation of temporary connections at the street for water and sewer shall be obtained from the Department of Environmental Protection.

106.7 Permits with respect to limited alteration applications. For permits with respect to limited alteration applications refer to Sections 28-101.5 and 28-104.6, Exception 1 of the *Administrative Code.*

SECTION PC [~~106~~] 107
CONSTRUCTION DOCUMENTS

[~~106.1~~] 107.1 General. Construction documents shall comply with Article 104 of Chapter 1 of Title 28 of the *Administrative Code* and other applicable provisions of this code and its referenced standards. Such construction documents shall be coordinated with architectural, structural and means of egress plans.

[~~106.2~~] 107.2 Required documents. The applicant shall submit all of the documents specified in Sections [~~106.3~~] 107.3 through [~~106.10~~] 107.10 as appropriate to the nature and extent of the work proposed. Construction documents shall indicate the plumbing work to be performed, so drawn as to conform to the architectural and structural aspects of the building and to show in detail compliance with this code.

[~~106.2.1~~] 107.2.1 Composite plans. Composite plans showing compliance of architectural, structural, and mechanical parts of a building may be submitted provided that a clear understanding of each part is not impaired.

[~~106.3~~] 107.3 Lot diagram. The lot diagram shall be provided where applicable to the work proposed, including but not limited to, street connection locations and increases of impervious surfaces.

[~~106.4~~] 107.4 Building classification statement. Where applicable to the proposed work, the statement shall identify:

1. The occupancy group or groups that apply to parts of the building in accordance with Section 302 of the *New York City Building Code*;
2. The occupancy group of the main use or dominant occupancy of the building;
3. The construction [~~class~~] type of the building in accordance with Section 602 of the *New York City Building Code*;
4. The structure category in accordance with Table 1604.5 of the *New York City Building Code*;
5. The height of the building as defined in Section [~~502.1~~] 202 of the *New York City Building Code*;
6. The applicable measurements to the highest and lowest level of Fire Department access; [~~and~~]
7. Whether the building is inside or outside of the fire districts[~~.~~] ; and
8. Whether the building is inside or outside a flood hazard area as such term is defined in Appendix G of the *New York City Building Code*.

[~~106.5~~] 107.5 Plumbing plans. Construction documents for plumbing work shall contain plans which include the following data and information. Such plans shall not be required in connection with applications for limited plumbing alterations.

1. Riser diagrams showing the story heights, all plumbing fixtures with diagrammatic arrangement of their connections to soil, waste, and vent piping, all soil, waste, and vent stacks from the point of connection with the building drain to their termination above the roof, all leader and storm water piping from the point of connection with the building drain to the roof drain, and all risers.
2. Diagrammatic floor plans showing the location, layout, and spacing of all plumbing fixtures, the summation of plumbing loads, the size, location, and material for all building sewers and drains, and the soil, waste, vent, water, and gas distribution piping.
3. Floor plans showing typical layouts; and stack details shown on one drawing, provided that such details are clearly identified as to location and stack number.
4. Plans clearly indicating all appurtenant equipment, including, but not limited to, pumps, ejectors, water tanks, and piping.
5. In the case of plans for new plumbing systems, and alterations of existing plumbing systems, plans indicating:

5.1. The relative elevation of the lowest fixture referred to the city datum provided in Section 28-104.7.6 of the *Administrative Code* and the approximate inside top of the public sewers;

5.2. The number, size, and location of all proposed sewer connections and relative location and size of all water mains, leaders, and risers; and

5.3. A statement from the Department of Environmental Protection, giving the minimum water pressure in the main serving the building.

6. Seismic protection and restraint details for piping and equipment as required by Chapter 16 of the *New York City Building Code*.
7. Details showing structural supports for water tanks where required.

8. In [~~areas of~~] special flood [~~hazards~~] hazard areas, construction documents shall comply with Appendix G of the *New York City Building Code*.

[~~106.6~~] 107.6 Discharge of sewage and discharge and/or management of stormwater runoff. Applications for construction document approval shall comply with Sections [~~106.6.1, 106.6.2 and 106.6.3~~] 107.6.1, 107.6.2 and 107.6.3.

[~~106.6.1~~] 107.6.1 Sewage. Applications for construction document approval shall include submittal documents relating to the availability and feasibility of a public sanitary or public combined sewer and/or other approved discharge for sewage in accordance with Sections [~~106.6.1.1~~] 107.6.1.1 and [~~106.6.1.2~~] 107.6.1.2 for the following types of applications:

1. New buildings that include any fixtures that produce sewage;
2. Alterations that require an increase in size to an existing sanitary or combined sewer connection; and/or
3. Alterations requiring a new connection to a sanitary or combined sewer.

[~~106.6.1.1~~] 107.6.1.1 Connection feasible and available. Where a public sanitary or combined sewer availability is certified by the Department of Environmental Protection or certified by an applicant in accordance with rules of such department [~~to be available~~] and connection thereto feasible, the applicant shall submit:

1. **Department of Environmental Protection certification of availability and feasibility.** A sewer certification issued by the Department of Environmental Protection that a public sanitary or combined sewer is available and connection thereto is feasible. Applications for such certification shall be made to the Department of Environmental Protection on forms specified by such department (Department of Environmental Protection "house/site connection proposal application" or other form as specified in the rules of such department) and shall be reviewed and approved by such department in accordance with the rules of such department. Such certification may be conditioned by such department on part or all of the sewage to be disposed of with an on-site disposal system or with the use of an alternative disposal system; or
2. **Applicant certification of availability and feasibility.** A certification submitted by the applicant to the Department of Environmental Protection in accordance with the rules of such department that a public sanitary or combined sewer is available and connection thereto is feasible, in such cases where the availability and feasibility of connection to a public sanitary or combined sewer are allowed to be certified by the applicant pursuant to such rules. Such certification shall be on forms specified by such department (Department of Environmental Protection "house/site connection proposal application" or other form as specified in the rules of such department).

[~~106.6.1.2~~] 107.6.1.2 Connection not feasible or not available. Where a public sanitary or combined sewer is not available, or where connection thereto is not feasible, the applicant shall submit:

1. **Department of Environmental Protection or applicant certification of unavailability or non-feasibility.** (i) A certification issued by the Department of Environmental Protection that a public sanitary or combined sewer is not available or that connection to an available sewer is not feasible. Such certification shall be on forms specified by such department (Department of Environmental Protection "house/site connection proposal application" or other form as specified in the rules of such department) or (ii) A certification submitted by the applicant to the Department of Environmental Protection that a public sanitary or combined sewer is not available or that connection thereto is not feasible, in such cases where the availability and feasibility of connection to a public sanitary or combined sewer are allowed to be certified by the applicant pursuant to the rules of such department. Such certification shall be on forms specified by such department (Department of Environmental Protection "house/site connection proposal application" or other form as specified in the rules of such department); and
2. **On-site disposal.** A proposal for the design and construction of a system for the on-site disposal of sewage

conforming to the provisions of this code and other applicable laws and rules including but not limited to minimum required distances from lot lines or structures and subsoil conditions. Construction documents for such system shall be subject to the approval of the department.

[~~106.6.2~~] 107.6.2 Stormwater. Applications for construction document approval shall include submittal documents relating to the availability and feasibility of a public combined or storm sewer or other approved method for stormwater discharge in accordance with Sections [~~106.6.2.1~~] 107.6.2.1 and [~~106.6.2.2~~] 107.6.2.2 for the following types of applications:

1. New buildings;
2. Alterations of buildings proposing horizontal building enlargement; and/or
3. Alterations that increase impervious surfaces on the tax lot.

Exceptions:

1. Applications for construction document approval for the alteration of an existing one- or two-family dwelling need not include such submittal documents, where the [~~area~~] footprint of a proposed horizontal building enlargement and any proposed increase in impervious surfaces combined is less than or equal to 200 square feet (19 m^2). Construction documents shall include the amount of proposed increase in impervious area.

1.1. This exception shall not apply if the horizontal building enlargement and increase in impervious surface related to the current application for construction document approval and any other enlargement or increase in impervious surface made on the same tax lot after July 1, 2008 together exceed 200 square feet (19 m^2).

2. Applications for construction document approval for the alteration of a building need not include such submittal documents, where the [~~area of a~~] increase in area of the footprint resulting from a proposed horizontal building enlargement and any proposed increase in impervious surfaces on a lot combined is less than or equal to 1,000 square feet (93 m^2), and on-site disposal of stormwater conforming to the provisions of the applicable laws and rules as determined by the department is proposed for such enlargement and/or increase in impervious surface. Construction documents shall include the amount of proposed increase in impervious area.

2.1. This exception shall not apply where on-site disposal cannot be designed to conform to the provisions of the applicable laws and rules including but not limited to minimum required distances from lot lines or structures or subsoil conditions as determined by the department.

2.2. This exception shall not apply if the horizontal building enlargement and increase in impervious surface related to the current application for construction document approval and all other enlargements or increases in impervious surface made on the same tax lot after July 1, 2008 together exceed 1,000 square feet (93 m^2).

[~~106.6.2.1~~] 107.6.2.1 Connection feasible and available. Where a public combined or storm sewer availability is certified by the Department of Environmental Protection or certified by an applicant in accordance with rules of such department [~~to be available~~] and connection thereto is feasible, applicants shall submit:

1. **Department of Environmental Protection certification of availability and feasibility.** A sewer certification issued by the Department of Environmental Protection that a public storm or combined sewer is available and connection thereto is feasible. Applications for such certification shall be made to the Department of Environmental Protection on forms specified by such department (Department of Environmental Protection “house/site connection proposal application” or other form as specified in the rules of such department) and shall be reviewed and approved by such department in accordance with the rules of such department. Such certification may be conditioned by such department on part or all of the stormwater runoff to be disposed of through an on-site detention or retention system, or by use of alternative

disposal methods including but not limited to ditches, swales or watercourses; or

2. **Applicant certification of availability and feasibility.** A certification submitted by the applicant to the Department of Environmental Protection in accordance with the rules of such department that a public storm or combined sewer is available and connection thereto is feasible, in such cases where the availability and feasibility of connection to a public storm or combined sewer are allowed to be certified by the applicant pursuant to such rules. Such certification shall be on forms specified by such department (Department of Environmental Protection "house/site connection proposal application" or other form as specified in the rules of such department).

[~~106.6.2.2~~] 107.6.2.2 Connection not feasible or not available. Where a public combined or storm sewer is not available, or where connection thereto is not feasible, applicants shall submit:

1. **Department of Environmental Protection or applicant certification of unavailability or non-feasibility.** (i) Certification issued by the Department of Environmental Protection that a public storm or combined sewer is not available or that connection thereto is not feasible. Such certification shall be on forms specified by such department (Department of Environmental Protection "house/site connection proposal application" or other form as specified in the rules of such department); or (ii) Certification submitted by the applicant to the Department of Environmental Protection that a public storm or combined sewer is not available or that connection thereto is not feasible, in such cases where the availability and feasibility of connection to a public storm or combined sewer are allowed to be certified by the applicant pursuant to rules of such department. Certification shall be on forms specified by such department (Department of Environmental Protection "house/site connection proposal application" or other form as specified in the rules of such department); and
2. **On-site disposal.** A proposal for the design and construction of a system for the on-site disposal of stormwater conforming to the provisions of this code and other applicable laws and rules including but not limited to minimum required distances from lot lines or structures and subsoil conditions. Construction documents for such system shall be subject to the approval of the department.

[~~106.6.3~~] 107.6.3 Post-construction stormwater management facilities. A post-construction stormwater management facility that is constructed as a part of a covered development project located within the MS4 area, shall comply with the rules of the Department of Environmental Protection and with this code.

[~~106.7~~] 107.7 Private sewers. If private sewers are to be constructed pursuant to subdivision b of Section 1403 of the *New York City Charter*, a copy of the sewer plan shall be submitted.

[~~106.8~~] 107.8 Private sewage treatment plant. If a private sewage treatment plant is to be constructed, a copy of plans approved by the Department of Health and Mental Hygiene and the Department of Environmental Protection shall be submitted.

[~~106.9~~] 107.9 Private stormwater or sewage disposal system. If a private stormwater or sewage disposal system is to be installed, a site and subsoil evaluation indicating that the site and subsoil conditions comply with the applicable laws and rules shall be submitted in accordance with the provisions of Section 1704.20.1 of the *New York City Building Code*.

[~~106.10~~] 107.10 Energy efficiency. Construction documents shall include compliance documentation as required by the *New York City Energy Conservation Code*.

107.11 Retention of construction and submittal documents. Refer to Section 28-104.11 of the *Administrative Code.*

SECTION PC [~~107~~] 108
INSPECTIONS AND TESTING

[~~107.1~~] 108.1 General. Except as otherwise specified, inspections required by this code or by the department during the progress of work may be performed on behalf of the owner by approved agencies or, if applicable, by special inspectors. However, in the interest of public safety, the commissioner may direct that any of such inspections be performed by the department. All inspections shall be performed at the sole cost and expense of the owner. Refer to Article 116 of Chapter 1 of Title 28 of the *Administrative Code* for additional provisions relating to inspections.

[~~107.2~~] 108.2 Required inspections and testing. In addition to any inspections otherwise required by this code or applicable rules, the holder of the permit shall be responsible for the scheduling of the following required inspections:

1. Progress inspections:

1.1. Underground inspection and/or testing of installed piping, valves, fittings, support structures, anti-corrosion equipment and associated underground components shall be made [~~after trenches or ditches are excavated and bedded, piping installed, and~~] before backfill is put in place. When excavated soil contains rocks, broken concrete, frozen chunks and other rubble that would damage or break the piping or cause corrosive action, clean backfill shall be on the job site ready for use in backfilling.

1.2. Rough-in inspection and/or testing shall be made after the roof, framing, fireblocking, firestopping, draftstopping and bracing is in place and all sanitary, storm and water distribution piping is roughed-in, and prior to the installation of wall or ceiling membranes.

Exception: When new water, waste and vent piping is installed or replaced and all of the piping is to be permanently exposed there shall be no requirement for a rough–in inspection.

1.3. Inspections required by the *New York City Energy Conservation Code* shall be made in accordance with the rules of the department, as applicable.

2. Special inspections. Special inspections shall be performed in accordance with this code and Chapter 17 of the *New York City Building Code*, and, where applicable, Section 107.3.

3. Final inspection shall be made after the building is complete, all plumbing fixtures are in place and properly connected, and the structure is ready for occupancy. Refer to Article 116 of Chapter 1 of Title 28 of the *Administrative Code* for additional requirements.

[~~107.2.1~~] 108.2.1 Approved agencies. Refer to Articles 114 and 115 of Chapter 1 of Title 28 of the *Administrative Code*.

108.2.2 Inspection of prefabricated construction assemblies. Prior to the approval of a prefabricated construction assembly having concealed work and the issuance of a permit, the department shall require the submittal of an evaluation report by an approved agency on each prefabricated construction assembly, indicating the complete details of the installation, including a description of the system and its components, the basis upon which the system is being evaluated, test results and similar information and other data as necessary for the commissioner to determine conformance to this code.

108.2.2.1 Test and inspection records. Required test and inspection records shall be available to the commissioner at all times during the fabrication of the installation and the erection of the building; or such records as the commissioner designates shall be filed.

[~~107.2.2~~] 108.2.3 Exposure of work. [~~It shall be the duty of the permit holder to cause the~~] The work shall[~~to~~] remain accessible and exposed for inspection purposes. Neither the commissioner nor the city shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

[~~107.3~~] 108.3 Special inspections of alternative engineered design systems. Special inspections of alternative engineered design plumbing systems shall be conducted in accordance with Sections [~~107.3.1~~] 108.3.1 and [~~107.3.2~~] 108.3.2.

[~~107.3.1~~] 108.3.1 Periodic inspection. The [~~registered design professional or designated~~] special inspector shall periodically inspect and observe the work being performed to determine that the installation is in accordance with the approved construction documents for the alternative engineered design [~~to determine that the installation is in accordance with the approved construction documents~~]. All discrepancies shall be brought to the immediate attention of the plumbing contractor for correction. Records shall be kept of all inspections.

[~~107.3.2~~] 108.3.2 Written report. The [~~registered design professional~~] special inspector shall submit a final report in writing to the commissioner upon completion of the installation, certifying that the alternative engineered design installation conforms to the approved construction documents.

[~~107.4~~] 108.4 Testing. Plumbing work and systems shall be tested as required in Section 312 and in accordance with Sections [~~107.4.1~~] 108.4.1 through [~~107.4.3~~] 108.4.3. Tests shall be made by the permit holder and [~~observed by the commissioner~~] witnessed by the department.

[~~107.4.1~~] 108.4.1 New, altered, extended or repaired systems. New plumbing systems and parts of existing systems that have been altered, extended or repaired shall be tested as prescribed herein to disclose leaks and defects, except that testing is not required in the following cases:

1. In any case that does not include addition to, replacement, alteration or relocation of any water supply, drainage or vent piping.
2. In any case where plumbing equipment is set up temporarily for exhibition purposes.
3. For ordinary plumbing work, the department may accept written certification from a licensed master plumber that the job was performed in compliance with the requirements of this code and rules of the department [~~in lieu of the inspection requirements otherwise set forth in this code~~].
4. Minor alterations and ordinary repairs.
5. In accordance with the exceptions in Section 312.1.

[~~107.4.2 Equipment~~] 108.4.2 Apparatus, material and labor for tests. All [~~equipment~~] apparatus, material and labor required for testing a plumbing system or part thereof shall be furnished by the permit holder.

[~~107.4.3~~] 108.4.3 Reinspection and testing. Where any work or installation does not pass any initial test or inspection, the necessary corrections shall be made to comply with this code. The work or installation shall then be resubmitted to the commissioner for inspection and testing.

[~~107.5~~] 108.5 Sign-off of completed work. Refer to Article 116 of [~~Chapter 28~~] Chapter 1 of Title 28 of the *Administrative Code*.

[~~107.6~~] 108.6 Temporary connection. The commissioner shall have the authority to authorize the temporary connection of the building or system to the utility source for the purpose of testing plumbing systems or for use under a temporary Certificate of Occupancy. Additional permits may be required in accordance with Section 106.6.

[~~107.7~~] 108.7 Connection of service utilities. Refer to Title 28 of the *Administrative Code*.

SECTION PC [~~108~~] 109
VIOLATIONS

[~~108.1~~] 109.1 General. Refer to Chapters 2 and 3 of Title 28 of the *Administrative Code*.

PART B

CHAPTER 2

§1. Section 201.3 of chapter 2 of the New York city plumbing code, as amended by local law number 41 for the year 2012, is amended to read as follows:

201.3 Terms defined in other codes. Where terms are not defined in this code and are defined in the *New York City Building Code*, *New York City Fire Code*, *New York City Electrical Code*, *New York City Fuel Gas Code*, *New York City Mechanical Code*, or the *New York City Energy Conservation Code*, such terms shall have the meanings ascribed to them as in those codes.

§2. Chapter 2 of the New York city plumbing code is amended by adding a new section 201.3.1 to read as follows:

201.3.1 Terms defined in the general administrative provisions. The following terms are defined in Section 28-101.5 of the *Administrative Code*:

1968 BUILDING CODE.

1968 OR PRIOR CODE BUILDINGS OR STRUCTURES (PRIOR CODE BUILDINGS).

ACCEPTANCE OR ACCEPTED.

ADDITION.

ADMINISTRATIVE CODE.

ALTERATION.

APPROVAL OR APPROVED.

APPROVED AGENCY.

APPROVED FABRICATOR.

APPROVED INSPECTION AGENCY.

APPROVED TESTING AGENCY.

ARCHITECT.

BUILDING.

CHARTER.

CERTIFICATE OF COMPLIANCE.

CITY.

COMMISSIONER.

CONSTRUCTION DOCUMENTS.

DAY.

DEFERRED SUBMITTAL.

DEMOLITION.

DEMOLITION, FULL.

DEMOLITION, PARTIAL.

DEPARTMENT.

ENGINEER.

ENLARGEMENT.

EXISTING BUILDING OR STRUCTURE.

FABRICATED ITEM.

FIRE PROTECTION PLAN.

HEREAFTER.

HERETOFORE.

INSPECTION CERTIFICATE.

LABEL.

LABELED.

LAND SURVEYOR.

LANDSCAPE ARCHITECT.

LETTER OF COMPLETION.

LIMITED OIL-BURNING BOILER ALTERATIONS.

LIMITED PLUMBING ALTERATIONS.

LIMITED SPRINKLER ALTERATIONS.

LIMITED STANDPIPE ALTERATIONS.

LISTED.

MAIN USE OR DOMINANT OCCUPANCY (OF A BUILDING).

MANUFACTURER'S DESIGNATION.

MARK.

MATERIALS.

OCCUPANCY.

OWNER.

PARTY WALL.

PERMIT.

PERSON.

<u>PREMISES.</u>

<u>PRIOR CODE BUILDING.</u>

<u>PROFESSIONAL CERTIFICATION.</u>

<u>PROGRESS INSPECTION.</u>

<u>PROJECT.</u>

<u>REGISTERED DESIGN PROFESSIONAL.</u>

<u>REGISTERED DESIGN PROFESSIONAL OF RECORD.</u>

<u>REQUIRED.</u>

<u>RETAINING WALL.</u>

<u>SERVICE EQUIPMENT.</u>

<u>SIGN-OFF.</u>

<u>SINGLE ROOM OCCUPANCY MULTIPLE DWELLING.</u>

<u>SPECIAL INSPECTION.</u>

<u>SPECIAL INSPECTION AGENCY.</u>

<u>SPECIAL INSPECTOR.</u>

<u>STRUCTURE.</u>

<u>SUBMITTAL DOCUMENTS.</u>

<u>SUPERINTENDENT OF CONSTRUCTION (CONSTRUCTION SUPERINTENDENT).</u>

<u>USE (USED).</u>

<u>UTILITY COMPANY OR PUBLIC UTILITY COMPANY.</u>

<u>UTILITY CORPORATION OR PUBLIC UTILITY CORPORATION.</u>

<u>WORK NOT CONSTITUTING MINOR ALTERATIONS OR ORDINARY REPAIRS.</u>

<u>WRITING (WRITTEN).</u>

<u>WRITTEN NOTICE.</u>

<u>ZONING RESOLUTION.</u>

§3. The definitions of “1968 or prior code buildings or structures (prior code buildings)”, “approved”, “approved agency”, “building”, “code”, “commissioner”, “construction documents”, “lead free pipe and fittings”, “occupancy”, “registered design professional”, and “structure” as set forth in section PC 202 of chapter 2 of the New York city plumbing code are REPEALED.

§4. The definitions of “access (to)”, “adapter fitting”, “alternative engineered design” “back flow preventer”, “building drain”, “clear water waste”, “combination waste and vent system”, concealed fouling surface”’ “contamination”, “detention system”, “discharge pipe”, “drain”, “drainage fitting”, “drainage system” , “essentially nontoxic transfer fluid” , “essentially toxic transfer fluid”, ”existing installation”, “fixture fitting”, “grease interceptor”, “grease removal device”, “groundwater or ground water”, “horizontal pipe”, “hot water”, “individual vent”, “joint”, “leader”, “low-pressure steam-heating boiler”, “macerating toilet system”, “mechanical joint”, “medical vacuum system”, “plumbing appliance”, “plumbing fixture”, ‘plumbing appurtenance”, “plumbing system”, “ready access”, “relief valve”, “retention system”, “sewage”, “sewer”, “single-occupant toilet room”, “sterilizer”, “storm water or stormwater”, “swimming pool”, “trap” “water pipe”, and "well", as set forth in section PC202 of chapter 2 of the New York city plumbing code, as added by local law number 99 for the year 2005, clear water waste, grease removal device, groundwater or ground water, low pressure steam heating boiler, retention system, storm water or stormwater, as added by and grease intercepter and sewage as amended by local law 41 for the year 2012, single-occupant toilet room as added by local law number 79 for the year 2016, are amended to read as follows:

ACCESS (TO). That which enables a device, fixture, appliance or equipment to be reached by ready access or by a means that first requires the removal or movement of a panel, door or similar obstruction (see "Ready access (to)").

ADAPTER FITTING. An approved connecting device that suitably and properly joins or adjusts pipes and fittings [~~which~~] that do not otherwise fit together**.**

ALTERNATIVE ENGINEERED DESIGN. A plumbing system that performs in accordance with the intent of [~~Chapters 3 through 12~~] this code and provides an equivalent level of performance for the protection of public health, safety and welfare. The system design is not specifically regulated by [~~Chapters 3 through 12~~] this code.

BACKFLOW PREVENTER. A backflow prevention assembly, a backflow prevention device or other means or method to prevent backflow into the potable water supply.

BUILDING DRAIN. That part of the lowest piping of a drainage system that receives the discharge from soil, waste and other drainage pipes inside and that extends [~~5 feet (1524 mm) in developed length of pipe beyond~~] to the exterior [~~walls of the~~] face of the exterior building wall, or the outlet of the most downstream trap, private manhole, catch basin, detention tank, or similar fixture or equipment, and conveys the drainage directly to the building sewer or, in the absence of building sewer, to an approved place of disposal.

Combined. A building drain that conveys both sewage and storm water or other drainage.

Sanitary. A building drain that conveys sewage only.

Storm. A building drain that conveys storm water or other drainage, but not sewage**.**

CLEAR WATER WASTE. Drips from [~~pumps and~~] equipment, coil condensate, steam condensate, single pass refrigeration discharge, RPZ discharge, and similar matter.

COMBINATION WASTE AND VENT SYSTEM. A specially designed system of waste piping embodying the horizontal wet venting of one or more[~~ sinks,~~] lavatories, drinking fountains or floor drains by means of a common waste and vent pipe adequately sized to provide free movement of air above the flow line of the drain.

CONCEALED FOULING SURFACE. Any surface of a plumbing fixture [~~which~~] that is not readily visible and is not scoured or cleansed with each fixture operation.

CONTAMINATION. An impairment of the quality of the potable water that creates an actual hazard to the public health through poisoning or [~~through~~] the spread of disease by sewage, industrial fluids or waste.

DETENTION SYSTEM. A system that slows and temporarily holds rainwater or storm water runoff so that it can be released into the public sewer system at a controlled rate.

DISCHARGE PIPE. A pipe that conveys the [~~discharges~~] discharge from plumbing fixtures or appliances.

DRAIN. Any pipe that carries [~~wastewater~~] waste water or water-borne wastes in a building drainage system.

DRAINAGE [~~FITTINGS~~] FITTING. [~~Type~~] The type of fitting or fittings utilized in the drainage system.

DRAINAGE SYSTEM. Piping within a public or private premise that conveys sewage, rainwater or other liquid [~~wastes~~] waste to a point of disposal. A drainage system does not include the mains of a public sewer system or a private or public sewage treatment or disposal plant.

Gravity. A drainage system that drains by gravity into the building sewer.

Sanitary. A drainage system that carries sewage or similar matter.

Storm. A drainage system that carries only stormwater, potable clear water waste, and groundwater.

ESSENTIALLY NONTOXIC TRANSFER [~~FLUIDS~~] FLUID. Fluids having a Gosselin rating of 1, including propylene glycol; mineral oil; polydimethylsiloxane; hydrochlorofluorocarbon, chlorofluorocarbon and carbon refrigerants; and FDA-approved boiler water additives for steam boilers.

ESSENTIALLY TOXIC TRANSFER [~~FLUIDS~~] FLUID. Soil, waste or gray water and fluids having a Gosselin rating of 2 or more, including ethylene glycol, hydrocarbon oils, ammonia refrigerants and hydrazine.

EXISTING [~~INSTALLATIONS~~] INSTALLATION. Any plumbing system regulated by this code that was legally installed prior to [~~the effective date of this code~~] July 1, 2008, or for which a permit to install has been issued prior to such date or prior to the effective date of a subsequent amendment of this code.

FIXTURE FITTING.

Supply fitting. A fitting that controls the volume[~~ and/or directional~~] , direction of flow or both, of water and is either attached to or accessible from a fixture, or is used with an open or atmospheric discharge**.**

Waste fitting. A combination of components that conveys the sanitary waste from the outlet of a fixture to the connection to the sanitary drainage system.

GREASE INTERCEPTOR. A plumbing appurtenance that is installed in a sanitary drainage system to intercept grease-laden wastes from a wastewater discharge. Such device has the ability to intercept free-floating fats and oils.

[~~Flow control.~~ ~~A device installed upstream from the interceptor, having an orifice that controls the rate of flow through the interceptor and an air intake (vent) downstream from the orifice that allows air to be drawn into the flow stream.~~]

GREASE REMOVAL DEVICE, AUTOMATIC (GRD). A plumbing appurtenance that is installed in the sanitary drainage system to intercept [~~grease-laden waste~~] free-floating fats, oils and grease from [~~wastewater~~] waste water discharge. Such a device operates on a time- or event-controlled basis and has the ability to remove free-floating fats, oils and grease automatically without intervention from the user[~~,~~] except for maintenance.

GROUNDWATER OR GROUND WATER. Water located beneath the ground surface in soil pore spaces, [~~and~~] in the fractures of rock formations and any water removed from the ground.

HORIZONTAL PIPE. Any pipe or fitting that makes an angle of less than 45 degrees (0.79 rad) with [~~the~~] a horizontal plane.

HOT WATER. Water at a temperature greater than or equal to 110°F (43°C).

INDIVIDUAL VENT. A pipe installed to vent a fixture trap and that connects with the vent system above the fixture served or terminates in the open air.

JOINT.

Expansion. A loop, return bend, return offset or manufactured device that provides for the expansion and contraction in a piping system and is utilized in tall buildings or where there is a rapid change of temperature, as in power plants, steam rooms and similar occupancies.

Flexible. Any joint between two pipes that permits one pipe to be deflected or moved without movement or deflection of the other pipe.

Mechanical. See "Mechanical joint."

Slip. A type of joint made by means of a washer or a special type of packing compound in which one pipe is slipped into the end of an adjacent pipe.

LEADER. [~~A~~] An exterior drainage pipe for conveying storm water from roof or gutter drains to an approved means of disposal.

LOW-PRESSURE STEAM-HEATING BOILER. A boiler [~~furnishing~~] in which steam is generated and that operates at [~~pressures~~] a steam pressure not exceeding 15 psig (103 kPa gauge).

MACERATING TOILET [~~SYSTEMS~~] SYSTEM. An assembly consisting of a water closet and sump with a macerating pump that is designed to collect, grind and pump wastes from the water closet and up to two other fixtures connected to the sump.

MECHANICAL JOINT. A connection between pipes, fittings, or pipes and fittings that is not screwed, caulked, threaded, soldered, solvent cemented, brazed[~~or~~] , welded or heat fused. A joint in which compression is applied along the centerline of the pieces being joined. In some applications, the joint is part of a coupling, fitting or adapter.

MEDICAL VACUUM [~~SYSTEMS~~] SYSTEM. A system consisting of central-vacuum-producing equipment with pressure and operating controls, shutoff valves, alarm-warning systems, gauges and a network of piping extending to and terminating with suitable station inlets at locations where patient suction may be required.

PLUMBING APPLIANCE. [~~Any one of a special class of plumbing fixtures~~] Water or drain-connected devices intended to perform a special function. [~~Included are fixtures having the~~] These devices have their operation or control dependent on one or more energized components, such as motors, controls, or heating elements[~~, or pressure- or temperature-sensing elements~~]. Such [~~fixtures~~] devices are manually adjusted or controlled by the owner or operator, or are operated automatically through one or more of the following actions: a time cycle, a temperature range, a pressure range, a measured volume or weight.

PLUMBING APPURTENANCE. A manufactured device, prefabricated assembly or [~~an~~] on-the-job assembly of component parts that is an adjunct to the basic piping system and plumbing fixtures. An appurtenance demands no additional water supply and does not add any discharge load to a fixture or to the drainage system.

PLUMBING FIXTURE. [~~A receptacle or device that is either permanently or temporarily connected to the water distribution system of the premises and demands a supply of water therefrom; discharges wastewater, liquid-borne waste materials or sewage either directly or indirectly to the drainage system of the premises; or requires both a water supply connection and a discharge to the drainage system of the premises.~~] A receptacle or device that is connected to a water supply system or discharges to a drainage system or both. Such receptacles or devices require a supply of water; or discharge liquid waste or liquid-borne solid waste; or require a supply of water and discharge waste to a drainage system.

PLUMBING SYSTEM. [~~Includes~~] A system that includes the water [~~supply and~~] distribution pipes; plumbing fixtures and traps; water-treating or water-using equipment; soil, waste and vent pipes; and [~~sanitary and storm sewers and~~] building drains; in addition to their respective connections, devices and appurtenances within a structure or premises; and the water service, building sewer and building storm sewer serving such structure or premises.

READY ACCESS (TO). That which enables a device, fixture, appliance or equipment to be directly reached without requiring the removal or movement of any panel, door or similar obstruction and without the use of a portable ladder, step stool or similar device.

RELIEF VALVE.

Pressure relief valve. A pressure-actuated valve held closed by a spring or other means and designed to relieve pressure automatically at the pressure at which such valve is set.

Temperature and pressure relief (T&P) valve. A combination relief valve designed to function as both a temperature relief and a pressure relief valve.

Temperature relief valve. A temperature-actuated valve designed to discharge automatically at the temperature at which such valve is set.

RETENTION SYSTEM. A system that captures rainwater or storm water runoff on site with no release.

SEWAGE. Any liquid waste containing animal or vegetable matter in suspension or solution, including liquids containing chemicals in solution [~~including but not limited to wastewater, human or animal wastes, non-potable clear water waste, and industrial waste.~~].

SEWER.

Building sewer. That part of the drainage system that extends from the end of the building drain, or the outlet of the most downstream trap, private manhole, catch basin, detention tank or similar fixture or equipment, and conveys the discharge to a public sewer[~~, private sewer, individual sewage disposal system or other point of disposal~~].

Combined sewer. A sewer receiving a combination of sewage, storm water, groundwater and [~~non-potable~~] nonpotable clear water waste.

Private sewer. A private sanitary, storm, or combined sewer that is designed and constructed in accordance with the requirements of the City drainage plan [~~to serve a specific development and is located in a finally mapped street, a record street, or a sewer easement, and discharges into an approved outlet~~].

Public sewer. A sewer that is owned by the city of New York.

Sanitary sewer. A sewer that conveys only sewage.

Storm sewer. A sewer that conveys only storm water, groundwater and potable clear water waste.

SINGLE-OCCUPANT TOILET ROOM. [~~A toilet room with no more than one water closet and no more than one urinal.~~] An enclosed space defined by walls and having a securable door that does not contain fixtures in excess of one water closet, one urinal, and one lavatory which is intended to be used by a single individual independently or an individual requiring assistance. The water closet shall not be within a secondary enclosure.

[~~**Exception:** A toilet room with one urinal and a door to such room that is not securable from within.~~]

STERILIZER.

Boiling type. A boiling-type sterilizer is a fixture of a nonpressure type utilized for boiling instruments, utensils or other equipment for disinfection. These devices are portable or are connected to the plumbing system.

Instrument. A device for the sterilization of various instruments.

Pressure (autoclave). A pressure vessel fixture designed to utilize steam under pressure for sterilizing.

Pressure instrument washer sterilizer. A [~~pressure instrument washer sterilizer is a~~] pressure vessel fixture designed to both wash and sterilize instruments during the operating cycle of the fixture.

Utensil. A device for the sterilization of utensils as utilized in health care services.

Water. A [~~water sterilizer is a~~] device for sterilizing water and storing [~~sterile~~] water.

STORM WATER OR STORMWATER. [~~The excess water running off from the surface of a drainage area during and immediately following a period of precipitation.~~] Natural precipitation, including snow melt, that has contacted a surface at or below grade.

SWIMMING POOL. Any structure, basin, chamber or tank containing an artificial body of water for swimming, diving or recreational bathing having a depth of [~~2 feet (610 mm)~~] 3 feet (915 mm) or more at any point.

TRAP. A fitting or device that provides a liquid seal to prevent the emission of sewer gases without materially affecting the flow of sewage or [~~wastewater~~] waste water through the trap.

WATER PIPE.

Water distribution pipe. A pipe within the structure or on the premises that conveys water from the water service pipe, or from the meter when the meter is at the structure, to the points of utilization**.**

Water service pipe. The pipe from the water main or other source of potable water supply, or from the meter when the meter is at the public right of way, to the water distribution system of the building served.

WELL.

Bored. A well constructed by boring a hole in the ground with an auger and installing a casing.

Drilled. A well constructed by making a hole in the ground with a drilling machine of any type and installing a casing and screen.

Driven. A well constructed by driving a pipe in the ground. The drive pipe is usually fitted with a well point and screen.

Dug. A well constructed by excavating a large-diameter shaft and installing a casing.

§5. Section PC 202 of chapter 2 of the New York city plumbing code is amended by adding the definitions of "CONVEYANCE PIPE" , "CURED-IN-PLACE PIPE (CIPP)", "DEMAND RECIRCULATION WATER SYSTEM" , "DRINKING FOUNTAIN", "FLOW CONTROL (Vented)", "FOOD WASTE DISPOSER", "GRAY WATER" , "NONMEDICAL GAS SYSTEM", "NONPOTABLE WATER" , "ON-SITE NONPOTABLE WATER", "ON-SITE NONPOTABLE WATER REUSE SYSTEM" "RAINWATER", 'TOILET FACILITY', "WALL-HUNG WATER CLOSET", "WASTE RECEPTOR", and "WATER CLOSET COMPARTMENT", "WATER PIPE, CONVEYANCE" , in alphabetical order, to read as follows:

CONVEYANCE PIPE. See "Water Pipe, conveyance."

CURED-IN-PLACE PIPE (CIPP). A piping repair method utilizing a resin-impregnated, flexible tube inverted into existing conduit by use of a hydrostatic head or air pressure, or by a process that sprays epoxy directly onto the walls of the rehabilitated pipe.

DEMAND RECIRCULATION WATER SYSTEM. A water distribution system where one or more pumps prime the service hot water piping with heated water upon a demand for hot water.

DRINKING FOUNTAIN. A plumbing fixture that is connected to the potable water distribution system and drains to an approved point of disposal. The fixture allows the user to obtain a drink directly from a stream of flowing water without the use of any accessories.

FLOW CONTROL (Vented). A device installed upstream from the interceptor, having an orifice that controls the rate of flow through the interceptor and an air intake (vent) downstream from the orifice that allows air to be drawn into the flow stream**.**

FOOD WASTE DISPOSER. An electric motor-driven device installed between a sink's drain and trap for grinding food waste and disposing of such ground food waste through the plumbing drainage system.

GRAY WATER. Discharge from lavatories, bathtubs, showers, clothes washers, and laundry trays.

NONMEDICAL GAS SYSTEM. The complete system to convey nonmedical gases for use in laboratory, research, and educational facilities which are not for patient application from a central supply system. Nonmedical gas systems shall not include those for industrial applications.

NONPOTABLE WATER. Water not safe for drinking, personal or culinary utilization.

ON-SITE NONPOTABLE WATER. Nonpotable water from other than public utilities, on-site surface sources and subsurface natural freshwater sources. Examples of such water are gray water, on-site reclaimed water, collected rainwater, captured condensate and rejected water from reverse osmosis systems.

ON-SITE NONPOTABLE WATER REUSE SYSTEM. A water system for the collection, treatment, storage, distribution and reuse of nonpotable water generated on site.

RAINWATER. Water from natural precipitation.

TOILET FACILITY. A room or space that contains not less than one water closet and one lavatory.

WALL-HUNG WATER CLOSET. A wall-mounted water closet installed in such a way that the fixture does not touch the floor.

WASTE RECEPTOR. A floor sink, standpipe, hub drain or floor drain that receives the discharge of one or more indirect waste pipes.

WATER CLOSET COMPARTMENT. An enclosed space defined by either walls or partitions and having a securable door that does not contain plumbing fixtures in excess of one water closet.

WATER PIPE, conveyance. A pipe within the structure or on the premises that conveys water from a source to the points of utilization, and including piping to and from storage containers. Such piping shall be used only in nonpotable water systems, including water recycling and irrigation.

PART C

CHAPTER 3

§1. Chapter 3 of the New York city plumbing code, as added by local law number 99 for the year 2005, sections 301.3, 301.7, 302.1, 302.2, 305.1, 305.8, 307.6, 308.9, 309.1, 310.4, PC 312, 314.1, 314.1.1, 314.2, 314.2.1, 314.2.2, 314.2.3.1, 314.2.3.2, 314.2.4, and tables 308.5 and 314.2.2 as amended by, and section 310.5 as added by, local law number 41 for the year 2012, and sections 301.4, 303.2, 308.5, and 309.2 as amended by local law 8 for the year 2008, and section 313.1 as amended by local law number 85 for the year 2009, and section 314.2.3 as amended by, and section 301.6 as added by, local law number 51 for the year 2014, is amended to read as follows:

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 [~~the sanitary~~] drainage system. [~~All plumbing~~] Plumbing fixtures, drains, appurtenances and appliances used to receive or discharge liquid [~~wastes~~] 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 [~~the~~] indirect waste systems required by Chapter 8.

[~~Exception:~~ ~~Fixtures discharging wastewater shall not be required to discharge to the sanitary drainage system where such fixtures discharge to a water recycling system in accordance with Appendix C.~~]

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 [~~specified~~] 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 [~~installation~~] 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[~~, combustible~~] , 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.

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.

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 [~~installation~~] 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.

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.

303.4 Third-party [~~testing and~~] certification. All plumbing products and materials shall [~~comply~~] be listed by a third-party certification agency as complying with the referenced [~~standards, specifications and performance criteria of this code and~~] standards. Products and materials shall be identified in accordance with Section 303.1. [~~When required by Table 303.4, plumbing products and materials shall either be tested by an approved third-party testing agency or certified by an approved third-party certification agency.~~]

[~~TABLE 303.4~~
~~PRODUCTS AND MATERIALS REQUIRING THIRD-PARTY TESTING AND THIRD-PARTY CERTIFICATION~~

~~PRODUCT OR MATERIAL~~	**~~THIRD-PARTY CERTIFIED~~**	**~~THIRD-PARTY TESTED~~**
~~Portable water supply system components and potable water fixture fittings~~	~~Required~~	—
~~Sanitary drainage and vent system components~~	~~Plastic pipe, fittings and pipe-related components~~	~~All others~~
~~Waste fixture fittings~~	~~Plastic pipe, fittings and pipe-related components~~	~~All others~~
~~Storm drainage system components~~	~~Plastic pipe, fittings and pipe-related components~~	~~All others~~
~~Plumbing fixtures~~	—	~~Required~~
~~Plumbing appliances~~	~~Required~~	—
~~Backflow prevention devices~~	~~Required~~	—
~~Water distribution system safety devices~~	~~Required~~	—
~~Special waste system components~~	—	~~Required~~
~~Subsoil drainage system components~~	—	~~Required~~

]

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.

304.2 Strainer plates. All strainer plates on drain inlets shall be designed and installed so that all openings are not greater than [~~0.5 inch~~] ½ inch (12.7 mm) in least dimension.

304.3 Reserved.

304.4 Openings for pipes. In or on structures where openings have been made in walls, floors or ceilings for the passage of pipes, [~~such openings shall be closed and protected in an approved manner~~] 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

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. [~~Minimum thickness~~] Thickness of sheathing or wrapping material shall be not less than 0.025 inch (0.64 mm).

305.2 [~~Breakage.~~ ~~Pipes passing through or under walls shall be protected from breakage.~~]

[~~305.3~~] 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.

[~~305.4 Sleeves.~~ ~~Annular spaces between sleeves and pipes shall be filled or tightly caulked in an approved manner. Annular spaces between sleeves and pipes in fire-resistance-rated assemblies shall be filled or tightly caulked in accordance with the~~ ~~*New York City Building Code*~~.]

[~~305.5~~] 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.

[~~305.6~~] 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 [~~temperature~~] 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.

[~~305.6.1 Sewer~~] 305.4.1 Building sewer and building drain depth. Building [~~sewers~~] 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.

[~~305.7~~] 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.

[~~305.8~~] 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 [~~1.5 inches~~] 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-inches (1.436 mm)~~] 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 [~~a minimum of~~] not less than 2 inches (51 mm) above sole plates and below top plates.

[~~305.9~~] 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.

[~~305.10~~] 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*.

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 [~~Over excavation~~] 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 [~~of~~] not greater than 6 inches (152 mm) [~~maximum~~] 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 [~~a minimum of~~] 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.

306.3 Backfilling. [~~Backfill~~] Material used under and beside pipes shall be clean backfill, [~~shall be~~] free [~~from~~] 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~~] 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.

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 supporting 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 Cutting, notching or bored holes.** A framing member shall not be cut, notched or bored in excess of limitations specified in 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.

[~~307.3~~] 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*.

[~~307.4 Alterations to trusses~~] 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. [~~Alterations resulting in the addition of loads to any member (e.g., HVAC equipment, water heater) shall not be permitted without verification that the truss is capable of supporting such additional loading.~~]

[~~307.5 Trench location.~~ ~~Trenches installed parallel to footings shall not extend below the 45-degree (0.79 rad) bearing plane of the footing or wall.~~]

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.

[~~307.6~~] 307.7 Piping materials exposed within plenums. [~~All piping~~] Piping materials exposed within plenums shall comply with the provisions of the *New York City* [~~*Construction Codes*~~] *Mechanical Code*.

SECTION PC *308*
PIPING SUPPORT

308.1 General. [~~All plumbing~~] 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.

[~~Exception:~~ ~~The interval of support for piping systems designed to provide for expansion/contraction shall conform to the engineered design in accordance with Section 28-113.2.2 of the~~ ~~*Administrative Code*~~.]

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 [~~20~~] 15
Copper or copper-alloy pipe	12	At each story height no greater than 12

PIPING MATERIAL	MAXIMUM HORIZONTAL SPACING (feet)	MAXIMUM VERTICAL SPACING (feet)
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
[~~Steel pipe~~]	[~~12~~]	[~~At every story height~~]
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. [~~Midstory guide for sizes 2 inches and smaller.~~] 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.

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.

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.

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.

[~~**308.9 Parallel water distribution systems.** Piping bundles for manifold systems shall be supported in accordance with Table 308.5. Support at changes in direction shall be in accordance with the manufacturer's installation instructions. Hot and cold water piping shall not be grouped in the same bundle.~~]

SECTION PC *309*
FLOOD HAZARD RESISTANCE

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*.

309.2 Flood hazard. For structures located in flood hazard areas, the following systems and equipment shall be located [~~at or above the design flood elevation~~] <u>and installed as required by Appendix G of the *New York City Building Code*</u>:

[~~Exception:~~ ~~In accordance with Appendix G of the *New York City Building Code*, the following 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.~~]

1. [~~All water~~] <u>Water</u> 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 [~~at least~~] <u>not less than</u> 1 foot [~~(304.8 mm)~~] <u>(305 mm)</u> above the design flood elevation.
4. [~~All sanitary~~] <u>Sanitary</u> drainage piping.
5. [~~All storm~~] <u>Storm</u> drainage piping.
6. Manhole covers shall be sealed, except where elevated to or above the design flood elevation.
7. [~~All other~~] <u>Other</u> plumbing fixtures, faucets, fixture fittings, piping systems and equipment.
8. Water heaters.
9. Vents and vent systems.

<u>**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.</u>

309.3 [~~Flood hazard~~] Coastal high-hazard areas [~~subject to high-velocity wave action~~] and coastal A zones. Structures located in [~~flood hazard~~] <u>coastal high-hazard</u> areas [~~subject to high-velocity wave action~~] <u>and coastal A zones</u> 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 [~~piping~~] <u>compartments</u>. [~~Piping, fixtures or equipment shall not be located in such a manner as to interfere with the normal operation of windows, doors or other means of egress openings.~~] <u>The location of plumbing fixtures and the requirements for compartments and partitions shall be in accordance with Section 405.</u>

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

[~~310.4 Water closet compartment.~~ ~~Each water closet utilized by the public or employees shall occupy a separate compartment with walls or partitions and a door enclosing the fixtures to ensure privacy.~~]

[~~Exceptions:~~]

[~~1. Water closet compartments shall not be required in a single-occupant toilet room with a lockable door.~~]

[~~2. Toilet rooms located in day care and child-care facilities and containing two or more water closets shall be permitted to have one water closet without an enclosing compartment.~~]

[~~3. Toilet areas located within Group I-3 housing areas.~~]

[~~310.5 Urinal partitions.~~ ~~Each urinal utilized by the public or employees shall occupy a separate area with walls or partitions to provide privacy. The walls or partitions shall begin at a height not more than 12 inches (305 mm) from and extend not less than 60 inches (1524 mm) above the finished floor surface. The walls or partitions shall extend from the wall surface at each side of the urinal a minimum of 18 inches (457 mm) or to a point not less than 6 inches (152 mm) beyond the outermost front lip of the urinal measured from the finished back wall surface, whichever is greater.~~]

[~~Exceptions:~~]

[~~1. Urinal partitions shall not be required in a single occupant or family/assisted-use toilet room with a lockable door.~~]

[~~2. Toilet rooms located in day-care and child-care facilities and containing two or more urinals shall be permitted to have one urinal without partitions.~~]

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 [~~312.10~~] 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.

[~~Exception~~] Exceptions:

1. The repair, replacement or alteration to existing water, waste, vent, [~~or~~] storm water piping or[~~ the~~], 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 [~~three (3)~~] 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 [~~(69 kPa)~~] (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~~] 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~~] 10-foot (3048 mm) head of water. This pressure shall be held for [~~at least~~] not less than15 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 [~~at least~~] not less than 15 minutes. Any adjustments to the test pressure required because of changes in ambient [~~temperature~~] temperatures or the seating of gaskets shall be made prior to the beginning of the test period.

312.4 Drainage and vent final [~~test~~] inspection. The final [~~test~~] 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 [~~PC 107~~] 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 [~~Gravity sewer test.~~ ~~Gravity sewer tests shall consist of plugging the end of the building sewer at the point of connection with the public sewer, filling the building sewer with water, testing with not less than a 10-foot (3048 mm) head of water and maintaining such pressure for 15 minutes.~~] **Reserved.**

312.7 Forced [~~sewer~~] drain test. Forced **[~~sewer~~] drain** tests shall consist of plugging the end of the [~~building sewer~~] pump discharge at the point of connection with the [~~public sewer~~] 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 [~~within a building~~] 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.

Exception: [~~Corrugated HDPE pipe~~] Storm drainage piping installed outside of a building shall be tested to withstand the head of water equal to grade, but such testing may be conducted after inspection and backfilling.

312.9 Shower liner test. Where shower floors and receptors are made [~~water-tight~~] 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~~] 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.

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

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

312.10.2 Testing. Reduced pressure principle[~~ backflow preventer assemblies~~] , double [~~check-valve assemblies~~] check, pressure vacuum breaker, reduced pressure detector fire protection [~~backflow prevention assemblies, and~~] , double check detector fire protection[~~ backflow prevention assemblies~~] , 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. [~~Refer to Section 608.13 and the Department of Environmental Protection for additional testing requirements.~~] 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.

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

312.11.1 Welder's qualifications. Welders installing domestic water piping within buildings at any pressure 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[~~(s)~~] 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 [~~installation~~] 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 [~~314.2.4~~] 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 [~~1/8~~] 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, [~~polybutylene,~~] polyethylene, ABS, CPVC, or PVC pipe or tubing. Polypropylene tubing may be used in lengths that do not exceed 12" for an individual drain application. [~~All components~~] 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 relative to the material type. Condensate waste and drain line size shall be not [~~be~~]less than [~~¾ inch (19 mm)~~] ¾-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 condensate drainage, the pipe or tubing shall be sized in accordance with Table 314.2.2.

TABLE 314.2.2
CONDENSATE DRAIN SIZING

EQUIPMENT CAPACITY	MINIMUM CONDENSATE PIPE DIAMETER [~~(inch)~~]
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	$1^1/_4$ [~~inch~~] inches
Over 90 tons to 125 tons of refrigeration	$1^1/_2$ [~~inch~~] inches
Over 125 tons to 250 tons of refrigeration	2 [~~inch~~] 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 [~~minimum~~] depth of not less than 1½ inches (38 mm), shall [~~not~~] 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 [~~minimum~~] thickness of not less than[~~ 0.0236 inches~~] 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 [~~minimum~~] thickness of not less than [~~0.0625 inch~~] 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~~] 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.

Exception: Fuel-fired appliances that automatically shut down operation in the event of a stoppage in the condensate drainage system.

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 [~~appliances~~] an appliance, equipment or insulation [~~are~~] is subject to water damage when auxiliary drain pans fill, [~~such portions~~] that portion of the [~~appliances~~] appliance, equipment and insulation shall be installed above the flood level rim of the[~~pan~~] pans. Supports located inside of the [~~pan~~] 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.

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*.

SECTION PC 316
RESERVED

PART D

CHAPTER 4

§1. Chapter 4 of the New York city plumbing code, as added by local law number 99 for the year 2005, section 417.1 as amended by and section 421.4 as renumbered by local law number 8 for the year 2008, section 428 as added by local law number 54 for the year 2010, section 410 as added by local law number 55 for the year 2010, sections 403, 408.3,417.5.1, 417.5.2 and 419.4 as added by and sections 405.3.1, 405.4, 405.4.3, 406.3, 407.2, 408.2, 412.1, 412.2, 413.1, 416.3, 416.5, 417.2, 417.3, 417.4.2, 419.1, 421.2, 421.5, 421.6 and 424 as amended by local law number 41 for the year 2012, sections 424.1.3 and 425.1.2 as added by local law number 79 for the year 2013, sections 401.3, 403.3 and 410.2 and footnote k of table 403.1 as amended by local law number 141 for the year 2013, no. 5, and 7. and footnote m of table 403.1 as amended by local law number 110 for the year 2013, section 429 as added by local law number 148 for the year 2013, occupancy A-5 of table 403.1 as amended by local law number 51 for the year 2014 and footnote j of table 403.1, and sections 403.1.3 and 403.2.1 as added by and section 403.4 as amended by local law number 79 for the year 2016, is amended to read as follows:

CHAPTER 4

FIXTURES, FAUCETS AND FIXTURE FITTINGS

SECTION **PC** *401*
GENERAL

401.1 Scope. This chapter shall govern the materials, design and installation of plumbing fixtures, faucets and fixture fittings in accordance with the type of occupancy, and shall provide for the minimum number of fixtures for various types of occupancies.

401.2 Prohibited fixtures and connections. Water closets having a concealed trap seal or an unventilated space or having walls that are not thoroughly washed at each discharge in accordance with [~~ASME A112.19.2M~~] ASME A112.19.2/CSA B45.1 shall be prohibited. Any water closet that permits siphonage of the contents of the bowl back into the tank shall be prohibited. Trough urinals shall be prohibited.

401.3 Water conservation. The maximum water flow rates and flush volume for plumbing fixtures and fixture fittings shall comply with Section [~~604.4~~] 604.

SECTION **PC** *402*
FIXTURE MATERIAL

402.1 Quality of fixtures. Plumbing fixtures shall be constructed of approved materials, with smooth, impervious surfaces, free from defects and concealed fouling surfaces, and shall conform to standards cited in this code. All porcelain enameled surfaces on plumbing fixtures shall be acid resistant.

402.2 Materials for specialty fixtures. Materials for specialty fixtures not otherwise covered in this code shall be of stainless steel, soapstone, chemical stoneware or plastic, or shall be lined with lead, copper-base alloy, nickel-copper alloy, corrosion-resistant steel or other material especially suited to the application for which the fixture is intended.

402.3 Sheet copper. Sheet copper for general applications shall conform to ASTM B 152 and shall not weigh less than 12 ounces per square foot (3.7 kg/m^2).

402.4 Sheet lead. Sheet lead for pans shall not weigh less than 4 pounds per square foot (19.5 kg/m^2) and shall be coated with an asphalt paint or other approved coating.

SECTION **PC** *403*
MINIMUM PLUMBING FACILITIES

403.1 Minimum number of fixtures. Plumbing fixtures shall be provided for the type of occupancy and in the minimum number shown in Table 403.1. Types of occupancies not shown in Table 403.1 shall be considered individually by the commissioner. The number of occupants shall be determined by the *New York City Building Code*. Occupancy classification shall be determined in accordance with the *New York City Building Code*.

TABLE 403.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES[a]
(See Sections [~~403.2~~] 403.1.1and [~~403.3~~] 403.2)

NO.	CLASSIFICATION	OCCUPANCY[i] h	DESCRIPTION	WATER CLOSETS [~~(URINALS SEE SECTION 419.2)~~] (URINALS: SEE SECTION 419.2)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAIN [~~(SEE SECTION 410.1)~~[e,f]] (SEE SECTION 410[e])	OTHER
				MALE	FEMALE	MALE	FEMALE			
1	Assembly	A-1[d]	Theaters and other buildings for the performing arts and motion pictures	1 per 70 for the first 210 and 1 per 125 for the remainder exceeding 210	1 per 35 for the first 210 and 1 per 65 for the remainder exceeding 210	1 per 200		—	1 per 500	1 service sink
		A-2[d]	Nightclubs, bars[g]f, taverns, dance halls and buildings for similar purposes	1 per 75[j]i	1 per 40[j]i	1 per 75		—	1 per 500	1 service sink
			Restaurants[h]g, banquet halls and food courts	1 per 75	1 per 75	1 per 200		—	1 per 500	1 service sink

		A-3[d]	Auditoriums without permanent seating, art galleries, exhibition halls, museums, lecture halls, [~~libraries,~~] arcades and gymnasiums	1 per 70 for the first 210 and 1 per 125 for the remainder exceeding 210	1 per 35 for the first 210 and 1 per 65 for the remainder exceeding 210	1 per 200		—	1 per 500	1 service sink
			Passenger terminals and transportation facilities	1 per 500	1 per 500	1 per 750		—	1 per 1,000	1 service sink
			Places of worship and other religious services	1 per 150	1 per 75	1 per 200		—	1 per 1,000	1 service sink
		A-4	Coliseums, arenas, skating rinks, pools and tennis courts for indoor sporting events and activities	1 per 75 for the first 1,500 and 1 per 120 for the remainder exceeding 1,500	1 per 40 for the first [~~1,500~~] 1,520 and 1 per 60for the remainder exceeding [~~1,500~~] 1,520	1 per 200	1 per 150	—	1 per 1,000	1 service sink

		A-5	Stadiums, amusement parks, bleachers and grandstands for outdoor sporting events and activities	1 per 75 for the first 1,500 and 1 per 120 for the remainder exceeding 1,500	1 per 40 for the first 1,520 and 1 per 60 for the remainder exceeding 1,520	1 per 200	1 per 150	—	1 per 1,000	1 service sink
2	Business	B[~~k~~]j,n	Buildings for the transaction of business, professional services, other services including merchandise, office buildings, banks, light industrial and similar uses	No. of persons for each sex / No. of fixtures 1 -20 1 21-45 2 46-70 3 71-100 4 101-140 5 141-190 6 1 fixture for each additional 50 persons		No. of persons No. of for each sex fixtures 1-25 1 26-50 2 51-75 3 76-115 4 116-160 5 1 fixture for each additional 60 persons		—	1 per 100	1 service sink[m]
3	Educational	E	Educational facilities, including libraries accessory to Group E	1 per 50		1 per 50		—	1 per 100	1 service sink

4	Factory and industrial	F-1 and F-2	Structures in which occupants are engaged in work fabricating, assembly or processing of products or materials	1 per 100	1 per 100	(see Section 411)	1 per 400	1 service sink
5	Institutional	I-1[~~m~~]k	Residential care	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
		I-2	[~~Hospital~~] Hospitals, ambulatory nursing home [~~patients~~] care recipient	1 per room[c]	1 per room[c]	1 per 15	1 per 100	1 service sink per floor
			Employees, other than residential care[b]	1 per 25	1 per 35	—	1 per 100	—
			Visitors, other than residential care	1 per 75	1 per 100	—	1 per 500	—
		I-3	Prisons[b]	1 per cell	1 per cell	1 per 15	1 per 100	1 service sink
			Reformatories, detention centers, and correctional centers[b]	1 per 15	1 per 15	1 per 15	1 per 100	1 service sink

			Employees[b]	1 per 25	1 per 35	—	1 per 100	—
		I-4	Adult day care and [~~Childcare~~] child day care	1 per 15	1 per 15	1 per 15	1 per 100	1 service sink
6	Mercantile	M	Retail stores, service stations, shops, salesrooms, markets and shopping centers	1 per 500	1 per 750	—	1 per 1,000	1 service sink[m]
7	Residential	R-1[~~m~~] [k]	Hotels, motels, boarding houses (transient)	1 per guestroom	1 per guestroom	1 per guestroom	—	1 service sink
		R-1[~~m~~] [k]	Dormitories, fraternities, sororities and boarding houses (not transient)	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
		R-2[~~m~~] [k]	Apartment house	1 per dwelling unit	1 per dwelling unit	1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per 20 dwelling units

		R-3	One- and two-family dwellings and lodging houses with five or fewer guestrooms	1 per dwelling unit	1 per dwelling unit	1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per dwelling unit
		R-3[~~m~~] [k]	Congregate living facilities with 16 or fewer persons	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
8	Storage	S-1[~~and~~] S-2	Structures for the storage of goods, warehouses, storehouse and freight depots. Low and [~~moderate hazard~~] Moderate Hazard.	1 per 100	1 per 100	See Section 411	1 per 1,000	1 service sink

a. The fixtures shown are based on one fixture being the minimum required for the number of persons indicated. Any fraction of the number of persons requires an additional fixture. The number of occupants shall be determined by the *New York City Building Code*.

b. Toilet facilities for employees shall be separate from facilities for inmates or [~~patients~~] care recipients.

c. A single-occupant toilet room with one water closet and one lavatory serving not more than two adjacent patient sleeping units shall be permitted where such room is provided with direct access from each patient sleeping unit and with provisions for privacy.

d. The occupant load for seasonal outdoor seating and entertainment areas shall be included when determining the minimum number of facilities required.

e. The minimum number of required drinking foundations shall comply with table 403.1 and Chapter 11 of the *New York City Building Code*.

[~~f. Drinking fountains are not required for an occupant load of 15 or fewer.~~]

[~~g.~~] f. For the purposes of this table only, "Bar" shall mean a business establishment or a portion of a nonprofit entity devoted primarily to the selling and serving of alcoholic beverages for consumption by the public, guests, patrons, or members on the premises and in which the serving of food is only incidental.

[~~h.~~] g. The total number of occupants for a single establishment comprising of a restaurant with an accessory bar shall be considered as a restaurant for the purposes of determining the minimum number of plumbing fixtures.

[~~i.~~] h. As per the *New York City Building Code.*

[~~j.~~] i. The requirements for the number of water closets for a total occupancy of 150 persons or fewer shall not apply to bars except that, subject to the requirements of Section 403.2.1, there shall be at least one water closet for men and at least one water closet for women or at least two single-occupant toilet rooms.

[~~k.~~] j. The number of fixtures for building or nonaccessory tenant space used for assembly purposes by fewer than 75 persons and classified as Group B occupancy in accordance with Section 303.1, Exception 2 of the *New York City Building Code* shall be permitted to be calculated in accordance with the requirements for Assembly occupancies.

[~~m.~~] k. In addition to the requirements of Table 403.1, residential occupancies I-1, R-1, R-2, and R-3 shall provide fixtures in compliance with the requirements of Section 614 for emergency drinking water access.

m. For business and mercantile occupancies with an occupant load of 15 or fewer, service sinks shall not be required.

n. Libraries that are not classified as accessory to Group E per Section 304.1 of the *New York City Building Code* shall comply with fixture counts for Group B occupancies.

403.1.1 Fixture calculations. [~~Where separate fixture ratios are provided to male and female individually in Table 403.1~~] To determine the occupant load of each sex, the total occupant load shall [~~first~~] be divided in half [~~before the corresponding fixture ratio is applied individually to each sex~~]. [~~Where a single fixture ratio is provided to the total occupant load in Table 403.1, such ratio shall be applied to the total occupant load including both male and female before dividing the resulting number of fixtures equally between male and female.~~] To determine the required number of fixtures, the fixture ratio or ratios for each fixture type shall be applied to the occupant load of each sex in accordance with Table 403.1. Fractional numbers resulting from applying the fixture ratios of Table 403.1 shall be rounded up to the next whole number. For calculations involving multiple occupancies, such fractional numbers for each occupancy shall first be summed and then rounded up to the next whole number. Fixture calculations in Group B office occupancies shall utilize the total occupant load on a given floor to determine the number of fixtures required for that floor.

Exception: The total occupant load shall not be required to be divided in half where approved statistical data indicates a distribution of the sexes of other than 50 percent of each sex.

403.1.2 Family or assisted-use toilet and bath fixtures. Fixtures located within family or assisted-use toilet and bathing rooms required by Section 1109.2.1 of the *New York City Building Code* are permitted to be included in the number of required fixtures for either the male or female occupants in assembly and mercantile occupancies.

403.1.3 Single-occupant toilet fixtures. Fixtures located within single-occupant toilet rooms are permitted to be included in the number of fixtures required by Section 403, or where applicable the 1968 Building Code, for either the male or the female occupants. Fixtures located within toilet rooms subject to the exception of Section 403.2.1 are permitted to be included in the number of fixtures required by Section 403, or where applicable the 1968 Building Code, only for that sex.

403.2 Separate facilities. Where plumbing fixtures are required, separate facilities shall be provided for each sex.

Exceptions:

1. Separate facilities shall not be required for dwelling units and sleeping units.
2. In structures or tenant spaces where combined employee and public toilet facilities are provided in accordance with Section 403.3, separate facilities shall not be required where the total number of employees, customers, patrons and visitors is 30 or fewer.
3. In structures or tenant spaces where required toilet facilities for only employee use are provided in accordance with Section 403.3, separate facilities shall not be required where the total number of employees is 30 or fewer.
4. In structures or tenant spaces where required toilet facilities for only public use are provided in accordance with Section 403.3, separate facilities shall not be required where the total number of customers, patrons and visitors is 30 or fewer.

403.2.1 Family or assisted-use toilet facilities serving as separate facilities. Where a building or tenant space requires a separate toilet facility for each sex and each toilet facility is required to have only one water closet, two family or assisted-use toilet facilities shall be permitted to serve as the required separate facilities. Family or assisted use toilet facilities shall not be required to be identified for exclusive use by either sex as required by Section 403.4.

403.2.2 Single-occupant toilet rooms. All single-occupant toilet rooms shall be made available for use by persons of any sex. Existing toilet rooms shall comply with this section [~~by no later than January 1, 2017~~]. Nothing in this section shall be construed to affect or alter the number of toilet rooms in a building otherwise required pursuant to this code or where applicable the *1968 Building Code*.

Exception: Where egress from a single-occupant toilet room is through a room permissibly restricted by sex.

403.3 Required employee and public toilet facilities. Employees shall be provided with toilet facilities in all occupancies. The number of plumbing fixtures located within the required employee toilet facilities shall be provided in accordance with Section [~~PC~~] 403 for all employees. Customers, patrons and visitors shall be provided with public toilet facilities in structures and tenant spaces intended for public utilization. The number of plumbing fixtures located within the required public toilet facilities shall be provided in accordance with Section [~~PC~~] 403 for all customers, patrons and visitors. Employee and public toilet facilities may be separate or combined. Where combined facilities are provided, the number of plumbing fixtures shall be in accordance with Section [~~PC~~] 403 for all users.

Exception: Public utilization of toilet facilities shall not be required for:

1. Food service establishments, as defined in Section 81.03 of the *New York City Health Code*, with a seating capacity of less than 20, provided such establishments are less than 10,000 square feet (929 m^2).
2. Establishments less than 10,000 square feet (929 m^2) classified as Occupancy Group B or M pursuant to Sections 304.1 and 309.1 of the *New York City Building Code*, respectively, provided however that this exception shall not apply to a building or nonaccessory tenant space used for assembly purposes by fewer than 75 persons and classified as a Group B occupancy in accordance with Section [~~303.1, Exception 2~~] 303.1.2 of the *New York City Building Code*.

403.3.1 Access. The route to the public toilet facilities required by Section 403.3 shall not pass through kitchens, storage rooms or closets. Access to the required facilities shall be from within the building or from the exterior of the building. [~~All routes~~] Routes shall comply with the accessibility requirements of the *New York City Building Code*. [~~Employees, customers, patrons and visitors~~] The public shall have access to the required toilet facilities at all times that the building is occupied.

403.3.2 Prohibited toilet room location. Toilet rooms shall not open directly into a room used for the preparation of food for service to the public.

403.3.3 Location of toilet facilities in occupancies other than [~~covered~~] malls. In occupancies other than covered and open mall buildings, the required public and employee toilet facilities shall be located not more than one story above or below the space required to be provided with toilet facilities, and the path of travel to such facilities shall not exceed a distance of 500 feet (152 m).

Exception: The location and maximum [~~travel~~] distances of travel to required employee facilities in factory and industrial occupancies are permitted to exceed that required by this section, provided that the location and maximum [~~travel~~] distance of travel are approved [~~by the department~~].

[~~403.3.3~~] 403.3.4 Location of toilet facilities in [~~covered~~] malls. In covered and open mall buildings, the required public and employee toilet facilities shall be located not more than one story above or below the space required to be provided with toilet facilities, and the path of travel to such facilities shall not exceed a distance of 300 feet [~~(91 440 mm)~~] (91 m). In [~~covered~~] mall buildings, the required facilities shall be based on total square footage within a covered mall building or within the perimeter line of an open mall building, and facilities shall be installed in each individual store or in a central toilet area located in accordance with this section. The maximum [~~travel~~] distance of travel to central toilet facilities in [~~covered~~] mall buildings shall be measured from the main entrance of any store or tenant space. In [~~covered~~] mall buildings, where employees' toilet facilities are not provided in the individual store, the maximum [~~travel~~] distance of travel shall be measured from the employees' work area of the store or tenant space.

[~~403.3.4~~] 403.3.5 Pay facilities. Where pay facilities are installed, such facilities shall be in excess of the required minimum facilities. Required facilities shall be free of charge.

403.3.6 Door locking. Where a toilet room is provided for the use of multiple occupants, the egress door for the room shall not be lockable from the inside of the room. This section does not apply to family or assisted-use toilet rooms.

403.4 Signage. Required public facilities shall be designated by a legible sign for each sex or, for a single-occupant toilet room, for all sexes. Signs shall be readily visible and located near the entrance to each toilet facility. Existing single-occupant toilet rooms shall comply with this requirement[~~ by January 1, 2017~~].

403.4.1 Directional signage. Directional signage indicating the route to the required public toilet facilities shall be posted in accordance with Section [~~BC~~] 1110 of the *New York City Building Code*. Such signage shall be located in a lobby, corridor [~~or aisle, at the~~] , aisle or similar space, such that the sign can be readily seen from the main entrance to the [~~facilities for customers, patrons, and visitors~~] building or tenant space.

403.5 Drinking fountain location. Drinking fountains shall not be required to be located in individual tenant spaces provided that public drinking fountains are located on each story within a distance of travel of 500 feet (152 m) of the most remote location in the tenant space on such story. Where the tenant space is in a covered or open mall, such distance shall not exceed 300 feet (91 m). Drinking fountains shall be located on an accessible route.

SECTION PC *404*
ACCESSIBLE PLUMBING FACILITIES

404.1 Where required. Accessible plumbing facilities and fixtures shall be provided in accordance with the *New York City Building Code*.

404.2 Accessible fixture requirements. Accessible plumbing fixtures shall be installed with the clearances, heights, spacings and arrangements in accordance with ICC A117.1.

404.3 Exposed pipes and surfaces. Water supply and drain pipes under accessible lavatories and sinks shall be covered or otherwise configured to protect against contact. Pipe coverings shall comply with ASME A112.18.9.

SECTION PC 405
INSTALLATION OF FIXTURES

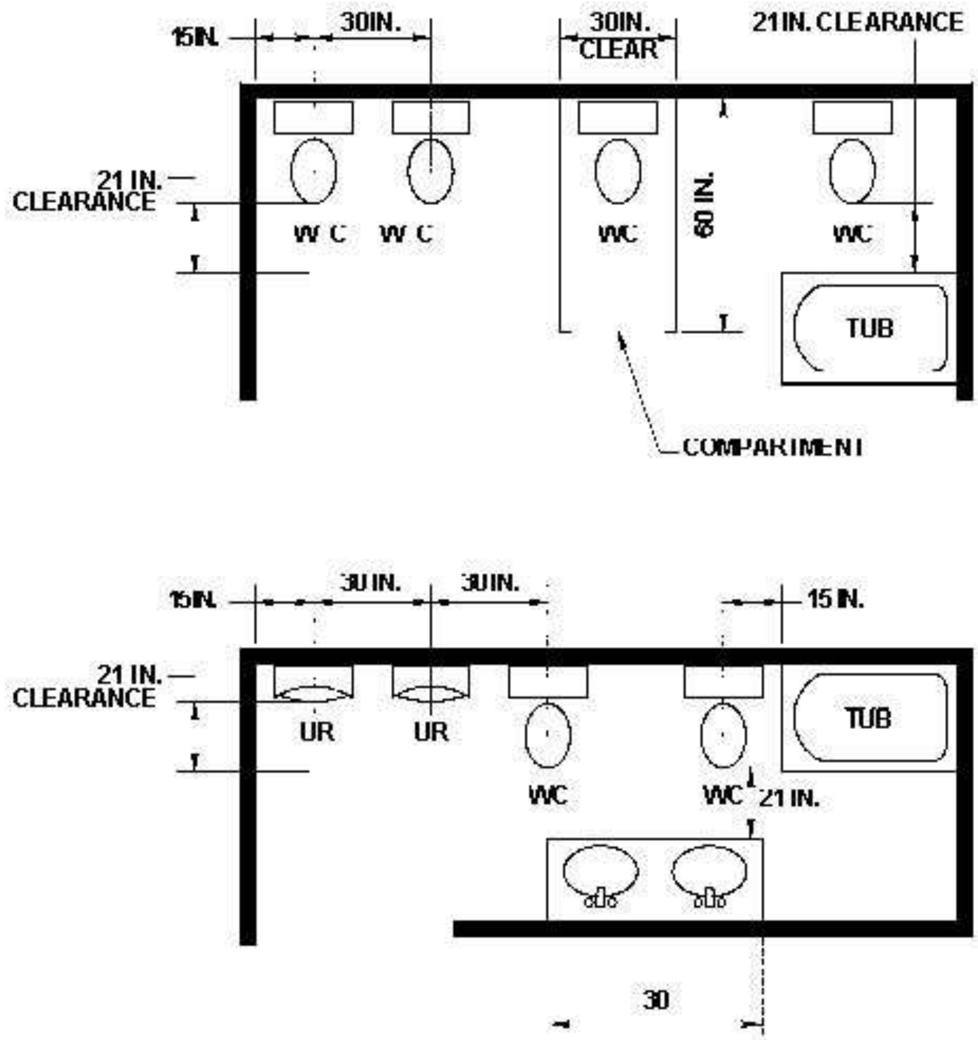
405.1 Water supply protection. The supply lines and fittings for every plumbing fixture shall be installed so as to prevent backflow.

405.2 Access for cleaning. Plumbing fixtures shall be installed so as to afford easy access for cleaning both the fixture and the area around the fixture.

405.3 Setting. Fixtures shall be set level and in proper alignment with reference to adjacent walls.

405.3.1 Water closets, urinals, lavatories and bidets. A water closet, urinal, lavatory or bidet shall not be set closer than 15 inches (381 mm) from its center to any side wall, partition, vanity or other obstruction, or closer than 30 inches (762 mm) [~~center-to-center~~] center to center between adjacent fixtures. There shall be [~~at least~~] not less than a [~~21 inch~~] 21-inch (533 mm) clearance in front of the water closet, urinal, lavatory or bidet to any wall, fixture or door. Water closet compartments shall be not [~~be~~] less than 30 inches (762 mm) [~~wide~~] in width and not less than 60 inches (1524 mm) [~~deep (see Figure 405.3.1)~~] in depth for floor-mounted water closets and not less than 30 inches (762 mm) in width and 56 inches (1422 mm) in depth for wall-hung water closets.

[



]

[~~FIGURE 405.3.1~~]
[~~FIXTURE CLEARANCE~~]

[~~For SI: 1 inch = 25.4 mm~~**.]**

405.3.2 Public lavatories. In employee and public toilet rooms, the required lavatory shall be located in the same room as the required water closet.

405.3.3 Location of fixtures and piping. Piping, fixtures or equipment shall not be located in such a manner as to interfere with the normal operation of windows, doors or other means of egress openings.

405.3.4 Water closet compartment. Each water closet utilized by the public or employees shall occupy a separate compartment with walls or partitions and a door enclosing the fixtures to ensure privacy.

Exceptions:

1. Water closet compartments shall not be required in a single-occupant toilet room with a lockable door.
2. Toilet rooms located in child day care facilities and containing two or more water closets shall be permitted to have one water closet without an enclosing compartment.
3. Toilet areas located within Group I-3 housing areas.

405.3.5 Urinal partitions. Each urinal utilized by the public or employees shall occupy a separate area with walls or partitions to provide privacy. The walls or partitions shall begin at a height not greater than 12 inches (305 mm) from and extend not less than 60 inches (1524 mm) above the finished floor surface. The walls or partitions shall extend from the wall surface at each side of the urinal not less than 18 inches (457 mm) or to a point not less than 6 inches (152 mm) beyond the outermost front lip of the urinal measured from the finished backwall surface, whichever is greater.

1. Urinal partitions shall not be required in a single occupant or family/assisted-use toilet room with a lockable door.
2. Toilet rooms located in child day care facilities and containing two or more urinals shall be permitted to have one urinal without partitions.

405.4 Floor and wall drainage connections. Connections between the drain and floor outlet plumbing fixtures shall be made with a floor flange or a waste connector and sealing gasket. The waste connector and sealing gasket joint shall comply with the joint tightness test of ASME A112.4.3 and shall be installed in accordance with the manufacturer's instructions. The flange shall be attached to the drain and anchored to the structure. Connections between the drain and wall-hung water closets shall be made with an approved [~~closet carrier fitting~~] extension nipple or horn adaptor. The water closet shall be bolted to the carrier with corrosion-resistant bolts or screws. Joints shall be sealed with an approved elastomeric gasket, [~~wax ring seal,~~] flange-to-fixture connection complying with ASME A112.4.3 or an approved setting compound.

405.4.1 Floor flanges. Floor flanges for water closets or similar fixtures shall be not [~~be~~] less than 0.125 inch (3.2 mm) thick for brass, 0.25 inch (6.4 mm) thick for plastic[~~,~~] and 0.25 inch (6.4 mm) thick and not less than a [~~2 inch~~] 2-inch (51 mm) caulking depth for cast-iron or galvanized malleable iron.

Floor flanges of hard lead shall weigh not less than 1 pound, 9 ounces (0.7 kg) and shall be composed of lead alloy with not less than [~~7.75 percent~~] 7.75-percent antimony by weight. Closet screws and bolts shall be of brass. Flanges shall be secured to the building structure with corrosion-resistant screws or bolts.

405.4.2 Securing floor outlet fixtures. Floor outlet fixtures shall be secured to the floor or floor flanges by screws or bolts of corrosion-resistant material.

405.4.3 Securing wall-hung water closet bowls. Wall-hung water closet bowls shall be supported by a concealed metal carrier that is attached to the building structure so that strain is not transmitted to the closet connector or any other part of the plumbing system. The carrier shall conform to ASME A112.6.1M or ASME A112.6.2.

405.5 Water-tight joints. Joints formed where fixtures come in contact with walls or floors shall be sealed.

405.6 Plumbing in mental health centers. In mental health centers, pipes or traps shall not be exposed, and fixtures shall be bolted through walls.

405.7 Design of overflows. Where any fixture is provided with an overflow, the waste shall be designed and installed so that standing water in the fixture will not rise in the overflow when the stopper is closed, and no water will remain in the overflow when the fixture is empty.

Exception: Existing overflows for bath tubs utilizing standing wastes.

405.7.1 Connection of overflows. The overflow from any fixture shall discharge into the drainage system on the inlet or fixture side of the trap.

Exception: The overflow from a flush tank serving a water closet or urinal shall discharge into the fixture served.

405.8 Slip joint connections. Slip joints shall be made with an approved elastomeric gasket and shall only be installed on the trap outlet, trap inlet and within the trap seal. Fixtures with concealed slip-joint connections shall be provided with an access panel or utility space [~~at least~~] not less than 12 inches (305 mm) in its smallest dimension or other approved arrangement so as to provide access to the slip joint connections for inspection and repair.

405.9 Design and installation of plumbing fixtures. Integral fixture fitting mounting surfaces on manufactured plumbing fixtures or plumbing fixtures constructed on site[~~,~~] shall meet the design requirements of [~~ASME A112.19.2M~~] ASME A112.19.2/CSA B45.1 or [~~ASME A112.19.3M~~] ASME A112.19.3/CSA B45.4.

SECTION **PC** *406*
AUTOMATIC CLOTHES WASHERS

406.1 [~~Approval.~~ ~~All automatic clothes washers shall conform to ASSE 1007.~~]

[~~406.2~~] Water connection. The water supply to an automatic clothes washer shall be protected against backflow by an air gap [~~installed integrally within the machine conforming to ASSE 1007 or~~] that is integral with the [~~installation of~~] machine or a backflow preventer shall be installed in accordance with Section [~~PC~~] 608. Air gaps shall comply with ASME A112.1.2 or A112.1.3.

[~~406.3~~] 406.2 Waste connection. The waste from an automatic clothes washer shall discharge through an air break into a standpipe in accordance with Section [~~802.4~~] 802 or into a laundry sink. The trap and fixture drain for an automatic clothes washer standpipe shall be [~~a minimum of~~] not less than 2 inches (51 mm) in diameter. The [~~automatic~~] fixture drain for the standpipe serving an automatic clothes washer [~~fixture drain~~] shall connect to a [~~branch drain or drainage stack a minimum of 3 inches~~] 3-inch (76 mm) [~~in~~] or larger diameter fixture branch, building drain, or stack. Automatic clothes washers that discharge by gravity shall be permitted to drain to a waste receptor or an approved trench drain.

SECTION **PC** *407*
BATHTUBS

407.1 Approval. Bathtubs shall conform to [~~ANSI Z124.1, ASME A112.19.1M, ASME A112.19.4M, ASME A112.19.9M, CSA B45.2, CSA B45.3 or CSA B45.5~~] ASME A112.19.1/ CSA B45.2, ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4, or CSA B45.5/IAPMO Z124.

407.2 Bathtub waste outlets and overflows. Bathtubs shall [~~have~~] be equipped with a waste [~~outlets a minimum of 1. inches (38 mm) in diameter~~] outlet and an overflow outlet. The outlets shall be connected to waste tubing or piping not less than 1½ inches (38 mm) in diameter. The waste outlet shall be equipped with [~~an approved stopper, and a built-in overflow shall be provided~~] a water-tight stopper.

407.3 Glazing. Windows and doors within a bathtub enclosure shall conform to the safety glazing requirements of the *New York City Building Code*.

407.4 Bathtub enclosure. Doors [~~within~~] in a bathtub enclosure shall conform to ASME A112.19.15.

SECTION **PC** *408* *BIDETS*

408.1 Approval. Bidets shall conform to [~~ASME A112.19.2M, ASME A112.19.9M or CSA B45.1~~] ASME A112.19.2/CSA B45.1.

408.2 Water connection. The water supply to a bidet shall be protected against backflow by an air gap or backflow preventer in accordance with Section [~~608.13.1, 608.13.2, 608.13.3, 608.13.5, 608.13.6 or 608.13.8~~] 608.13.

408.3 Bidet water temperature. The discharge water temperature from a bidet fitting shall be limited to a maximum temperature of 110°F (43°C) by a water temperature limiting device conforming to ASSE 1070 or CSA B125.3.

SECTION **PC** *409* *DISHWASHING MACHINES*

409.1 Approval. [~~Domestic dishwashing machines shall conform to ASSE 1006.~~] Commercial dishwashing machines shall conform to ASSE 1004 and NSF 3. Commercial dishwashing machines with integral gas-fired heating must be tested and evaluated in accordance with UL 921.

409.2 Water connection. The water supply to a dishwashing machine shall be protected against backflow by an air gap that is integral with the machine or a backflow preventer shall be installed in accordance with Section [~~PC~~] 608. Air gaps shall comply with ASME A112.1.2 or A112.1.3.

409.3 Waste connection. The waste connection of a dishwashing machine shall comply with [~~Sections 802.1.6 or 802.1.7, as applicable~~] Section 802.

SECTION **PC** *410* *DRINKING FOUNTAINS*

410.1 Approval. Drinking fountains shall conform to [~~ASME A112.19.1M, ASME A112.19.2M or ASME A112.19.9M,~~] ASME A112.19.1/CSA B45.2 or ASME A112.19.2/CSA B45.1 and water coolers shall conform to [~~ARI 1010~~] AHRI 1010. Drinking fountains and water coolers shall conform to NSF 61, Section 9 and ICC A117.1. Drinking fountains required by Table 403.1 shall be equipped with both a bubbler faucet for drinking and a separate faucet designed for filling a container at least 10 inches (254 mm) in height. Drinking fountains and water coolers shall comply with the lead requirements of Section 605.

410.2 Small occupancies. Drinking fountains shall not be required for an occupant load of 15 or fewer.

410.3 Required drinking fountains. Where water is served in restaurants, drinking fountains shall not be required. In other occupancies, where drinking fountains are required, up to 50 percent of required drinking fountains conforming to Section 410.1 may be substituted by dedicated plumbing fixtures with faucets designed for filling a container at least 10 inches (254 mm) in height, provided any such dedicated plumbing fixture is adjacent to or readily visible from the location of a drinking fountain conforming to Section 410.1. Bottled water dispensers shall not be substituted for required drinking fountains.

[~~410.3~~] 410.4 Prohibited location. Drinking fountains and plumbing fixtures with faucets permitted to be substituted for required drinking fountains shall not be installed in public restrooms.

SECTION **PC** *411* *EMERGENCY SHOWERS AND EYEWASH STATIONS*

411.1 Approval. Emergency showers and eyewash stations shall conform to ISEA Z358.1.

411.2 Waste connection. Waste connections shall not be required for emergency showers and eyewash stations.

SECTION **PC** *412*
FLOOR AND TRENCH DRAINS

412.1 Approval. Floor drains shall conform to ASME A112.3.1, ASME A112.6.3 or CSA B79. Trench drains shall comply with ASME A112.6.3.

412.2 Floor drains. Floor drains shall have removable strainers. [~~The strainer shall have a waterway area of not less than the area of the tailpiece.~~]The floor drain shall be constructed so that the drain is capable of being cleaned. Access shall be provided to the drain inlet. Ready access shall be provided to floor drains.

Exception: Floor drains serving refrigerated display cases shall be provided with access.

412.3 Size of floor drains. Floor drains shall have a [~~minimum 3-inch~~] drain outlet not less than 3 inches (76 mm) in diameter [~~drain outlet~~].

412.4 Public laundries and central washing facilities. In public coin-operated laundries and in the central washing facilities of multiple-family dwellings, the rooms containing automatic clothes washers shall be provided with floor drains located to readily drain the entire floor area. Such drains shall have [~~a minimum 3 inch~~] an outlet of not less than 3 inches (76 mm) in diameter [~~drain outlet~~] and be provided with lint strainers.

SECTION **PC** *413*
FOOD WASTE [~~GRINDER~~] **DISPOSER** *UNITS*

413.1 Approval. Domestic food waste [~~grinders~~] disposers shall conform to ASSE 1008 and shall be listed and labeled in accordance with UL 430. Food waste [~~grinders~~] disposers shall not increase the drainage fixture unit load on the sanitary drainage system. Food waste [~~grinders~~] disposers shall be permitted only within dwelling units.

413.2 Domestic food waste [~~grinder~~] disposer waste outlets. [~~Domestic~~] The outlets of domestic food waste [~~grinders~~] disposers shall be connected to a drain of not less than 2 inches (51 mm) in diameter.

413.3 [~~Reserved.~~] Commercial food waste disposer units. Commercial food waste disposers shall be prohibited unless approved for use by the Department of Environmental Protection.

413.4 Water supply required. [~~All food~~] Food waste [~~grinders~~] disposers shall be provided with a supply of cold water.

SECTION **PC** *414*
GARBAGE CAN WASHERS

414.1 Water connection. The water supply to a garbage can washer shall be protected against backflow by an air gap or a backflow preventer in accordance with Section 608.13.1, 608.13.2, 608.13.3, 608.13.5, 608.13.6 or 608.13.8.

414.2 Waste connection. Garbage can washers shall be trapped separately. The receptacle receiving the waste from the washer shall have a removable basket or strainer to prevent the discharge of large particles into the drainage system.

SECTION **PC** *415*
LAUNDRY TRAYS

415.1 Approval. Laundry trays shall conform to [~~ANSI Z124.6, ASME A112.19.1M, ASME A112.19.3M, ASME A112.19.9M, CSA B45.2 or CSA B45.4~~] ASME A112.19.1/CSA B45.2, ASME A112.19.2/CSA B45.1, ASME A119.19.3/CSA B45.4 or CSA B45.5/IAPMO Z124.

415.2 Waste outlet. Each compartment of a laundry tray shall be provided with a waste outlet [~~a minimum of 1.5~~] not less than 1½ inches (38 mm) in diameter and a strainer or crossbar to restrict the clear opening of the waste outlet.

SECTION PC *416*
LAVATORIES

416.1 Approval. Lavatories shall conform to [~~ANSI Z124.3, ASME A112.19.1M, ASME A112.19.2M, ASME A112.19.3M, ASME A112.19.4M, ASME A112.19.9M, CSA B45.1, CSA B45.2, CSA B45.3 or CSA B45.4~~] ASME A112.19.1/CSA B45.2, ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4 or CSA B45.5/IAPMO Z124. Group wash-up equipment shall conform to the requirements of Section [~~PC~~] 402. Every 20 inches (508 mm) of rim space shall be considered as one lavatory.

416.2 Cultured marble lavatories. Cultured marble vanity tops with an integral lavatory shall conform to [~~ANSI Z124.3 or CSA B45.5~~] CSA B45.5/IAPMO Z124.

416.3 Lavatory waste outlets. Lavatories shall have waste outlets not less than 1¼ inches (32 mm) in diameter. A strainer, pop-up stopper, crossbar or other device shall be provided to restrict the clear opening of the waste outlet. Where a stopper is utilized, a built-in overflow shall be provided.

416.4 Moveable lavatory systems. Moveable lavatory systems shall comply with ASME A112.19.12.

416.5 Tempered water for public hand-washing facilities. Tempered water shall be delivered from lavatories and group wash fixtures located in public [~~hand-washing~~] toilet facilities provided for customers, patrons and visitors. Tempered water shall be delivered through an approved water-temperature limiting device that conforms to [~~ASSE 1016 or~~] ASSE 1070[~~ or CSA B125.3~~].

Exception: Where point of use heaters are installed, outlet water temperature shall be regulated to provide tempered water.

SECTION **PC** *417*
SHOWERS

417.1 Approval. Prefabricated showers and shower compartments shall conform to [~~ANSI Z124.2, ASME A112.19.9M or CSA B45.5~~] ASME A112.19.2/CSA B45.1 or CSA B45.5/IAPMO Z124. Shower valves for individual showers shall conform to the requirements of Section 424.3.

417.2 Water supply riser. Water supply risers from the shower valve to the shower head outlet, whether exposed or concealed, shall be attached to the structure. The attachment to the structure shall be made by the use of support devices designed for use with the specific piping material or by fittings anchored with screws.

417.3 Shower waste outlet. Waste outlets serving showers shall be [~~at least~~] not less than 2 inches (51 mm) in diameter and, for other than waste outlets in bathtubs, shall have removable strainers not less than 3 inches (76 mm) in diameter with strainer openings not less than ¼ inch (6.4 mm) in [~~minimum~~] least dimension. Where each shower space is not provided with an individual waste outlet, the waste outlet shall be located and the floor pitched so that waste from one shower does not flow over the floor area serving another shower. Waste outlets shall be fastened to the waste pipe in an approved manner.

417.4 Shower compartments. [~~All shower~~] Shower compartments shall [~~have a minimum of~~] be not less than 900 square inches (0.58 m^2) [~~of~~] in interior cross-sectional area. Shower compartments shall be not [~~be~~]less than 30 inches (762 mm) in [~~minimum~~] least dimension as measured from the finished interior dimension of the compartment, exclusive of fixture valves, showerheads, soap dishes[~~,~~] and safety grab bars or rails. Except as required in Section [~~PC~~] 404, the minimum required area and dimension shall be measured from the finished interior dimension at a height equal to the top of the threshold and at a point tangent to its centerline and shall be continued to a height not less than 70 inches (1778 mm) above the shower drain outlet.

417.4.1 [~~Wall~~] Floor and wall area. [~~**The wall area**~~] Bathtub floors, shower floors, wall areas above built-in tubs [~~with~~] that have installed shower heads and walls in shower compartments shall be constructed of smooth, [~~noncorrosive~~] corrosion-resistant and nonabsorbent waterproof materials. Wall materials shall extend to a height of not less than 6 feet (1829 mm) above the room floor level, and not less than 70 inches (1778 mm) [~~where measured from the compartment floor at~~] above the drain of the tub or shower. Such walls shall form a water-tight joint with each other and with either the tub[~~, receptor~~] or shower floor.

417.4.2 Access. The shower compartment access and egress opening shall have a [~~minimum~~] clear and unobstructed finished width of not less than 22 inches (559 mm). Shower compartments required to be designed in conformance to accessibility provisions shall comply with Section 404.1.

417.5 Shower floors or receptors. Floor surfaces shall be constructed of impervious, noncorrosive, nonabsorbent and waterproof materials.

417.5.1 Support. Floors or receptors under shower compartments shall be laid on, and supported by, a smooth and structurally sound base.

417.5.2 Shower lining. Floors under shower compartments, except where prefabricated receptors have been provided, shall be lined and made water tight utilizing material complying with Sections 417.5.2.1 through [~~417.5.2.5~~] 417.5.2.6. Such liners shall turn up on all sides [~~at least~~] not less than 2 inches (51 mm) above the finished threshold level. Liners shall be recessed and fastened to an approved backing so as not to occupy the space required for wall covering, and shall not be nailed or perforated at any point less than 1 inch (25 mm) above the finished threshold. Liners shall be pitched one-fourth unit vertical in 12 units horizontal (2-percent slope) and shall be sloped toward the fixture drains and be securely fastened to the waste outlet at the seepage entrance, making a water-tight joint between the liner and the outlet. The completed liner shall be tested in accordance with Section 312.9.

Exceptions:

1. Floor surfaces under shower heads provided for rinsing laid directly on the ground are not required to comply with this section.
2. Where a sheet-applied, load-bearing, bonded, waterproof membrane is installed as the shower lining, the membrane shall not be required to be recessed.

417.5.2.1 PVC sheets. Plasticized polyvinyl chloride (PVC) sheets shall [~~be a minimum of 0.040 inch (1.02 mm) thick, and shall~~] meet the requirements of ASTM D 4551. Sheets shall be joined by solvent welding in accordance with the manufacturer's installation instructions.

417.5.2.2 Chlorinated polyethylene (CPE) sheets. Nonplasticized chlorinated polyethylene sheet [~~shall be a minimum 0.040 inch (1.02 mm) thick, and~~] shall meet the requirements of ASTM D 4068. The liner shall be joined in accordance with the manufacturer's installation instructions.

417.5.2.3 Sheet lead. Sheet lead shall [~~not~~]weigh not less than 4 pounds per square foot (19.5 kg/m^2) and shall be coated with an asphalt paint or other approved coating. The lead sheet shall be insulated from conducting substances other than the connecting drain by 15-pound (6.80 kg) asphalt felt or [~~its~~] an equivalent. Sheet lead shall be joined by burning or soldering.

417.5.2.4 Sheet copper. Sheet copper shall conform to ASTM B 152 and shall weigh not [~~weight~~] less than 12 ounces per square foot (3.7 kg/m^2). The copper sheet shall be insulated from conducting substances other than the connecting drain by 15-pound (6.80 kg) asphalt felt or [~~its~~] an equivalent. Sheet copper shall be joined by brazing or soldering.

417.5.2.5 Sheet-applied, load-bearing, bonded, waterproof membranes. Sheet-applied, load-bearing, bonded, waterproof membranes shall meet requirements of ANSI A118.10 and shall be applied in accordance with the manufacturer's installation instructions.

417.5.2.6 Liquid-type, trowel-applied, load-bearing, bonded waterproof materials. Liquid-type, trowel-applied, load-bearing, bonded waterproof materials shall meet the requirements of ANSI A118.10 and shall be applied in accordance with the manufacturer's instructions.

417.6 Glazing. Windows and doors within a shower enclosure shall conform to the safety glazing requirements of the *New York City Building Code*.

SECTION PC *418*
SINKS

418.1 Approval. Sinks shall conform to [~~ANSI Z124.6, ASME A112.19.1M, ASME A112.19.2M, ASME A112.19.3M, ASME A112.19.4M, ASME A112.19.9M, CSA B45.1, CSA B45.2, CSA B45.3 or CSA B45.4~~] ASME A112.19.1/CSA B45.2, ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4 or CSA B45.5/IAPMO Z124.

418.2 Sink waste outlets. Sinks shall be provided with waste outlets [~~a minimum of 2 inches (51 mm) in diameter~~] having a diameter not less than 1½ inches (38 mm). A strainer or crossbar shall be provided to restrict the clear opening of the waste outlet.

418.3 Moveable sink systems. Moveable sink systems shall comply with ASME A112.19.12.

SECTION PC *419*
URINALS

419.1 Approval. Urinals shall conform to [~~ANSI Z124.9, ASME A112.19.2M, CSA B45.1 or CSA B45.5~~] ASME A112.19.2/CSA B45.1, ASME A112.19.19 or CSA B45.5/IAPMO Z124. Urinals shall conform to the water consumption requirements of Section 604.4. Water-supplied urinals shall conform to the hydraulic performance requirements of [~~ASME A112.19.6, CSA B45.1 or CSA B45.5~~] ASME A112.19.2/CSA B45.1 or CSA B45.5/IAPMO Z124.

419.2 Substitution for water closets. In each bathroom or toilet room, urinals shall not be substituted for more than 50 percent of the required water closets.

419.3 Surrounding material. Wall and floor space to a point 2 feet (610 mm) in front of a urinal lip and 4 feet (1219 mm) above the floor and at least 2 feet (610 mm) to each side of the urinal shall be waterproofed with a smooth, readily cleanable, nonabsorbent material.

419.4 Waterless urinals. Approved waterless urinals may be utilized only as part of an approved building water conservation plan prepared in accordance with the rules of the department.

SECTION PC *420*
WATER CLOSETS

420.1 Approval. Water closets shall conform to the water consumption requirements of Section 604.4 and shall conform to[~~ ANSI Z124.4, ASME A112.19.2M, CSA B45.1, CSA B45.4 or CSA B45.5~~] ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4 or CSA B45.5/IAPMO Z124. Water closets shall conform to the hydraulic performance requirements of [~~ASME A1 12.19.6~~] ASME A112.19.2/CSAB45.1. Water closet tanks shall conform to [~~ANSI Z124.4, ASME A112.19.2, ASME A112.19.9M, CSA B45.1, CSA B45.4 or CSA B45.5~~] ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4 or CSA B45.5/IAPMO Z124. Electro-hydraulic water closets shall comply with [~~ASME A112.19.13~~] ASME A112.19.2/CSA B45.1. Water closets equipped with a dual flushing device shall comply with ASME A112.19.14.

420.2 Water closets for public or employee toilet facilities. Water closet bowls for public or employee toilet facilities shall be of the elongated type.

420.3 Water closet seats. Water closets shall be equipped with seats of smooth, nonabsorbent material. All seats of water closets provided for public or employee toilet facilities shall be of the hinged open-front type. Integral water closet seats shall be of the same material as the fixture. Water closet seats shall be sized for the water closet bowl type.

420.4 Water closet connections. A 4-inch by 3-inch (102 mm by 76 mm) closet bend shall be acceptable. Where a 3-inch (76 mm) bend is utilized on water closets, a 4-inch by 3-inch (102 mm by 76 mm) flange shall be installed to receive the fixture horn.

420.5 Water closets for children's use. In nurseries, schools, and similar places where plumbing fixtures are provided for the use of children under 6 years of age, such water closets shall be of a size and height suitable for the children's use.

SECTION* PC *421
WHIRLPOOL BATHTUBS

421.1 Approval. Whirlpool bathtubs shall comply with [~~ASME A112.19.7M or with CSA B45.5 and CSA B45 (Supplement 1)~~] ASME A112.19.7/CSA B45.10 and shall be listed and labeled in accordance with UL 1795.

421.2 Installation. Whirlpool bathtubs shall be installed and tested in accordance with the manufacturer's [~~installation~~] instructions. The pump shall be located above the weir of the fixture trap.

421.3 Drain. The pump drain and circulation piping shall be sloped to drain the water in the volute and the circulation piping when the whirlpool bathtub is empty.

421.4 Suction fittings. Suction fittings for whirlpool bathtubs shall comply with [~~ASME A112.19.8M~~] ASME A112.19.7/CSA B45.10.

421.5 Access to pump. Access shall be provided to circulation pumps in accordance with the fixture or pump manufacturer's installation instructions. Where the manufacturer's instructions do not specify the location and minimum size of field-fabricated access openings, [~~a 12-inch by 12-inch (305 mm by 305 mm) minimum sized opening~~] an opening not less than 12 inches by 12 inches (305 mm by 305 mm) shall be installed to provide access to the circulation pump. Where pumps are located more than 2 feet (609 mm) from the access opening, an [~~18-inch by 18-inch (457 mm by 457 mm) minimum sized opening~~] opening not less than 18 inches by 18 inches (457 mm by 457 mm) shall be installed. A door or panel shall be permitted to close the opening. In all cases, the access opening shall be unobstructed and of the size necessary to permit the removal and replacement of the circulation pump.

421.6 Whirlpool enclosure. Doors within a whirlpool enclosure shall conform to ASME A112.19.15.

SECTION* PC *422
HEALTH CARE FIXTURES AND EQUIPMENT

422.1 Scope. This section shall govern those aspects of health care plumbing systems that differ from plumbing systems in other structures. Health care plumbing systems shall conform to the requirements of this section in addition to the other requirements of this code. The provisions of this section shall apply to the special devices and equipment installed and maintained in the following occupancies: hospitals, nursing homes, homes for the aged, orphanages, infirmaries, first aid stations, psychiatric facilities, clinics, professional offices of dentists and doctors, mortuaries, educational facilities, surgery, dentistry, research and testing laboratories, establishments manufacturing pharmaceutical drugs and medicines, animal care facilities, and other structures with similar apparatus and equipment classified as plumbing.

422.2 Approval. All special plumbing fixtures, equipment, devices, assemblies and apparatus shall be of an approved type.

422.3 Protection. All devices, appurtenances, appliances and apparatus intended to serve some special function, such as sterilization, distillation, processing, cooling, or storage of ice or foods, and that connect to either the water supply or drainage system, shall be provided with protection against backflow, flooding, fouling, contamination of the water supply system and stoppage of the drain.

422.4 Materials. Fixtures designed for therapy, special cleansing or disposal of waste materials, combinations of such purposes, or any other special purpose, shall be of smooth, impervious, corrosion-resistant materials and, where subjected to temperatures in excess of 180°F (82°C), shall be capable of withstanding, without damage, higher temperatures.

422.5 Access. Access shall be provided to concealed piping in connection with special fixtures where such piping contains steam traps, valves, relief valves, check valves, vacuum breakers or other similar items that require periodic inspection, servicing, maintenance or repair. Access shall be provided to concealed piping that requires periodic inspection, maintenance or repair.

422.6 Clinical sink. A clinical sink shall have an integral trap in which the upper portion of a visible trap seal provides a water surface. The fixture shall be designed so as to permit complete removal of the contents by siphonic or blowout action and to reseal the trap. A flushing rim shall provide water to cleanse the interior surface. The fixture shall have the flushing and cleansing characteristics of a water closet.

422.7 Prohibited usage of clinical sinks and service sinks. A clinical sink serving a soiled utility room shall not be considered as a substitute for, or be utilized as, a service sink. A service sink shall not be utilized for the disposal of urine, fecal matter or other human waste**.**

422.8 Ice prohibited in soiled utility room. Machines for manufacturing ice, or any device for the handling or storage of ice, shall not be located in a soiled utility room.

422.9 Sterilizer equipment requirements. The approval and installation of all sterilizers shall conform to the requirements of the *New York City Mechanical Code*.

422.9.1 Sterilizer piping. Access for the purposes of inspection and maintenance shall be provided to all sterilizer piping and devices necessary for the operation of sterilizers.

422.9.2 Steam supply. Steam supplies to sterilizers, including those connected by pipes from overhead mains or branches, shall be drained to prevent any moisture from reaching the sterilizer. The condensate drainage from the steam supply shall be discharged by gravity.

422.9.3 Steam condensate return. Steam condensate returns from sterilizers shall be a gravity return system.

422.9.4 Condensers. Pressure sterilizers shall be equipped with a means of condensing and cooling the exhaust steam vapors. Nonpressure sterilizers shall be equipped with a device that will automatically control the vapor, confining the vapors within the vessel.

422.10 Special elevations. Control valves, vacuum outlets and devices protruding from a wall of an operating, emergency, recovery, examining or delivery room, or in a corridor or other location where patients are transported on a wheeled stretcher, shall be located at an elevation that prevents bumping the patient or stretcher against the device.

SECTION **PC** *423*
SPECIALTY PLUMBING FIXTURES

423.1 Water connections. Baptisteries, ornamental and lily pools, aquariums, ornamental fountain basins, swimming pools, and similar constructions, where provided with water supplies, shall be protected against backflow in accordance with Section [~~PC~~] 608.

423.2 Approval. Specialties requiring water and waste connections shall be submitted for approval.

423.3 Footbaths, pedicure baths and head shampoo sinks. The water supplied to specialty plumbing fixtures, such as pedicure chairs having an integral foot bathtub, footbaths, and head shampoo sinks, shall be limited to a maximum temperature of 120°F (49°C) by a water temperature limiting device that conforms to ASSE 1070 or CSA B125.3.

SECTION **PC** *424*
FAUCETS AND OTHER FIXTURE FITTINGS

424.1 Approval. Faucets and fixture fittings shall conform to [~~ASME A112.18.1 or CSA B125~~] ASME A112.18.1/CSA B125.1. Faucets and fixture fittings that supply drinking water for human ingestion shall conform to the requirements of NSF 61, section 9. Flexible water connectors exposed to continuous pressure shall conform to the requirements of Section 605.6.

424.1.1 Faucets and supply fittings. Faucets and supply fittings shall conform to the water consumption requirements of Section 604.4.

424.1.2 Waste fittings. Waste fittings shall conform to ASME A112.18.2/CSA B125.2, ASTM F 409 or to one of the standards listed in Tables 702.1 and 702.4 for [~~above-ground~~] aboveground drainage and vent pipe and fittings.

424.1.3 Lavatory operation without external electrical power. Where automatic lavatory faucets connected to an external supply of electrical power are provided in a bathroom or toilet room, at least one lavatory faucet in such bathroom or toilet room shall be capable of normal operation in the absence of an external supply of electrical power for a period of at least two weeks, either through manual operation or built-in battery back-up. Where such automatic lavatory faucets are located in a bathroom or toilet room with a required accessible lavatory, such operational lavatory faucet shall be at such required accessible lavatory.

Exception: Section 424.1.3 shall not apply to more than one bathroom or toilet room in a dwelling unit.

424.2 Hand showers. Hand-held showers shall conform to [~~ASME A112.18.1 or CSA B125.1~~] ASME A112.18.1/CSA B125.1. Hand-held showers shall provide backflow protection in accordance with [~~ASME A112.18.1 or CSA B125.1~~] ASME A112.18.1/CSA B125.1 or shall be protected against backflow by a device complying with ASME A112.18.3.

424.3 Individual shower [~~and tub~~] valves. Individual shower[~~, tub~~] and [~~shower-tub~~] tub-shower combination valves shall be [~~balanced pressure~~] balanced-pressure, thermostatic or combination balanced-pressure/thermostatic valves that conform to the requirements of [~~ASSE 1016~~] ASSE 1016/ASME A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1 and shall be installed at the point of use.[~~.~~] Shower[~~, tub and shower-tub~~] and tub-shower combination valves required by this section shall be equipped with a means to limit the maximum setting of the valve to 120°F (49°C), which shall be field adjusted in accordance with the manufacturer's instructions. In-line thermostatic valves shall not be utilized for compliance with this section.

424.4 Multiple (gang) showers. Multiple (gang) showers supplied with a single-tempered water supply pipe shall have the water supply for such showers controlled by an *approved* automatic temperature control mixing valve that conforms to ASSE 1069 or [~~CSA B125~~] CSA B125.3, or each shower head shall be individually controlled by a balanced-pressure, thermostatic or combination balanced-pressure/thermostatic valve that conforms to [~~ASSE 1016 or CSA B125~~] ASSE 1016/ASME A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1 and is installed at the point of use. Such valves shall be equipped with a means to limit the maximum setting of the valve to 120°F (49°C), which shall be field adjusted in accordance with the manufacturers' instructions.

424.5 Bathtub and whirlpool bathtub valves. The hot water supplied to bathtubs and whirlpool bathtubs, including bathtubs equipped with hand-held showers, shall be limited to a maximum temperature of 120°F (49°C) by a water-temperature limiting device that conforms to [~~ASSE 1016 or~~] ASSE 1070 or CSA B125.3, except where such protection is otherwise provided by a combination tub/shower valve in accordance with Section 424.3.

424.6 Hose-connected outlets. Faucets and fixture fittings with hose-connected outlets shall conform to [~~ASME A112.18.3M or CSA B125~~] ASME A112.18.3 or ASME A112.18.1/CSA B125.1.

424.7 Temperature-actuated, flow reduction valves for individual fixture fittings. Temperature-actuated, flow reduction devices, where installed for individual fixture fittings, shall conform to ASSE 1062. Such valves shall not be used alone as a substitute for the [~~balanced pressure~~] balanced-pressure, thermostatic or combination shower valves required in Section 424.3.

424.8 Transfer valves. Deck-mounted bath/shower transfer valves containing an integral atmospheric vacuum breaker shall conform to the requirements of [~~ASME A112.18.7~~] ASME A112.18.1/CSA B125.1.

424.9 Water closet personal hygiene devices. Personal hygiene devices integral to water closets or water closet seats shall conform to the requirements of ASME A112.4.2.

SECTION PC *425*
FLUSHING DEVICES FOR WATER CLOSETS AND URINALS

425.1 Flushing devices required. Each water closet, urinal, clinical sink and any plumbing fixture that depends on trap siphonage to discharge the fixture contents to the drainage system shall be provided with a flushometer valve, flushometer tank or a flush tank designed and installed to supply water in quantity and rate of flow to flush the contents of the fixture, cleanse the fixture and refill the fixture trap.

425.1.1 Separate for each fixture. A flushing device shall not serve more than one fixture**.**

425.1.2 Water closet flushing without external electrical power. Where automatic flushing devices connected to an external supply of electrical power are provided for water closets in a bathroom or toilet room, the flushing device of at least one water closet in such bathroom or toilet room shall be capable of normal operation in the absence of an external supply of electrical power for a period of at least two weeks, either through manual operation or built-in battery back-up. Where such automatic flushing devices are located in a bathroom or toilet room with a required accessible water closet, such operational flushing device shall be at such required accessible water closet.

Exception: Section 425.1.2 shall not apply to more than one bathroom or toilet room in a dwelling unit.

425.2 Flushometer valves and tanks. Flushometer valves and tanks shall comply with ASSE 1037 or CSA B125.3. Vacuum breakers on flushometer valves shall conform to the performance requirements of ASSE 1001 or [~~CAN/CSA-B64.1.1~~] CSA B64.1.1. Access shall be provided to vacuum breakers. Flushometer valves shall be of the [~~water-conservation~~] water conservation type and shall not be [~~utilized~~] used where the water pressure is lower than the minimum required for normal operation. When operated, the valve shall automatically complete the cycle of operation, opening fully and closing positively under the water supply pressure. Each flushometer valve shall be provided with a means for regulating the flow through the valve. The trap seal to the fixture shall be automatically refilled after each [~~valve~~] flushing cycle.

425.3 Flush tanks. Flush tanks equipped for manual flushing shall be controlled by a device designed to refill the tank after each discharge and to shut off completely the water flow to the tank when the tank is filled to operational capacity. The trap seal to the fixture shall be automatically refilled after each flushing. The water supply to flush tanks equipped for automatic flushing shall be controlled with a timing device or sensor control devices.

425.3.1 Fill valves. [~~All flush~~] Flush tanks shall be equipped with an antisiphon fill valve conforming to ASSE 1002 or [~~CSA B125~~] CSA B125.3. The fill valve backflow preventer shall be located [~~at least~~] not less than 1 inch (25 mm) above the full opening of the overflow pipe.

425.3.2 Overflows in flush tanks. Flush tanks shall be provided with overflows discharging to the water closet or urinal connected thereto and shall be sized to prevent flooding the tank at the maximum rate at which the tanks are supplied with water according to the manufacturer's design conditions. The opening of the overflow pipe shall be located above the flood level rim of the water closet or urinal or above a secondary overflow in the flush tank.

425.3.3 Sheet copper. Sheet copper utilized for flush tank linings shall conform to ASTM B 152 and shall not weigh less than 10 ounces per square foot (0.03 kg/m^2).

425.3.4 Access required. All parts in a flush tank shall be accessible for repair and replacement.

425.4 Flush pipes and fittings. Flush pipes and fittings shall be of nonferrous material and shall conform to [~~ASME A112.19.5 or CSA B125~~] ASME A112.19.5/CSA B45.15.

SECTION PC *426*
MANUAL FOOD AND BEVERAGE DISPENSING EQUIPMENT

426.1 Approval. Manual food and beverage dispensing equipment shall conform to the requirements of NSF 18.

SECTION* PC *427
FLOOR SINKS

427.1 Approval. Sanitary floor sinks shall conform to the requirements of ASME A112.6.7.

SECTION PC 428
PROHIBITED WATER USES

428.1 Prohibited potable water uses. Potable water shall not be permitted for those uses prohibited by this section.

428.1.1 Potable water prohibited for once through cooling. Potable water shall not be used for once-through cooling. Equipment such as ice making machines, walk-in coolers, refrigerated walk-in boxes, or air conditioning equipment shall be provided with air cooled condensers or recirculating condenser water systems[~~, or supplied with non-potable as permitted by Appendix C of this code~~].

Exceptions:

1. Once-through water-cooled ice making machines producing less than 500 pounds (227 kg) of ice per day at Standard Rating Conditions as specified in [~~ARI~~] AHRI 810.
2. Once-through water-cooled ice making machines, walk-in coolers, refrigerated walk-in boxes or air conditioning equipment supplied with potable water through piping systems installed prior to January 1, 2011 and any subsequent replacements that use the same or lesser amount of potable water and are installed in accordance with RCNY Title 15 Chapter 20 Section 20-06.
3. Use of once-through cooling may be permitted for temporary emergency conditions where approved by the commissioner.

SECTION PC 429
ROOFTOP GARDENS AND LANDSCAPING

429.1 Water supply. Where a connection to an approved water supply is required by Section 318.5 of the *New York City Fire Code* for rooftop gardens or landscaping exceeding 250 square feet (23 m^2), an approved fixture shall be provided for connection to such water supply in accordance with this code.

PART E

CHAPTER 5

§1. Chapter 5 of the New York city plumbing code, as added by local law number 99 for the year 2005, sections 502, 504.6, 504.7 and 505.1, as amended by local law number 41 for the year 2012, is amended to read as follows:

CHAPTER 5

WATER HEATERS

SECTION PC 501 GENERAL

501.1 Scope. The provisions of this chapter shall govern the materials, design and installation of water heaters and the related safety devices and appurtenances.

[~~**501.2 Water heater as space heater.** Where a combination potable water heating and space heating system requires water for space heating at temperatures higher than 140°F (60°C), a master thermostatic mixing valve complying with ASSE 1017 shall be provided to limit the water supplied to the potable hot water distribution system to a temperature of 140°F (60°C) or less. The potability of the water shall be maintained throughout the system.~~]

501.2 Water heaters utilized for space heating. Water heaters utilized both to supply potable hot water and provide hot water for space-heating applications shall be listed and labeled for such applications by the manufacturer and shall be built in accordance with Section IV of the ASME Boiler and Pressure Vessel Code with an "H" code stamp. They shall be installed in accordance with the manufacturer's instructions, the ASME Boiler and Pressure Vessel Code and the *New York City Mechanical Code***.**

501.2.1 Cross connection. Water heaters utilized for both potable hot water and hot water for space heating applications shall have separate heating sections and connections for distribution systems and shall not be cross-connected. The potability of the domestic water shall be maintained throughout the system in accordance with Chapter 6.

501.2.2 Sizing. Water heaters utilized for both potable water-heating and space-heating applications shall be sized to prevent the space-heating load from diminishing the required potable water-heating capacity.

501.2.3 Temperature limitation. Where a combination potable water-heating and space- heating system requires water for space-heating, a temperature actuated mixing valve complying with ASSE 1017 shall be provided to temper the water supplied to the potable hot water distribution system in accordance with Section 607.

501.3 Drain valves. Drain valves for emptying shall be installed at the bottom of each tank-type water heater and hot water storage tank. [~~Drain valves shall conform to ASSE 1005.~~] The drain valve inlet shall be not less than ¾-inch (19 mm) nominal iron pipe size and the outlet shall be provided with male garden hose threads.

501.4 Location. Water heaters and storage tanks shall be located and connected so as to provide access for observation, maintenance, servicing and replacement.

501.5 Water heater labeling. [~~All water~~] Water heaters shall be third-party certified.

501.6 Water temperature control in piping from tankless heaters. The temperature of water from tankless water heaters shall be [~~a maximum of~~] not greater than 140°F (60°C) [~~when~~] where intended for domestic uses. This provision shall not supersede the requirement for protective shower valves in accordance with Section 424.3.

501.7 Pressure marking of storage tanks. Storage tanks and water heaters installed for domestic hot water shall have the maximum allowable working pressure clearly and indelibly stamped in the metal or marked on a plate welded thereto or otherwise permanently attached. Such markings shall be in an accessible position outside of the tank so as to make inspection or reinspection readily possible.

501.8 Temperature controls. [~~All hot~~] Hot water supply systems shall be equipped with automatic temperature controls capable of adjustments from the lowest to the highest acceptable temperature settings for the intended temperature operating range.

501.9 Supplemental water-heating devices. Potable water-heating devices that utilize refrigerant-to-water heat exchangers shall be approved and installed in accordance with this code, the applicable provisions of the New York City Energy Conservation Code and the manufacturer's instructions.

SECTION PC 502
INSTALLATION

502.1 General. Water heaters shall be installed in accordance with the manufacturer's [~~installation~~] instructions. Oil-fired water heaters shall conform to the requirements of this code, [~~and~~] the *New York City Mechanical Code*, and shall comply with UL 732. Approval for oil-fired water heaters 350,000 Btu/h input (1025 kW) and above shall be obtained from the New York City Department of Environmental Protection. Electric water heaters shall conform to the requirements of this code and provisions of the *New York City Electrical Code*. Domestic electric water heaters shall comply with UL 174 or UL 1453. Commercial electric water heaters shall comply with UL 1453. Gas-fired water heaters shall conform to the requirements of the *New York City Fuel Gas Code*. All water heaters shall conform to the *New York City Energy Conservation Code*.

502.1.1 Elevation and protection. Elevation of water heater ignition sources and mechanical damage protection requirements for water heaters shall be in accordance with the *New York City Mechanical Code* and the *New York City Fuel Gas Code*.

502.2 Rooms used as a plenum. Water heaters using solid, liquid or gas fuel shall not be installed in a room containing air-handling machinery [~~when~~] where such room is used as a plenum.

502.3 Water heaters installed in attics. [~~Electric water~~] Water heaters [~~only shall be~~] installed in attics shall be electric. [~~An attic~~] Attics containing a water heater shall be provided with an opening and unobstructed passageway large enough to allow removal of the water heater. The passageway shall be not [~~be~~] less than 30 inches (762 mm) [~~high~~] in height and 22 inches (559 mm) [~~wide~~] in width and not more than 20 feet (6096 mm) in length when measured along the centerline of the passageway from the opening to the water heater. The passageway shall have continuous solid flooring not less than 24 inches (610 mm) [~~wide~~] in width. A level service space [~~at least~~] not less than 30 inches (762 mm) [~~deep~~] in length and 30 inches (762 mm) [~~wide~~] in width shall be present at the front or service side of the water heater. [~~The~~] Dimensions of the clear access opening [~~dimensions~~] shall be [~~a minimum of~~] not less than 20 inches by 30 inches (508 mm by 762 mm) [~~where such dimensions are~~] and shall be large enough to allow removal of the water heater.

502.4 Seismic supports. Where earthquake loads are applicable in accordance with the *New York City Building Code*, water heater supports shall be designed and installed for the seismic forces in accordance with the *New York City Building Code*.

502.5 Clearances for maintenance and replacement. Appliances shall be provided with access for inspection, service, repair and replacement without disabling the function of a fire-resistance-rated assembly or removing permanent construction, other appliances or any other piping or ducts not connected to the appliance being inspected, serviced, repaired or replaced. A level working space [~~at least~~] not less than 30 inches [~~deep~~] in length and 30 inches [~~wide~~] in width (762 mm by 762 mm) shall be provided in front of the control side to service an appliance.

SECTION PC 503
CONNECTIONS

503.1 Cold water line valve. The cold water branch line from the main water supply line to each hot water storage tank or water heater shall be provided with a valve, located near the equipment and serving only the hot water storage tank or water heater. The valve shall not interfere or cause a disruption of the cold water supply to the remainder of the cold water system. The valve shall be provided with access on the same floor level as the water heater served.

503.2 Water circulation. The method of connecting a circulating water heater to the tank shall provide proper circulation of water through the water heater. The pipe or tubes required for the installation of appliances that will draw from the water heater or storage tank shall comply with the provisions of this code for material and installation.

SECTION PC 504
SAFETY DEVICES

504.1 Antisiphon devices. An approved means, such as a cold water "dip" tube with a hole at the top or a vacuum relief valve installed in the cold water supply line above the top of the heater or tank, shall be provided to prevent siphoning of any storage water heater or tank.

504.2 Vacuum relief valve. Bottom fed water heaters and bottom fed tanks connected to water heaters shall have a vacuum relief valve installed. The vacuum relief valve shall comply with ANSI Z21.22.

504.3 Shutdown. A means for disconnecting an electric hot water supply system from its energy supply shall be provided in accordance with the *New York City Electrical Code*. A separate valve shall be provided to shut off the energy fuel supply to all other types of hot water supply systems in accordance with the *New York City Fuel Gas Code* and *New York City Mechanical Code*.

504.4 Relief valve. [~~All storage~~] Storage water heaters operating above atmospheric pressure shall be provided with an approved, self-closing (levered) pressure relief valve and temperature relief valve or combination thereof. The relief valve shall conform to ANSI Z21.22. The relief valve shall not be used as a means of controlling thermal expansion.

504.4.1 Installation. Such valves shall be installed in the shell of the storage water heater tank. Temperature relief valves shall be so located in the tank as to be actuated by the water in the top 6 inches (152 mm) of the tank served. For installations with separate storage tanks, the [~~valves~~] approved, self-closing (levered) pressure relief valve and temperature relief valve or combination thereof conforming to ANSI Z21.22, shall be installed on both the [~~tank and there shall not be any type of valve installed between the~~] storage water heater and [~~the~~] storage tank. There shall not be a check valve or shutoff valve between a relief valve and the heater or tank served.

504.5 Relief valve approval. Temperature and pressure relief valves, or combinations thereof, and energy cutoff devices shall bear the label of an approved agency and shall have a temperature setting of not more than 210°F (99°C) and a pressure setting not exceeding the tank or water heater manufacturer's rated working pressure [~~or 150 psi (1035 kPa), whichever is less~~]. The relieving capacity of each pressure relief valve and each temperature relief valve shall equal or exceed the heat input to the water heater or storage tank.

504.6 Requirements for discharge piping. The discharge piping serving a pressure relief valve, temperature relief valve or combination thereof shall:

1. Not be directly connected to the drainage system.
2. Discharge through an air gap located in the same room as the water heater.

3. Not be smaller than the diameter of the outlet of the valve served and shall discharge full size to the air gap.
4. Serve a single relief device and shall not connect to piping serving any other relief device or equipment.
5. Discharge in a manner that does not cause personal injury or structural damage.
6. Discharge to a termination point that is readily observable by the building occupants.
7. Not be trapped.
8. Be installed so as to flow by gravity.
9. [~~Not terminate~~] Terminate not more than 6 inches (152 mm) above [~~the floor or~~] and not less than two times the discharge pipe diameter above the floor or flood level rim of the waste receptor.
10. Not have a threaded connection at the end of such piping.
11. Not have valves or tee fittings.
12. Be constructed of those materials listed in Section 605.4 or materials tested, rated and approved for such use in accordance with ASME A112.4.1.

504.7 Required pan. Where a storage tank-type water [~~heaters~~] heater or a hot water storage [~~tanks are~~] tank is installed in [~~locations~~] a location where water leakage [~~of~~] from the [~~tanks or connections~~] tank will cause damage, the tank[~~ or water heater~~] shall be installed in a galvanized steel pan having a material thickness of not less than 0.0236 inch (0.6010 mm) (No. 24 gage), or other pans approved for such use.

504.7.1 Pan size and drain. The pan shall be not less than [~~1.5 inches~~] 1½ inches (38 mm) [~~deep~~] in depth and shall be of sufficient size and shape to receive all dripping or condensate from the tank or water heater. The pan shall be drained by an indirect waste pipe having a [~~minimum~~] diameter of not less than ¾ inch (19 mm). Piping for safety pan drains shall be of those materials listed in Table 605.4.

Exception: A pan drain shall not be required for a replacement water heater where a pan drain was not previously installed, provided that a leak detector is installed within the pan.

504.7.2 Pan drain termination. The pan drain shall extend [~~full-size~~] full size and terminate over a suitably located indirect waste receptor or floor drain or extend to the exterior of the building and terminate not less than 6 inches (152 mm) and not more than 24 inches (610 mm) above the adjacent ground surface at a point that is readily observable by the building occupants.

504.8 Flow-sensing switch. On copper fin tube, gas-fired domestic hot water heaters, a flow switch shall be provided to interrupt the gas supply to the heater in the event water flow through the coil is interrupted.

SECTION PC 505
INSULATION

505.1 Unfired vessel insulation. Unfired hot water storage tanks shall be insulated [~~to a minimum of R-12.5 (h · ft² · F°)/Btu (R-2.2 m²· K/W)~~] in accordance with the *New York City Energy Conservation Code*.

PART F

CHAPTER 6

§1. Chapter 6 of the New York city plumbing code, as added by local law number 99 for the year 2005, sections 601.5, 602.3, and 608.13.3 as amended by, and sections 601.5.3, 601.6, 603.3, 603.4, and 603.5 as added by, local law number 8 for the year 2008, and sections 603 through 608 and 612 and tables 604.3, 604.5, 605.3, 605.5, 605.8, 606.5.4(1), 606.5.4(2), 608.1, and 608.15.1, and figure 606.5.4 as amended by, local law number 41 for the year 2012, and section 606.5.4.1 as amended by local law number 56 for the year 2010, and sections 605.2 and 608.1, and tables 604.4 and 605.4 as amended by local law number 141 for the year 2013, and section 604.4.1 as added by local law number 57 for the year 2010, and sections 605.12.2 and 605.14.2 as amended by local law number 71 for the year 2009, and section 607.2.1 as amended by local law number 85 for the year 2009, and sections 614.1through 614.1.5 as added by local law number 110 for the year 2013, is amended to read as follows:

CHAPTER 6

WATER SUPPLY AND DISTRIBUTION

SECTION PC *601*
GENERAL

601.1 Scope. This chapter shall govern the materials, design and installation of water supply systems, both hot and cold, for utilization in connection with human occupancy and habitation and shall govern the installation of individual water supply systems.

601.2 Solar energy utilization. Solar energy systems used for heating potable water or using an independent medium for heating potable water shall comply with the applicable requirements of this code. The use of solar energy shall not compromise the requirements for cross connection or protection of the potable water supply system required by this code.

601.3 Existing piping used for grounding. Existing metallic water service piping used for electrical grounding shall not be replaced with nonmetallic pipe or tubing until other approved means of grounding is provided.

601.4 Tests. The potable water distribution system shall be tested in accordance with Section 312.5.

601.5 Rehabilitation of piping systems. Cured-in-place pipe (CIPP) and epoxy spray pipe lining systems shall not be used.

601.6 Water supply. The water distribution system shall be connected to a public water main if available. Where a public water main is not available, an individual potable water supply shall be provided. Any such private system shall be provided subject to the approval of the commissioner and of any other agency or agencies having jurisdiction.

[~~601.5.1~~] 601.6.1 Extensions of public water mains. Extensions of public water mains shall be made in accordance with the regulations of the Department of Environmental Protection.

[~~601.5.2~~] 601.6.2 Availability of public water main to other than one- or two-family dwellings. A public water main shall be deemed available to a building, other than a one- or two-family dwelling, if a property line of such building is within 500 feet (152 m), measured along a street, alley, or right-of-way, of the public water supply system. The extension and connection shall be made in accordance with the applicable standards of the Department of Environmental Protection.

Exception: Where a substantial improvement of a building is contemplated on a tract of land, the public water supply system may be declared available thereto by the agencies having jurisdiction thereon even though the specified distance is exceeded.

[~~601.5.3~~] 601.6.3 Availability of public water main to one- or two-family dwellings. A public water main shall be deemed available to a one- and two-family dwelling if a property line of such dwelling is within 100 feet (30 480 mm), measured along a street, alley, or right-of-way, of the public water supply system. The extension and connection shall be made in accordance with the applicable standards of the Department of Environmental Protection.

Exception: Where two or more one- or two-family dwellings are to be constructed on a tract of land, the public water supply system may be declared available thereto by the agencies having jurisdiction thereon even though the specified distance is exceeded.

[~~601.6~~] 601.7 Destruction of abandoned corporation stops and wet connections. All driven corporation stops, when abandoned, shall be removed and replaced by plugs. All wet connections or screw corporation stops, when abandoned, shall be destroyed in place, and all exposed portions of the service pipe shall be cut and removed. Where a corporation stop or wet connection is destroyed and the connecting service pipe is one that is equipped with a curb valve and box, the curb box shall be removed in accordance with the rules of the Department of Environmental Protection. The expense in connection with the abandonment or destruction of a corporation stop or wet connection shall be chargeable to the owner of the property into which the service pipe entered.

SECTION **PC** *602*
WATER REQUIRED

602.1 General. [~~Every structure~~] Structures equipped with plumbing fixtures and utilized for human occupancy or habitation shall be provided with a potable supply of water in the amounts and at the pressures specified in this chapter.

602.2 Potable water required. Only potable water shall be supplied to plumbing fixtures that provide water for drinking, bathing or culinary purposes, or for the processing of food, medical or pharmaceutical products. Unless otherwise provided in this code, potable water shall be supplied to all plumbing fixtures.

602.3 Individual water supply. Where a potable public water supply is not available, individual sources of potable water supply shall be utilized. No well or individual water supply shall be installed for any purpose without approval of the commissioner, the Department of Health and Mental Hygiene and the Department of Environmental Protection.

602.3.1 Sources. Dependent on geological and soil conditions and the amount of rainfall, individual water supplies are of the following types: drilled well, driven well, dug well, bored well, spring, stream or cistern. Surface bodies of water and land cisterns shall not be sources of individual water supply unless properly treated by approved means to prevent contamination.

602.3.2 Minimum quantity. The combined capacity of the source and storage in an individual water supply system shall supply the fixtures with water at rates and pressures as required by this chapter.

602.3.3 Water quality. Water from an individual water supply shall be approved as potable by the authority having jurisdiction prior to connection to the plumbing system.

602.3.4 Disinfection of system. After construction or major repair, the individual water supply system shall be purged of deleterious matter and disinfected in accordance with Section [~~PC~~] 610.

602.3.5 Pumps. Pumps shall be rated for the transport of potable water. Pumps in an individual water supply system shall be constructed and installed so as to prevent contamination from entering a potable water supply through the pump units. Pumps shall be sealed to the well casing or covered with a water-tight seal. Pumps shall be designed to maintain a prime and installed such that ready access is provided to the pump parts of the entire assembly for repairs.

602.3.5.1 Pump enclosure. The pump room or enclosure around a well pump shall be drained and protected from freezing by heating or other approved means. Where pumps are installed in basements, such pumps shall be mounted on a block or shelf not less than 18 inches (457 mm) above the basement floor. Well pits shall be prohibited.

SECTION PC *603*
WATER SERVICE

603.1 Size of water service pipe. The water service pipe shall be sized to supply water to the structure in the quantities and at the pressures required in this code. The minimum diameter of water service pipe shall be 1 inch (25 mm).

603.2 Separation [~~of~~] from water service [~~and building sewer~~]. [~~Water~~] Underground water service pipe and the building sewer or the building drain shall be separated by not less than 5 feet (1524 mm) of undisturbed or compacted earth.

Exceptions:

1. The required separation distance shall not apply where the bottom of the water service pipe within 5 feet (1524 mm) of the sewer or drain is a minimum of 12 inches (305 mm) above the top of the highest point of the sewer or drain and the pipe materials conform to Section 703.1.
2. Water service pipe is permitted to be located in the same trench with a building [~~sewer~~] drain, provided such [~~sewer~~] drain is constructed of materials listed in Table 702.2.
3. The required separation distance shall not apply where a water service pipe crosses a sewer or drain pipe provided the water service pipe is sleeved to at least 5 feet (1524 mm) horizontally from the sewer or drain pipe centerline, on both sides of such crossing with pipe materials listed in Table 605.3, Table 702.2 or Table 702.3.

603.2.1 Water service near sources of pollution. Potable water service pipes shall not be located in, under or above cesspools, septic tanks, septic tank drainage fields or seepage pits (see Section 605.1 for soil and groundwater conditions) and shall be separated by a minimum of 10 feet (3048 mm) and shall meet all Department of Environmental Protection requirements.

603.3 Installation of service pipe. Each new service pipe shall be installed in accordance with the rules of the Department of Environmental Protection.

603.4 Location of meters. The service pipe between the house control valve and the meter shall be kept exposed. All meter locations shall be subject to approval by the Department of Environmental Protection.

603.5 Connections to city water mains. Connections to city water mains shall comply with the rules of the Department of Environmental Protection.

603.5.1 Separate supply. A separate tap and service shall be installed for each building in accordance with the rules of the Department of Environmental Protection.

603.5.2 Connections. Corporation stops, wet connections, or other connections to a street main shall be made only by employees of the Department of Environmental Protection. The cost of the installation shall be borne by the owner of the property for which the connection is made.

SECTION PC *604*
DESIGN OF BUILDING WATER DISTRIBUTION SYSTEM

604.1 General. The design of the water distribution system shall conform to accepted engineering practice.

604.2 System interconnection. At the points of interconnection between the hot and cold water supply piping systems and the individual fixtures, appliances or devices, provisions shall be made to prevent flow between such piping systems.

604.3 Water distribution system design criteria. The water distribution system shall be designed, and pipe sizes shall be selected such that under conditions of peak demand, the capacities at the fixture supply pipe outlets shall be not [~~be~~] less than shown in Table 604.3. The minimum flow rate and flow pressure provided to fixtures and appliances not listed in Table 604.3 shall be in accordance with the manufacturer's instructions.

TABLE 604.3
WATER DISTRIBUTION SYSTEM DESIGN CRITERIA REQUIRED CAPACITY AT FIXTURE SUPPLY PIPE OUTLETS

FIXTURE SUPPLY OUTLET SERVING	FLOW RATE[a] (gpm)	FLOW PRESSURE[b] (psi)
Bathtub, no shower	4	20
Bathtub with anti-scald protection	4	20
Bidet	1.5	20
Combination fixture	4	8
Dishwasher, residential	2.75	8
Drinking fountain	0.75	8
Laundry tray	4	8
Lavatory, private	[~~2~~] 1.5	8
Lavatory[~~(self closing)~~] , private, mixing valve	[~~2~~] 1.5	[~~20~~] 8
Lavatory[~~(sensor)~~] , public	[~~2~~] 1.5	[~~20~~] 8
Shower	[~~3~~] 2	8
Shower, balanced-pressure, thermostatic or combination balanced-pressure/thermostatic mixing valve	[~~3~~] 2[b]	20
Sillcock, hose bibb	5	8
Sink, residential	[~~2.5~~] 2.2	8
Sink, service	3	8
Urinal, valve	18	20
Water closet, blow out, flushometer valve	25	25 [~~25~~]
Water closet, flushometer tank	3	20

FIXTURE SUPPLY OUTLET SERVING	FLOW RATE[a] (gpm)	FLOW PRESSURE[b] (psi)
Water closet, siphonic, flushometer valve	25	25
Water closet, tank, close coupled	3	15
Water closet, tank, one piece	3	20

For SI: 1 pound per square inch = 6.895 kPa, 1 gallon per minute = 3.785 L/m.

a. For additional requirements for flow rates and quantities, see Section 604.4.

b. [~~Minimum pressures as per manufacturer's recommendations.~~] Where the shower mixing valve manufacturer indicates a lower flow rating for the mixing valve, the lower value shall be applied.

604.4 Maximum flow and water consumption. The maximum water consumption flow rates and quantities for all plumbing fixtures and fixture fittings shall be in accordance with Table 604.4.

Exceptions:

1. Blowout design water closets [~~[3.5 gallons (13 L) per flushing cycle]~~] having a water consumption not greater than 3½ gallons (13 L) per flushing cycle.
2. Vegetable sprays.
3. Clinical sinks [~~[4.5gallons (17 L) per flushing cycle]~~] having a water consumption not greater than 4½ gallons (17 L) per flushing cycle.
4. Service sinks.
5. Emergency showers.

TABLE 604.4
MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES AND FIXTURE FITTINGS

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY[b]
Lavatory, private	1.5 gpm at 60 psi
Lavatory, public [~~, (self-closing)~~] (metering)	0.25 gallon per metering cycle
Lavatory, public (other than metering)	0.5 gpm at 60 psi
Shower head[a]	2.0 gpm at 80 psi[d]
Sink faucet	2.2 gpm at 60 psi
Urinal	0.5 gallon per flushing cycle
Water closet	1.28 gallons per flushing cycle or equivalent dual flush[c]

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. A hand-held shower spray or body spray is a shower head.

b. Consumption tolerances shall be determined from referenced standards.
c. A dual flush water closet where one third of the sum of the high flush volume plus twice the low flush volume is less than or equal to 1.28 gallons per flush.
d. The total flow of all shower heads in each shower compartment or bathing unit, in residential occupancies, shall be limited to 3 gpm operating simultaneously.

604.4.1 WaterSense program label required. Showerheads, private lavatory faucets, water closets and for urinals, the urinal flush valve or fixture/valve combination, shall meet the specifications required for the WaterSense program label and shall bear such label, or shall be approved in accordance with this code.

[~~**Exception:** Water closets in public restrooms.~~]

604.5 Size of fixture supply. The minimum size of a fixture supply pipe shall be as shown in Table 604.5. The fixture supply pipe shall [~~not~~] terminate not more than 24 inches (610 mm) from the point of connection to the fixture. Each fixture supply shall have a stop valve. A reduced-size flexible water connector installed between the supply pipe and the fixture shall be of an approved type. The connector shall be used singularly. Coupling of two or more connectors shall not be allowed. The supply pipe shall extend to the floor or wall adjacent to the fixture. The minimum size of individual distribution lines utilized in parallel water distribution systems shall be as shown in Table 604.5.

TABLE 604.5
MINIMUM SIZES OF FIXTURE WATER SUPPLY PIPES

FIXTURE	**MINIMUM PIPE SIZE (inch)**
Bathtubs	$^1/_2$
Bidet	$^3/_8$
Combination sink and tray	$^1/_2$
Dishwasher, domestic	$^1/_2$
Drinking fountain	$^3/_8$
Hose bibbs	$^1/_2$
Kitchen sink	$^1/_2$
Laundry, 1, 2 or 3 compartments	$^1/_2$
Lavatory	$^3/_8$
Shower, single head	$^1/_2$
Sinks, flushing rim	$^3/_4$
Sinks, service	$^1/_2$
Urinal, flush tank	$^1/_2$

FIXTURE	MINIMUM PIPE SIZE (inch)
Urinal, [~~flush~~] flushometer valve	$^3/_4$
Wall hydrant	$^1/_2$
Water closet, flush tank	$^3/_8$
[~~Water closet, flush valve~~]	[~~1~~]
Water closet, flushometer tank	$^3/_8$
Water closet, flushometer valve	1
Water closet, one piece	$^1/_2$

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kPa.

604.6 Variable street pressures. Where street water main pressures fluctuate, the building water distribution system shall be designed for the minimum pressure available.

604.7 Inadequate water pressure. Wherever water pressure from the street main or other source of supply is insufficient to provide flow pressures at fixture outlets as required under Table 604.3, a water pressure booster system conforming to Section 606.5 shall be installed on the building water supply system.

604.8 [~~Water-pressure reducing~~] Water pressure-reducing valve or regulator. Where water pressure within a building exceeds 85 psi (586 kPa) static, an approved [~~water-pressure reducing~~] valve conforming to ASSE 1003 or CSA B356 with strainer shall be installed to reduce the pressure in the building water distribution piping to not greater than 85 psi (586 kPa) static [~~or less~~].

Exception: Service lines to sill cocks and outside hydrants, and main supply risers where pressure from the mains is reduced to 85 psi (586 kPa) or less at individual fixtures.

604.8.1 Valve design. The pressure-reducing valve shall be designed to remain open to permit uninterrupted water flow in case of valve failure.

604.8.2 Repair and removal. [~~All water-pressure reducing~~] Water pressure-reducing valves, regulators and strainers shall be so constructed and installed as to permit repair or removal of parts without breaking a pipeline or removing the valve and strainer from the pipeline.

604.9 Water hammer. The flow velocity of the water distribution system shall be controlled to reduce the possibility of water hammer. A water-hammer arrestor shall be installed where quick-closing valves are utilized and when otherwise required by this code. Water-hammer arrestors shall be installed in accordance with the manufacturer's [~~specifications~~] instructions. Water-hammer arrestors shall conform to ASSE 1010.

604.10 Reserved.

[~~TABLE 604.10.1~~
~~MANIFOLD SIZING~~

~~NOMINAL SIZE INTERNAL DIAMETER (inches)~~	~~MAXIMUM DEMAND (gpm)~~	
	~~Velocity at 4 feet per second~~	~~Velocity at 8 feet per second~~
~~1/2~~	~~2~~	~~5~~
~~3/4~~	~~6~~	~~11~~
~~1~~	~~10~~	~~20~~
~~1 1/4~~	~~15~~	~~31~~
~~1 1/2~~	~~22~~	~~44~~

~~For SI: 1 inch = 25.4 mm, 1 gallon per minute = 3.785 L/m, 1 foot per second = 0.305 m/s.~~]

604.11 Individual pressure balancing in-line valves for individual fixture fittings. Where individual pressure balancing in-line valves for individual fixture fittings are installed, such valves shall comply with ASSE 1066. Such valves shall be installed in an accessible location and shall not be utilized alone as a substitute for the balanced pressure, thermostatic or combination shower valves required in Section 424.3.

SECTION PC *605*
MATERIALS, JOINTS AND CONNECTIONS

605.1 Soil and ground water. The installation of a water service or water distribution pipe shall be prohibited in soil and groundwater contaminated with solvents, fuels, organic compounds or other detrimental materials causing permeation, corrosion, degradation or structural failure of the piping material. Where detrimental conditions are suspected, a chemical analysis of the soil and ground water conditions shall be required to ascertain the acceptability of the water service or water distribution piping material for the specific installation. Where detrimental conditions exist, approved alternative materials or routing shall be required.

605.2 Lead content of drinking water pipe and fittings. Pipe, pipe fittings, joints, valves, faucets and fixture fittings utilized to supply water for drinking or cooking purposes shall comply with NSF 372 and shall have a weighted average lead content of 0.25 percent or less.

605.3 Water service pipe. The [~~subsurface portion of~~] water service pipe shall conform to one of the standards listed in the rules of the Department of Environmental Protection[~~.~~]. [~~The above-ground portion of water service pipe shall be metal and conform to one of the standards listed in Table 605.4.~~]

[~~TABLE 605.3~~]
[~~WATER SERVICE PIPE~~]

[~~**MATERIAL**~~]	[~~**STANDARD**~~]
[~~Brass pipe~~]	[~~ASTM B 43~~]
[~~Copper or copper-alloy pipe~~]	[~~ASTM B 42; ASTM B 302~~]
[~~Copper or copper-alloy tubing (Type K)~~]	[~~ASTM B 75; ASTM B 88; ASTM B 251; ASTM B 447~~]
[~~Ductile iron water pipe~~]	[~~AWWA C151; AWWA C115~~]
[~~Stainless steel pipe (Type 304/304L)~~]	[~~ASTM A 312; ASTM A 778~~]
[~~Stainless steel pipe (Type 316/316L)~~]	[~~ASTM A 312; ASTM A 778~~]

[~~605.3.1 Underground water distribution pipe. Underground water distribution pipe shall conform to NSF 61 and shall conform to one of the standards listed in Table 605.3.~~]

605.4 Water distribution pipe. Water distribution pipe shall conform to NSF 61 and shall conform to one of the standards listed in Table 605.4.

TABLE 605.4
WATER DISTRIBUTION PIPE

MATERIAL	**STANDARD**	**[~~STANDARD~~]**
Brass pipe	ASTM B 43	
Copper or copper-alloy pipe	ASTM B 42; ASTM B 302	
Copper or copper-alloy tubing (Type K, L)	ASTM B 75; ASTM B 88; ASTM B 251; ASTM B 447	
Ductile iron pipe	AWWA C151/A21.51; AWWA C115/A21.15	
Stainless steel pipe (Type 304/304L)	ASTM A 312; ASTM A 778	
Stainless steel pipe (Type 316/316L)	ASTM A 312; ASTM A 778	

605.4.1 Underground water distribution pipe. Underground water distribution pipe shall conform to NSF 61 and shall conform to one of the standards listed in Table 605.4.1.

TABLE 605.4.1
UNDERGROUND WATER DISTRIBUTION PIPE

MATERIAL	STANDARD
Brass pipe	ASTM B 43
Copper or copper-alloy pipe	ASTM B 42; ASTM B 302
Copper or copper-alloy tubing (Type K)	ASTM B 75; ASTM B 88; ASTM B 251; ASTM B 447
Ductile iron water pipe	AWWA C151/A21.51; AWWA C115/A21.15
Stainless steel pipe (Type 304/304L)	ASTM A 312; ASTM A 778
Stainless steel pipe (Type 316/316L)	ASTM A 312; ASTM A 778

605.5 Fittings. Pipe fittings shall be approved for installation with the piping material installed and shall comply with the applicable standards listed in Table 605.5. [~~All pipe~~] Pipe fittings utilized in water supply systems shall also comply with NSF 61. [~~Ductile and gray iron pipe fittings shall be cement mortar lined in accordance with AWWA C 104.~~]

TABLE 605.5
PIPE FITTINGS

MATERIAL	STANDARD
Brass	ASTM B 62
Cast iron	ASME B16.4[~~; ASME B16.12~~]
Copper or copper alloy	ASME B16.15; ASME B16.18; ASME B16.22; ASME B16.23; ASME B16.26; ASME [~~B 16.29~~] B16.51; ASSE 1061; ASTM F 1476; ASTM F 1548
Gray iron and ductile iron	ASTM F 1476; ASTM F 1548; AWWA C110/A21.10; AWWA C153/A21.53
Stainless steel (Type 304/304L)	ASTM A 312; ASTM A 778; ASTM F 1476; ASTM F 1548
Stainless steel (Type 316/316L)	ASTM A 312; ASTM A 778; ASTM A403/A403M; ASTM F 1476; ASTM F 1548

605.5.1 Mechanically formed tee fittings. Mechanically extracted outlets shall have a height not less than three times the thickness of the branch tube wall.

605.5.1.1 Full flow assurance. Branch tubes shall not restrict the flow in the run tube. A [~~dimple/depth~~] dimple serving as a depth stop shall be formed in the branch tube to ensure that penetration into the collar is of the correct depth. For inspection purposes, a second dimple shall be placed ¼ inch (6.4 mm) above the first dimple. Dimples shall be aligned with the tube run.

605.5.1.2 Brazed joints. Mechanically formed tee fittings shall be brazed in accordance with Section 605.14.1.

605.6 Flexible water connectors. Flexible water connectors exposed to continuous pressure shall conform to [~~IAPMO PS74 and PS 48~~] ASME A112.18.6/CSA B125.6, shall not exceed 24 inches (610 mm), shall be used in exposed locations only and shall be used singularly; that is, two connectors cannot be joined.

605.7 Valves. [~~All valves~~] Valves shall be [~~of an approved type and~~]compatible with the type of piping material installed in the system. Valves shall conform to one of the standards listed in Table 605.7 or shall be approved. Valves intended to supply drinking water shall meet the requirements of NSF 61.

TABLE 605.7
VALVES

MATERIAL	**STANDARD**
Copper or copper-alloy	ASME A112.4.14; ASME A112.18.1/CSA B125.1; ASME B16.34; CSA B125.3; MSS SP-67; MSS SP-80; MSS SP-110
Gray iron and ductile iron	AWWA C500; AWWA C504; AWWA C507; MSS SP-67; MSS SP-70; MSS SP-71; MSS SP-72; MSS SP-78
Stainless steel (Type 304/304L and 316/316L)	MSS SP-67; MSS SP-110

605.8 Manufactured pipe nipples. Manufactured pipe nipples shall conform to one of the [~~standard~~] standards listed in Table 605.8.

TABLE 605.8
MANUFACTURED PIPE NIPPLES

MATERIAL	**STANDARD**
Brass-, copper-, chromium-plated	ASTM B 687
Stainless steel	ASTM A 403/A 403M

605.9 Prohibited joints and connections. The following types of joints and connections shall be prohibited:

1. Cement or concrete joints.
2. Joints made with fittings not approved for the specific installation.
3. Saddle-type fittings.
4. Removable press-connect fittings.
5. Removable push-fit fittings.
6. Nail-type fittings.
7. Compression type fittings for other than final fixture connections.

605.10 Reserved.

605.11 [~~Reserved.~~]

[~~605.12~~] Brass. Joints between brass pipe and fittings shall comply with Sections [~~605.12.1~~] 605.11.1 through [~~605.12.4~~] 605.11.3.

[~~605.12.1~~] 605.11.1 Brazed joints. All joint surfaces shall be cleaned. An approved flux shall be applied where required. The joint shall be brazed with a filler metal conforming to AWS A5.8.

[~~605.12.2~~] 605.11.2 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions and in conformance with acceptance criteria established by the commissioner.

[~~605.12.3~~] 605.11.3 Threaded joints. Threads shall conform to ASME B1.20.1. Pipe-joint compound or tape shall be applied on the male threads only.

[~~605.13~~] 605.12 Gray iron and ductile iron joints. Joints for gray and ductile iron pipe and fittings shall comply with AWWA C111 and shall be installed in accordance with the manufacturer's [~~installation~~] instructions.

[~~605.14~~] 605.13 Copper pipe. Joints between copper or copper-alloy pipe [~~or~~] and fittings shall comply with Sections [~~605.14.1~~] 605.13.1 through [~~605.14.4~~] 605.13.4.

[~~605.14.1~~] 605.13.1 Brazed joints. All joint surfaces shall be cleaned. An approved flux shall be applied where required. The joint shall be brazed with a filler metal conforming to AWS A5.8.

[~~605.14.2~~] 605.13.2 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions and in conformance with acceptance criteria established by the commissioner.

[~~605.14.3 Soldered joints.~~] ~~Solder joints shall be made in accordance with the methods of ASTM B 828. All cut tube ends shall be reamed to the full inside diameter of the tube end. All joint surfaces shall be cleaned. A flux conforming to ASTM B 813 shall be applied. The joint shall be soldered with a solder conforming to ASTM B 32. The joining of water supply piping shall be made with lead-free solder and fluxes. "Lead free" shall mean a chemical composition equal to or less than 0.2-percent lead.~~]

605.13.3 Reserved.

[~~605.14.4~~] 605.13.4 Threaded joints. Threads shall conform to ASME B1.20.1. Pipe-joint compound or tape shall be applied on the male threads only.

[~~605.15~~] 605.14 Copper tubing. Joints between copper or copper-alloy tubing [~~or~~] and fittings shall comply with Sections [~~605.15.1~~] 605.14.1 through [~~605.15.4~~] 605.14.6.

[~~605.15.1~~] 605.14.1 Brazed joints. [~~All~~ ~~joint~~] Joint surfaces shall be cleaned. An approved flux shall be applied where required. The joint shall be brazed with a filler metal conforming to AWS A5.8.

[~~605.15.2~~] 605.14.2 Flared joints. Flared joints for water pipe shall be made by a tool designed for that operation.

[~~605.15.3~~] 605.14.3 Grooved and shouldered mechanical joints. Grooved and shouldered mechanical joints shall comply with ASTM F 1476, shall be made with an approved elastomeric seal and shall be installed in accordance with the manufacturer's instructions. Such joints shall be exposed or concealed.

605.14.4 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's insturctions and shall be tested, designed and evaluated in accordance with IAPMO PS 117[~~, ICC-ES PMG LC 1002~~] and ASSE 1061.

605.14.5 Press-connect joints. Press-connect joints shall conform to one of the standards listed in Table 605.5, and shall be installed in accordance with the manufacturer's instructions. Cut tube ends shall be reamed to the full inside diameter of the tube end. Joint surfaces shall be cleaned. The tube shall be fully inserted into the pressconnect fitting. Press-connect joints shall be pressed with a tool certified by the manufacturer.

[~~605.15.4 Soldered~~] 605.14.6 Solder joints. Solder joints shall be made in accordance with the methods of ASTM B 828. All cut tube ends shall be reamed to the full inside diameter of the tube end. All joint surfaces shall be cleaned. A flux conforming to ASTM B 813 shall be applied. The joint shall be soldered with a solder conforming to ASTM B 32. The joining of water supply piping shall be made with lead-free solders and fluxes. [~~"Lead free" shall mean a chemical composition equal to or less than 0.2-percent lead.~~]

605.15 Reserved.

605.16 Reserved.

605.17 Reserved.

605.18 Reserved.

605.19 Reserved.

605.20 Reserved.

605.21 Reserved.

605.22 Reserved.

605.23 Stainless steel. Joints between stainless steel pipe and fittings shall comply with Sections 605.23.1 [~~and 605.23.2~~] through 605.23.3.

605.23.1 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions and in conformance with acceptance criteria established by the commissioner.

605.23.2 Welded joints. All [~~joint surfaces~~] joints shall be [~~cleaned. The joint shall be welded autogenously or with an approved filler metal as referenced in ASTM A 312~~] welded in accordance with ASME B31.9, inspected and tested in accordance with Section 312.

605.23.3 Grooved and shouldered mechanical joints. Grooved and shouldered mechanical joints shall comply with ASTM F 1476, shall be made with an approved elastomeric seal and shall be installed in accordance with the manufacturer's instructions. Such joints shall be exposed or concealed.

605.24 Joints between different materials. Joints between different piping materials shall be made with a mechanical joint of the compression or mechanical-sealing type, or as permitted in Sections 605.24.1 and 605.24.3. [~~Connectors or adapters shall have an elastomeric seal conforming to ASTM D 1869 or ASTM F 477.~~] Joints shall be installed in accordance with the manufacturer's instructions and in conformance with acceptance criteria established by the commissioner.

605.24.1 Copper or copper-alloy tubing to galvanized steel pipe. Joints between copper or copper-alloy tubing and galvanized steel pipe shall be made with a brass fitting or dielectric fitting or a dielectric union conforming to ASSE 1079. The copper tubing shall be soldered to the fitting in an approved manner, and the fitting shall be screwed to the threaded pipe.

605.24.2 Reserved.

605.24.3 Stainless steel. Joints between stainless steel and different piping materials shall be made with a mechanical joint of the compression or mechanical sealing type or a dielectric fitting or a dielectric union conforming to ASSE 1079.

605.25 Reserved.

SECTION* PC *606
INSTALLATION OF THE BUILDING WATER DISTRIBUTION SYSTEM

606.1 Location of shutoff valves. Shutoff valves shall be installed in the following locations:

1. On the water distribution supply pipe at the entrance into the structure.
2. On the supply and discharge side of every water sub-meter.
3. On the base of every water riser pipe in occupancies other than multiple-family residential occupancies that are two stories or less in height and in one- and two-family residential occupancies.
4. On the top of every water down-feed pipe and on the base of every up-feed pipe in occupancies other than one- and two-family residential occupancies.
5. On the entrance to every water supply pipe to a dwelling unit, except where supplying fixtures equipped with individual stops.
6. On the water supply pipe to and from a gravity or pressurized water tank.
7. On the water supply pipe to every water heater.
8. On the water supply to each sillcock.
9. On the water supply pipe to each appliance or mechanical equipment.

606.2 Reserved.

606.3 Access to valves. [~~Ready access~~] Access shall be provided to all full-open valves and shutoff valves.

606.4 Valve identification. Service and hose bibb valves shall be identified. All other valves installed in locations that are not adjacent to the fixture or appliance shall be identified, indicating the fixture or appliance served.

606.5 Water pressure booster and gravity house tank systems. Water pressure booster or gravity house tank systems shall be provided as required by Sections 606.5.1 through 606.5.10.

606.5.1 Water pressure booster or gravity house tank systems required. Where the water pressure in the public water main or individual water supply system is insufficient to supply the minimum pressures and quantities specified in this code, the supply shall be supplemented by an elevated water tank, a hydropneumatic pressure booster system or a water pressure booster pump installed in accordance with Section 606.5.5.

606.5.2 Support. All water supply tanks shall be supported in accordance with the *New York City Building Code*.

606.5.3 Covers. All water supply tanks shall be [~~covered~~] equipped with a lockable cover to keep out unauthorized persons, dirt and vermin. Such cover shall be tamper-proof and equipped with a local alarm. The covers of gravity tanks shall be vented with a return bend vent pipe with an area not less than the area of the down-feed riser pipe, and the vent shall be screened with a corrosion-resistant screen of not less than 16 by 20 mesh per inch [~~(6 by 8 mesh per cm)~~] (630 by 787 mesh per m). [~~All water supply tanks shall be equipped with a lockable cover to prevent access by unauthorized persons or vermin. Such cover shall be tamper-proof and equipped with a local alarm.~~]

606.5.4 Overflows for water supply tanks. [~~Each~~] A gravity or suction water supply tank shall be provided with an overflow with a diameter not [~~smaller~~] less than that shown in [~~Table 606.5.4(1) and/or Table 606.5.4(2)~~] Table 606.5.4. The gallons per minute listed in the [~~tables~~] table shall be the total automatic pump capacity connected to the tank. The overflow outlet shall discharge [~~within~~] at a point not less than 6 inches (152 mm)

[~~of a~~] above the roof or roof drain, or over an open [~~water supplied~~] water-supplied fixture. The overflow [~~discharge~~] outlet shall be [~~provided with durable screening~~] covered with [~~openings of not more than $^1/_8$ inch (3.18 mm).~~] a corrosion-resistant screen of not less than 16 by 20 mesh per inch (630 by 787 mesh per m) and by ¼-inch (6.4 mm) hardware cloth or shall terminate in a horizontal angle seat check valve. Drainage from overflow pipes shall be directed so as not to freeze on roof walks.

[~~TABLE 606.5.4(1)~~] TABLE 606.5.4
SIZE OF OVERFLOWS FOR GRAVITY AND SUCTION TANKS
[~~[See Figure 606.5.4 (Single Orifice/Multiple Orifice)]~~]

OVERFLOW PIPE SIZE (inches)	MAXIMUM ALLOWABLE GPM FOR EACH ORIFICE OPENING INTO TANK	MAXIMUM ALLOWABLE GPM FOR VERTICAL OVERFLOW (PIPING CONNECTING ORIFICES)
2	19	25
3	43	75
4	90	163
5	159	296
6	257	472
8	505	1,020
10	890	1,870
12	1,400	2,967

For SI: 1 inch = 25.4 mm, 1 gallon per minute = 3.785 L/m.

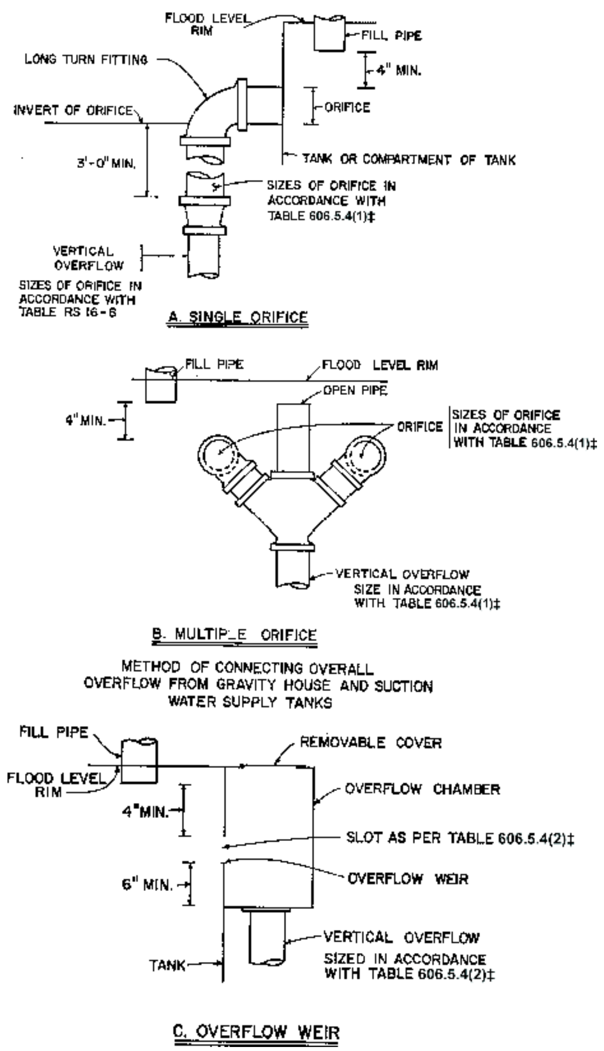
[~~TABLE 606.5.4(2)~~
~~SIZE OF WEIRS FOR GRAVITY AND SUCTION TANKS~~
~~[See Figure 606.5.4 (Overflow Weir)]~~

~~SLOTTED WEIR OPENING INTO TANK BETWEEN OVERFLOW CHAMBER AND WATER COMPARTMENT[a]~~	~~MAXIMUM GPM ALLOWABLE FOR WEIR~~
~~3 inches × 24 inches~~	~~381~~
~~3$^1/_2$ inches × 24 inches~~	~~475~~
~~4$^1/_2$ inches × 24 inches~~	~~685~~
~~4$^1/_2$ inches × 36 inches~~	~~1,037~~

~~**SLOTTED WEIR OPENING INTO TANK BETWEEN OVERFLOW CHAMBER AND WATER COMPARTMENT**~~[a]	~~**MAXIMUM GPM ALLOWABLE FOR WEIR**~~
~~6 inches × 36 inches~~	~~1,569~~
~~6 inches × 48 inches~~	~~2,100~~

~~For SI: 1 inch = 25.4 mm.~~
~~a. Bottom of the overflow chamber must be at least 6 inches below weir~~**.]**

[



]

[~~FIGURE 606.5.4~~
~~METHODS OF CONNECTING OVERFLOW FROM GRAVITY HOUSE AND SUCTION WATER SUPPLY TANKS~~]

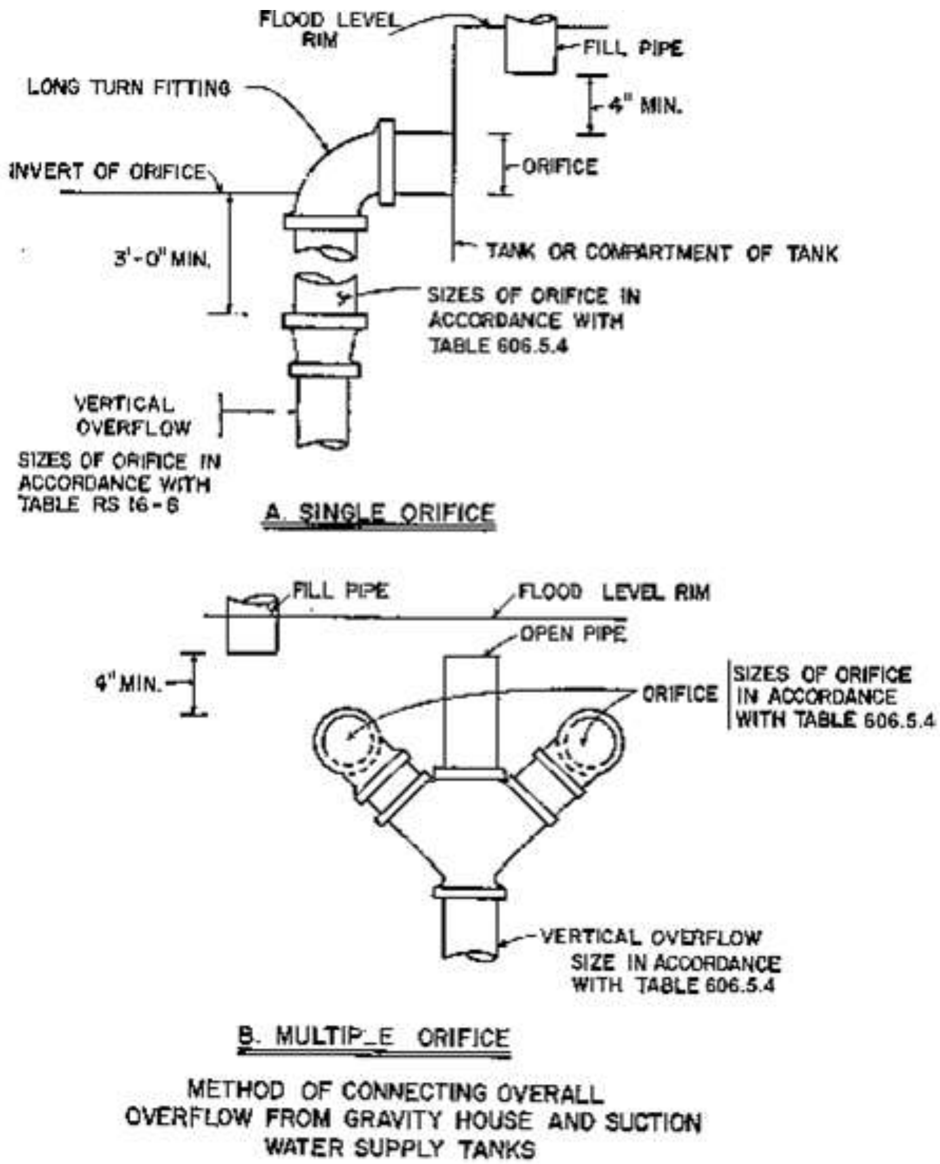


FIGURE 606.5.4
METHODS OF CONNECTING OVERFLOW FROM GRAVITY HOUSE AND SUCTION WATER SUPPLY TANKS

606.5.4.1 Water piping control and location. Water inlets to gravity house tanks shall be controlled by a ball cock or other automatic supply valve or emergency electrical cut-off so installed as to prevent the overflow of the tank in the event that the pumps filling the tanks do not shut off at the predetermined level or the street pressure rises to a point where it can fill the tank. The water inlet to a suction tank shall be controlled by a ball cock or other automatic supply valve. The inlet shall be terminated so as to provide an accepted air gap but in no case shall it be less than 4 inches (102 mm) above the top of the overflow. The outlet from a gravity tank to the distribution system shall be equipped with a strainer located at least 2 inches (51 mm) above the tank bottom to prevent solids from entering the piping system. All down-feed supplies from a tank cross connected in any manner with distribution supply piping in a building supplied by direct street or pump pressure shall be equipped with a check valve on the main cold water down supply to prevent backflow of water into the roof tank. All roof tanks shall be equipped with a high water level alarm, at or slightly below the overflow, designed to activate when the ball cock, automatic supply valve, or emergency electrical cut-off fails.

[~~**606.5.4.2 Drain pipes for emptying tanks.** Each tank or tank compartment shall be provided, at its lowest point, with a valved pipe to permit emptying the tank. The drain pipe shall discharge as required for the overflow pipe, and shall be at least 4 inches (102 mm) in diameter.~~]

[~~**606.5.4.3 Prohibited location.** Manholes of potable water tanks shall not be located directly under any soil or waste piping or any source of contamination.~~]

[~~606.5.4.4~~] <u>606.5.4.2</u> Design. The gravity house supply tank shall be built of wood, steel, or equivalent materials. Subject to the approval of the commissioner, additional linings may be installed in the tank, provided the lining material <u>complies with NSF 61 standards and</u> does not have a toxic or otherwise objectionable effect on the potable water. Steel tanks shall be painted both inside and outside. If a tank with a dividing partition is installed, the total capacity of the combined compartments shall be considered as the capacity of a single tank for the purpose of determining storage capacities of the tank.

[~~606.5.4.5~~] <u>606.5.4.3</u> Cleaning or painting. Water tanks shall be cleaned and painted in accordance with the following:

[~~606.5.4.5.1~~] <u>606.5.4.3.1</u> Prohibited materials. No water tank of any kind that is part of a building water supply system used for potable purposes shall be cleaned with any material or painted on the inside with any material that will have a toxic or otherwise objectionable effect on the potability of the water supply when the tank is put into service. No lead paint shall be used. The water supply connections to and from a tank shall be disconnected or plugged while the tank is being cleaned or painted to prevent any foreign fluid or substance from entering the distribution piping. Where the air in a tank may be insufficient to sustain human life, or may contain an injurious gas, adequate measures shall be taken for the protection of the workers.

[~~606.5.4.5.2~~] <u>606.5.4.3.2</u> Disinfection. After the tank has been cleaned or painted, it shall be disinfected according to the following procedure before it is put back in service:

1. The underside of the top, the bottom, and the walls shall be washed with a hypochlorite solution containing 100 or more parts per million of available chlorine.
2. The tank shall be filled with water to which hypochlorite solution is added during the filling in sufficient quantity so that the treated water in the tank will contain at least 10 parts per million of available chlorine.
3. The chlorinated water shall be allowed to remain in the tank for two hours.
4. Finally, the tank shall be drained completely before refilling.

[~~606.5.4.5.3~~] <u>606.5.4.3.3</u> Maintenance schedule. House and suction tanks shall be drained and cleaned at least once a year.

606.5.5 Low-pressure cutoff required [~~on booster pumps~~]. A low-pressure cutoff shall be installed on all <u>house pumps filling a water tank, and</u> booster pumps in a water pressure booster system to prevent creation of a vacuum or negative pressure on the suction side of the pump when a positive pressure of 10 psi (68.94 kPa) or less occurs on the suction side of the pump.

606.5.6 Reserved.

606.5.7 [~~Reserved.~~] <u>Tank drain pipes.</u> <u>A valved pipe shall be provided at the lowest point of each tank or tank compartment to permit emptying of the tank. The tank drain pipe shall discharge as required for overflow pipes and shall not be smaller in size than specified in Table 606.5.7.</u>

TABLE 606.5.7
SIZE OF DRAIN PIPES FOR WATER TANKS

TANK CAPACITY (gallons)	**DRAIN PIPE (inches)**
Up to 750	1
751 to 1,500	1 1/2
1,501 to 3,000	2
3,001 to 5,000	2 1/2
5,000 to 7,500	3
Over 7,500	4

For SI: 1 inch = 25.4 mm, 1 gallon = 3.785 L.

606.5.8 Prohibited location of potable supply tanks. Potable water gravity tanks or manholes of potable water pressure tanks shall not be located directly under any soil or waste piping or any source of contamination.

606.5.9 Pressure tanks, vacuum relief. All water pressure tanks shall be provided with a vacuum relief valve at the top of the tank that will operate up to a maximum water pressure of 200 psi (1380 kPa) and up to a maximum temperature of 200ºF (93ºC). The [~~minimum~~] size of such vacuum relief valve shall be [~~0.50 inch~~] not less than ½ inch (12.7 mm).

Exception: This section shall not apply to pressurized captive air diaphragm/bladder tanks.

606.5.10 Pressure relief for tanks. Every pressure tank in a hydropneumatic pressure booster system shall be protected with a pressure relief valve. The pressure relief valve shall be set at a maximum pressure equal to the rating of the tank. The relief valve shall be installed on the supply pipe to the tank or on the tank. The relief valve shall discharge by gravity to a safe place of disposal.

606.6 Water supply system test. Upon completion of a section of or the entire water supply system, the system, or portion completed, shall be tested in accordance with Section [~~PC~~] 312.

606.7 Reserved.

606.8 Water sub-meters required. Water distribution pipe lines serving a commercial cooking facility, commercial laundry facility, or commercial gym or spa shall be equipped with at least one water sub-meter to measure the amount of water supplied through such lines to the water using equipment within such facility, gym or spa. Makeup water lines serving an evaporative cooling tower or swimming pool shall be equipped with at least one water sub-meter to measure the amount of water supplied through such lines to such cooling tower or swimming pool. Makeup water lines to any boiler or boiler plant with heat input greater than 2.8 million btu/h (820 kW) shall be equipped with at least one water sub-meter to measure the amount of water supplied through such lines to such boilers. Water sub-meters shall be those models approved [~~recommended~~] for billing purposes [~~in the "Guide to Water Sub-meters" published~~] by the Department of Environmental Protection [~~or as otherwise provided in the rules of the department.~~].

Exception: [~~Swimming pools accessory to~~] Water sub-meters shall not be required in Group R-3 occupancies.

[~~606.8~~] 606.9 Pressure tanks. Tank systems containing water and air in combination under pressure exceeding 15 psi (103.4 kPa) above atmospheric pressure, where the pressure is supplied and maintained by pumps connected directly to the tanks, shall comply with the requirements of this section.

[~~606.8.1~~] 606.9.1 Design requirements. The pressure tank system shall be designed by a registered design professional. An application for a permit and plans shall be filed with the department. The plans and application shall contain, but not be limited to:

1. Size and location of high pressure tanks;
2. The operating pressures and temperatures; and
3. The location, type and specifications of pressure relief valves.

[~~606.8.2~~] 606.9.2 Location requirements. All high pressure tanks shall be located at least 5 feet (1524 mm) horizontally from a gas service or distribution line or its vertical projection upon the floor.

[~~606.8.3~~] 606.9.3 Required separation. All pressure tanks shall be located in rooms separated from gas service or distribution lines by fire-resistance rated enclosures.

SECTION **PC** *607*
HOT WATER SUPPLY SYSTEM

607.1 Where required. In residential occupancies, hot water shall be supplied to [~~all~~] plumbing fixtures and equipment utilized for bathing, washing, culinary purposes, cleansing, laundry or building maintenance. In nonresidential occupancies, hot water shall be supplied for culinary purposes, cleansing, laundry or building maintenance purposes. In nonresidential occupancies, hot water or tempered water shall be supplied for bathing and washing purposes.

607.1.1 Temperature limiting means. A thermostat control for a water heater shall not serve as the temperature limiting means for the purposes of complying with the requirements of this code for maximum allowable hot or tempered water delivery temperature at fixtures.

607.1.2 Tempered water temperature control. Tempered water shall be supplied through a water temperature limiting device that conforms to ASSE 1070 and shall limit the tempered water to a maximum of 110ºF (43ºC). This provision shall not supersede the requirement for protective shower valves in accordance with Section 424.3.

607.2 Hot or tempered water supply [~~temperature maintenance~~] to fixtures. [~~Where the~~] The developed length of hot or tempered water piping, from the source of hot water [~~supply~~] to the [~~farthest fixture exceeds~~] fixtures that require hot or tempered water, shall not exceed 20 feet (6096 mm)[~~,~~] or the maximum length in accordance with the *New York City Energy Conservation Code*. Recirculating [~~the hot water supply~~] system piping and heat-traced piping shall be [~~provided with a method of maintaining the temperature in accordance with the *New York City Energy Conservation Code*~~] considered to be sources of hot or tempered water.

607.2.1 [~~Piping insulation.~~ ~~Circulating hot water system piping shall be insulated in accordance with the *New York City Energy Conservation Code*.~~] **Circulation systems and heat trace systems for maintaining heated water temperature in distribution systems.** For residential occupancies, the installation of heated water circulation and temperature maintenance systems shall be in accordance with the *New York City Energy Conservation Code*. For commercial occupancies that are three stories or less in height above grade plane, the installation of heated water circulation and heat trace systems shall be in accordance with the *New York City Energy Conservation Code*.

[~~607.2.2~~]607.2.1.1 [~~Hot~~] Pump controls for hot water storage [~~system controls~~] systems. [~~Automatic circulating hot water system~~] The controls on pumps [~~or temperature maintenance cable shall be arranged to be conveniently turned off, automatically or manually, when the hot water system is not in~~] that circulate water between a water heater and a storage tank for heated water shall limit operation of the pump from heating cycle startup to not greater than 5 minutes after the end of the cycle.

607.2.1.2 Demand recirculation controls for distribution systems. A water distribution system having one or more recirculation pumps that pump water from a heated water supply pipe back to the heated water source through a cold water supply pipe shall be a demand recirculation water system. Pumps shall have controls that comply with both of the following:

1. The control shall start the pump upon receiving a signal from the action of a user of a fixture or appliance, sensing the presence of a user of a fixture, or sensing the flow of hot or tempered water to a fixture fitting or appliance.
2. The control shall limit the temperature of the water entering the cold water piping to 104°F (40°C).

[~~607.2.3 Recirculating pump.~~] 607.2.2 Piping for recirculation sytems having master thermostatic valves. Where a thermostatic mixing valve is used in a system with a hot water recirculating pump, the hot water or tempered water return line shall be routed to the cold water inlet pipe of the water heater and the cold water inlet pipe or the hot water return connection of the thermostatic mixing valve.

607.3 Thermal expansion control. [~~A means of controlling increased~~] Where a storage water heater is supplied with cold water that passes through a check valve, pressure [~~caused by~~] reducing valve or backflow preventer, a thermal expansion tank shall be [~~provided where required in accordance with Sections 607.3.1 and 607.3.2.~~] connected to the water heater cold water supply pipe at a point that is downstream of all check valves, pressure reducing valves and backflow preventers. Thermal expansion tanks shall be sized in accordance with the tank manufacturer's instructions and shall be sized such that the pressure in the water distribution system shall not exceed that required by Section 604.8.

[**~~607.3.1 Pressure-reducing valve.~~** ~~For water service system sizes up to and including 2 inches (51 mm), a device for controlling pressure shall be installed where, because of thermal expansion, the pressure on the downstream side of a pressure-reducing valve exceeds the pressure-reducing valve setting.~~]

[~~607.3.2 Backflow prevention device or check valve.~~ ~~Where a backflow prevention device, check valve or other device is installed on a water supply system utilizing storage water heating equipment such that thermal expansion causes an increase in pressure, a device for controlling pressure shall be installed.~~]

607.4 Flow of hot water to fixtures. Fixture fittings, faucets and diverters shall be installed and adjusted so that the flow of hot water from the fittings corresponds to the left-hand side of the fixture fitting.

Exception: Shower and tub/shower mixing valves conforming to [~~ASSE 1016~~] ASSE 1016/ASME A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1[~~,~~] , where the flow of hot water corresponds to the markings on the device.

607.5 Insulation of piping. For other than residential occupancies, as defined in the *New York City Energy Conservation Code* that are three stories or less in height above grade plane, piping to the inlet of a water heater and piping conveying water heated by a water heater shall be insulated in accordance with Section C404 of the *New York City Energy Conservation Code*. For residential occupancies, as defined in the New York City Energy Conservation Code that are three stories or less in height above grade plane, piping to the inlet of a water heater and piping conveying water heated by a water heater shall be insulated in accordance with Section R403 of the *New York City Energy Conservation Code*.

SECTION PC *608*
PROTECTION OF POTABLE WATER SUPPLY

608.1 General. A potable water supply system shall be designed, installed and maintained in such a manner so as to prevent contamination from nonpotable liquids, solids or gases being introduced into the potable water supply through [~~cross-connections~~] cross connections or any other piping connections to the system. Backflow preventer applications shall conform to Table 608.1, except as specifically stated in Sections 608.2 through 608.16.10. Primary backflow prevention devices shall comply with the requirements of the Department of Environmental Protection.

TABLE 608.1
APPLICATION OF BACKFLOW PREVENTERS

DEVICE	**DEGREE OF HAZARD**[a]	**APPLICATION**[b]	**APPLICABLE STANDARDS**
Backflow prevention assemblies:			
[~~Air gap~~]	[~~High or low hazard~~]	[~~Backsiphonage or backpressure~~]	[~~ASME A112.1.2~~]
[~~Air gap fittings for use with plumbing fixtures, appliances and appurtenances~~]	[~~High or low hazard~~]	[~~Backsiphonage or backpressure~~]	[~~ASME A112.1.3~~]
[~~Antisiphon-type fill valves for gravity water closet flush tanks~~]	[~~High hazard~~]	~~[Backsiphonage only]~~	[~~ASSE 1002, CSA B 125.3~~]
[~~Backflow preventer for carbonated beverage machines~~]	[~~Low hazard~~]	[~~Backpressure or backsiphonage Sizes 1/4" - 3/8"~~]	[~~ASSE 1022~~]
[~~Backflow preventer with intermediate atmospheric vents~~]	[~~Low hazard~~]	[~~Backpressure or backsiphonage Sizes 1/4" - 3/4"~~]	[~~ASSE 1012, CAN/CSA B64.3~~]
[~~Barometric loop~~]	[~~High or low hazard~~]	[~~Backsiphonage only~~]	[~~(See Section 608.13.4)~~]
Double check backflow prevention assembly	Low hazard	Backpressure or backsiphonage Sizes $^{3}/_{8}$" – 12"	ASSE 1015, AWWA C510, CSA B64.5, CSA B64.5.1
Double check detector fire protection backflow prevention assemblies	Low hazard	Backpressure or [~~systems)~~] backsiphonage [~~(Fire sprinkler systems)~~] Sizes 2" – 12"	ASSE 1048
[~~Dual-check-valve-type backflow preventer~~]	[~~Low hazard~~]	[~~Backpressure or backsiphonage Sizes 1/4" - 1"~~]	[~~ASSE 1024, CSA B64.6~~]

DEVICE	DEGREE OF HAZARD[a]	APPLICATION[b]	APPLICABLE STANDARDS
[~~Hose connection backflow preventer~~]	[~~High or low hazard~~]	[~~Low head backpressure, rated working pressure, backpressure or backsiphonage Sizes 1/2" - 1"~~]	[~~ASSE 1052, CSA B64.2.1.1~~]
[~~Hose connection vacuum breaker~~]	[~~High or low hazard~~]	[~~Low head backpressure or backsiphonage Sizes 1/2", 3/4", 1"~~]	[~~ASSE 1011, CAN/CSA B64.2, CSA B64.2.1~~]
[~~Laboratory faucet backflow preventer~~]	[~~High or low hazard~~]	[~~Low head backpressure and Backsiphonage~~]	[~~ASSE 1035, CSA B64.7~~]
[~~Pipe-applied atmospheric-type vacuum Breaker~~]	[~~High or low hazard~~]	[~~Backsiphonage only Sizes 1/4" - 4"~~]	[~~ASSE 1001, CAN/CSA B64.1.1~~]
Pressure vacuum breaker assembly[c]	High or low hazard	Backsiphonage[~~a~~] only Sizes $^1/_2$" – 2"	ASSE 1020, CSA B64.1.2
Reduced pressure principle backflow preventer	High or low hazard	Backpressure or backsiphonage Sizes $^3/_8$" - 12"	ASSE 1013, AWWA C511, [~~CAN/~~]CSA B64.4, CSA B64.4.1
Reduced pressure detector fire protection backflow prevention assemblies	High or low hazard	Backsiphonage or backpressure [~~(Fire sprinkler systems)~~]	ASSE 1047
[~~Spillproof~~]Spill-resistant vacuum breaker assembly[c]	High or low hazard	Backsiphonage only [~~Backs~~] Sizes $^1/_4$" - 2"	ASSE 1056
[~~Vacuum breaker wall hydrants, frost-resistant, automatic draining type~~]	[~~High or low hazard~~]	[~~Low head backpressure or backsiphonage Sizes 3/4", 1"~~]	[~~ASSE 1019, CAN/CSA B64.2.2~~]
Backflow preventer plumbing devices:			

DEVICE	**DEGREE OF HAZARD**[a]	**APPLICATION**[b]	**APPLICABLE STANDARDS**
Antisiphon-type fill valves for gravity water closet flush tanks	High hazard	Backsiphonage only	ASSE 1002, CSA B 125.3
Backflow preventer for carbonated beverage machines	Low hazard	Backpressure or backsiphonage Sizes $^{1}/_{4}$"- $^{3}/_{8}$"	ASSE 1022
Backflow preventer with intermediate atmospheric vents	Low hazard	Backpressure or backsiphonage Sizes $^{1}/_{4}$"- $^{3}/_{8}$"	ASSE 1012, CSA B64.3
Dual-check-valve-type backflow preventer	Low hazard	Backpressure or backsiphonage Sizes $^{1}/_{4}$" - 1"	ASSE 1024, CSA B64.6
Hose connection backflow preventer	High or low hazard	Low head backpressure, rated working pressure, backpressure or backsiphonage Sizes $^{1}/_{2}$" - 1"	ASME A112.21.3, ASSE 1052, CSA B64.2.1.1
Hose connection vacuum breaker	High or low hazard	Low head backpressure or backsiphonage Sizes $^{1}/_{2}$", $^{3}/_{4}$", 1"	ASME A112.21.3, ASSE 1011, CSA B64.2, CSA B64.2.1
Laboratory faucet backflow preventer	High or low hazard	Low head backpressure and backsiphonage	ASSE 1035, CSA B64.7
Pipe-applied atmospheric-type vacuum breaker	High or low hazard	Backsiphonage only Sizes $^{1}/_{4}$" - 4"	ASSE 1001, CSA B64.1.1
Vacuum breaker wall hydrants, frost-resistant, automatic-draining type	High or low hazard	Low head backpressure or backsiphonage Sizes $^{3}/_{4}$", 1"	ASME A112.21.3, ASSE 1019, CSA B64.2.2
Other means or methods:			
Air gap	High or low hazard	Backsiphonage or backpressure	ASME A112.1.2

DEVICE	DEGREE OF HAZARD[a]	APPLICATION[b]	APPLICABLE STANDARDS
Air gap fittings for use with plumbing fixtures, appliances and appurtenances	High or low hazard	Backsiphonage or backpressure	ASME A112.1.3
Barometric loop	High or low hazard	Backsiphonage only	(See Section 608.13.4)

[~~Sizes listed in inches.~~] For SI: 1 inch = 25.4 mm.

a. Low hazard.

High hazard—See Contamination (Section 202).
b. [~~See Backpressure (Section 202).~~] See Backpressure, low head (Section 202).
See Backsiphonage (Section 202).
c. The regulations of the Department of Environmental Protection prohibit use of vacuum breaker assemblies as primary backflow prevention devices.

608.2 Plumbing fixtures. The supply lines [~~or~~] and fittings for [~~every~~] plumbing [~~fixture~~] fixtures shall be installed so as to prevent backflow. Plumbing fixture fittings shall provide backflow protection in accordance with [~~ASME A112.18.1~~] ASME A112.18.1/CSA B125.1.

608.3 Devices, appurtenances, appliances and apparatus. [~~All devices~~] Devices, appurtenances, appliances and apparatus intended to serve some special function, such as sterilization, distillation, processing, cooling, or storage of ice or foods, and that connect to the water supply system, shall be provided with protection against backflow and contamination of the water supply system. Water pumps, filters, softeners, tanks and [~~all~~] other appliances and devices that handle or treat potable water shall be protected against contamination.

608.3.1 Special equipment, water supply protection. The water supply for hospital fixtures shall be protected against backflow with a reduced pressure principle backflow [~~preventer~~] prevention assembly, an atmospheric or [~~spill-proof~~] spill-resistant vacuum breaker, assembly or an air gap. Vacuum breakers for bedpan washer hoses shall not be located less than 5 feet (1524 mm) above the floor. Vacuum breakers for hose connections in health care or laboratory areas shall not be less than 6 feet (1829 mm) above the floor.

608.4 Water service piping. Water service piping shall be protected in accordance with Sections 603.2 and 603.2.1.

608.5 Chemicals and other substances. Chemicals and other substances that produce either toxic conditions, taste, odor or discoloration in a potable water system shall not be introduced into, or utilized in, such systems.

608.6 [~~Cross connection~~] Cross connection control. Cross connections shall be prohibited, except where approved [~~protective~~] backflow prevention assemblies, backflow prevention devices or other means or methods are installed to protect the potable water supply.

608.6.1 Private water supplies. Cross connections between a private water supply and a potable public supply shall be prohibited.

608.7 Valves and outlets prohibited below grade. Potable water outlets and combination stop-and-waste valves shall not be installed underground or below grade. [~~Freeze-proof~~] Freezeproof yard hydrants that drain the riser into the ground are considered to be stop-and-waste valves.

Exception: [~~Freeze-proof~~] Freezeproof yard hydrants that drain the riser into the ground shall be permitted to be installed, provided that the potable water supply to such hydrants is protected upstream of the hydrants in accordance with Section 608 and the hydrants are permanently identified as nonpotable outlets by approved signage that reads as follows: "Caution, Nonpotable Water. Do Not Drink."

608.8 Identification of nonpotable water systems. [~~In buildings where~~] Where nonpotable water systems are installed, the piping conveying the nonpotable water shall be identified either by color marking[~~or~~] , metal tags or tape in accordance with Sections 608.8.1 through [~~608.8.3~~] 608.8.2.3.[~~ All nonpotable~~]

608.8.1 Signage required. Nonpotable water outlets, such as hose connections, open ended pipes[~~,~~] and faucets, shall be identified [~~at the point of use~~] with signage that reads as follows: "Nonpotable water is utilized for [~~each outlet with the words, "Caution. Nonpotable Water. Do Not Drink."~~] (application name). CAUTION: NONPOTABLE WATER – DO NOT DRINK." The words shall be legibly and indelibly printed on a tag or sign constructed of corrosion-resistant waterproof material or shall be indelibly printed on the fixture. The letters of the words shall be not less than [~~0.5 inches~~] 0.5 inch (12.7 mm) in height and [~~color~~] in colors in contrast to the background on which they are applied. In addition to the required wordage, the pictograph shown in Figure 608.8.1 shall appear on the required signage.

FIGURE 608.8.1
PICTOGRAPH—DO NOT DRINK

[~~608.8.1 Information.~~]608.8.2 Distribution pipe labeling and marking. Nonpotable distribution piping shall be purple in color and shall be embossed, or integrally stamped or marked, with the words: "CAUTION: NONPOTABLE WATER – DO NOT DRINK" or the piping shall be installed with a purple identification tape or wrap. Pipe identification shall include the contents of the piping system and an arrow indicating the direction of flow. Hazardous piping systems shall also contain information addressing the nature of the hazard. Pipe identification shall be repeated at [~~maximum~~] intervals [~~of~~] not exceeding 25 feet (7620 mm) and at each point where the piping passes through a wall, floor or roof. Lettering shall be readily observable within the room or space where the piping is located.

[~~608.8.2~~] 608.8.2.1 Color. The color of the pipe identification shall be discernable and consistent throughout the building. The color purple shall be used to identify nonpotable[~~recycled, rain and gray~~] water distribution systems.

[~~608.8.3 Size.~~] 608.8.2.2 Lettering size. The size of the background color field and lettering shall comply with Table [~~608.8.3~~] 608.8.2.2.

TABLE [~~608.8.3~~] 608.8.2.2
SIZE OF PIPE IDENTIFICATION

PIPE DIAMETER (inches)	LENGTH BACKGROUND COLOR FIELD (inches)	SIZE OF LETTERS (inches)
$^3/_4$ to $1^1/_4$	8	0.5
$1^1/_2$ to 2	8	0.75
$2^1/_2$ to 6	12	1.25
8 to 10	24	2.5
over 10	32	3.5

For SI 1 inch = 25.4 mm.

608.8.2.3 Identification tape. Where used, identification tape shall be at least 3 inches (76 mm) wide and have white or black lettering on a purple field stating "CAUTION: NONPOTABLE WATER – DO NOT DRINK." Identification tape shall be installed on top of nonpotable water distribution pipes, fastened at least every 10 feet (3048 mm) to each pipe length and run continuously the entire length of the pipe.

608.9 Reutilization prohibited. Water utilized for the cooling of equipment or other processes shall not be returned to the potable water system. Such water shall be discharged into a drainage system through an air gap or shall be utilized for nonpotable purposes.

608.10 Reuse of piping. Piping that has been utilized for any purpose other than conveying potable water shall not be utilized for conveying potable water.

608.11 Painting of water tanks. The interior surface of a potable water tank shall not be lined, painted or repaired with any material that changes the taste, odor, color or potability of the water supply when the tank is placed in, or returned to, service. Linings, paints, and repairs must be in accordance with the requirements of the Department of Health and Mental Hygiene.

608.12 Pumps and other appliances. Water pumps, filters, softeners, tanks and [~~all~~]other devices that handle or treat potable water shall be protected against contamination.

608.13 Backflow protection. Means of protection against secondary backflow shall be provided[~~, maintained and inspected~~]in accordance with Sections 608.13.1 through [~~608.13.9~~] 608.13.10 and tested and inspected in accordance with Chapter 3.

608.13.1 Air gap. The minimum required air gap shall be measured vertically from the lowest end of a potable water outlet to the flood level rim of the fixture or receptacle into which such potable water outlet discharges. Air gaps shall comply with ASME A112.1.2 and air gap fittings shall comply with ASME A112.1.3.

608.13.2 Reduced pressure principle backflow [~~preventers~~] prevention assemblies. Reduced pressure principle backflow [~~preventers~~] prevention assemblies shall conform to ASSE 1013, AWWA C511, CSA B64.4 or CSA B64.4.1. Reduced pressure detector assembly backflow preventers shall conform to ASSE 1047. These devices shall be permitted to be installed where subject to continuous pressure conditions. The relief opening shall discharge by air gap and shall be prevented from being submerged. [~~These devices shall be tested annually by a New York State certified tester employed by a New York City licensed plumber.~~]

608.13.3 Backflow preventer with intermediate atmospheric vent. Backflow preventers with intermediate atmospheric vents shall conform to ASSE 1012 or [~~CAN/CSA B64.3~~] CSA B64.3. These devices shall be permitted to be installed where subject to continuous pressure conditions. The relief opening shall discharge by air gap and shall be prevented from being submerged.

608.13.4 Barometric loop. Barometric loops shall precede the point of connection and shall extend vertically to a height of 35 feet (10 668 mm). A barometric loop shall only be utilized as an atmospheric-type or pressure-type vacuum breaker.

608.13.5 [~~Pressure-type~~] Pressure vacuum [~~breakers~~] breaker assemblies. [~~Pressure-type~~] Pressure vacuum [~~breakers~~]breaker assemblies shall conform to ASSE 1020 or CSA B64.1.2. Spill-resistant vacuum breaker assemblies shall comply with ASSE 1056. These [~~devices~~] assemblies are designed for installation under continuous pressure conditions [~~when~~] where the critical level is installed at the required height. [~~Pressure-type~~] Pressure vacuum [~~breakers~~] breaker assemblies shall not be installed in locations where spillage could cause damage to the structure.

608.13.6 Atmospheric-type vacuum breakers. [~~Pipe-applied~~] Pipe applied atmospheric-type vacuum breakers shall conform to ASSE 1001 or [~~CAN/CSA B64.1.1~~] CSA B64.1.1. Hose-connection vacuum breakers shall conform to ASME A112.21.3, ASSE 1011, ASSE 1019, ASSE 1035, ASSE 1052, [~~CAN/CSA B64.2~~]CSA B64.2, CSA B64.2.1, CSA B64.2.1.1, [~~CAN/CSA B64.2.2~~] CSA B64.2.2 or CSA B64.7. These devices shall operate under normal atmospheric pressure when the critical level is installed at the required height.

608.13.7 Double [~~check-valve~~] check backflow prevention assemblies. Double [~~check-valve~~] check backflow prevention assemblies shall conform to ASSE 1015, CSA B64.5, CSA B64.5.1[~~,~~] or AWWA C510. [~~Double-detector check-valve~~] Double check detector fire protection backflow prevention assemblies shall conform to ASSE 1048. These [~~devices~~] assemblies shall be capable of operating under continuous pressure conditions. [~~These devices shall be tested annually by a New York State certified tester employed by a New York City licensed plumber..~~]

608.13.8 [~~Spillproof~~] Spill-resistant pressure vacuum [~~breakers~~] breaker assemblies. [~~Spillproof~~] Spill-resistant pressure vacuum [~~breakers (SVB)~~] breaker assemblies shall conform to ASSE 1056 or CSA B64.1.3. These [~~devices~~] assemblies are designed for installation under continuous-pressure conditions [~~when~~] where the critical level is installed at the required height.

608.13.9 Chemical dispenser backflow devices. Backflow devices for chemical dispensers shall comply with ASSE 1055 or shall be equipped with an air gap fitting.

608.13.10 Dual check backflow preventer. Dual check backflow preventers shall conform to ASSE 1024 or CSA B64.6.

608.14 Location of backflow preventers. Access shall be provided to backflow preventers as specified by the [~~installation~~] manufacturer's instructions[~~ of the approved manufacturer~~].

608.14.1 Outdoor enclosures for backflow prevention devices. Outdoor enclosures for backflow prevention devices shall comply with ASSE 1060.

608.14.2 Protection of backflow preventers. Backflow preventers shall not be located in areas subject to freezing except where they can be removed by means of unions or are protected from freezing by heat, insulation or both.

608.14.2.1 Relief port piping. The termination of the piping from the relief port or air gap fitting of a backflow preventer shall discharge to an approved indirect waste receptor or to the outdoors where it will not cause damage or create a nuisance.

608.15 Protection of potable water outlets. All potable water openings and outlets shall be protected against backflow in accordance with Section 608.15.1, 608.15.2, 608.15.3, 608.15.4, 608.15.4.1[~~,~~] or 608.15.4.2.

608.15.1 Protection by air gap. Openings and outlets shall be protected by an air gap between the opening and the fixture flood level rim as specified in Table 608.15.1. Openings and outlets equipped for hose connection shall be protected by means other than an air gap.

TABLE 608.15.1
MINIMUM REQUIRED AIR GAPS

FIXTURE	MINIMUM AIR GAP	
	Away from a wall[a] (inches)	**Close to a wall (inches)**
Lavatories and other fixtures with effective [~~opening~~] openings not greater than $^1/_2$ inch in diameter	1	$1^1/_2$
[~~Sink~~] Sinks, laundry trays, gooseneck back faucets and other fixtures with effective openings not greater than $^3/_4$ inch in diameter	$1^1/_2$	$2^1/_2$
Over-rim bath fillers and other fixtures with effective openings not greater than 1 inch in diameter	2	3
Drinking water fountains, single orifice not greater than $^7/_{16}$ inch in diameter or multiple orifices with a total area of 0.150 square inch (area of circle $^7/_{16}$ inch in diameter)	1	$1^1/_2$
Effective openings greater than 1 inch	Two times the diameter of the effective opening	Three times the diameter of the effective opening

For SI: 1 inch = 25.4 mm, 1 square inch = 645 mm^2.

a. Applicable where walls or obstructions are spaced from the nearest inside-edge of the spout opening a distance greater than three times the diameter of the effective opening for a single wall, or a distance greater than four times the diameter of the effective opening for two intersecting walls.

608.15.2 Protection by [~~a~~]reduced pressure principle backflow prevention assembly. Openings and outlets shall be protected by a reduced pressure principle backflow [~~preventer~~] prevention assembly or a reduced pressure principle fire protection backflow prevention assembly on potable water supplies.

608.15.3 Protection by a backflow preventer with intermediate atmospheric vent. Openings and outlets shall be protected by a backflow preventer with an intermediate atmospheric vent.

608.15.4 Protection by a vacuum breaker. Openings and outlets shall be protected by atmospheric-type or pressure-type vacuum breakers. The critical level of the vacuum breaker shall be set [~~a minimum of~~] not less than 6 inches (152 mm) above the flood level rim of the fixture or device. Fill valves shall be set in accordance with Section 425.3.1. Vacuum breakers shall not be installed under exhaust hoods or similar that will contain toxic fumes or vapors. Pipe-applied vacuum breakers shall be installed not less than 6 inches (152 mm) above the flood level rim of the fixture, receptor or device served.

608.15.4.1 Deck-mounted and integral vacuum breakers. Approved deck-mounted or equipment mounted vacuum breakers and faucets with integral atmospheric [~~or spillproof~~] vacuum breakers or spill-resistant vacuum breaker assemblies shall be installed in accordance with the manufacturer's instructions and the requirements for labeling with the critical level not less than 1 inch (25 mm) above the flood level rim.

608.15.4.2 Hose connections. Sillcocks, hose bibbs, wall hydrants and other openings with a hose connection shall be protected by an atmospheric-type or pressure-type vacuum breaker or a permanently attached hose connection vacuum breaker.

Exceptions:

1. This section shall not apply to water heater and boiler drain valves that are provided with hose connection threads and that are intended only for tank or vessel draining.
2. This section shall not apply to water supply valves intended for connection of clothes washing machines where backflow prevention is otherwise provided or is integral with the machine.

608.16 Connections to the potable water system. Connections to the potable water system shall conform to Sections 608.16.1 through 608.16.10.

608.16.1 Beverage dispensers. The water supply connection to [~~carbonated~~] beverage dispensers shall be protected against backflow by a backflow preventer conforming to ASSE 1022 or by an air gap. The portion of the backflow preventer device downstream from the second check valve and the piping downstream therefrom shall not be affected by carbon dioxide gas.

608.16.2 Connections to boilers. The potable supply to the boiler [~~shall be equipped with a backflow preventer with an intermediate atmospheric vent complying with ASSE 1012 or CAN/CSA B64.3. Where conditioning chemicals are introduced into the system, the potable water connection~~] shall be protected by an air gap or a reduced pressure principle backflow preventer, complying with ASSE 1013, [~~CAN/~~] CSA B64.4 or AWWA C511. [~~Makeup water lines to any boiler with heat input greater than 2.8 million btu/h (820 kW) shall be equipped with at least one water sub-meter to measure the amount of water supplied through such lines to such boilers. Water sub-meters shall shall be those models recommended for billing purposes in the "Guide to Water Sub-meters" published by the Department of Environmental Protection or as otherwise provided in the rules of the department.~~]

Exception: An atmospheric vent complying with ASSE 1012 or CSA B64.3 may be installed in buildings classified as Occupancy Group R-3 and which do not utilize conditioning chemicals.

608.16.3 Heat exchangers. Heat exchangers utilizing an essentially toxic transfer fluid shall be separated from the potable water by double-wall construction. An air gap open to the atmosphere shall be provided between the two walls. Heat exchangers utilizing an essentially nontoxic transfer fluid shall be permitted to be of single-wall construction.

Exceptions: Double-wall construction shall not be required for the following:

1. Heat exchangers supplied directly from the Consolidated Edison steam system; and
2. Low-pressure steam-heating boilers.

608.16.4 Connections to automatic fire sprinkler systems and standpipe systems. The potable water supply to automatic fire sprinkler and standpipe systems shall be protected against backflow by a double [~~check valve~~] check backflow prevention assembly, a double check detector fire protection backflow prevention assembly, reduced pressure principle backflow prevention assembly, or a reduced pressure [~~principle~~] detector fire protection backflow [~~preventer~~] prevention assembly.

Exceptions:

1. Where systems are installed as a portion of the water distribution system in accordance with the requirements of this code and are not provided with a fire department connection, isolation of the water supply system shall not be required.
2. Isolation of the water distribution system is not required for deluge, preaction or dry pipe systems.

608.16.4.1 Additives or nonpotable source. Where systems under continuous pressure contain chemical additives or antifreeze, or where systems are connected to a nonpotable secondary water supply, the potable water supply shall be protected against backflow by a reduced pressure principle backflow prevention assembly or a reduced pressure detector fire protection backflow prevention assembly. Where chemical additives or antifreeze are added to only a portion of an automatic fire sprinkler or standpipe system, the reduced pressure principle backflow [~~preventer~~] prevention assembly or the reduced pressure detector fire protection backflow prevention assembly shall be permitted to be located so as to isolate that portion of the system. Where systems are not under continuous pressure, the potable water supply shall be protected against backflow by an air gap or [~~a pipe applied~~] an atmospheric vacuum breaker conforming to ASSE 1001 or [~~CAN/CSA B64.1.1~~] CSA B64.1.1.

608.16.5 Connections to lawn irrigation systems. The potable water supply to lawn irrigation systems shall be protected against backflow by an [~~atmospheric-type~~] atmospheric vacuum breaker, a [~~pressure-type~~] pressure vacuum breaker assembly or a reduced pressure principle backflow [~~preventer~~] prevention assembly. [~~A valve~~] Valves shall not be installed downstream from an atmospheric vacuum breaker. Where chemicals are introduced into the system, the potable water supply shall be protected against backflow by a reduced pressure principle backflow [~~preventer~~] prevention assembly.

608.16.6 Connections subject to backpressure. Where a potable water connection is made to a nonpotable line, fixture, tank, vat, pump, cooling tower or other equipment subject to [~~back-pressure~~] high-hazard backpressure, the potable water connection shall be protected by a reduced pressure principle backflow [~~preventer~~] prevention assembly.

608.16.7 Chemical dispensers. Where chemical dispensers connect to the potable water distribution system, the water supply system shall be protected against backflow in accordance with Section 608.13.1, 608.13.2, 608.13.5, 608.13.6, 608.13.8 or 608.13.9.

608.16.8 Portable cleaning equipment. Where the portable cleaning equipment connects to the water distribution system, the water supply system shall be protected against backflow in accordance with Section 608.13.1, 608.13.2, 608.13.3, 608.13.7 or 608.13.8.

608.16.9 Dental pump equipment. Where dental pumping equipment connects to the water distribution system, the water supply system shall be protected against backflow in accordance with Section 608.13.1, 608.13.2, 608.13.5, 608.13.6 or 608.13.8.

608.16.10 Coffee machines and noncarbonated beverage dispensers. The water supply connection to coffee machines and noncarbonated beverage dispensers shall be protected against backflow by a backflow preventer conforming to ASSE 1022 or by an air gap.

608.17 Protection of individual water supplies. An individual water supply shall be located and constructed so as to be safeguarded against contamination in accordance with Sections 608.17.1 through 608.17.8.

608.17.1 Well locations. A potable ground water source or pump suction line shall not be located closer to potential sources of contamination than the distances shown in Table 608.17.1. In the event the underlying rock structure is limestone or fragmented shale, the local or state health department shall be consulted on well site location. The distances in Table 608.17.1 constitute minimum separation and shall be increased in areas of creviced rock or limestone, or where the direction of movement of the ground water is from sources of contamination toward the well.

TABLE 608.17.1
DISTANCE FROM CONTAMINATION TO
PRIVATE WATER SUPPLIES AND PUMP SUCTION LINES

SOURCE OF CONTAMINATION	DISTANCE (feet)
Barnyard	100
Farm silo	25
Pasture	100
Pumphouse floor drain of cast iron draining to ground surface	2
Seepage pits	50
Septic tank	25
Sewer	10
Subsurface disposal fields	50
Subsurface pits	50

For SI: 1 foot = 304.8 mm.

608.17.2 Elevation. Well sites shall be positively drained and shall be at higher elevations than potential sources of contamination.

608.17.3 Depth. Private potable well supplies shall not be developed from a water table less than 10 feet (3048 mm) below the ground surface.

608.17.4 Water-tight casings. Each well shall be provided with a water-tight casing extending to [~~a minimum distance of~~] 10 feet (3048 mm) below the ground surface. [~~All casings~~] Casings shall extend [~~at least~~] not less than 6 inches (152 mm) above the well platform. [~~The casing~~] Casings shall be large enough to permit installation of a separate drop pipe. Casings shall be sealed at the bottom in an impermeable stratum or extend several feet into the water-bearing stratum.

608.17.5 Drilled or driven well casings. Drilled or driven well casings shall be of steel or other approved material. Where drilled wells extend into a rock formation, the well casing shall extend to and set firmly in the formation. The annular space between the earth and the outside of the casing shall be filled with cement grout to a [~~minimum distance~~] depth of not less than 10 feet (3048 mm) below the ground surface. In an instance of casing to rock installation, the grout shall extend to the rock surface.

608.17.6 Dug or bored well casings. Dug or bored well casings shall be of water-tight concrete, tile[~~,~~] or galvanized or corrugated metal pipe extending to [~~a minimum distance of~~] not less than 10 feet (3048 mm) below the ground surface. Where the water table is more than 10 feet (3048 mm) below the ground surface, the water-tight casing shall extend below the table surface. Well casings for dug wells or bored wells constructed with sections of concrete, tile[~~,~~] or galvanized or corrugated metal pipe shall be surrounded by 6 inches (152 mm) of grout poured into the hole between the outside of the casing and the ground [~~to a minimum depth of~~] and extending not less than 10 feet (3048 mm) below the ground surface.

608.17.7 Cover. [~~Every potable~~] Potable water [~~well~~] wells shall be equipped with an overlapping water-tight cover at the top of the well casing or pipe sleeve such that contaminated water or other substances are prevented from entering the well through the annular opening at the top of the well casing, wall or pipe sleeve. Covers shall extend downward [~~at least~~] not less than 2 inches (51 mm) over the outside of the well casing or wall. A dug well cover shall be provided with a pipe sleeve permitting the withdrawal of the pump suction pipe, cylinder or jet body without disturbing the cover. Where pump sections or discharge pipes enter or leave a well through the side of the casing, the circle of contact shall be water tight.

608.17.8 Drainage. [~~All potable~~] Potable water wells and springs shall be constructed such that surface drainage will be diverted away from the well or spring.

SECTION **PC** *609*
HEALTH CARE PLUMBING

609.1 Scope. This section shall govern those aspects of health care plumbing systems that differ from plumbing systems in other structures. Health care plumbing systems shall conform to the requirements of this section in addition to the other requirements of this code. The provisions of this section shall apply to the special devices and equipment installed and maintained in the following occupancies: hospitals, nursing homes, homes for the aged, orphanages, infirmaries, first aid stations, psychiatric facilities, clinics, professional offices of dentists and doctors, mortuaries, educational facilities, surgery, dentistry, research and testing laboratories, establishments manufacturing pharmaceutical drugs and medicines, animal care facilities, and other structures with similar apparatus and equipment classified as plumbing.

609.2 Water service. [~~All hospitals~~] Hospitals shall have two water service pipes installed in such a manner so as to minimize the potential for an interruption of the supply of water in the event of a water main or water service pipe failure.

609.3 Hot water. Hot water shall be provided to supply all of the hospital fixture, kitchen and laundry requirements. Special fixtures and equipment shall have hot water supplied at a temperature specified by the manufacturer. The hot water system shall be installed in accordance with Section [~~PC~~] 607.

609.4 Vacuum breaker installation. Vacuum breakers shall be installed [~~a minimum of~~] not less than 6 inches (152 mm) above the flood level rim of the fixture or device in accordance with Section [~~PC~~] 608. The flood level rim of hose connections shall be the maximum height at which any hose is utilized.

609.5 Prohibited water closet and clinical sink supply. Jet or water-supplied orifices, except those supplied by the flush connections, shall not be located in or connected with a water closet bowl or clinical sink. This section shall not prohibit an approved bidet installation.

609.6 Clinical, hydrotherapeutic and radiological equipment. [~~All clinical~~] Clinical, hydrotherapeutic, radiological or any equipment that is supplied with water or that discharges to the waste system shall conform to the requirements of this section and Section [~~PC~~] 608.

609.7 Condensate drain trap seal. A water supply shall be provided for cleaning, flushing and resealing the condensate trap, and the trap shall discharge through an air gap in accordance with Section [~~PC~~] 608.

609.8 Valve leakage diverter. Each water sterilizer filled with water through directly connected piping shall be equipped with an approved leakage diverter or bleed line on the water supply control valve to indicate and conduct any leakage of unsterile water away from the sterile zone.

SECTION **PC** *610*
DISINFECTION OF POTABLE WATER SYSTEM

610.1 General. [~~New or repaired potable~~] Potable water systems shall be purged of deleterious matter and disinfected prior to utilization. The method to be followed shall be that prescribed by the health authority or water purveyor having jurisdiction or, in the absence of a prescribed method, the procedure described in either AWWA C651 or AWWA C652, or as described in this section. This requirement shall apply to "on-site" or [~~"in-plant"~~] "inplant" fabrication of a system or to a modular portion of a system.

1. The pipe system shall be flushed with clean, potable water until dirty water does not appear at the points of outlet.
2. The system or part thereof shall be filled with a water/chlorine solution containing [~~at least~~] not less than 50 parts per million (50 mg/L) of chlorine, and the system or part thereof shall be valved off and allowed to stand for 24 hours; or the system or part thereof shall be filled with a water/chlorine solution containing [~~at least~~] not less than 200 parts per million (200 mg/L) of chlorine and allowed to stand for 3 hours.
3. Following the required standing time, the system shall be flushed with clean potable water until the chlorine is purged from the system.
4. The procedure shall be repeated where shown by a bacteriological examination that contamination remains present in the system.

Exception: Potable water systems are not required to be purged and disinfected after ordinary repairs.

SECTION **PC** *611*
DRINKING WATER TREATMENT UNITS

611.1 Design. Drinking water treatment units shall meet the requirements of NSF 42, NSF 44, NSF 53[~~ or~~] , NSF 62 or CSA B483.1.

611.2 Reverse osmosis systems. The discharge from a reverse osmosis drinking water treatment unit shall enter the drainage system through an air gap or an air gap device that meets the requirements of NSF 58 or CSA B483.1.

611.3 Connection tubing. The tubing to and from drinking water treatment units shall be of a size and material as recommended by the manufacturer. The tubing shall comply with NSF 14, NSF 42, NSF 44, NSF 53, NSF 58 or NSF 61.

SECTION PC *612*
SOLAR SYSTEMS

612.1 Solar systems. The construction, installation, alterations and repair of systems, equipment and appliances intended to capture and utilize solar energy for space heating or cooling, domestic hot water heating, swimming pool heating or process heating shall be in accordance with the *New York City Mechanical Code* and this code.

SECTION PC *613*
TEMPERATURE CONTROL DEVICES AND VALVES

613.1 Temperature-actuated mixing valves. Temperature actuated mixing valves, which are installed to reduce water temperatures to defined limits, shall comply with ASSE 1016 and ASSE 1017.

SECTION PC 614
EMERGENCY DRINKING WATER ACCESS

614.1 Buildings required to provide alternative potable water access. Buildings that supply potable water from the public water main for dwelling units and sleeping units in Occupancy Groups I-1, R-1, R-2, and R-3 with the assistance of pumps shall provide additional fixtures that in an emergency when such pumps are inoperable are capable of supplying potable water from the public water main to the building utilizing only the available pressure from the public water main. Such fixtures shall comply with Sections 614.1.1 through 614.1.5.

Exception: Buildings where the pumps used to supply potable water for the dwelling units or sleeping units are connected to an emergency or a standby power system that complies with the requirements of Chapter 27 of the *New York City Building Code*.

614.1.1 Emergency water fixture. Fixtures capable of supplying an emergency source of potable water in accordance with this section shall consist of a faucet conforming to Section [~~PC~~] 424 or a fixture conforming to Section [~~PC~~] 424 that is capable of attaching to a splitter either:

1. a sink conforming to Section [~~PC~~] 418; or
2. a floor drain conforming to Section [~~PC~~] 412.

614.1.2 Number of emergency water fixtures required. One such fixture shall be provided for each 100 occupants as determined by the occupant load of the building.

614.1.3 Access to emergency water fixtures. Fixtures capable of supplying an emergency source of potable water in accordance with this section shall be located indoors in one or more common areas of the building. Such area shall be on an accessible route that complies with Section 1104.3 of the *New York City Building Code*. Where such area requires users to pass through a doorway to access the emergency water fixture, such area shall further comply with Section 1107.3 of the *New York City Building Code*. Emergency fixtures shall comply with Section 1109.12 of the *New York City Building Code*.

Exception. Such fixtures shall not be located in a bathroom or toilet room.

614.1.4 Signage. Fixtures capable of supplying an emergency source of potable water in accordance with this section shall be identified by a legible sign stating: “EMERGENCY DRINKING WATER.” Signs shall be readily visible and located near such fixtures and on the door to any room or closet in which such a fixture is located.

614.1.5 Retroactive requirement for existing buildings. Existing buildings greater than five stories that supply potable water from the public water main for dwelling units and sleeping units in Occupancy Groups I-1, R-1, R-2, and R-3 with the assistance of pumps shall be provided with fixtures capable of supplying an emergency source of potable water in accordance with this section within 8 years after the effective date of this section.

Exception: Areas in such existing buildings greater than five stories where emergency fixtures are installed are not required to comply with Section 1104.3 or 1107.3 of the *New York City Building Code* unless where required pursuant to Section 1101.3.

PART G

CHAPTER 7

§1. Chapter 7 of the New York city plumbing code, as added by local law number 99 for the year 2005, sections 701.2, 701.3,701.4, 701.5, 701.8, 701.10, tables 702.1, 702.2, and 702.3, section and table 702.4, section 702.6, figure 704.6, sections 705.5.2, 705.5.3,705.11.1, 705.13.2, 705.16 through 705.18 and 705.20, section 708.3.3, table 709.1, section 709.2, table 710.1, and sections 713.11.2, 713.11.3, as amended by local law number 41 for the year 2012 and section 703.6.1 as added by such local law; sections 705.2.1, 705.4.2, 705.9.2, 705.10.2, 705.12.2, 705.14.1 as amended by local law number 71 for the year 2009; sections 705.19 and table 705.22 as amended by local law number 141 for the year 2014; and section 715.1 as amended by local law number 83 for the year 2013, is amended to read as follows:

CHAPTER 7

SANITARY DRAINAGE

SECTION PC 701
GENERAL

701.1 Scope. The provisions of this chapter shall govern the materials, design, construction and installation of sanitary drainage systems.

701.2 Sewer required. [~~Every building~~] Buildings in which plumbing fixtures are installed and [~~all~~] premises having drainage piping shall be connected to a public sewer, where available and where connection thereto is feasible. Where neither a sanitary nor a combined sewer is available to which connection is feasible, a private sewer or private sewage disposal system shall be provided. See Section [~~106.6.1 of this code~~] 107.6.1 for required construction documents relating to provisions for discharge for sanitary sewage[~~.~~].

701.2.1 Extensions of public sanitary or combined sewers. Extensions of public sanitary or combined sewers shall be made in accordance with the regulations of the Department of Environmental Protection.

701.2.2 Availability of public sanitary or combined sewer. The determination as to whether a public sanitary or combined sewer is available shall be made in accordance with the applicable standards of the Department of Environmental Protection.

701.2.3 Feasibility of connecting to an available sanitary or combined public sewer. The determination as to whether connection to an available sanitary or combined public sewer is feasible shall be in accordance with the applicable standards of the Department of Environmental Protection.

701.2.4 Where public sewers are made available to premises with private sewage disposal system. When public sewers are made available to premises with individual on-site private disposal systems, such private sewage disposal system shall be abandoned in a manner prescribed by the commissioner, and the owner shall connect the building house sewer to the available public sewer within 6 months of the date of notification that the sewer has been accepted to receive flow by the agency or agencies having jurisdiction.

701.2.5 Abandonment of existing building sewer connections. All abandoned building sewers shall require plug permits from the Department of Environmental Protection and shall be securely sealed at a point inside the curb line and as close thereto as practicable.

701.3 Separate sewer connection. [~~Every~~] A building having plumbing fixtures installed and intended for human habitation, occupancy or use on premises abutting on a street, alley or easement in which there is a public sewer shall have a separate connection with the sewer. Where located on the same lot, multiple buildings shall not be prohibited from connecting to a common building sewer that connects to the public sewer, provided, however, that the common elements of an internal private drain are located in a dedicated, unobstructed right-of-way that extends to the sewer with a minimum width of 10 feet (3048 mm) located entirely outside of the building footprint and outside of all overhangs and projections that are less than 14 feet (4267 mm) in height above grade.

701.4 Sewage treatment. Sewage or other waste shall not be discharged into surface or subsurface water unless it has been discharged by a method subject to the approval of the commissioner and of the Department of Health and Mental Hygiene, the Department of Environmental Protection, and the New York State Department of Environmental Conservation.

701.5 Damage to drainage system or public sewer. [~~Wastes~~] Waste detrimental to the public sewer system or to the functioning of the sewage-treatment plant shall be treated and disposed of in accordance with applicable rules of the Department of Environmental Protection.

701.6 Tests. The sanitary drainage system shall be tested in accordance with Section [~~PC~~] 312.

[~~701.7 Connections.~~ ~~Direct connection of a steam exhaust, blowoff or drip pipe shall not be made with the building drainage system. Wastewater when discharged into the building drainage system shall be at a temperature not higher than 150°F (65.6°C). When higher temperatures exist, approved cooling methods shall be provided.~~]

[~~701.8~~] 701.7 Engineered systems. Engineered sanitary drainage systems shall conform to the provisions of Section 28-113.2.2 of the *Administrative Code* and [~~PC~~] 714 of this code.

[~~701.9~~] 701.8 Drainage piping in food service areas. Exposed soil or waste piping shall not be installed above any working, storage or eating surfaces in food service establishments.

[~~701.10~~] 701.9 Plastic pipe. Plastic piping and fittings shall not be used.

Exceptions:

1. Plastic piping and fittings may be used in residential buildings five stories or less in height.
2. Plastic piping and fittings may be used as permitted in [~~Sections PC~~] Section 803 [~~and PC 804~~].

701.10 Cured-in-place pipe. Cured-in-place pipe (CIPP) and epoxy spray pipe lining systems shall not be used.

701.11 Connections. Direct connection of a steam exhaust, blowoff or drip pipe shall not be made with the building drainage system. Wastewater when discharged into the building drainage system shall be at a temperature not higher than 150°F (65.6°C). When higher temperatures exist, approved cooling methods shall be provided.

SECTION PC 702
MATERIALS

702.1 Above-ground sanitary drainage and vent pipe. Above-ground soil, waste and vent pipe shall conform to one of the standards listed in Table 702.1.

TABLE 702.1
ABOVE-GROUND DRAINAGE AND VENT PIPE

MATERIAL	STANDARD
Acrylonitrile butadiene styrene (ABS) plastic pipe in IPS diameters, including Schedule 40, DR 22 (PS 200) and DR 24 (PS 140); with a solid, cellular core or composite wall[a]	ASTM D 2661; ASTM F 628; ASTM F 1488; CSA B181.1
Brass pipe	ASTM B 43
Cast-iron pipe	ASTM A 74; ASTM A 888; CISPI 301
Copper or copper-alloy pipe	ASTM B 42; ASTM B 302
Copper or copper-alloy tubing (Type [~~K, L~~] K or L)	ASTM B 75; ASTM B 88; ASTM B 251[~~; ASTM B 306~~]
Ductile iron	[~~AWWA C 151~~] AWWA C151
Galvanized steel pipe	ASTM A 53
[~~Glass pipe~~]	[~~ASTM C 1053~~]
[~~High silicon cast iron~~]	[~~ASTM A 518 A/518 M~~]
[~~Polyolefin pipe[a]~~]	[~~ASTM F 1412; ASTM D 2657; CAN/CSA-B 181.3~~]
Polyvinyl chloride (PVC) plastic pipe in IPS diameters, including [~~schedule~~] Schedule 40, DR 22 (PS 200), and DR 24 (PS 140); with a solid, cellular core or composite wall[a]	ASTM D 2665; ASTM F 891; ASTM F 1488; CSA B181.2
Polyvinyl chloride (PVC) plastic pipe with a 3.25-inch O.D. and a solid, cellular core or composite wall[a]	ASTM D 2949; ASTM F 1488
~~[Polyvinylidene fluoride (PVDF) plastic pipe[a]]~~	~~[ASTM F 1673; CAN/CSA-B 181.3]~~
Stainless steel drainage systems, Types 304 and 316L	ASME A112.3.1

For SI: 1 inch = 25.4 mm.

a. Limited to residential buildings five stories or less in height.

702.2 Underground building sanitary drainage and vent pipe. Underground building sanitary drainage and vent pipe shall conform to one of the standards listed in Table 702.2.

TABLE 702.2
UNDERGROUND BUILDING DRAINAGE AND VENT PIPE

MATERIAL	STANDARD
Cast-iron pipe	ASTM A 74; ASTM A 888; CISPI 301
Copper or copper-alloy tubing (Type K or L)	ASTM B 75; ASTM B 88; ASTM B 251[~~;~~ ~~ASTM B 306~~]
Ductile iron	[~~AWWA C 151~~] AWWA C151
[~~Nonasbestos fiber cement pipe~~]	[~~ASTM C 1449~~]
Polyolefin pipe	ASTM F 1412; CSA B181.3
Polyvinyl chloride (PVC) plastic pipe in IPS diameters, including [~~schedule~~] Schedule 40, DR 22 (PS 200), and DR 24 (PS 140); with a solid, cellular core or composite wall[a]	ASTM D 2665; ASTM F 891; ASTM F 1488; CSA B181.2
Stainless steel drainage systems, Type 316L	ASME A112.3.1

For SI: 1 inch = 25.4 mm.

a. Limited to residential buildings five stories or less in height.

702.3 Building [~~sewer~~] drain pipe. Building [~~sewer~~] drain pipe shall conform to one of the standards listed in Table 702.3.

TABLE 702.3
BUILDING [~~SEWER~~] DRAIN PIPE

MATERIAL	STANDARD
Cast-iron pipe	ASTM A 74; ASTM A 888; CISPI 301
Chlorinated polyvinyl chloride (CPVC) plastic[a]	ASTM F 437; ASTM F 438; ASTM F 439
[~~Concrete pipe~~]	[~~ASTM C 14; ASTM C 76; CAN/CSA A257.1M; CAN/CSA A257.2M~~]
Copper or copper-alloy tubing (Type K or L)	ASTM B 75; ASTM B 88; ASTM B 251
Ductile iron	AWWA C151
Galvanized steel pipe	ASTM A 53; ASTM A 123
[~~Nonasbestos fiber cement pipe~~]	[~~ASTM C 1449~~]

MATERIAL	STANDARD
Polyvinyl chloride (PVC) plastic pipe (Type DWV, SDR26, SDR35, SDR41, PS50 or PS100)[a]	ASTM D 2665; ASTM D 3034; ASTM F 891; CSA B182.2; [~~CAN/~~] CSA B182.4; CSA B181.2
Stainless steel drainage systems, Types 304 and 316L	ASME A112.3.1
[~~Vitrified clay pipe~~]	~~ASTM C 4; ASTM C 700~~]

For SI: 1 inch = 25.4 mm.

a. Limited to residential buildings five stories or less in height.

702.4 Fittings. Pipe fittings shall be approved for installation with the piping material installed and shall comply with the applicable standards listed in Table 702.4.

TABLE 702.4
PIPE FITTINGS

MATERIAL	STANDARD
Acrylonitrile butadiene styrene (ABS) plastic pipe in IPS diameters[a]	ASTM D 2661; ASTM F 628; CSA B181.1
[~~Acrylonotrile~~] Acrylonitrile butadiene styrene (ABS) plastic pipe in sewer and drain diameters	ASTM D 2751
Brass	ASTM B 62
Cast iron	[~~ASME B 16.4; ASME B 16.12;~~] ASME B16.4; ASME B16.12; ASTM A 74; ASTM A 888; CISPI 301
Chlorinated polyvinyl chloride (CPVC) plastic[a]	ASTM F 437; ASTM F 438; ASTM F 439
Copper or copper alloy	[~~ASME B 16.15; ASME B 16.18; ASME B 16.22; ASME B 16.23; ASME B 16.26; ASME B 16.29~~] ASME B16.15; ASME B16.18; ASME B16.22; ASME B16.23; ASME B16.26; ASME B16.29
Galvanized steel	ASTM A 153; [~~ASME B 16.3~~] ASME B16.3
[~~Glass~~]	~~ASTM C 1053~~]
Ductile iron	~~AWWA C 110~~] AWWA C110

MATERIAL	STANDARD
[~~High silicon iron~~]	~~ASTM A 861~~]
Malleable iron	~~ASME B 16.3~~] ASME B16.3
[~~Non-asbestos fiber cement~~]	~~ASTM C 1449~~]
Polyethylene (PE) plastic pipe[a]	ASTM F 2306/F 2306M
[~~Polyolefin~~[a]]	[~~CAN/CSA B181.3; ASTM F 1312; ASTM D 2657~~]
Polyvinyl chloride (PVC)[~~Plastic~~] plastic in IPS diameters[a]	ASTM D 2665; ASTM F 1866
Polyvinyl chloride (PVC) plastic pipe in sewer and drain diameters[a]	ASTM D 3034
Polyvinyl chloride (PVC) plastic pipe with a 3.25-inch O.D.[a]	ASTM D 2949
[~~Polyvinylidene fluoride (PVDF) plastic pipe~~[a]]	[~~ASTM F 1673; CAN/CSA B181.3~~]
Stainless steel drainage systems, Types 304 and 316L	[~~ASME A 112.3.1~~] ASME A 112.3.1
[~~Vitrified clay pipe~~]	[~~ASTM C 425~~]

For SI: 1 inch = 25.4 mm.

a. Limited to residential buildings five stories or less in height.

702.5 Temperature rating. Where the waste water temperature will be greater than 140°F (60°C), the sanitary drainage piping material shall be rated for the highest temperature of the waste water.

[~~702.5~~] 702.6 Chemical waste system. A chemical waste system shall be completely separated from the sanitary drainage system. The chemical waste shall be treated in accordance with Section 803.2 before discharging to the sanitary drainage system. Separate drainage systems for chemical wastes and vent pipes shall be [~~of an approved material that is resistant to corrosion and degradation for the concentrations of chemicals involved~~] constructed in accordance with Section 803.3.

[~~702.6~~] 702.7 Lead bends and traps. [~~Lead~~] The wall thickness of lead bends and traps shall be not [~~be~~] less than ⅛ inch (3.2 mm)[~~ wall thickness~~].

SECTION PC 703
BUILDING [~~SEWER~~] DRAIN

703.1 Building [~~sewer~~] drain pipe near the water service. Where the building [~~sewer~~] drain is installed underground and within 5 feet (1524 mm) of the water service, as provided for in Section 603.2, the building [~~sewer~~] drain pipe shall conform to one of the standards for, cast-iron pipe, copper or copper-alloy tubing, or ductile iron listed in Table 702.3.

703.2 Drainage pipe in filled ground. Where a [~~building sewer or~~] building drain is installed on filled or unstable ground, the drainage pipe shall conform to one of the standards for, cast-iron pipe, copper or copper-alloy tubing, ductile iron, nonasbestos fiber cement or concrete pipe listed in Table 702.3.

703.3 Sanitary and storm [~~sewers~~] drains. Where separate systems of sanitary drainage and storm drainage are installed in the same property, the sanitary and storm building [~~sewers or~~] drains shall be permitted to be laid side by side in one trench.

703.4 Existing building [~~sewers and~~] drains. Existing building [~~sewers and~~] drains shall connect with new building [~~sewer and~~] drainage systems only where found by examination and test to conform to the new system in quality of material. The commissioner shall notify the owner to make the changes necessary to conform to this code.

703.5 Cleanouts on building [~~sewers~~] drains. Cleanouts on building [~~sewers~~] drains shall be located as set forth in Section [~~PC~~] 708.

703.6 Combined sanitary and storm public sewer. Where the public sewer is a combined system for both sanitary and storm water, the sanitary building drain shall be connected in accordance with Section 1109.1.

[~~703.6~~] 703.7 Building house traps. Building house traps shall be installed on all building drains[~~ near the foundation wall of the structure, inside of the street line, and on the sewer side of all connections except the connection used to receive the discharge from a sewage ejector, oil separator or leader on combined systems. If such trap is placed outside of the foundation wall or below a cellar floor, it shall be made accessible in a manhole with a cover, or by extension of the two handholes that shall be provided with cleanouts at the cellar floor or grade. Handhold extensions shall be not more than 18 inches (457 mm) above the centerline of the drain. Building (house) traps shall be the same size as the building house drain connected thereto~~] in accordance with Section 1002.6.

[~~703.6.1~~] 703.7.1 Fresh air inlets. Every sanitary or combined building drain [~~equipped with a building trap, sewage pump, ejector, receiving tank, oil separator, or similar equipment~~], shall be provided with a fresh air inlet pipe connected to the building drain immediately upstream from, and within 4 feet (1219 mm) of, [~~such~~] the building trap[~~or equipment~~]. Such connection shall be made in the same manner as prescribed in Section [~~PC~~] 905 for vent connections to horizontal drains, and the fresh air inlet pipe shall be extended to the outer air and shall be terminated in an open end at least 6 inches (152 mm) above grade. The open end shall be protected by a perforated metal plate permanently fixed in the mouth of the inlet and having an open ventilating area at least equal to the area of the pipe, or by a return bend with its unprotected open end at least 6 inches (152 mm) above grade, located inside the street line. The size of the fresh air inlet pipe shall be at least one-half the diameter of the building drain at the point of connection, but not less than 3 inches (76 mm).

703.7.2 Fresh air inlets located in flood hazard areas. Fresh air inlets located in flood hazard areas shall be located above the design flood elevation in accordance with Section G304 of Appendix G of the *New York City Building Code.*

SECTION PC 704
DRAINAGE PIPING INSTALLATION

704.1 Slope of horizontal drainage piping. Horizontal drainage piping shall be installed in uniform alignment at uniform slopes. The [~~minimum~~] slope of a horizontal drainage pipe shall be [~~in accordance with~~] not less than that indicated in Table 704.1.

TABLE 704.1
SLOPE OF HORIZONTAL DRAINAGE PIPE

SIZE (inches)	MINIMUM SLOPE (inch per foot)
$2^{1}/_{2}$ or less	$^{1}/_{4}$
3 to 6	$^{1}/_{8}$
8 or larger	$^{1}/_{16}$

For SI: 1 inch = 25.4 mm, 1 inch per foot = [~~83.3~~] 83.33 mm/m.

704.2 Change in size. The size of the drainage piping shall not be reduced in size in the direction of the flow. A [~~4 inch~~] 4-inch by [~~3 inch~~] 3-inch (102 mm by 76 mm) water closet connection shall not be considered as a reduction in size.

704.3 Connections to offsets and bases of stacks. Horizontal branches shall connect to the bases of stacks at a point located not less than 10 times the diameter of the drainage stack downstream from the stack. [~~Except as prohibited by Section 711.2, horizontal~~] Horizontal branches shall connect to horizontal stack offsets at a point located not less than 10 times the diameter of the drainage stack downstream from the upper stack.

704.4 Future fixtures. Drainage piping for future fixtures shall terminate with an approved cap or plug.

704.5 Dead ends. In the installation or removal of any part of a drainage system, dead ends shall be prohibited. Cleanout extensions and approved future fixture drainage piping shall not be considered as dead ends.

704.6 Suds pressure zones vents. Where sinks, laundry trays, laundry washing machines, bathtubs, and similar fixtures in which detergents producing suds are normally used and discharged at an upper floor level into a soil or waste stack that also serves fixtures in other occupancy units at a lower floor level, the drainage and vent piping for such lower fixtures shall be arranged so as to avoid connection to suds pressure zones in the sanitary drainage and vent systems. If connected to the sanitary system, a suds relief vent relieving to a nonpressure zone shall be provided at each suds pressure zone where such connections are installed. The diameter of such relief vent shall be at least three-quarters the diameter of the piping in which the pressure zone occurs, but not less than 2 inches (51 mm). Suds pressure zones shall be considered to exist at the following locations in sanitary drainage and vent systems when the piping serves fixtures on two or more floors that receive wastes that contain detergents producing suds:

1. In a soil or waste stack a zone shall be considered to exist in the vertical portion within 40 stack diameters of the base fitting.
2. In the horizontal drain at the base of a soil or waste stack a zone shall be considered to exist in the horizontal portion within 10 stack diameters of the base fitting. Where a 60-degree (1.05 rad) or 90-degree (1.57 rad) fitting is installed in the horizontal drain, a zone shall be considered to exist in the horizontal portion within 40 drain diameters upstream of and 10 drain diameters downstream of the fitting in accordance with [~~Figure 704.6(2)~~] Figure 704.6.
3. In a soil or waste stack offset of 60 degrees (1.05 rad) or 90 degrees (1.57 rad), a zone shall be considered to exist in the vertical portion of the stack within 40 stack diameters of the base fitting for the upper section of the stack. The zone shall be considered to exist in the horizontal offset within 10 stack diameters of such base fitting and within 40 stack diameters of the top fitting for the lower section of the stack.
4. In a vent stack that has its base connected to a suds pressure zone in the sanitary drainage system, a zone shall be considered to exist in the portion of the vent stack extending from its base connection up to the

lowest branch vent fitting located above the level of the suds pressure zone in the sanitary drainage system.

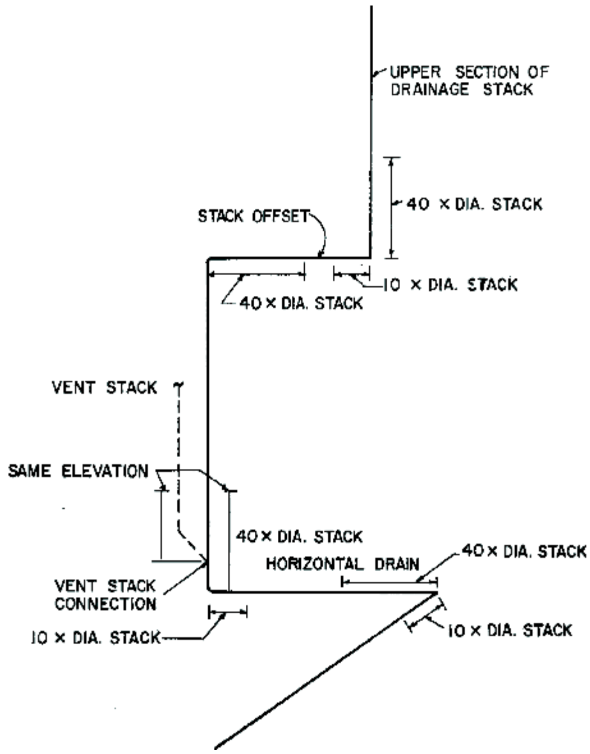


FIGURE [~~704.6(2)~~] 704.6
SUDS PRESSURE ZONES

704.7 Collection pipe labeling and marking. Collection piping that conveys untreated water for reuse shall be painted gray in color or covered in a gray jacket and shall be labelled, embossed, or integrally stamped or marked, with the words: "CAUTION: UNTREATED WATER FOR RE-USE" or the piping shall be installed with a gray identification tape or wrap. Pipe identification shall include the contents of the piping system and an arrow indicating the direction of flow. Hazardous piping systems shall also contain information addressing the nature of the hazard. Pipe identification shall be repeated at intervals not exceeding 25 feet (7620 mm) and at each point where the piping passes through a wall, floor or roof. Lettering shall be readily observable within the room or space where the piping is located.

SECTION PC 705
JOINTS

705.1 General. This section contains provisions applicable to joints specific to sanitary drainage piping.

705.2 ABS plastic. Joints between ABS plastic pipe or fittings shall comply with Sections 705.2.1 through 705.2.3.

705.2.1 Mechanical joints. Mechanical joints on drainage pipes shall be made with an elastomeric seal conforming to ASTM C 1173, ASTM D 3212 or [~~CAN/CSA B602~~] CSA B602. Mechanical joints shall be installed only in underground systems unless otherwise approved. Joints shall be installed in accordance with the manufacturer's instructions and in conformance with acceptance criteria established by the commissioner.

705.2.2 Solvent cementing. Joint surfaces shall be clean and free from moisture. Solvent cement that conforms to ASTM D 2235 or CSA B181.1 shall be applied to all joint surfaces. The joint shall be made while the cement is wet. Joints shall be made in accordance with ASTM D 2235, ASTM D 2661, ASTM F 628 or CSA B181.1. Solvent cement joints shall be permitted above or below ground.

705.2.3 Threaded joints. Threads shall conform to ASME B1.20.1. Schedule 80 or heavier pipe shall be permitted to be threaded with dies specifically designed for plastic pipe. Approved thread lubricant or tape shall be applied on the male threads only.

705.3 [~~Asbestos-cement.~~ ~~Joints between asbestos-cement pipe or fittings shall be made with a sleeve coupling of the same composition as the pipe, sealed with an elastomeric ring conforming to ASTM D 1869.~~]

[~~705.4~~] Brass. Joints between brass pipe or fittings shall comply with Sections [~~705.4.1~~] 705.3.1 through [~~705.4.~~4] 705.3.4.

[~~705.4.1~~] 705.3.1 Brazed joints. All joint surfaces shall be cleaned. An approved flux shall be applied where required. The joint shall be brazed with a filler metal conforming to AWS A5.8.

[~~705.4.2~~] 705.3.2 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions and in conformance with acceptance criteria established by the commissioner.

[~~705.4.3~~] 705.3.3 Threaded joints. Threads shall conform to ASME B1.20.1. Pipe-joint compound or tape shall be applied on the male threads only.

[~~705.4.4~~] 705.3.4 Welded joints. All joint surfaces shall be cleaned. The joint shall be welded with an approved filler metal.

[~~705.5~~] 705.4 Cast iron. Joints between cast-iron pipe or fittings shall comply with Sections [~~705.5.1~~] 705.4.1 through [~~705.5.3~~] 705.4.3.

[~~705.5.1~~] 705.4.1 Caulked joints. Joints for hub and spigot pipe shall be firmly packed with oakum or hemp. Molten lead shall be poured in one operation to a depth of not less than 1 inch (25 mm). The lead shall not recede more than [~~0.125 inch~~] ⅛ inch (3.2 mm) below the rim of the hub and shall be caulked tight. Paint, varnish or other coatings shall not be permitted on the jointing material until after the joint has been tested and approved. Lead shall be run in one pouring and shall be caulked tight. Acid-resistant rope and acidproof cement shall be permitted.

[~~705.5.2~~] 705.4.2 Compression gasket joints. Compression gaskets for hub and spigot pipe and fittings shall conform to ASTM C 564 and shall be tested to ASTM C 1563. Gaskets shall be compressed when the pipe is fully inserted.

[~~705.5.3~~] 705.4.3 Mechanical joint coupling. Mechanical joint couplings for hubless pipe and fittings shall consist of an elastomeric sealing sleeve and a metallic shield that comply with CISPI 310[~~ or~~] , ASTM C 1277 or ASTM C 1540. The elastomeric sealing sleeve shall conform to ASTM C 564 or [~~CAN/CSA B602~~] CSA B602 and shall be provided with a center stop. Mechanical joint couplings shall be installed in accordance with the manufacturer's [~~installation~~] instructions.

[~~705.6~~] 705.5 Concrete joints. Joints between concrete pipe and fittings shall be made with an elastomeric seal conforming to ASTM C 443, ASTM C 1173, [~~CAN/CSA A257.3M~~] CSA A257.3M or [~~CAN/CSA B602~~] CSA B602.

[~~705.7 Reserved.~~]

[~~705.8 Reserved.~~]

[~~705.9~~] 705.6 Copper pipe. Joints between copper or copper-alloy pipe or fittings shall comply with Sections [~~705.9.1~~] 705.6.1 through [~~705.9.5~~] 705.6.5.

[~~705.9.1~~] 705.6.1 Brazed joints. All joint surfaces shall be cleaned. An approved flux shall be applied where required. The joint shall be brazed with a filler metal conforming to AWS A5.8.

[~~705.9.2~~] 705.6.2 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions and in conformance with acceptance criteria established by the commissioner.

[~~705.9.3~~] 705.6.3 [~~Soldered~~] Solder joints. Solder joints shall be made in accordance with the methods of ASTM B 828. [~~All cut~~] Cut tube ends shall be reamed to the full inside diameter of the tube end. All joint surfaces shall be cleaned. A flux conforming to ASTM B 813 shall be applied. The joint shall be soldered with a solder conforming to ASTM B 32.

[~~705.9.4~~] 705.6.4 Threaded joints. Threads shall conform to ASME B1.20.1. Pipe-joint compound or tape shall be applied on the male threads only.

[~~705.9.5~~] 705.6.5 Welded joints. All joint surfaces shall be cleaned. The joint shall be welded with an approved filler metal.

[~~705.10~~] 705.7 Copper tubing. Joints between copper or copper-alloy tubing or fittings shall comply with Sections [~~705.10.1~~] 705.7.1 through [~~705.10.3~~] 705.7.3.

[~~705.10.1~~] 705.7.1 Brazed joints. All joint surfaces shall be cleaned. An approved flux shall be applied where required. The joint shall be brazed with a filler metal conforming to AWS A5.8.

[~~705.10.2~~] 705.7.2 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions and in conformance with acceptance criteria established by the commissioner.

[~~705.10.3~~] 705.7.3 [~~Soldered~~] Solder joints. Solder joints shall be made in accordance with the methods of ASTM B 828. [~~All cut~~] Cut tube ends shall be reamed to the full inside diameter of the tube end. All joint surfaces shall be cleaned. A flux conforming to ASTM B 813 shall be applied. The joint shall be soldered with a solder conforming to ASTM B 32.

[~~**705.11 Borosilicate glass joints.** Glass-to-glass connections shall be made with a bolted compression-type stainless steel (300 series) coupling with contoured acid-resistant elastomeric compression ring and a fluorocarbon polymer inner seal ring; or with caulked joints in accordance with Section 705.11.1.~~]

705.8 Reserved.

[~~**705.11.1 Caulked joints.** Every lead-caulked joint for hub and spigot soil pipe shall be firmly packed with oakum or hemp and filled with molten lead not less than 1 inch (25 mm) deep and not to extend more than ⅛ inch (3.2 mm) below the rim of the hub. Paint, varnish or other coatings shall not be permitted on the jointing material until after the joint has been tested and approved. Lead shall be run in one pouring and shall be caulked tight. Acid-resistant rope and acidproof cement shall be permitted.~~]

[~~705.12~~] 705.9 Steel. Joints between galvanized steel pipe or fittings shall comply with Sections [~~705.12.1~~] 705.9.1 and [~~705.12.2~~] 705.9.2.

[~~705.12.1~~] 705.9.1 Threaded joints. Threads shall conform to ASME B1.20.1. Pipe-joint compound or tape shall be applied on the male threads only.

[~~705.12.2~~] 705.9.2 Mechanical joints. Joints shall be made with an approved elastomeric seal. Mechanical joints shall be installed in accordance with the manufacturer's instructions and in conformance with acceptance criteria established by the commissioner.

[~~705.13~~] 705.10 Lead. Joints between lead pipe or fittings shall comply with Sections [~~705.13.1~~] 705.10.1 and [~~705.13.2~~] 705.10.2.

[~~705.13.1~~] 705.10.1 Burned. Burned joints shall be uniformly fused together into one continuous piece. The thickness of the joint shall be at least as thick as the lead being joined. The filler metal shall be of the same material as the pipe.

[~~705.13.2~~] 705.10.2 Wiped. Joints shall be fully wiped, with an exposed surface on each side of the joint not less than ¾ inch (19.1 mm). The joint shall be [~~at least~~] not less than ⅜ inch (9.5 mm) thick at the thickest point.

[~~705.14~~] 705.11 PVC plastic. Joints between PVC plastic pipe or fittings shall comply with Sections [~~705.14.1~~] 705.11.1 through [~~705.14.3~~] 705.11.3.

[~~705.14.1~~] 705.11.1 Mechanical joints. Mechanical joints on drainage pipe shall be made with an elastomeric seal conforming to ASTM C 1173, ASTM D 3212 or [~~CAN/CSA B602~~] CSA B602. Mechanical joints shall not be installed in above-ground systems, unless otherwise approved. Joints shall be installed in accordance with the manufacturer's instructions and in conformance with acceptance criteria established by the commissioner.

[~~705.14.2~~] 705.11.2 Solvent cementing. Joint surfaces shall be clean and free from moisture. A purple primer that conforms to ASTM F 656 shall be applied. Solvent cement not purple in color and conforming to ASTM D 2564, [~~CSA B 137.3, CSA B 181.2 or CSA B 182.1~~] CSA B137.3, CSA B181.2 or CSA B182.1 shall be applied to all joint surfaces. The joint shall be made while the cement is wet and shall be in accordance with ASTM D 2855. Solvent cement joints shall be permitted above or below ground.

Exception: A primer is not required where both of the following conditions apply:

1. The solvent cement used is third-party certified as conforming to ASTM D 2564.
2. The solvent cement is used only for joining PVC drain, waste and vent pipe and fittings in nonpressure applications in sizes up to and including 4 inches (102 mm) in diameter.

[~~705.14.3~~] 705.11.3 Threaded joints. Threads shall conform to ASME B1.20.1. Schedule 80 or heavier pipe shall be permitted to be threaded with dies specifically designed for plastic pipe. Approved thread lubricant or tape shall be applied on the male threads only.

[~~705.15~~] 705.12 Vitrified clay. Joints between vitrified clay pipe or fittings shall be made with an elastomeric seal conforming to ASTM C 425, ASTM C 1173 or [~~CAN/CSA B602~~] CSA B602.

[~~705.16~~] 705.13 Polyethylene plastic pipe. Joints between polyethylene plastic pipe and fittings shall be underground and shall comply with Section [~~705.16.1~~] 705.13.1 or [~~705.16.2~~] 705.13.2.

[~~705.16.1~~] 705.13.1 Heat-fusion joints. Joint surfaces shall be clean and free from moisture. All joint surfaces shall be cut, heated to melting temperature and joined using tools specifically designed for the operation. Joints shall be undisturbed until cool. Joints shall be made in accordance with ASTM D 2657 and the manufacturer's instructions.

[~~705.16.2~~] 705.13.2 Mechanical joints. Mechanical joints in drainage piping shall be made with an elastomeric seal conforming to ASTM C 1173, ASTM D 3212 or [~~CAN/CSA B602~~] CSA B602. Mechanical joints shall be installed in accordance with the manufacturer's instructions.

[~~**705.17 Polyolefin plastic.** Joints between polyolefin plastic pipe and fittings shall comply with Sections 705.17.1 and 705.17.2.~~]

705.14 Reserved.

[~~**705.17.1 Heat-fusion joints.** Heat-fusion joints for polyolefin pipe and tubing joints shall be installed with socket-type heat-fused polyolefin fittings or electrofusion polyolefin fittings. Joint surfaces shall be clean and free from moisture. The joint shall be undisturbed until cool. Joints shall be made in accordance with ASTM F 1412 or CAN/CSA B181.3.~~]

[~~**705.17.2 Mechanical and compression sleeve joints.** Mechanical and compression sleeve joints shall be installed in accordance with the manufacturer's instructions, and in conformance with acceptance criteria established by the commissioner.~~]

[~~**705.18 Polyvinylidene fluoride plastic.** Joints between polyvinylidene plastic pipe and fittings shall comply with Sections 705.18.1 and 705.18.2.~~]

705.15 Reserved.

[~~**705.18.1 Heat-fusion joints.** Heat-fusion joints for polyvinylidene fluoride pipe and tubing joints shall be installed with socket-type heat-fused polyvinylidene fluoride fittings or electrofusion polyvinylidene fittings and couplings. Joint surfaces shall be clean and free from moisture. The joint shall be undisturbed until cool. Joints shall be made in accordance with ASTM F 1673.~~]

[~~**705.18.2 Mechanical and compression sleeve joints.** Mechanical and compression sleeve joints shall be installed in accordance with the manufacturer's instructions, and in conformance with acceptance criteria established by the commissioner.~~]

[~~705.19~~] 705.16 Joints between different materials. Joints between different piping materials shall be made with a mechanical joint of the compression or mechanical-sealing type conforming to ASTM C 1173, ASTM C 1460 or ASTM C 1461. Connectors and adapters shall be approved for the application and such joints shall have an elastomeric seal conforming to ASTM C 425, ASTM C 443, ASTM C 564, ASTM C 1440, [~~ASTM D 1869,~~] ASTM F 477, [~~CAN/CSA A257.3M~~] CSA A257.3M or [~~CAN/CSA B602~~] CSA B602, or as required in Sections [~~705.19.1, 705.19.3, 705.19.4 and 705.19.7~~] 705.16.1 through 705.16.7. Joints between glass pipe and other types of materials shall be made with adapters having a TFE seal. Joints shall be installed in accordance with the manufacturer's instructions.

[~~705.19.1~~] 705.16.1 Copper or copper-alloy tubing to cast-iron hub pipe. Joints between copper or copper-alloy tubing and cast-iron hub pipe shall be made with a brass ferrule or compression joint. The copper or copper-alloy tubing shall be soldered to the ferrule in an approved manner, and the ferrule shall be joined to the cast-iron hub by a caulked joint or a mechanical compression joint.

[~~705.19.2 Reserved.~~] 705.16.2 Copper or copper-alloy tubing to galvanized steel pipe. Joints between copper or copper-alloy tubing and galvanized steel pipe shall be made with a brass converter fitting or dielectric fitting. The copper tubing shall be soldered to the fitting in an approved manner, and the fitting shall be screwed to the threaded pipe.

[~~705.19.3~~] 705.16.3 Cast-iron pipe to galvanized steel or brass pipe. Joints between cast-iron and galvanized steel or brass pipe shall be made by either caulked or threaded joints or with an approved adapter fitting.

[~~705.19.4~~]705.16.4 Plastic pipe or tubing to other piping material. Joints between different [~~grades~~] types of plastic pipe or between plastic pipe and other piping material shall be made with an approved adapter fitting. Joints between plastic pipe and cast-iron hub pipe shall be made by a caulked joint or a mechanical compression joint.

[~~705.19.5~~] 705.16.5 Lead pipe to other piping material. Joints between lead pipe and other piping material shall be made by a wiped joint to a caulking ferrule, soldering nipple[~~,~~] or bushing or shall be made with an approved adapter fitting.

[~~705.19.6~~] 705.16.6 Borosilicate glass to other materials. Joints between glass pipe and other types of materials shall be made with adapters having a TFE seal and shall be installed in accordance with the manufacturer's instructions.

[~~705.19.7~~] 705.16.7 Stainless steel drainage systems to other materials. Joints between stainless steel drainage systems and other piping materials shall be made with approved mechanical couplings.

[~~705.20~~] 705.17 Drainage slip joints. Slip joints shall comply with Section 405.8.

[~~705.21~~] 705.18 Caulking ferrules. Ferrules shall be of red brass and shall be in accordance with [~~Table 705.21~~]

Table 705.18.

TABLE [~~705.21~~] 705.18
CAULKING FERRULE SPECIFICATIONS

PIPE SIZES (inches)	INSIDE DIAMETER (inches)	LENGTH (inches)	MINIMUM WEIGHT EACH
2	$2^1/_4$	$4^1/_2$	1 pound
3	$3^1/_4$	$4^1/_2$	1 pound 12 ounces
4	$4^1/_4$	$4^1/_2$	2 pounds 8 ounces

For SI: 1 inch = 25.4 mm, 1 ounce = 28.35 g, 1 pound = 0.454 kg.

[~~705.22~~] 705.19 Soldering bushings. Soldering bushings shall be of red brass and shall be in accordance with [~~Table 705.22~~] Table 705.19.

TABLE [~~705.22~~] 705.19
SOLDERING BUSHING SPECIFICATIONS

PIPE SIZES (inches)	MINIMUM WEIGHT EACH
$1^1/_4$	6 ounces
$1^1/_2$	8 ounces
2	14 ounces
$2^1/_2$	1 pound 6 ounces
3	2 pounds
4	3 pounds 8 ounces

For SI: 1 inch = 25.4 mm, 1 ounce = 28.35 g, 1 pound = 0.454 kg.

[~~705.23~~] 705.20 Stainless steel drainage systems. O-ring joints for stainless steel drainage systems shall be made with an approved elastomeric seal.

SECTION PC 706
CONNECTIONS BETWEEN DRAINAGE PIPING AND FITTINGS

706.1 Connections and changes in direction. All connections and changes in direction of the sanitary drainage system shall be made with approved drainage fittings. Connections between drainage piping and fixtures shall conform to Section [~~PC~~] 405.

706.2 Obstructions. The fittings shall not have ledges, shoulders or reductions capable of retarding or obstructing flow in the piping. Threaded drainage pipe fittings shall be of the recessed drainage type. This section shall not be applicable to tubular waste fittings used to convey vertical flow upstream of the trap seal liquid level of a fixture trap.

706.3 Installation of fittings. Fittings shall be installed to guide sewage and waste in the direction of flow. Change in direction shall be made by fittings installed in accordance with Table 706.3. Change in direction by combination fittings, side inlets or increasers shall be installed in accordance with Table 706.3 based on the pattern of flow created by the fitting.

TABLE 706.3
FITTINGS FOR CHANGE IN DIRECTION

TYPE OF FITTING PATTERN	CHANGE IN DIRECTION		
	Horizontal to vertical	**Vertical to horizontal**	**Horizontal to horizontal**
Sixteenth bend	X	X	X
Eighth bend	X	X	X
Sixth bend	X	X	X
Quarter bend	X	X[a]	X[a]
Short sweep	X	X[a,b]	X[a]
Long sweep	X	X	X
Sanitary tee	X[c]	[3/4] –	[3/4] –
Wye	X	X	X
Combination wye and eighth bend	X	X	X

For SI: 1 inch = 25.4 mm.

a. The fittings shall only be permitted for a 2-inch or smaller fixture drain.

b. Three inches or larger.

c. For a limitation on double sanitary tees, see Section 706.3.

706.4 Reserved.

SECTION PC 707
PROHIBITED JOINTS AND CONNECTIONS

707.1 Prohibited joints. The following types of joints and connections shall be prohibited:

1. Cement or concrete joints.
2. Mastic or hot-pour bituminous joints.

3. Joints made with fittings not approved for the specific installation.
4. Joints between different diameter pipes made with elastomeric rolling O-rings.
5. Solvent-cement joints between different types of plastic pipe.
6. Saddle-type fittings.

SECTION PC 708
CLEANOUTS

708.1 [~~Scope.~~ ~~This section shall govern the size, location, installation and maintenance of drainage pipe cleanouts.~~]

[~~708.2 Cleanout plugs.~~ ~~Cleanout plugs shall be brass or plastic, or other approved materials. Brass cleanout plugs shall be utilized with metallic drain, waste and vent piping only, and shall conform to ASTM A 74, ASME A112.3.1 or ASME A112.36.2M. Cleanouts with plate-style access covers shall be fitted with corrosion-resisting fasteners. Plastic cleanout plugs shall conform to the requirements of Section 702.4. Plugs shall have raised square or countersunk square heads. Countersunk heads shall be installed where raised heads are a trip hazard. Cleanout plugs with borosilicate glass systems shall be of borosilicate glass.~~]

[~~708.3 Where~~] Cleanouts required. Cleanouts shall be [~~located~~] provided for drainage piping in accordance with Sections [~~708.3.1~~] 708.1.1 through [~~708.3.4~~] 708.1.12.

[~~708.3.1~~] 708.1.1 Horizontal drains [~~within buildings~~] and building drains. [~~All horizontal drains~~] Horizontal drainage pipes in buildings shall [~~be provided with~~] have cleanouts located at intervals of not more than 100 feet (30 480 mm) [~~apart~~]. Building drains shall have cleanouts located at intervals of not more than 100 feet (30 480 mm).

Exception: Horizontal fixture drain piping serving a nonremovable trap shall not be required to have a cleanout for the section of piping between the trap and the vent connection for such trap.

[~~708.3.2~~] 708.1.2 Building sewers. Building sewers smaller than 8 inches (203 mm) shall [~~be provided with~~] have cleanouts located at intervals of not more than 100 feet (30 480 mm)[~~apart measured from the upstream entrance of the cleanout~~]. [~~For building~~] Building sewers 8 inches (203 mm) and larger[~~, manholes shall be provided and~~] shall have a manhole located not more than 200 feet (60 960 mm) from the junction of the building drain and building sewer[~~, at each change in direction~~] and at intervals of not more than 400 feet (122 m)[~~ apart~~]. [~~Manholes and manhole covers shall be of an approved type.~~] The interval length shall be measured from the cleanout or manhole opening, along the developed length of the piping to the next drainage fitting providing access for cleaning, a manhole or the end of the building sewer.

708.1.3 Building drain and building sewer junction. The junction of the building drain and the building sewer shall be served by a cleanout that is located at the junction or within 10 feet (3048 mm) of the developed length of piping upstream of the junction. For the requirements of this section, the cleanout access shall not be provided by water closet removal.

[~~708.3.3~~] 708.1.4 Changes of direction. [~~Cleanouts shall be installed at each~~] Where a horizontal drainage pipe, a building drain or a building sewer has a change of horizontal direction [~~of the building drain or horizontal waste or soil lines~~] greater than 45 degrees (0.79 rad), [~~in the building sewer, building drain and horizontal waste or soil lines~~] a cleanout shall be installed at the change of direction. Where more than one change of horizontal direction greater than 45 degrees (0.79 rad) occurs [~~in a run of piping, only one cleanout shall be required for each~~] within 40 feet (12 192 mm) of developed length of [~~the drainage~~] piping, the cleanout installed for the first change of direction shall serve as the cleanout for all changes in direction within that 40 feet (12 192 mm) of developed length of piping.

708.1.5 Cleanout size. Cleanouts shall be the same size as the piping served by the cleanout, except that cleanouts for piping larger than 4 inches (102 mm) need not be larger than 4 inches (102 mm).

Exceptions:

1. A removable P-trap with slip or ground joint connections can serve as a cleanout for drain piping that is one size larger than the P-trap size.
2. Cleanouts located on stacks can be one size smaller than the stack size.
3. The size of cleanouts for cast-iron piping can be in accordance with the referenced standards for cast-iron fittings as indicated in Table 702.4.

708.1.6 Cleanout plugs. Cleanout plugs shall be of brass, plastic or other approved materials. Cleanout plugs for borosilicate glass piping systems shall be of borosilicate glass. Brass cleanout plugs shall conform to ASTM A 74 and shall be limited for use only on metallic piping systems. Plastic cleanout plugs shall conform to the referenced standards for plastic pipe fittings, as indicated in Table 702.4. Cleanout plugs shall have a raised square head, a countersunk square head or a countersunk slot head. Where a cleanout plug will have a trim cover screw installed into the plug, the plug shall be manufactured with a blind end threaded hole for such purpose.

[~~708.3.4 Base of stack.~~ ~~A cleanout shall be provided at the base of each waste or soil stack.~~]

[~~708.3.5~~] 708.1.7 Manholes. Manholes [~~serving a building drain shall have secured gas-tight covers and shall be located in accordance with Section 708.3.2.~~] and manhole covers shall be of an approved type. Manholes located inside of a building shall have gas-tight covers that require tools for removal.

708.1.8 Installation arrangement. The installation arrangement of a cleanout shall enable cleaning of drainage piping only in the direction of drainage flow.

Exceptions:

1. Test tees serving as cleanouts.
2. A two-way cleanout installation that is approved for meeting the requirements of Section 708.1.3.

708.1.9 Required clearance. Cleanouts for 6-inch (153 mm) and smaller piping shall be provided with a clearance of not less than 18 inches (457 mm) from, and perpendicular to, the face of the opening to any obstruction. Cleanouts for 8-inch (203 mm) and larger piping shall be provided with a clearance of not less than 36 inches (914 mm) from, and perpendicular to, the face of the opening to any obstruction.

708.1.10 Cleanout access. Required cleanouts shall be provided with access. Cleanouts on concealed piping or piping under a floor slab or in a crawl space of less than 24 inches (610 mm) in height or a plenum shall be extended through and terminate flush with the finished wall, floor or ground surface or shall be extended to the outside of the building. Cleanouts with openings at a finished wall shall have the face of the opening located within 1½ inches (38 mm) of the finished wall surface. Cleanouts located below grade shall be extended to grade level so that the top of the cleanout plug is at or above grade. A cleanout installed in a floor or walkway that will not have a trim cover installed shall have a countersunk plug installed so the top surface of the plug is flush with the finished surface of the floor or walkway.

708.1.10.1 Cleanout plug trim covers. Trim covers and access doors for cleanout plugs shall be designed for such purposes and shall be approved. Trim cover fasteners that thread into cleanout plugs shall be corrosion resistant. Cleanout plugs shall not be covered with mortar, plaster or any other permanent material.

709.1.10.2 Floor cleanout assemblies. Where it is necessary to protect a cleanout plug from the loads of vehicular traffic, cleanout assemblies in accordance with ASME A112.36.2M shall be installed.

708.1.11 Prohibited use. The use of a threaded cleanout opening to add a fixture or to extend piping shall be prohibited except where another cleanout of equal size is installed with the required access and clearance.

708.1.12 Base of stack. A cleanout shall be provided at the base of each waste or soil stack.

[~~708.4 Concealed piping.~~ ~~Cleanouts on concealed piping or piping under a floor slab or in a crawl space of less than 24 inches (610 mm) in height or a plenum shall be extended through and terminate flush with the finished wall, floor or ground surface or shall be extended to the outside of the building. Cleanout plugs shall not be covered with cement, plaster or any other permanent finish material. Where it is necessary to conceal a cleanout or to terminate a cleanout in an area subject to vehicular traffic, the covering plate, access door or cleanout shall be of an approved type designed and installed for this purpose.~~]

[~~708.5 Opening direction.~~ ~~Every cleanout shall be installed to open to allow cleaning in the direction of the flow of the drainage pipe or at right angles thereto.~~]

[~~708.6 Prohibited installation.~~ ~~Cleanout openings shall not be utilized for the installation of new fixtures, except where approved and where another cleanout of equal access and capacity is provided.~~]

[~~708.7 Minimum size.~~ ~~Cleanouts shall be the same nominal size as the pipe they serve up to 4 inches (102 mm). For pipes larger than 4 inches (102 mm) nominal size, the minimum size of the cleanout shall be 4 inches (102 mm).~~]

[~~Exceptions:~~]

[~~1. "P" trap connections with slip joints or ground joint connections, or stack cleanouts that are not more than one pipe diameter smaller than the drain served, shall be permitted.~~]

[~~2. Cast-iron cleanout sizing shall be in accordance with referenced standards in Table 702.4, ASTM A 74 for hub and spigot fittings or ASTM A 888 or CISPI 301 for hubless fittings.~~]

[~~708.8 Clearances.~~ ~~Cleanouts on 6-inch (153 mm) and smaller pipes shall be provided with a clearance of not less than 18 inches (457 mm) for rodding. Cleanouts on 8-inch (203 mm) and larger pipes shall be provided with a clearance of not less than 36 inches (914 mm) for rodding.~~]

[~~708.9 Access.~~ ~~Access shall be provided to all cleanouts.~~]

SECTION PC 709
FIXTURE UNITS

709.1 Values for fixtures. Drainage fixture unit values as given in Table 709.1 designate the relative load weight of different kinds of fixtures that shall be employed in estimating the total load carried by a soil or waste pipe, and shall be used in connection with Tables 710.1(1) and 710.1(2) of sizes for soil, waste and vent pipes for which the permissible load is given in terms of fixture units.

TABLE 709.1
DRAINAGE FIXTURE UNITS FOR FIXTURES AND GROUPS

FIXTURE TYPE	DRAINAGE FIXTURE UNIT VALUE AS LOAD FACTORS	MINIMUM SIZE OF TRAP (inches)
Automatic clothes washers, commercial[a,g]	3	2
Automatic clothes washers, residential[g]	2	2
Bathroom group as defined in Section 202[~~(1.6 gpf water closet)~~][f]	5	—
[~~Bathroom group as defined in Section 202 (water closet flushing greater than 1.6 gpf)~~[f]]	[~~6~~]	[—]
Bathtub[b] (with or without overhead shower or whirpool attachments)	2	$1\frac{1}{2}$
Bidet	1	[~~$1\frac{1}{2}$~~] $1\frac{1}{4}$
Combination sink and tray	2	$1\frac{1}{2}$
Dental lavatory	1	[~~$1\frac{1}{2}$~~] $1\frac{1}{4}$
Dental unit or cuspidor	1	$1\frac{1}{4}$
Dishwashing [~~machine,~~[e]] machine[c], domestic	2	$1\frac{1}{2}$
Drinking fountain	$\frac{1}{2}$	$1\frac{1}{4}$
Emergency floor drain	0	2
Floor drains	2[h]	3
Floor sinks	Note h	2
Hand wash sinks and lavatories (circular or multiple) each faucet	2	$1\frac{1}{2}$
Kitchen sink, domestic	2	2
Kitchen sink, domestic with food waste [~~grinder~~] disposer and/or dishwasher	2	2
Laundry tray (1 or 2 compartments)	2	2
Lavatory	1	[~~$1\frac{1}{2}$~~] $1\frac{1}{4}$

FIXTURE TYPE	DRAINAGE FIXTURE UNIT VALUE AS LOAD FACTORS	MINIMUM SIZE OF TRAP (inches)
Multiple (gang) shower (based on the total flow rate through shower heads and body sprays)		
Flow rate:		
5.7 gpm or less	2	2
Greater than 5.7 gpm to 12.3 gpm	3	2
Greater than 12.3 gpm to 25.8 gpm	5	3
Greater than 25.8 gpm to 55.6 gpm	6	4
Shower	2	2
Sink	2	2
Urinal	4	Note d
Urinal, 1 gallon per flush or less	2^e	Note d
Urinal, nonwater supplied	1/2	Note d
[~~Wash sink (circular or multiple) each set of faucets~~]	[~~2~~]	[~~1 1/2~~]
Water closet, flushometer, tank, public or private	4^e	Note d
[~~Water closet, private (flushing greater than 1.6 gpf)~~]	[~~3^e~~]	[~~Note d~~]
[~~Water closet, public (1.6 gpf)~~]	[~~4^e~~]	[~~Note d~~]
[~~Water closet, public (flushing greater than 1.6 gpf)~~]	[~~6^e~~]	[~~Note d~~]

For SI: 1 inch = 25.4 mm, 1 gallon = 3.785 L, gpf = gallon per flushing cycle, gpm = gallon per minute.

a. For traps larger than 3 inches, use Table 709.2.

b. A showerhead over a bathtub or whirlpool bathtub attachment does not increase the drainage fixture unit value.

c. See Sections 709.2 through [~~709.4~~] 709.4.1 for methods of computing unit value of fixtures not listed in this table or for rating of devices with intermittent flows.

d. Trap size shall be consistent with the fixture outlet size.

e. For the purpose of computing loads on building drains and sewers, water closets and urinals shall not be rated at a lower drainage fixture unit unless the lower values are confirmed by testing.

f. For fixtures added to a [~~dwelling unit~~] bathroom group, add the [~~DFU~~] dfu value of those additional fixtures to the bathroom group fixture count.

g. See Section 406.3 for sizing requirements for fixture drain, branch drain and drainage stack for an automatic clothes washer standpipe.

h. See Sections 709.4 and 709.4.1.

709.2 Fixtures not listed in Table 709.1. Fixtures not listed in Table 709.1 shall have a drainage fixture unit load based on the outlet size of the fixture in accordance with Table 709.2. The minimum trap size for unlisted fixtures shall be the size of the drainage outlet but not less than 1¼ inches (32 mm).

TABLE 709.2
DRAINAGE FIXTURE UNITS FOR FIXTURE DRAINS OR TRAPS

FIXTURE DRAIN OR TRAP SIZE (inches)	DRAINAGE FIXTURE UNIT VALUE
$1^1/_4$	1
$1^1/_2$	2
2	3
$2^1/_2$	4
3	5
4	6

For SI: 1 inch = 25.4 mm.

709.3 Values for continuous and semicontinuous flow. Drainage fixture unit values for continuous and semicontinuous flow into a drainage system shall be computed on the basis that 1 gpm (0.06 L/s) of flow is equivalent to two fixture units.

709.4 Values for indirect waste receptor. The drainage fixture unit load of an indirect waste receptor receiving the discharge of indirectly connected fixtures shall be the sum of the drainage fixture unit values of the fixtures that discharge to the receptor, but not less than the drainage fixture unit value given for the indirect waste receptor in Table 709.1 or 709.2.

709.4.1 Clear-water waste receptors. Where waste receptors such as funnel drains, floor sinks and hub drains receive only clear-water waste from display cases, refrigerated display cases, ice bins, coolers and freezers, such receptors shall have a drainage fixture unit value of one-half.

SECTION PC 710
DRAINAGE SYSTEM SIZING

710.1 Maximum fixture unit load. The maximum number of drainage fixture units connected to a given size of building sewer, building drain or horizontal branch of the building drain shall be determined using Table

710.1(1). The maximum number of drainage fixture units connected to a given size of horizontal branch or vertical soil or waste stack shall be determined using Table 710.1(2).

TABLE 710.1(1)
BUILDING DRAINS AND SEWERS

DIAMETER OF PIPE (inches)	MAXIMUM NUMBER OF DRAINAGE FIXTURE UNITS CONNECTED TO ANY PORTION OF THE BUILDING DRAIN OR THE BUILDING SEWER, INCLUDING BRANCHES OF THE BUILDING DRAIN[a]			
	Slope per foot			
	$^{1}/_{16}$ inch	$^{1}/_{8}$ inch	$^{1}/_{4}$ inch	$^{1}/_{2}$ inch
$1^{1}/_{4}$	—	—	1	1
$1^{1}/_{2}$	—	—	3	3
2	—	—	21	26
$2^{1}/_{2}$	—	—	24	31
3	—	36	42	50
4	—	180	216	250
5	—	390	480	575
6	—	700	840	1,000
8	1,400	1,600	1,920	2,300
10	2,500	2,900	3,500	4,200
12	3,900	4,600	5,600	6,700
15	7,000	8,300	10,000	12,000

For SI: 1 inch = 25.4 mm, 1 inch per foot = 83.3 mm/m.

a. The minimum size of any building drain serving a water closet shall be 3 inches.

TABLE 710.1(2)
HORIZONTAL FIXTURE BRANCHES AND STACKS[a]

DIAMETER OF PIPE (inches)	MAXIMUM NUMBER OF DRAINAGE FIXTURE UNITS (dfu)		
	Total for horizontal branch	Stacks[b]	
		Total for stack of three branch Intervals or less	Total for stack greater than three branch intervals
$1^1/_2$	3	4	8
2	6	10	24
$2^1/_2$	12	20	42
3	20	48	72
4	160	240	500
5	360	540	1,100
6	620	960	1,900
8	1,400	2,200	3,600
10	2,500	3,800	5,600
12	3,900	6,000	8,400
15	7,000	Note c	Note c

For SI: 1 inch = 25.4 mm.

a. Does not include branches of the building drain. Refer to Table 710.1(1).

b. Stacks shall be sized based on the total accumulated connected load at each story or branch interval. No soil or waste stack shall be smaller than any horizontal branch connection thereto.

c. Sizing load based on design criteria.

710.1.1 Horizontal stack offsets. Horizontal stack offsets shall be sized as required for building drains in accordance with Table 710.1(1), except as required by Section [~~711.4~~] 711.3.

710.1.2 Vertical stack offsets. Vertical stack offsets shall be sized as required for straight stacks in accordance with Table 710.1(2), except where required to be sized as a building drain in accordance with Section 711.1.1.

710.2 [~~Reserved.~~] Future fixtures. Where provision is made for the future installation of fixtures, those provided for shall be considered in determining the required sizes of drain pipes.

SECTION PC 711
OFFSETS IN DRAINAGE PIPING IN BUILDINGS OF FIVE STORIES OR MORE

711.1 Horizontal branch connections above or below vertical stack offsets. If a horizontal branch connects to the stack within 2 feet (610 mm) above or below a vertical stack offset, and the offset is located more than four branch intervals below the top of the stack, the offset shall be vented in accordance with Section [~~PC 915~~] 907.

711.1.1 Omission of vents for vertical stack offsets. Vents for vertical offsets required by Section 711.1 shall not be required where the stack and its offset are sized as a building drain [~~[see Table 710.1(1), Column 5]~~] (see Table 710.1(1), Column 5).

711.2 [~~Horizontal branch connections to horizontal stack offsets.~~ ~~Where a horizontal stack offset is located more than four branch intervals below the top of the stack, a horizontal branch shall not connect within the horizontal stack offset or within 2 feet (610 mm) above or below such offset.~~]

[~~711.3~~] Horizontal stack offsets. A stack with a horizontal offset located more than four branch intervals below the top of the stack shall be vented in accordance with Section [~~PC 915~~] 907 and sized as follows:

1. The portion of the stack above the offset shall be sized as for a vertical stack based on the total number of drainage fixture units above the offset.
2. The offset shall be sized in accordance with Section 710.1.1.
3. The portion of the stack below the offset shall be sized as for the offset or based on the total number of drainage fixture units on the entire stack, whichever is larger [~~[see Table 710.1(2), Column 4]~~] (see Table 710.1(2), Column 4).

[~~711.3.1~~] 711.2.1 Omission of vents for horizontal stack offsets. Vents for horizontal stack offsets required by Section [~~711.3~~] 711.2 shall not be required where the stack and its offset are one pipe size larger than required for a building drain [~~[see Table 710.1(1), Column 5]~~] (see Table 710.1(1), Column 5) and the entire stack and offset are not less in cross-sectional area than that required for a straight stack plus the area of an offset vent as provided for in Section [~~PC 915~~] 907.[~~ Omission of offset vents in accordance with this section shall not constitute approval of horizontal branch connections within the offset or within 2 feet (610 mm) above or below the offset.~~]

[~~711.4~~] 711.3 Offsets below lowest branch. Where a vertical offset occurs in a soil or waste stack below the lowest horizontal branch, a change in diameter of the stack because of the offset shall not be required. If a horizontal offset occurs in a soil or waste stack below the lowest horizontal branch, the required diameter of the offset and the stack below it shall be determined as for a building drain in accordance with Table 710.1(1).

SECTION PC 712
EJECTORS

712.1 Building subdrains. Building subdrains that cannot be discharged to the sewer by gravity flow shall be discharged into a [~~gas tight~~] gas-tight covered and vented ejector pit/basin from which the liquid shall be lifted and discharged into the building gravity drainage system by automatic pumping equipment or other approved method.

712.2 Valves required. A check valve and a full open valve[~~,~~] located on the discharge side of the check valve[~~,~~] shall be installed in the pump or ejector discharge piping between the pump or ejector and the gravity drainage system. Access shall be provided to such valves. Such valves [~~will~~] shall be located above the sump cover required by Section 712.1 or, where the discharge pipe from the ejector is below grade, the valves shall be accessibly located outside the sump below grade in an access pit with a removable access cover.

712.3 Ejector design. The ejector pit and discharge piping shall conform to the requirements of Sections 712.3.1 through 712.3.5.

712.3.1 Ejector pump. The ejector pump capacity and head shall be appropriate to anticipated use requirements.

712.3.2 Ejector pit. The ejector pit shall be not less than 18 inches (457 mm) in diameter and [~~not less than~~] 24 inches (610 mm) [~~deep~~] in depth, unless otherwise approved. The pit shall be accessible and located such that all drainage flows into the pit by gravity. The ejector pit shall be constructed of tile, concrete, steel, plastic or other approved materials. The pit bottom shall be solid and provide permanent support for the pump. The ejector pit shall be fitted with a gas-tight removable cover that is installed flush with grade or floor level, or above grade or floor level. The cover shall be adequate to support anticipated loads in the area of use. The ejector pit shall be vented in accordance with Chapter 9.

712.3.3 Discharge [~~piping~~] pipe and fittings. Discharge [~~piping~~] pipe and fittings serving ejectors shall be constructed of [~~approved~~]materials in accordance with Sections 712.3.3.1 and 712.3.3.2 and shall be approved.

712.3.3.1 Materials. Pipe and fitting materials shall be in accordance with Table 702.1 and Table 702.2.

712.3.3.2 Ratings. Pipe and fittings shall be rated for the maximum system operating pressure and temperature. Pipe fitting materials shall be compatible with the pipe material. Where pipe and fittings are buried in the earth, they shall be suitable for burial.

712.3.4 Maximum effluent level. The effluent level control shall be adjusted and maintained to at all times prevent the effluent from rising to within 2 inches (51 mm) of the invert of the gravity drain inlet into the sump.

712.3.5 [~~Ejector~~] Waste pump and waste ejector connection to the drainage system. Pumps connected to the drainage system shall connect to [~~the~~] a building[~~ sewer or shall connect to a wye fitting in the building~~] drain[~~ a minimum of 10 feet (3048 mm) from the base of any~~] , soil stack, waste stack or [~~fixture~~] horizontal branch drain. Where the discharge line connects into horizontal drainage piping, the [~~connector~~] connection shall be made through a wye fitting into the top of the drainage piping and such wye fitting shall be located not less than 10 pipe diameters from the base of any soil stack, waste stack or fixture drain.

712.4 Sewage pumps and sewage ejectors. A sewage pump or sewage ejector shall automatically discharge the contents of the pit to the building drainage system downstream of the house trap**.**

[~~712.4.1 Macerating toilet systems.~~] Exceptions: Macerating toilet systems [~~shall~~] that comply with [~~CSA B45.9 or ASME A112.3.4~~] ASME A112.3.4/CSA B45.9 and [~~shall be~~] installed in accordance with the manufacturer's [~~installation~~] instructions. Macerating toilet systems shall be permitted to discharge to a horizontal drain or stack in accordance with Section 712.3.5.

[~~712.4.2~~] 712.4.1 Capacity. A sewage pump or sewage ejector shall have the capacity and head for the application requirements. Pumps or ejectors that receive the discharge of water closets shall be capable of handling spherical solids with a diameter of up to and including 2 inches (51 mm). Other pumps or ejectors shall be capable of handling spherical solids with a diameter of up to and including 1 inch [~~(25.4 mm)~~] (25 mm). The [~~minimum~~] capacity of a pump or ejector based on the diameter of the discharge pipe shall be [~~in accordance with~~] not less than that indicated in Table [~~712.4.2~~] 712.4.1.

Exceptions:

1. Grinder pumps or grinder ejectors that receive the discharge of water closets shall have a [~~minimum~~] discharge opening of not less than 1¼ inches (32 mm).

2. Macerating toilet assemblies that serve single water closets shall have a [~~minimum~~] discharge opening of not less than ¾ inch [~~(19 mm)~~] (19.1 mm).

TABLE [~~712.4.2~~] 712.4.1
MINIMUM CAPACITY OF SEWAGE PUMP OR SEWAGE EJECTOR

DIAMETER OF THE DISCHARGE PIPE (inches)	CAPACITY OF PUMP OR EJECTOR (gpm)
2	21
$2^1/_2$	30
3	46

For SI: 1 inch = 25.4 mm, 1 gallon per minute = 3.785 L/m.

SECTION PC 713
HEALTH CARE PLUMBING

713.1 Scope. This section shall govern those aspects of health care plumbing systems that differ from plumbing systems in other structures. Health care plumbing systems shall conform to this section in addition to the other requirements of this code. The provisions of this section shall apply to the special devices and equipment installed and maintained in the following occupancies: nursing homes; homes for the aged; orphanages; infirmaries; first aid stations; psychiatric facilities; clinics; professional offices of dentists and doctors; mortuaries; educational facilities; surgery, dentistry, research and testing laboratories; establishments manufacturing pharmaceutical drugs and medicines; and other structures with similar apparatus and equipment classified as plumbing.

713.2 Bedpan washers and clinical sinks. Bedpan washers and clinical sinks shall connect to the drainage and vent system in accordance with the requirements for a water closet. Bedpan washers shall also connect to a local vent.

713.3 Indirect waste. [~~All sterilizers~~] Sterilizers, steamers and condensers shall discharge to the drainage through an indirect waste pipe by means of an air gap. Where a battery of not more than three sterilizers discharges to an individual receptor, the distance between the receptor and a sterilizer shall not exceed 8 feet (2438 mm). The indirect waste pipe on a bedpan steamer shall be trapped.

713.4 Vacuum system station. Ready access shall be provided to vacuum system station receptacles. Such receptacles shall be built into cabinets or recesses and shall be visible.

713.5 Bottle system. Vacuum (fluid suction) systems intended for collecting, removing and disposing of blood, pus or other fluids by the bottle system shall be provided with receptacles equipped with an overflow prevention device at each vacuum outlet station.

713.6 Central disposal system equipment. [~~All central~~] Central vacuum (fluid suction) systems shall provide continuous service. Systems equipped with collecting or control tanks shall provide for draining and cleaning of the tanks while the system is in operation. In hospitals, the system shall be connected to the emergency power system. The exhausts from a vacuum pump serving a vacuum (fluid suction) system shall discharge separately to open air above the roof.

713.7 Central vacuum or disposal systems. Where the waste from a central vacuum (fluid suction) system of the barometric-lag, collection-tank or bottle-disposal type is connected to the drainage system, the waste shall be directly connected to the sanitary drainage system through a trapped waste.

713.7.1 Piping. The piping of a central vacuum (fluid suction) system shall be of corrosion-resistant material with a smooth interior surface. A branch shall be not [~~be~~] less than [~~0.5 inch~~] ½-inch (12.7 mm) nominal pipe size for one outlet and shall be sized in accordance with the number of vacuum outlets. A main shall be not [~~be~~] less than [~~1 inch~~] 1-inch (25 mm) nominal pipe size. The pipe sizing shall be increased in accordance with the manufacturer's instructions as stations are increased.

713.7.2 Velocity. The velocity of airflow in a central vacuum (fluid suction) system shall be less than 5,000 feet per minute (25 m/s).

713.8 Vent connections prohibited. Connections between local vents serving bedpan washers or sterilizer vents serving sterilizing apparatus and normal sanitary plumbing systems are prohibited. Only one type of apparatus shall be served by a local vent.

713.9 Local vents and stacks for bedpan washers. Bedpan washers shall be vented to open air above the roof by means of one or more local vents. The local vent for a bedpan washer shall be not [~~be~~] less than a 2-inch-diameter (51 mm) pipe. A local vent serving a single bedpan washer is permitted to drain to the fixture served.

713.9.1 Multiple installations. Where bedpan washers are located above each other on more than one floor, a local vent stack is permitted to be installed to receive the local vent on the various floors. Not more than three bedpan washers shall be connected to a 2-inch (51 mm) local vent stack, not more than six to a 3-inch (76 mm) local vent stack and not more than 12 to a 4-inch (102 mm) local vent stack. In multiple installations, the connections between a bedpan washer local vent and a local vent stack shall be made with tee or tee-wye sanitary pattern drainage fittings installed in an upright position.

713.9.2 Trap required. The bottom of the local vent stack, except where serving only one bedpan washer, shall be drained by means of a trapped and vented waste connection to the sanitary drainage system. The trap and waste shall be the same size as the local vent stack.

713.9.3 Trap seal maintenance. A water supply pipe not less than ¼ inch (6.4 mm) in diameter shall be taken from the flush supply of each bedpan washer on the discharge or fixture side of the vacuum breaker, shall be trapped to form not less than a 3-inch (76 mm) water seal[~~,~~] and shall be connected to the local vent stack on each floor. The water supply shall be installed so as to provide a supply of water to the local vent stack for cleansing and drain trap seal maintenance each time a bedpan washer is flushed**.**

713.10 Sterilizer vents and stacks. Multiple installations of pressure and nonpressure sterilizers shall have the vent connections to the sterilizer vent stack made by means of inverted wye fittings. Access shall be provided to vent connections for the purpose of inspection and maintenance.

713.10.1 Drainage. The connection between sterilizer vent or exhaust openings and the sterilizer vent stack shall be designed and installed to drain to the funnel or basket-type waste fitting. In multiple installations, the sterilizer vent stack shall be drained separately to the lowest sterilizer funnel or basket-type waste fitting or receptor.

713.11 Sterilizer vent stack sizes. Sterilizer vent stack sizes shall comply with Sections 713.11.1 through 713.11.4.

713.11.1 Bedpan steamers. The minimum size of a sterilizer vent serving a bedpan steamer shall be [~~1.50 inches~~] 1½ inches (38 mm) in diameter. Multiple installations shall be sized in accordance with Table 713.11.1.

TABLE 713.11.1
STACK SIZES FOR BEDPAN STEAMERS AND BOILING-TYPE STERILIZERS
(Number of Connections of Various Sizes Permitted to Various-sized Sterilizer Vent Stacks)

STACK SIZE (inches)	CONNECTION SIZE		
	1 1/2"		**2"**
1 1/2[a]	1	or	0
2[a]	2	or	1
2[b]	1	and	1
3[a]	4	or	2
3[b]	2	and	2
4[a]	8	or	4
4[b]	4	and	4

For SI: 1 inch = 25.4 mm.

a. Total of each size.

b. Combination of sizes.

713.11.2 Boiling-type sterilizers. The[~~minimum~~] size of a sterilizer vent stack shall be not less than 2 inches (51 mm) in diameter where serving a utensil sterilizer and not less than 1½ inches (38 mm) in diameter where serving an instrument sterilizer. Combinations of boiling-type sterilizer vent connections shall be sized in accordance with Table 713.11.1.

713.11.3 Pressure sterilizers. Pressure sterilizer vent stacks shall be 2½ inches (64 mm) minimum. Those serving combinations of pressure sterilizer exhaust connections shall be sized in accordance with Table 713.11.3.

TABLE 713.11.3
STACK SIZES FOR PRESSURE STERILIZERS
(Number of Connections of Various Sizes Permitted To Various-sized Vent Stacks)

STACK SIZE (inches)	CONNECTION SIZE			
	$^{3}/_{4}$"	1"	**$1^{1}/_{4}$"**	**$1^{1}/_{2}$"**
$1^{1}/_{2}$[a]	3 or	2 or	1	—
$1^{1}/_{2}$[b]	2 and	1	—	—
2[a]	6 or	3 or	2 or	1
2[b]	3 and	2	—	—
2[b]	2 and	1 and	1	—
2[b]	1 and	1 and	—	1
3[a]	15 or	7 or	5 or	3
3[b]	1 and	1 and 5 and	2 and[—]	2 1

For SI: 1 inch = 25.4 mm.

a. Total of each size.

b. Combination of sizes.**713.11.4 Pressure instrument washer sterilizer sizes.** The [~~minimum~~] diameter of a sterilizer vent stack serving an instrument washer sterilizer shall be not less than 2 inches (51 mm). Not more than two sterilizers shall be installed on a 2-inch (51 mm) stack, and not more than four sterilizers shall be installed on a 3-inch (76 mm) stack.

SECTION PC 714
COMPUTERIZED DRAINAGE DESIGN

714.1 Design of drainage system. The sizing, design and layout of the drainage system shall be permitted to be designed by approved computer design methods.

714.2 Load on drainage system. The load shall be computed from the simultaneous or sequential discharge conditions from fixtures, appurtenances and appliances or the peak usage design condition.

714.2.1 Fixture discharge profiles. The discharge profiles for flow rates versus time from fixtures and appliances shall be in accordance with the manufacturer's specifications.

714.3 Selections of drainage pipe sizes. Pipe shall be sized to prevent full-bore flow.

714.3.1 Selecting pipe wall roughness. Pipe size calculations shall be conducted with the pipe wall roughness factor (ks), in accordance with the manufacturer's specifications and as modified for aging roughness factors with deposits and corrosion.

714.3.2 Slope of horizontal drainage piping. Horizontal drainage piping shall be designed and installed at slopes in accordance with Table 704.1.

SECTION PC 715
BACKWATER VALVES

715.1 Sewage backflow. Where fixtures, floor drains, or area drains are subject to overflow as the result of backwater from the public sewer system, accessible backwater valves shall be installed in the fixture drain pipe from such fixture, in the branch drain to such area drain or group of fixtures, or in the building drain at its point of exit from the building and downstream from the building trap. Buildings located in [~~areas of special~~] flood hazard areas[~~, as established by Section G102.2 of Appendix G of the *New York City Building Code*,~~] shall be deemed to be subject to overflow as the result of backwater from the public sewer system and shall be provided with backwater valves in accordance with the additional requirements of Section 7.3.3 of ASCE 24 as modified by Appendix G of the *New York City Building Code*.

715.2 Material. [~~All bearing~~] Bearing parts of backwater valves shall be of corrosion-resistant material. Backwater valves shall comply with ASME A112.14.1, CSA B181.1 or CSA B181.2.

715.3 Seal. Backwater valves shall be so constructed as to provide a mechanical seal against backflow. The flap shall be so designed as to hang partially open when not subject to backwater pressure.

715.4 Diameter. Backwater valves, when fully opened, shall have a capacity not less than that of the pipes in which they are installed.

715.5 Accessibility. Backwater valves shall be installed so that access is provided to the working parts for service and repair. Masonry access manholes shall be provided when the centerline of any drain line is 18 inches (457 mm) or more below a slab on grade.

SECTION PC 716
RESERVED

SECTION PC 717
RESERVED

PART H

CHAPTER 8

§1. Chapter 8 of the New York city plumbing code, as added by local law number 99 for the year 2005, section 802.1 as amended by local law number 141 for the year 2013, sections 802.1.4 and 803.2 as amended by, and section 802.1.8 as added by, local law 41 of 2012, is amended to read as follows:

CHAPTER 8

INDIRECT/SPECIAL WASTE

SECTION PC *801*
GENERAL

801.1 Scope. This chapter shall govern matters concerning indirect waste piping and special wastes. This chapter shall further control matters concerning food-handling establishments, sterilizers, clear-water [~~wastes~~] waste, swimming pools, methods of providing air breaks or air gaps, and neutralizing devices for corrosive wastes.

801.2 Protection. [~~All devices,~~] Devices, appurtenances, appliances and apparatus intended to serve some special function, such as sterilization, distillation, processing, cooling, or storage of ice or foods, and that discharge to the drainage system, shall be provided with protection against backflow, flooding, fouling, contamination and stoppage of the drain.

SECTION PC *802*
INDIRECT WASTES

802.1 Where required. Food-handling equipment[~~ and ~~] , in other than dwelling units, clear-water waste, dishwashing machines and utensils, pots, pans and dishwashing sinks shall discharge through an indirect waste pipe as specified in Sections 802.1.1 through 802.1.8. [~~All health-care~~] Health-care related fixtures, devices and equipment shall discharge to the drainage system through an indirect waste pipe by means of an air gap in accordance with this chapter and Section 713.3. Fixtures not required by this section to be indirectly connected shall be directly connected to the plumbing system in accordance with Chapter 7.

802.1.1 Food handling. Equipment and fixtures utilized for the storage, preparation and handling of food shall discharge through an indirect waste pipe by means of an air gap. Each well of a multiple-compartment sink shall discharge independently to a waste receptor.

802.1.2 Floor drains in food storage areas. Floor drains located within walk-in refrigerators or freezers in food service and food establishments shall be indirectly connected to the sanitary drainage system by means of an air gap. Where a floor drain is located within an area subject to freezing, the waste line serving the floor drain shall not be trapped and shall indirectly discharge into a waste receptor located outside of the area subject to freezing.

Exception: Where protected against backflow by a backwater valve, such floor drains shall be indirectly connected to the sanitary drainage system by means of an air break or an air gap.

802.1.3 Potable clear-water waste. Where devices and equipment, such as sterilizers and relief valves, discharge potable water to the building drainage system, the discharge shall be through an indirect waste pipe by means of an air gap.

802.1.4 Swimming pools. Where [~~wastewater~~] waste water from swimming pools, backwash from filters and water from pool deck drains discharge to the building drainage system, the discharge shall be through an indirect waste pipe by means of an air gap to a waste outlet.

802.1.5 Nonpotable clear-water waste. Where devices and equipment such as process tanks, filters, drips and boilers discharge nonpotable water to the building drainage system, the discharge shall be through an indirect waste pipe by means of an air break or an air gap.

802.1.6 Domestic [~~Dishwashing~~] dishwashing machines. Domestic dishwashing machines shall discharge indirectly through an air gap or air break into a [~~standpipe or~~] waste receptor in accordance with Section 802.2, or discharge into a [~~wye-branch~~] wye branch fitting on the tailpiece of the kitchen sink or the dishwasher connection of a food waste [~~grinder~~] disposer. The waste line of a domestic dishwashing machine discharging into a kitchen sink tailpiece or food waste [~~grinder~~] disposer shall connect to a deck-mounted air gap or the waste line shall rise and be securely fastened to the underside of the sink rim or counter.

802.1.7 Commercial dishwashing machines. The discharge from a commercial dishwashing machine shall be through an air gap or air break into a [~~standpipe or~~]waste receptor in accordance with Section 802.2.

802.1.8 Food utensils, dishes, pots and pans sinks. Sinks, in other than dwelling units, used for the washing, rinsing or sanitizing of utensils, dishes, pots, pans or [~~serviceware~~] service ware used in the preparation, serving or eating of food shall discharge indirectly through an air gap or an air break.

Exception: Hand sinks may be directly connected to the drainage system.

802.2 Installation. [~~All indirect~~] Indirect waste piping shall discharge through an air gap or air break into a waste receptor[~~ or standpipe~~]. Waste receptors [~~and standpipes~~] shall be trapped and vented and shall connect to the building drainage system. [~~All indirect~~] Indirect waste piping that exceeds [~~2 feet (610 mm)~~] 30 inches (762 mm) in developed length measured horizontally, or [~~4 feet (1219 mm)~~] 54 inches (1372 mm) in total developed length, shall be trapped.

Exception: Where a waste receptor receives only clear-water waste and does not directly connect to a sanitary drainage system, the receptor shall not require a trap.

802.2.1 Air gap. The air gap between the indirect waste pipe and the flood level rim of the waste receptor shall be [~~a minimum of~~] not less than twice the effective opening of the indirect waste pipe.

802.2.2 Air break. An air break shall be provided between the indirect waste pipe and the trap seal of the waste receptor[~~ or standpipe~~].

802.3 Waste receptors. [~~Every~~] For other than hub drains that receive only clear-water waste [~~receptor shall be of an approved type. A~~] and standpipes, a removable strainer or basket shall cover the [~~waste~~] outlet of waste receptors. Waste receptors shall not be installed in [~~ventilated~~] concealed spaces. Waste receptors shall not be installed in [~~bathrooms or toilet rooms or in any inaccessible or unventilated space such as a closet or storeroom~~] plenums, crawl spaces, attics, interstitial spaces above ceilings and below floors. Ready access shall be provided to waste receptors.

802.3.1 Size of receptors. A waste receptor shall be sized for the maximum discharge of all indirect waste pipes served by the receptor. Receptors shall be installed to prevent splashing or flooding.

802.3.2 [~~Open hub waste receptors~~] Hub drains. [~~Waste receptors~~] A hub drain shall be [~~permitted~~] in the form of a hub or a pipe extending not less than 1 inch [~~(25.4 mm)~~] (25 mm) above a water-impervious floor[~~ and are not required to have a strainer~~].

[~~802.4~~] 802.3.3 Standpipes. Standpipes shall be individually trapped. Standpipes shall extend [~~a minimum of~~] not less than 18 inches (457 mm) [~~and a maximum of~~] but not greater than 42 inches [~~(1067 mm)~~] (1066 mm) above the trap weir. Access shall be provided to [~~all~~] standpipes and drains for rodding.

SECTION **PC** *803*
SPECIAL WASTES

803.1 Wastewater temperature. Steam pipes shall not connect to any part of a drainage or plumbing system and water above 150°F (66°C) shall not be discharged into any part of a drainage system. Such pipes shall discharge into an indirect waste receptor connected to the drainage system.

803.2 Neutralizing device required for corrosive wastes. All discharges into the public sewers are subject to regulation by the Department of Environmental Protection. The Department of Environmental Protection may prohibit the discharge of any corrosive liquids, including but not limited to spent acids or other harmful chemicals that destroy or injure a drain, sewer, soil or waste pipe, or create noxious or toxic fumes or interfere with sewage treatment processes or may require that such liquids be neutralized or treated prior to discharge in accordance with the Department of Environmental Protection regulations. Where treatment prior to discharge is required by the Department of Environmental Protection, liquids shall not be discharged into the plumbing system without being thoroughly neutralized or treated in compliance with the rules of the Department of Environmental Protection.

803.3 [~~System~~] Chemical waste system design. A chemical drainage and vent system shall be designed and installed in accordance with this code. Chemical drainage and vent systems shall be completely separated from the sanitary systems. Chemical waste shall not discharge to a sanitary drainage system until such waste has been treated in accordance with Section 803.2.

803.3.1 Chemical drainage and vent pipe. Chemical waste and vent pipe shall conform to one of the standards listed in Table 803.3.1.

TABLE 803.3.1
CHEMICAL WASTE AND VENT PIPE

MATERIAL	**STANDARD**
Chlorinated polyvinyl chloride (CPVC) plastic	ASTM F 2618
Glass pipe	ASTM C 1053
High silicon cast iron	ASTM A 518 A/518 M
Polyolefin pipe	ASTM F 1412; CSA B181.3
Polypropylene (PP) pipe	ASTM F 1412
Polyvinylidene fluoride (PVDF) plastic pipe	ASTM F 1673; CSA B181.3

803.3.2 Chemical drainage and vent pipe fittings. Chemical waste and vent pipe fittings shall conform to one of the standards listed in Table 803.3.2.

TABLE 803.3.2
CHEMICAL WASTE AND VENT PIPE FITTINGS

MATERIAL	STANDARD
Chlorinated polyvinyl chloride (CPVC) plastic	ASTM F 2618
Glass	ASTM C 1053
High silicon iron	ASTM A 861
Polyolefin pipe	ASTM F 1412; CSA B181.3
Polypropylene (PP) pipe	ASTM F 1412
Polyvinylidene fluoride (PVDF) plastic pipe	ASTM F 1673; CSA B181.3

803.3.3 Chemical drainage and vent pipe installation. The installation of chemical waste and vent pipe shall conform to Sections 704.1, 704.2, 704.3, 704.4. and 704.5.

803.3.4 Chemical drainage and vent pipe joints. This section contains provisions applicable to joints specific to chemical drainage and vent piping. Joints between different materials shall conform to Section 705.

803.3.4.1 CPVC plastic. Joints between CPVC plastic pipe or fittings shall comply with Sections 803.3.4.1.1, 803.3.4.1.2 and 803.3.4.1.3.

803.3.4.1.1 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions.

803.3.4.1.2 Solvent cementing. Joint surfaces shall be clean and free from moisture. Joints shall be made in accordance with the pipe manufacturer's installation instructions. Where such instructions require that a primer be used, the primer shall be applied to the joint surfaces and a solvent cement orange in color and conforming to ASTM F 2618 shall be applied to the joint surfaces. Where such instructions allow for a one-step solvent cement, yellow in color and conforming to ASTM F 2618, to be used, the joint surfaces shall not require application of a primer before the solvent cement is applied. The joint shall be made while the cement is wet and in accordance with ASTM F 2618. Solvent cement joints shall be permitted above or below ground.

803.3.4.1.3 Threaded joints. Threads shall conform to ASME B1.20.1. Schedule 80 or heavier pipe shall be permitted to be threaded with dies specifically designed for plastic pipe, but the pressure rating of the pipe shall be reduced by 50 percent. Thread by socket molded fittings shall be permitted. Approved thread lubricant or tape shall be applied on the male threads only.

803.3.4.2 Borosilicate glass joints. Joints between Borosilicate glass pipe and fittings shall comply with Sections 803.3.4.2.1 and 803.3.4.2.2.

803.3.4.2.1 Mechanical joints. Glass-to-glass connections shall be made with a bolted compression-type, 300 series stainless steel coupling with contoured acid-resistant elastomeric compression ring and a fluorocarbon polymer inner seal ring; or with caulked joints in accordance with Section 803.3.4.2.2.

803.3.4.2.2 Caulked joints. Lead-caulked joints for hub and spigot soil pipe shall be firmly packed with oakum or hemp and filled with molten lead not less than 1 inch (25 mm) in depth and not to recede more than ⅛ inch (3.2 mm) below the rim of the hub. Paint, varnish or other coatings shall not be permitted on the jointing material until after the joint has been tested and approved. Lead shall be run in one pouring and shall be caulked tight. Acid-resistant rope and acidproof cement shall be permitted.

803.3.4.3 High silicon cast iron. Joints in high silicon cast iron system shall be in accordance with Section 705.4.

803.3.4.4 Polyolefin. Joints between polyolefin plastic pipe and fittings shall comply with Sections 803.3.4.4.1 and 803.3.4.4.2.

803.3.4.4.1 Heat-fusion joints. Heat-fusion joints for polyolefin pipe and tubing joints shall be installed with socket-type heat-fused polyolefin fittings or electrofusion polyolefin fittings. Joint surfaces shall be clean and free from moisture. The joint shall be undisturbed until cool. Joints shall be made in accordance with ASTM F 1412 or CSA B181.3.

803.3.4.4.2 Mechanical and compression sleeve joints. Mechanical and compression sleeve joints shall be installed in accordance with the manufacturer's instructions, and in conformance with acceptance criteria established by the commissioner.

803.3.4.5 Polypropylene (PP) plastic. Joints between PP plastic pipe and fittings shall comply with Section 803.3.4.5.1 or 803.3.4.5.2.

803.3.4.5.1 Heat-fusion joints. Heat-fusion joints for polypropylene pipe and tubing joints shall be installed with socket-type heat-fused polypropylene fittings, butt-fusion polypropylene fittings or electrofusion polypropylene fittings. Joint surfaces shall be clean and free from moisture. The joint shall be undisturbed until cool. Joints shall be made in accordance with ASTM F 1412.

803.3.4.5.2 Mechanical and compression sleeve joints. Mechanical and compression sleeve joints shall be installed in accordance with the manufacturer's instructions.

803.3.4.6 Polyvinylidene fluoride plastic. Joints between polyvinylidene plastic pipe and fittings shall comply with Sections 803.3.4.6.1 and 803.3.4.6.2.

803.3.4.6.1 Heat-fusion joints. Heat-fusion joints for polyvinylidene fluoride pipe and tubing joints shall be installed with socket-type heat-fused polyvinylidene fluoride fittings or electrofusion polyvinylidene fittings and couplings. Joint surfaces shall be clean and free from moisture. The joint shall be undisturbed until cool. Joints shall be made in accordance with ASTM F 1673.

803.3.4.6.2 Mechanical and compression sleeve joints. Mechanical and compression sleeve joints shall be installed in accordance with the manufacturer's instructions, and in conformance with acceptance criteria established by the commissioner.

803.3.5 Chemical drainage and vent pipe cleanouts. Chemical waste and vent pipe cleanouts shall conform to Sections 708.1.1, 708.1.4, 708.1.5, 708.1.6, 708.1.8, 708.1.9, 708.1.10 and 708.1.11.

803.3.6 Chemical drainage and vent pipe sizing. Sizing of chemical waste and vent pipe shall conform to Sections 709 and 710.

803.3.7 Offsets in chemical drainage and vent pipe sizing. Offsets of chemical waste and vent pipe shall conform to Section 711.

SECTION **PC** *804*
MATERIALS, JOINTS AND CONNECTIONS

804.1 General. The materials and methods utilized for the construction and installation of indirect waste pipes and systems shall comply with the applicable provisions of Chapter 7.

PART I

CHAPTER 9

§1. Chapter 9 of the New York city plumbing code, as added by local law 99 of 2005, sections 909.1 and 919.1 as amended by local law 71 of 2009, sections 904.5, 916.5.1, and 918.1 as amended by local law 8 of 2008 and sections 903.3, 907.2, 909.1, 906.5.1, and 906.5.2 as amended by local law 41 of 2012, is amended to read as follows:

CHAPTER 9
VENTS

SECTION* PC *901
GENERAL

901.1 Scope. The provisions of this chapter shall govern the materials, design, construction and installation of vent systems except for vent systems for methane and radon which shall be governed by this section.

901.1.1 Methane and radon venting. The design and materials used in the installation of the methane and radon vent systems shall be approved by the commissioner and shall comply with all applicable rules of the [~~fire department~~] Fire Department.

901.2 Trap seal protection. The plumbing system shall be provided with a system of vent piping that will permit the admission or emission of air so that the seal of any fixture trap shall not be subjected to a [~~pneumatic~~] pressure differential of more than 1 inch of water column (249 Pa).

901.2.1 Venting required. [~~Every trap~~] Traps and trapped [~~fixture~~] fixtures shall be vented in accordance with one of the venting methods specified in this chapter.

901.3 Chemical waste vent [~~system~~] systems. The vent system for a chemical waste system shall be independent of the sanitary vent system and shall terminate separately through the roof to the [~~open air~~] outdoors.

901.4 Use limitations. The plumbing vent system shall not be utilized for purposes other than the venting of the plumbing system.

901.5 Tests. The vent system shall be tested in accordance with Section [~~PC~~] 312.

901.6 Engineered systems. Engineered venting systems shall conform to the provisions of Section [~~PC 918~~] 919.

SECTION* PC *902
MATERIALS

902.1 Vents. The materials and methods utilized for the construction and installation of venting systems shall comply with the applicable provisions of Section [~~PC~~] 702.

902.2 Sheet copper. Sheet copper for vent pipe flashings shall conform to ASTM B 152 and shall weigh not less than 8 ounces per square foot (2.5 kg/m^2).

902.3 Sheet lead. Sheet lead for vent pipe flashings shall weigh not less than 3 pounds per square foot (15 kg/m^2) for field-constructed flashings and not less than [~~2.5~~] 2½ pounds per square foot (12 kg/m^2) for prefabricated flashings.

SECTION* PC *903
***VENT [~~STACKS AND STACK VENTS~~]* TERMINALS**

903.1[~~**Stack required.** Every building in which plumbing is installed shall have at least one 4-inch (102 mm) vent stack (or stack vent). Such stack shall run undiminished in size and as directly as possible from the building drain through to the open air above the roof.~~]

[~~903.1.1 Connection to drainage system.~~ ~~A vent stack shall connect to the building drain or to the base of a drainage stack in accordance with Section 903.4. A stack vent shall be an extension of the drainage stack.~~**] Roof extension.** Open vent pipes that extend through a roof shall be terminated not less than 24 inches (610 mm) above the roof. Where a roof is to be used for assembly or as a promenade, observation deck, sun bathing deck or similar purposes, open vent pipes shall terminate not less than 7 feet (2134 mm) above the roof. Approved vandal-resistant vent caps may be used.

903.2 Frost closure. Vent extensions through a roof or wall shall be not less than 4 inches (102 mm) in diameter. Any increase in the size of the vent shall be made not less than 1 foot (305 mm) inside the thermal envelope of the building.

903.3 Flashings. The juncture of each vent pipe with the roof line shall be made water tight by an approved flashing.

903.4 Prohibited use. A vent terminal shall not be used for any purpose other than a vent terminal.

903.5 Location of vent terminal. Locations of vent terminals shall comply with Sections 903.5.1 and 903.5.2.

903.5.1 New vent terminals. An open vent terminal from a drainage system of the new or altered building shall not be located directly beneath any door, operable window, or other air intake opening of the building or of an adjacent building, and any such vent terminal shall not be within 10 feet (3048 mm) horizontally of such an opening unless it is at least 3 feet (914 mm) above the top of such opening. When the consent of the owner of an adjoining taller building is obtained, the owner of the new or altered building shall be permitted to carry the new vent stack, with adequate support, to a level above the higher existing roof.

903.5.2 New openings. A door, operable window, or other air intake opening of the new or altered building shall not be located within 10 feet (3048 mm) horizontally from an open vent terminal from a drainage system of an existing adjacent building unless the existing terminal is at least 3 feet (914 mm) above such opening. Whenever necessary, the owner of the new building shall at his or her own expense, and with approval of the adjoining owner, offset the vent stack of the adjacent existing building to a distance of 10 feet (3048 mm) or more from such openings, or shall extend such vent stack to a height of at least 3 feet (924 mm) above the topmost opening.

903.6 Reserved.

903.7 Reserved.

SECTION PC 904
OUTDOOR VENT EXTENSIONS

904.1 Required vent extension. The vent system serving each building drain shall have not less than one vent pipe that extends to the outdoors.

904.1.1 Installation. The required vent shall be a dry vent that connects to the building drain or an extension of a drain that connects to the building drain. Such vent shall not be an island fixture vent as allowed by Section 916.

904.1.2 Size. The required vent shall be sized in accordance with Section 906.2 based on the required size of the building drain.

[~~903.2~~] 904.2 Vent stack required. A vent stack shall be required for every drainage stack that [~~is~~] has three branch intervals or more**.**

[~~903.3~~] 904.3 Vent termination. Vent stacks or stack vents shall terminate outdoors above the roof or to the stack vent portion of the soil or waste stack, at least 6 inches (152 mm) above the flood level of the highest fixture connection discharging into the soil or waste stack.

[~~903.4~~] 904.4 Vent connection at base. [~~Every vent stack~~] Vent stacks shall connect to the base of the drainage stack. The vent stack shall connect at or below the lowest horizontal branch. Where the vent stack connects to the building drain, the connection shall be located downstream of the drainage stack and within a distance of 10 times the diameter of the drainage stack.

[~~903.5~~] 904.5 Vent headers. Stack vents and vent stacks connected into a common vent header at the top of the stacks and extending to the open air above the roof at one point shall be sized in accordance with the requirements of Section [~~916.1~~] 906.1, but shall not be smaller than the smallest stack vent. The number of fixture units shall be the sum of all fixture units on all stacks connected thereto, and the developed length shall be the longest vent length from the intersection at the base of the most distant stack to the vent terminal in the open air, as a direct extension of one stack.

[~~903.6~~] 904.6 Sub-stack connections. Where it is desired to terminate stacks at a point below the roof terminus of the main vent stack, the sub-stack may connect to the main vent stack provided the portion of the main vent stack above the connection is sized for the total fixture unit load connected thereto, and for the maximum developed length of the stack or sub-stack.

[*~~SECTION~~* ~~PC 904~~
~~VENT TERMINALS~~]

[~~904.1 Roof extension.~~ ~~All open vent pipes that extend through a roof shall be terminated at least 24 inches (610 mm) above the roof, except that where a roof is to be used for any purpose other than weather protection or maintenance, the vent extensions shall be run at least 7 feet (2134 mm) above the roof. Approved vandal-resistant vent caps may be used.~~]

[~~904.2 Frost closure.~~ ~~Where the 97.5-percent value for outside design temperature is 0°F (-18°C) or less, every vent extension through a roof shall be a minimum of 4 inches (102 mm) in diameter. Any increase in the size of the vent shall be made inside the structure directly below the roof.~~]

[~~904.3 Flashings.~~ ~~The juncture of each vent pipe with the roof line shall be made water tight by an approved flashing.~~]

[~~904.4 Prohibited use.~~ ~~Vent terminals shall not be used as a flag pole or to support flag poles, television aerials or similar items.~~]

[~~904.5 Location of vent terminal.~~ ~~Locations of vent terminals shall comply with Sections 904.5.1 and 904.5.2.~~]

[~~904.5.1 New vent terminals.~~ ~~An open vent terminal from a drainage system of the new or altered building shall not be located directly beneath any door, operable window, or other air intake opening of the building or of an adjacent building, and any such vent terminal shall not be within 10 feet (3048 mm) horizontally of such an opening unless it is at least 3 feet (914 mm) above the top of such opening. When the consent of the owner of an adjoining taller building is obtained, the owner of the new or altered building shall be permitted to carry the new vent stack, with adequate support, to a level above the higher existing roof.~~]

[~~904.5.2 New openings.~~ ~~A door, operable window, or other air intake opening of the new or altered building shall not be located within 10 feet (3048 mm) horizontally from an open vent terminal from a drainage system of an existing adjacent building unless the existing terminal is at least 3 feet (914 mm) above such opening. Whenever necessary, the owner of the new building shall at his or her own expense, and with approval of the adjoining owner, offset the vent stack of the adjacent existing building to a distance of 10 feet (3048 mm) or more from such openings, or shall extend such vent stack to a height of at least 3 feet (924 mm) above the topmost opening.~~]

[~~904.6 Reserved.~~]

[~~904.7 Reserved.~~]

SECTION **PC** *905*
VENT CONNECTIONS AND GRADES

905.1 Connection. [~~All individual~~] Individual, branch and circuit vents shall connect to a vent stack, stack vent, or extend to the open air above the roof.

905.2 Grade. [~~All vent~~] Vent and branch vent pipes shall be so graded and connected as to drain back to the drainage pipe by gravity.

905.3 Vent connection to drainage system. Every dry vent connecting to a horizontal drain shall connect above the centerline of the horizontal drain pipe.

905.4 Reserved.

905.5 Height above fixtures. A connection between a vent pipe and a vent stack or stack vent shall be made at [~~least~~] not less than 6 inches (152 mm) above the flood level rim of the highest fixture served by the vent. Horizontal vent pipes forming branch vents, relief vents or loop vents shall be [~~at least~~] located not less than 6 inches (152 mm) above the flood level rim of the highest fixture served**.**

905.6 Vent for future fixtures. Where the drainage piping has been roughed-in for future fixtures, a rough-in connection for a vent shall be installed. The vent size shall be not less than one-half the diameter of the rough-in drain to be served. The vent rough-in shall connect to the vent system, or shall be vented by other means as provided for in this chapter. The connection shall be identified to indicate that it is a vent.

SECTION **PC** *906*
[~~FIXTURE VENTS~~] VENT PIPE SIZING

906.1 Size of stack vents and vent stacks. The minimum required diameter of stack vents and vent stacks shall be determined from the developed length and the total of drainage fixture units connected thereto in accordance with Table 906.1, but in no case shall the diameter be less than one-half the diameter of the drain served or less than 1¼ inches (32 mm).

TABLE 906.1
SIZE AND DEVELOPED LENGTH OF STACK VENTS AND VENT STACKS

DIAMETER OF SOIL OR WASTE STACK (inches)	TOTAL FIXTURE UNITS BEING VENTED (dfu)	MAXIMUM DEVELOPED LENGTH OF VENT (feet)[a] DIAMETER OF VENT (inches)										
		1¼	1½	2	2½	3	4	5	6	8	10	12
1¼	2	30										
1½	8	50	150	—	—	—	—	—	—	—	—	—
1½	10	30	100									
2	12		75	200								
2	20	30	50	150		—	—	—	—	—	—	—
2½	42	26	30	100	300							
3	10	—	42	150	360	1,040	—	—	—	—	—	—
3	21		32	110	270	810						

DIAMETER OF SOIL OR WASTE STACK (inches)	TOTAL FIXTURE UNITS BEING VENTED (dfu)	MAXIMUM DEVELOPED LENGTH OF VENT (feet)[a] DIAMETER OF VENT (inches)										
		$1^1/_4$	$1^1/_2$	2	$2^1/_2$	3	4	5	6	8	10	12
3	53		27	94	230	680						
3	102		25	86	210	620						
4	43	—		35	85	250	980	—	—	—	—	—
4	140			27	65	200	750					
4	320		—	23	55	170	640					
4	540	—		21	50	150	580		—	—	—	—
5	190				28	82	320	990				
5	490				21	63	250	760				
5	940	—	—	—	18	53	210	670	—	—	—	—
5	1,400				16	49	190	590				
6	500					33	130	400	1,000			
6	1,100	—	—	—	—	26	100	310	780	—	—	—
6	2,000					22	84	260	660			
6	2,900					20	77	240	600			
8	1,800	—	—	—	—		31	95	240	940	—	—
8	3,400						24	73	190	729		
8	5,600						20	62	160	610		
8	7,600	—	—	—	—	—	18	56	140	560		—
10	4,000							31	78	310	960	
10	7,200							24	60	240	740	
10	11,000	—	—	—	—	—	—	20	51	200	630	—
10	15,000							18	46	180	571	
12	7,300	—	—	—	—	—	—	—	31	120	380	940
12	13,000								24	94	300	720

DIAMETER OF SOIL OR WASTE STACK (inches)	TOTAL FIXTURE UNITS BEING VENTED (dfu)	MAXIMUM DEVELOPED LENGTH OF VENT (feet)[a] DIAMETER OF VENT (inches)										
		1¼	1½	2	2½	3	4	5	6	8	10	12
12	20,000								20	79	250	610
12	26,000	—	—	—	—	—	—	—	18	72	230	500
15	15,000	—	—	—	—	—	—	—		40	130	310
15	25,000	—	—	—	—	—	—	—		31	96	240
15	38,000	—	—	—	—	—	—	—	—	26	81	200
15	50,000	—	—	—	—	—	—	—	—	24	74	180

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

a. The developed length shall be measured from the vent connection to the open air.

906.2 Vents other than stack vents or vent stacks. The diameter of individual vents, branch vents, circuit vents and relief vents shall be at least one-half the required diameter of the drain served. The required size of the drain shall be determined in accordance with Table 710.1(2). Vent pipes shall not be less than 1¼ inches (32 mm) in diameter. Vents shall be sized in accordance with Table 906.1 utilizing the drainage fixture units and the corresponding developed length. Relief vents for soil and waste stacks in buildings having more than 10 branch intervals shall be sized in accordance with Section 908.2.

906.3 Developed length. The developed length of individual, branch, circuit and relief vents shall be measured from the farthest point of vent connection to the drainage system to the point of connection to the vent stack, stack vent or termination outside of the building.

906.4 Multiple branch vents. Where multiple branch vents are connected to a common branch vent, the common branch vent shall be sized in accordance with this section based on the size of the common horizontal drainage branch that is or would be required to serve the total drainage fixture unit load being vented.

906.5 Ejector vents. Ejector vent sizes shall be determined in accordance with Sections 906.5.1 and 906.5.2.

906.5.1 Sewage pumps and sewage ejectors other than pneumatic. Drainage piping below sewer level shall be vented in the same manner as that of a gravity system. Building sump vent sizes for sumps with sewage pumps or sewage ejectors, other than pneumatic, shall be determined in accordance with Table 906.5.1. Where a building sump vent connects to a sanitary vent system, the sanitary branch vent shall be at least 3 inches (76 mm) in diameter.

TABLE 906.5.1
SIZE AND LENGTH OF SUMP VENTS

DISCHARGE CAPACITY OF PUMP (gpm)	MAXIMUM DEVELOPED LENGTH OF VENT (feet)[a]					
	Diameter of vent (inches)					
	$1^1/_4$	$1^1/_2$	2	$2^1/_2$	3	4
10	No limit[b]	No limit	No limit	No limit	No limit	No limit
20	270	No limit	No limit	No limit	No limit	No limit
40	72	160	No limit	No limit	No limit	No limit
60	31	75	270	No limit	No limit	No limit
80	16	41	150	380	No limit	No limit
100	10[c]	25	97	250	No limit	No limit
150	Not permitted	10[c]	44	110	370	No limit
200	Not permitted	Not permitted	20	60	210	No limit
250	Not permitted	Not permitted	10	36	132	No limit
300	Not permitted	Not permitted	10[c]	22	88	380
400	Not permitted	Not permitted	Not permitted	10[c]	44	210
500	Not permitted	Not permitted	Not permitted	Not permitted	24	130

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 gallon per minute = 3.785 L/m.

a. *Developed length* plus an appropriate allowance for entrance losses and friction due to fittings, changes in direction and diameter. Suggested allowances shall be obtained from NBS Monograph 31 or other *approved* sources. An allowance of 50 percent of the *developed length* shall be assumed if a more precise value is not available.

b. Actual values greater than 500 feet.

c. Less than 10 feet.

906.5.2 Pneumatic sewage ejectors. The air pressure relief pipe from a pneumatic sewage ejector shall be connected to an independent vent stack terminating as required for vent extensions through the roof. The relief pipe shall be sized to relieve air pressure inside the ejector to atmospheric pressure, but shall be not less than 1½ inches (38 mm) in size.

SECTION PC 907
VENTS FOR STACK OFFSETS

907.1 Vent for horizontal offset of drainage stack. Horizontal offsets of drainage stacks shall be vented where five or more branch intervals are located above the offset. The offset shall be vented by venting the upper section of the drainage stack and the lower section of the drainage stack.

907.2 Upper section. The upper section of the drainage stack shall be vented as a separate stack with a vent stack connection installed in accordance with Section 904.4. The offset shall be considered the base of the stack.

907.3 Lower section. The lower section of the drainage stack shall be vented by a yoke vent connecting between the offset and the next lower horizontal branch. The yoke vent connection shall be permitted to be a vertical extension of the drainage stack. The size of the yoke vent and connection shall be a minimum of the size required for the vent stack of the drainage stack.

SECTION PC 908
RELIEF VENTS—STACKS OF MORE THAN 10 BRANCH INTERVALS

908.1 Where required. Soil and waste stacks in buildings having more than 10 branch intervals shall be provided with a relief vent at each tenth interval installed, beginning with the top floor.

908.2 Size and connection. The size of the relief vent shall be equal to the size of the vent stack to which it connects. The lower end of each relief vent shall connect to the soil or waste stack through a wye below the horizontal branch serving the floor, and the upper end shall connect to the vent stack through a tee or inverted wye not less than 3 feet (914 mm) above the floor.

SECTION PC 909
FIXTURE VENTS

[~~906.1 Reserved.~~]

909.1 Distance of trap from vent. Each fixture trap shall have a protecting vent located so that the slope and the developed length in the fixture drain from the trap weir to the vent fitting are within the requirements set forth in Table 909.1.

Exception: The developed length of the fixture drain from the trap weir to the vent fitting for self-siphoning fixtures, such as water closets, shall not be limited.

TABLE 909.1
MAXIMUM DISTANCE OF FIXTURE TRAP FROM VENT

SIZE OF TRAP (inches)	SLOPE (inch per foot)	DISTANCE FROM TRAP (feet)
$1^1/_4$	$^1/_4$	5
$1^1/_2$	$^1/_4$	6
2	$^1/_4$	8
3	$^1/_8$	12
4	$^1/_8$	16

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 inch per foot = 83.3 mm/m.

[~~906.2~~] 909.2 Venting of fixture drains. The vent for a fixture drain, except where serving a fixture with integral traps, such as water closets, shall connect above the weir of the fixture trap being vented.

[~~906.3~~] 909.3 Crown vent. A vent shall not be installed within two pipe diameters of the trap weir**.**

***SECTION* PC [~~907~~] 910**
INDIVIDUAL VENT

[~~907.1~~] 910.1 Individual vent permitted. Each trap and trapped fixture is permitted to be provided with an individual vent. The individual vent shall connect [~~not more than 4 feet (1219 mm)~~] to the fixture drain of the trap or trapped fixture being vented in accordance with section 909.1, but at a distance not to exceed 16 feet (4876 mm).

[~~907.2~~] 910.2 Floor drain vents. No vents will be required for piping serving floor drains when the floor drain is located not more than 15 feet (4572 mm) from the vented line to which it connects.

***SECTION* PC [~~908~~] 911**
COMMON VENT

[~~908.1~~] 911.1 Individual vent as common vent. An individual vent is permitted to vent two traps or trapped fixtures as a common vent. The traps or trapped fixtures being common vented shall be located on the same floor level.

[~~908.2~~] 911.2 Connection at the same level. Where the fixture drains being common vented connect at the same level, the vent connection shall be at the interconnection of the fixture drains.

Exception: Where wet vents are permitted by this code, the wet vent connection may be located downstream of the interconnection.

[~~908.3~~] 911.3 Connection at different levels. Where the fixture drains connect at different levels, the vent shall connect as a vertical extension of the vertical drain. The vertical drain pipe connecting the two fixture drains shall be considered the vent for the lower fixture drain, and shall be sized in accordance with Table [~~908.3~~] 911.3. The upper fixture shall not be a water closet.

TABLE [~~908.3~~] 911.3
COMMON VENT SIZES

PIPE SIZE (inches)	MAXIMUM DISCHARGE FROM UPPER FIXTURE DRAIN (dfu)
$1^1/_2$	1
2	4
$2^1/_2$ to 3	6

For SI: 1 inch = 25.4 mm.

***SECTION* PC [~~909~~]912**
WET VENTING

[~~909.1~~] 912.1 Horizontal wet vent permitted. Any combination of fixtures within one bathroom group located in the same room is permitted to be vented by a horizontal wet vent. The wet vent shall be considered the vent for the fixtures and shall extend from the connection of the dry vent along the direction of the flow in the drain pipe to the most downstream fixture drain connection to the horizontal branch drain. Each wet-vented fixture drain shall connect independently to the horizontal wet vent. Only the fixtures within the bathroom groups shall connect to the wet-vented horizontal branch drain. Any additional fixtures shall discharge downstream of the horizontal wet vent.

912.1.1 Vertical wet vent permitted. Any combination of fixtures within one bathroom group is permitted to be vented by a vertical wet vent. The vertical wet vent shall be considered the vent for the fixtures and shall extend from the connection of the dry vent down to the lowest fixture drain connection. Each wet-vented fixture shall connect independently to the vertical wet vent. Fixture drains shall connect above or at the same elevation as the water closet fixture drain. The dry-vent connection to the vertical wet vent shall be an individual or common vent serving one or two fixtures.

[~~909.2~~] 912.2 [~~Vent~~] Dry-vent connection. [~~The dry vent connection to the wet vent shall be an individual vent or common vent to the lavatory, bidet, shower or bathtub. The dry vent shall be sized based on the largest required diameter of pipe within the wet vent system served by the dry vent.~~] The required dry-vent connection for wet-vented systems shall comply with Sections 912.2.1 and 912.2.2.

[~~909.2.1~~] 912.2.1 Horizontal wet vent. The dry-vent connection for a horizontal wet-vent system shall be an individual vent or a common vent for any bathroom group fixture, except an emergency floor drain. Where the dry-vent connects to a water closet fixture drain, the drain shall connect horizontally to the horizontal wet-vent system. Not more than one wet-vented fixture drain shall discharge upstream of the dry-vented fixture drain connection.

912.2.2 Vertical wet vent. The dry-vent connection for a vertical wet-vent system shall be an individual vent or common vent for the most upstream fixture drain.

[~~909.3~~] 912.3 Size. The dry vent serving the wet vent shall be sized based on the largest required diameter of pipe within the wet-vent system served by the dry vent. The wet vent shall be of a [~~minimum size of 2 inches (51 mm)~~] size not less than that specified in Table 912.3, based on the fixture unit discharge to the wet vent.

TABLE 912.3
WET VENT SIZE

MINIMUM WET VENT PIPE SIZE (inches)	MAXIMUM DRAINAGE FIXTURE UNIT LOAD (dfu)
2	4
$2^1/_2$	6
3	12

For SI: 1 inch = 25.4 mm.

SECTION PC [~~910~~]913
[~~WASTE STACK VENT~~]
RESERVED

SECTION PC [~~911~~]914
CIRCUIT VENTING

[~~911.1~~] 914.1 Circuit vent permitted. A maximum of eight fixtures connected to a horizontal branch drain shall be permitted to be circuit vented. Each fixture drain shall connect horizontally to the horizontal branch being circuit vented. The horizontal branch drain shall be classified as a vent from the most downstream fixture drain connection to the most upstream fixture drain connection to the horizontal branch.

[~~911.1.1~~] 914.1.1 Multiple circuit-vented branches. Circuit-vented horizontal branch drains are permitted to be connected together. Each group of a maximum of eight fixtures shall be considered a separate circuit vent and shall conform to the requirements of this section.

[~~911.2~~] 914.2 Vent connection. The circuit vent connection shall be located between the two most upstream fixture drains. The vent shall connect to the horizontal branch and shall be installed in accordance with Section 905. The circuit vent pipe shall not receive the discharge of any soil or waste.

[~~911.3~~] 914.3 Slope and size of horizontal branch. The [~~maximum~~] slope of the vent section of the horizontal branch drain shall be not greater than one unit vertical in 12 units horizontal ([~~8-percent~~] 8.3-percent slope). The entire length of the vent section of the horizontal branch drain shall be sized for the total drainage discharge to the branch.

[~~911.3.1~~] 914.3.1 Size of multiple circuit vent. Each separate circuit-vented horizontal branch that is interconnected shall be sized independently in accordance with Section [~~911.3~~] 914.3. The downstream circuit-vented horizontal branch shall be sized for the total discharge into the branch, including the upstream branches and the fixtures within the branch.

[~~911.4~~] 914.4 Relief vent. A relief vent shall be provided for [~~circuit vented~~] circuit-vented horizontal branches receiving the discharge of four or more water closets and connecting to a drainage stack that receives the discharge of soil or waste from upper horizontal branches.

[~~911.4.1~~] 914.4.1 Connection and installation. The relief vent shall connect to the horizontal branch drain between the stack and the most downstream fixture drain of the circuit vent. The relief vent shall be installed in accordance with Section [~~PC~~] 905.

[~~911.4.2~~] 914.4.2 Fixture drain or branch. The relief vent is permitted to be a fixture drain or fixture branch for fixtures located within the same branch interval as the circuit-vented horizontal branch. The maximum discharge to a relief vent shall be four fixture units.

[~~911.5~~] 914.5 Additional fixtures. Fixtures, other than the circuit-vented fixtures, are permitted to discharge to the horizontal branch drain. Such fixtures shall be located on the same floor as the circuit-vented fixtures and shall be either individually or common vented.

SECTION PC [~~912~~] 915
COMBINATION [~~DRAIN~~] WASTE *AND VENT SYSTEM*

[~~912.1~~] 915.1 [~~Permitted combination waste and vent system~~] Types of fixtures. A combination waste and vent [~~piping~~] system[~~, limited for use as a means of venting the traps of~~] shall not serve fixtures other than floor drains[~~ and laboratory sinks~~] , lavatories and drinking fountains[~~shall be permitted in conjunction with horizontal branch waste piping of an independent flammable oil waste system or acid waste systems, and as described under indirect wastes and special wastes~~]. Combination waste and vent systems shall not receive the discharge from a food waste disposer or clinical sink.

[~~912.2~~] 915.2 Installation. [~~Combination drain and vent system shall comply with this section.~~] The combination waste and vent system shall be a horizontal piping system. The only vertical pipe of a combination waste and vent system shall be the connection between the fixture drain and the horizontal combination waste and vent pipe. The vertical distance shall not exceed 8 feet (2438 mm).

[~~912.2.1~~] 915.2.1 Slope. The slope at a horizontal combination [~~drain~~] waste and vent pipe shall [~~have a maximum slope of~~] not exceed one-half unit vertical in 12 units horizontal (4-percent slope)[~~. The minimum slope~~] and shall not be less than indicated in [~~accordance with~~] Table 704.1.

915.2.2 Size and length. The size of a combination waste and vent pipe shall be not less than that indicated in Table 915.2.2. The horizontal length of a combination waste and vent system shall be unlimited.

TABLE 915.2.2
SIZE OF COMBINATION WASTE AND VENT PIPE

DIAMETER PIPE (inches)	**MAXIMUM NUMBER OF DRAINAGE FIXTURE UNITS (dfu)**	
	Connecting to a horizontal branch or stack	**Connecting to a building drain or building subdrain**
2	3	4
2½	6	26
3	12	31
4	20	50
5	160	250
6	360	575

For SI: 1 inch = 25.4 mm.

[~~912.2.2~~] 915.2.3 Connection. The combination [~~drain~~] waste and vent system shall be provided with a dry vent connected at any point within the system or the system shall connect to a horizontal drain that [~~is~~] serves vented [~~in accordance with one of~~] fixtures located on the [~~venting methods specified in this chapter~~] same floor. Combination [~~drain~~] waste and vent systems connecting to building drains receiving only the discharge from [~~a stack~~] one or more stacks shall be provided with a dry vent. The vent connection to the combination [~~drain~~] waste and vent pipe shall extend vertically [~~a minimum of~~] to a point not less than 6 inches (152 mm) above the flood level rim of the highest fixture being vented before offsetting horizontally.

[~~912.2.3~~] 915.2.4 Vent size. The vent shall be sized for the total drainage fixture unit load in accordance with Section [~~916.2~~]906.2.

[~~912.3 Size.~~] 915.2.5 Fixture branch or drain. The [~~minimum size of a~~] fixture branch or fixture drain shall connect to the combination [~~drain~~] waste and vent within a distance specified in Table 909.1. The combination waste and vent pipe shall be [~~in accordance with Table 912.3~~] considered the vent for the fixture.

[~~TABLE 912.3~~
~~SIZE OF COMBINATION DRAIN AND VENT PIPE~~

~~DIAMETER PIPE~~	**~~MAXIMUM NUMBER OF DRAINAGE FIXTURE UNITS (dfu)~~**	
	~~Connecting to a horizontal branch or stack~~	**~~Connecting to a building drain or building subdrain~~**
~~2~~	~~3~~	~~4~~
~~2½~~	~~6~~	~~26~~
~~3~~	~~12~~	~~31~~

~~DIAMETER PIPE~~	~~MAXIMUM NUMBER OF DRAINAGE FIXTURE UNITS (dfu)~~	
	~~Connecting to a horizontal branch or stack~~	~~Connecting to a building drain or building subdrain~~
~~4~~	~~20~~	~~50~~
~~5~~	~~160~~	~~250~~
~~6~~	~~360~~	~~575~~

~~For SI: 1 inch = 25.4 mm.~~**]**

SECTION PC [~~913~~] 916
ISLAND FIXTURE VENTING

[~~913.1~~] 916.1 Limitation. Island fixture venting shall not be permitted for fixtures other than sinks and lavatories. Residential kitchen sinks with a dishwasher waste connection, a food waste [~~grinder~~] disposer, or both, in combination with the kitchen sink waste, shall be permitted to be vented in accordance with this section.

[~~913.2~~] 916.2 Vent connection. The island fixture vent shall connect to the fixture drain as required for an individual or common vent. The vent shall rise vertically to above the drainage outlet of the fixture being vented before offsetting horizontally or vertically downward. The vent or branch vent for multiple island fixture vents shall extend to a [~~minimum of~~] point not less than 6 inches (152 mm) above the highest island fixture being vented before connecting to the outside vent terminal.

[~~913.3~~] 916.3 Vent installation below the fixture flood level rim. The vent located below the flood level rim of the fixture being vented shall be installed as required for drainage piping in accordance with Chapter 7, except for sizing. The vent shall be sized in accordance with Section [~~916.2~~] 906.2. The lowest point of the island fixture vent shall connect full size to the drainage system. The connection shall be to a vertical drain pipe or to the top half of a horizontal drain pipe. Cleanouts shall be provided in the island fixture vent to permit rodding of all vent piping located below the flood level rim of the fixtures. Rodding in both directions shall be permitted through a cleanout.

[~~*SECTION* PC 914~~
~~RELIEF VENTS—STACKS OF MORE THAN 10 BRANCH INTERVALS~~

~~914.1 Where required.~~ ~~Soil and waste stacks in buildings having more than 10 branch intervals shall be provided with a yoke relief vent at each tenth interval installed, beginning with the top floor.~~

~~914.2 Size and connection~~~~. The size of the relief yoke vent shall be equal to the size of the vent stack to which it connects. The lower end of each relief vent shall connect to the soil or waste stack through a wye below the horizontal branch serving the floor, and the upper end shall connect to the vent stack through a tee or inverted wye not less than 3 feet (914 mm) above the floor.~~**]**

[~~SECTION PC 915~~
~~VENTS FOR STACK OFFSETS~~]

[~~915.1 Vent for horizontal offset of drainage stack.~~ ~~Horizontal offsets of drainage stacks shall be vented where five or more branch intervals are located above the offset. The offset shall be vented by venting the upper section of the drainage stack and the lower section of the drainage stack.~~]

[**~~915.2 Upper section.~~** ~~The upper section of the drainage stack shall be vented as a separate stack with a vent stack connection installed in accordance with Section 903.4. The offset shall be considered the base of the stack.~~]

[**~~915.3 Lower section.~~** ~~The lower section of the drainage stack shall be vented by a yoke vent connecting between the offset and the next lower horizontal branch. The yoke vent connection shall be permitted to be a vertical extension of the drainage stack. The size of the yoke vent and connection shall be a minimum of the size required for the vent stack of the drainage stack.~~]

[~~SECTION PC 916~~
~~VENT PIPE SIZING~~]

[**~~916.1 Size of stack vents and vent stacks.~~** ~~The minimum required diameter of stack vents and vent stacks shall be determined from the developed length and the total of drainage fixture units connected thereto in accordance with Table 916.1, but in no case shall the diameter be less than one-half the diameter of the drain served or less than 1½ inches (38 mm).~~**]**

[~~TABLE 916.1~~
~~SIZE AND DEVELOPED LENGTH OF STACK VENTS AND VENT STACKS~~

~~DIAMETER OF SOIL OR WASTE STACK (inches)~~	**~~TOTAL FIXTURE UNITS BEING VENTED (dfu)~~**	**~~MAXIMUM DEVELOPED LENGTH OF VENT (feet)~~**[a] **~~DIAMETER OF VENT (inches)~~**									
		~~1½~~	**~~2~~**	**~~2½~~**	**~~3~~**	**~~4~~**	**~~5~~**	**~~6~~**	**~~8~~**	**~~10~~**	**~~12~~**
~~1½~~	~~8~~	~~150~~									
~~1½~~	~~10~~	~~100~~									
~~2~~	~~12~~	~~75~~	~~200~~								
~~2~~	~~20~~	~~50~~	~~150~~		—	—	—	—	—	—	—
~~2½~~	~~42~~	~~30~~	~~100~~	~~300~~							
~~3~~	~~10~~	~~42~~	~~150~~	~~360~~	~~1,040~~						
~~3~~	~~21~~	~~32~~	~~110~~	~~270~~	~~810~~	—	—	—	—	—	—
~~3~~	~~53~~	~~27~~	~~94~~	~~230~~	~~680~~						
~~3~~	~~102~~	~~25~~	~~86~~	~~210~~	~~620~~						
~~4~~	~~43~~		~~35~~	~~85~~	~~250~~	~~980~~	—	—	—	—	—
~~4~~	~~140~~		~~27~~	~~65~~	~~200~~	~~750~~					
~~4~~	~~320~~		~~23~~	~~55~~	~~170~~	~~640~~					
~~4~~	~~540~~	—	~~21~~	~~50~~	~~150~~	~~580~~		—	—	—	—
~~5~~	~~190~~			~~28~~	~~82~~	~~320~~	~~990~~				

~~DIAMETER OF SOIL OR WASTE STACK (inches)~~	~~TOTAL FIXTURE UNITS BEING VENTED (dfu)~~	~~MAXIMUM DEVELOPED LENGTH OF VENT (feet)[a] DIAMETER OF VENT (inches)~~									
		~~1½~~	~~2~~	~~2½~~	~~3~~	~~4~~	~~5~~	~~6~~	~~8~~	~~10~~	~~12~~
~~5~~	~~490~~			~~21~~	~~63~~	~~250~~	~~760~~				
~~5~~	~~940~~	—	—	~~18~~	~~53~~	~~210~~	~~670~~	—	—	—	—
~~5~~	~~1,400~~			~~16~~	~~49~~	~~190~~	~~590~~				
~~6~~	~~500~~				~~33~~	~~130~~	~~400~~	~~1,000~~			
~~6~~	~~1,100~~	—	—	—	~~26~~	~~100~~	~~310~~	~~780~~	—	—	—
~~6~~	~~2,000~~				~~22~~	~~84~~	~~260~~	~~660~~			
~~6~~	~~2,900~~				~~20~~	~~77~~	~~240~~	~~600~~			
~~8~~	~~1,800~~	—	—	—		~~31~~	~~95~~	~~240~~	~~940~~	—	—
~~8~~	~~3,400~~					~~24~~	~~73~~	~~190~~	~~720~~		
~~8~~	~~5,600~~					~~20~~	~~62~~	~~160~~	~~610~~		
~~8~~	~~7,600~~	—	—	—	—	~~18~~	~~56~~	~~140~~	~~560~~		—
~~10~~	~~4,000~~						~~31~~	~~78~~	~~310~~	~~960~~	
~~10~~	~~7,200~~						~~24~~	~~60~~	~~240~~	~~740~~	
~~10~~	~~11,000~~	—	—	—	—	—	~~20~~	~~51~~	~~200~~	~~630~~	—
~~10~~	~~15,000~~						~~18~~	~~46~~	~~180~~	~~570~~	
~~12~~	~~7,300~~							~~31~~	~~120~~	~~380~~	~~940~~
~~12~~	~~13,000~~	—	—	—	—	—	—	~~24~~	~~94~~	~~300~~	~~720~~
~~12~~	~~20,000~~							~~20~~	~~79~~	~~250~~	~~610~~
~~12~~	~~26,000~~							~~18~~	~~72~~	~~230~~	~~500~~
~~15~~	~~15,000~~	—	—	—	—	—	—		~~40~~	~~130~~	~~310~~
~~15~~	~~25,000~~								~~31~~	~~96~~	~~240~~
~~15~~	~~38,000~~	—	—	—	—	—	—	—	~~26~~	~~81~~	~~200~~
~~15~~	~~50,000~~								~~24~~	~~74~~	~~180~~

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

~~a. The developed length shall be measured from the vent connection to the open air.~~**]**

[~~**916.2 Vents other than stack vents or vent stacks.** The diameter of individual vents, branch vents, circuit vents and relief vents shall be at least one-half the required diameter of the drain served. The required size of the drain shall be determined in accordance with Table 710.1(2). Vent pipes shall not be less than 1½ inches (38 mm) in diameter. Vents shall be sized in accordance with Table 916.1 utilizing the drainage fixture units and the corresponding developed length. Relief vents for soil and waste stacks in buildings having more than 10 branch intervals shall be sized in accordance with Section 914.2.~~]

[~~**916.3 Developed length.** The developed length of individual, branch, circuit and relief vents shall be measured from the farthest point of vent connection to the drainage system to the point of connection to the vent stack, stack vent or termination outside of the building.~~]

[~~**916.4 Multiple branch vents.** Where multiple branch vents are connected to a common branch vent, the common branch vent shall be sized in accordance with this section based on the size of the common horizontal drainage branch that is or would be required to serve the total drainage fixture unit (dfu) load being vented.~~]

[~~**916.5 Ejector vents.** Ejector vent sizes shall be determined in accordance with Sections 916.5.1 and 916.5.2.~~]

[~~**916.5.1 Sewage pumps and sewage ejectors other than pneumatic.** Drainage piping below sewer level shall be vented in a similar manner to that of a gravity system. Building sump vent sizes for sumps with sewage pumps or sewage ejectors, other than pneumatic, shall be determined in accordance with Table 916.5.1. Where a building sump vent connects to a sanitary vent system, the sanitary branch vent shall be at least 3 inches (76 mm) in diameter.~~**]**

[~~TABLE 916.5.1~~
~~SIZE AND LENGTH OF SUMP VENTS~~

~~DISCHARGE CAPACITY OF PUMP (gpm)~~	**~~MAXIMUM DEVELOPED LENGTH OF VENT (feet)~~**[a]					
	~~Diameter of vent (inches)~~					
	~~1¼~~	**~~1½~~**	**~~2~~**	**~~2½~~**	**~~3~~**	**~~4~~**
~~10~~	~~No limit~~[b]	~~No limit~~	~~No limit~~	~~No limit~~	~~No limit~~	~~No limit~~
~~20~~	~~270~~	~~No limit~~	~~No limit~~	~~No limit~~	~~No limit~~	~~No limit~~
~~40~~	~~72~~	~~160~~	~~No limit~~	~~No limit~~	~~No limit~~	~~No limit~~
~~60~~	~~31~~	~~75~~	~~270~~	~~No limit~~	~~No limit~~	~~No limit~~
~~80~~	~~16~~	~~41~~	~~150~~	~~380~~	~~No limit~~	~~No limit~~
~~100~~	~~10~~[c]	~~25~~	~~97~~	~~250~~	~~No limit~~	~~No limit~~
~~150~~	~~Not permitted~~	~~10~~[c]	~~44~~	~~110~~	~~370~~	~~No limit~~
~~200~~	~~Not permitted~~	~~Not permitted~~	~~20~~	~~60~~	~~210~~	~~No limit~~
~~250~~	~~Not permitted~~	~~Not permitted~~	~~10~~	~~36~~	~~132~~	~~No limit~~

~~DISCHARGE CAPACITY OF PUMP (gpm)~~	~~MAXIMUM DEVELOPED LENGTH OF VENT (feet)[a]~~					
	~~Diameter of vent (inches)~~					
	~~1¼~~	~~1½~~	~~2~~	~~2½~~	~~3~~	~~4~~
~~300~~	~~Not permitted~~	~~Not permitted~~	~~10[c]~~	~~22~~	~~88~~	~~380~~
~~400~~	~~Not permitted~~	~~Not permitted~~	~~Not permitted~~	~~10[c]~~	~~44~~	~~210~~
~~500~~	~~Not permitted~~	~~Not permitted~~	~~Not permitted~~	~~Not permitted~~	~~24~~	~~130~~

~~For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 gallon per minute = 3.785 L/m.~~

~~a. *Developed length* plus an appropriate allowance for entrance losses and friction due to fittings, changes in direction and diameter. Suggested allowances shall be obtained from NSB Monograph 31 or other *approved* sources. An allowance of 50 percent of the *developed length* shall be assumed if a more precise value is not available.~~

~~b. Actual values greater than 500 feet.~~

~~c. Less than 10 feet.~~]

[~~916.5.2 Pneumatic sewage ejectors vent.~~ ~~The air pressure relief pipe from a pneumatic sewage ejector shall be connected to an independent vent stack terminating as required for vent extensions through the roof. The relief pipe shall be sized to relieve air pressure inside the ejector to atmospheric pressure, but shall not be less than 1½ inches (38 mm) in size.~~]

SECTION PC 917
[~~AIR ADMITTANCE VALVES~~]
RESERVED

***SECTION* PC 918**
RESERVED

***SECTION* PC [~~918~~] 919**
ENGINEERED VENT SYSTEMS

[~~918.1~~] 919.1 General. Engineered vent systems shall comply with this section and Section 28-113.2.2 of the *Administrative Code*.

[~~918.2~~] 919.2 Individual branch fixture and individual fixture header vents. The maximum developed length of individual fixture vents to vent branches and vent headers shall be determined in accordance with Table [~~918.2~~] 919.2 for the minimum pipe diameters at the indicated vent airflow rates. [~~The individual vent airflow rate shall be determined in accordance with the following:~~]

The individual vent airflow rate shall be determined in accordance with the following:

$Q_{h,b} = N_{n,b}Q_v$ **(Equation 9-1)**

For SI: $Q_{h,b} = N_{n,b}Q_v(0.4719\ \mathrm{L/s})$

where:

$N_{n,b} =$ Number of fixtures per header (or vent branch) ÷ total number of fixtures connected to vent stack.

$Q_{h,b} =$ Vent branch or vent header airflow rate (cfm).

$Q_v =$ Total vent stack airflow rate (cfm).

$Q_v(\text{gpm}) =$ [~~$27.8rs^{2/3}(1 - rs)D\ 8/3$~~] $27.8r_s^{2/3}(1 - r_s)D^{8/3}$

$Q_v(\text{cfm}) =$ $0.134Q_v(\text{gpm})$

where:

D = Drainage stack diameter (inches).

$Q_w =$ Design discharge load (gpm).

$r_s =$ Waste water flow area to total area.\

= $Q_w/27.8D^{8/3}$

Individual vent airflow rates are obtained by equally distributing $Q_{h,b}$ into one-half the total number of fixtures on the branch or header for more than two fixtures; for an odd number of total fixtures, decrease by one; for one fixture, apply the full value of $Q_{h,b}$.

Individual vent developed length shall be increased by 20 percent of the distance from the vent stack to the fixture vent connection on the vent branch or header.

TABLE [~~918.2~~] 919.2
MINIMUM DIAMETER AND MAXIMUM LENGTH OF INDIVIDUAL BRANCH FIXTURE VENTS AND INDIVIDUAL FIXTURE HEADER VENTS FOR SMOOTH PIPES

DIAMETER OF VENT PIPE (inches)	INDIVIDUAL VENT AIRFLOW RATE (cubic feet per minute)																			
	Maximum developed length of vent (feet)																			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
$^1/_2$	95	25	13	8	5	4	3	2	1	1	1	1	1	1	1	1	1	1	1	1
$^3/_4$	100	88	47	30	20	15	10	9	7	6	5	4	3	3	3	2	2	2	2	1
1	—	—	100	94	65	48	37	29	24	20	17	14	12	11	9	8	7	7	6	6
$1^1/_4$	—	—	—	—	—	—	—	100	87	73	62	53	46	40	36	32	29	26	23	21
$1^1/_2$	—	—	—	—	—	—	—	—	—	—	—	100	96	84	75	65	60	54	49	45
2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	100

For SI: 1 inch = 25.4 mm, 1 cubic foot per minute = 0.4719 L/s, 1 foot = 304.8 mm.

[~~918.3~~] 919.3 A licensed professional engineer shall certify design. An engineer shall also inspect and certify the system upon completion of the system.

***SECTION* PC [~~919~~] 920**
COMPUTERIZED VENT DESIGN

[~~919.1~~] 920.1 Design of vent system. The sizing, design and layout of the vent system shall be permitted to be determined by computer program design methods which shall be approved by the commissioner to insure compliance with the minimum standards of this code.

[~~919.2~~] 920.2 System capacity. The vent system shall be based on the air capacity requirements of the drainage system under a peak load condition.

[~~919.3~~] 920.3 Design shall be certified by a licensed professional engineer. An engineer shall also inspect and certify the system upon completion of the system.

PART J

CHAPTER 10

§1. Chapter 10 of the New York city plumbing code, as added by local law number 99 for the year 2005, sections 1002.1, 1002.3, 1002.4, 1003.1, 1003.3, 1003.3.1, 1003.3.2, 1003.3.3, 1003.3.4, 1003.3.4.1, 1003.3.4.2, 1003.4, 1003.6, and 1003.10 as amended by, and section 1003.3.5 as added by, local law number 41 for the year 2012, is amended to read as follows:

CHAPTER 10

TRAPS, INTERCEPTORS AND SEPARATORS

SECTION* PC *1001
GENERAL

1001.1 Scope. This chapter shall govern the material and installation of traps, interceptors and separators.

SECTION* PC *1002
TRAP REQUIREMENTS

1002.1 Fixture traps. Each plumbing fixture shall be separately trapped by a [~~water-seal~~] liquid-seal trap, except as otherwise permitted by this code. [~~The trap shall be placed as close as possible to the fixture outlet.~~] The vertical distance from the fixture outlet to the trap weir shall not exceed [~~24 inches (610 mm)~~] 48 inches (1220 mm), and the horizontal distance shall not exceed 30 inches (762 mm) measured from the centerline of the fixture outlet to the centerline of the inlet of the trap. The height of a clothes washer standpipe above a trap shall conform to Section [~~802.4~~] 802.3.3. A fixture shall not be double trapped.

Exceptions:

1. This section shall not apply to fixtures with integral traps.
2. A combination plumbing fixture is permitted to be installed on one trap, provided that one compartment is not more than 6 inches (152 mm) deeper than the other compartment and the waste outlets are not more than 30 inches (762 mm) apart.
3. A grease interceptor intended to serve as a fixture trap in accordance with the manufacturer's installation instructions shall be permitted to serve as the trap for a single fixture or a combination sink of not more than three compartments where the vertical distance from the fixture outlet to the inlet of the interceptor does not exceed 30 inches (762 mm)[~~,~~] and the developed length of the waste pipe from the most upstream fixture outlet to the inlet of the interceptor does not exceed 60 inches (1524 mm).

4. Floor drains in multilevel parking structures that discharge to a building storm sewer shall not be required to be individually trapped. Where floor drains in multilevel parking structures are required to discharge to a combined building sewer system, the floor drains shall not be required to be individually trapped provided that they are connected to a main trap in accordance with Section 1103.1.

5. This section shall not apply to outdoor drinking fountains discharging to a drywell.

6. This section shall not apply where local acid neutralizing systems are utilized in accordance with the rules of the Department of Environmental Protection and Section 803.2 of this code.

1002.2 Design of traps. Fixture traps shall be self-scouring. Fixture traps shall not have interior partitions, except where such traps are integral with the fixture or where such traps are constructed of an approved material that is resistant to corrosion and degradation. Slip joints shall be made with an approved elastomeric gasket and shall be installed only on the trap inlet, trap outlet and within the trap seal.

1002.3 Prohibited traps. The following types of traps are prohibited:

1. Traps that depend on moving parts to maintain the seal.
2. Bell, pot, bottle traps and traps with interior partitions.
3. Crown-vented traps.
4. Traps not integral with a fixture and that depend on interior partitions for the seal, except those traps constructed of an approved material that is resistant to corrosion and degradation.
5. “S” traps.
6. Drum traps.

Exception: [~~Traps~~] Drum traps used as solids interceptors and drum traps serving chemical waste systems shall [~~not~~] be [~~prohibited~~] permitted.

1002.4 Trap seals. Each fixture trap shall have a liquid seal of not less than 2 inches (51 mm) and not more than 4 inches (102 mm), or deeper for special designs relating to accessible fixtures. [~~Where a trap seal is subject to loss by evaporation, a trap seal primer valve shall be installed. Trap seal primer valves shall connect to the trap at a point above the level of the trap seal. A trap seal primer valve shall conform to ASSE 1018 or ASSE 1044.~~]

1002.4.1 Trap seal protection. Trap seals of emergency floor drain traps and trap seals subject to evaporation shall be protected by one of the methods in Sections 1002.4.1.1 through 1002.4.1.3.

1002.4.1.1 Potable water-supplied trap seal primer valve. A potable water-supplied trap seal primer valve shall supply water to the trap. Water-supplied trap seal primer valves shall conform to ASSE 1018. The discharge pipe from the trap seal primer valve shall connect to the trap above the trap seal on the inlet side of the trap.

1002.4.1.2 Reclaimed or gray water-supplied trap seal primer valve. A reclaimed or gray water-supplied trap seal primer valve shall supply water to the trap. Water-supplied trap seal primer valves shall conform to ASSE 1018. The quality of reclaimed or gray water supplied to trap seal primer valves shall be in accordance with the requirements of the manufacturer of the trap seal primer valve and this code. The discharge pipe from the trap seal primer valve shall connect to the trap above the trap seal, on the inlet side of the trap.

1002.4.1.3 Manual water-supplied trap priming. A hose bib or similar manually operated plumbing fixture shall be provided within the same room and within a horizontal distance not to exceed 25 feet (7620 mm) and not more than 3 feet (914 mm) above the floor.

1002.5 Size of fixture traps. Fixture trap size shall be sufficient to drain the fixture rapidly and not less than the size indicated in Table 709.1. A trap shall not be larger than the drainage pipe into which the trap discharges.

1002.6 Building traps. [~~Building traps shall be provided with a cleanout and a relief vent or fresh air intake but in no case less than 3 inches (76 mm) on the inlet side of the trap. The size of the relief vent or fresh air intake shall not be less than one-half the diameter of the drain to which the relief vent or air intake connects.~~

~~Such relief vent or fresh air intake shall be carried above grade and shall be terminated in a screened outlet located outside the building.~~] Building (house) traps shall be installed on all building drains near the foundation wall of the structure, inside of the street line, and on the sewer side of all connections except the connection used to receive the discharge from a sewage ejector, oil separator or leader on combined systems. If such trap is placed outside of the foundation wall or below a cellar floor, it shall be made accessible in a manhole with a cover, or by extension of the two handholes that shall be provided with cleanouts at the cellar floor or grade. Handhold extensions shall be not more than 18 inches (457 mm) above the centerline of the drain. Building (house) traps shall be the same size as the building drain connected thereto and shall be provided with a fresh air inlet in accordance with Section 703.7.1.

1002.7 Trap setting and protection. Traps shall be set level with respect to the trap seal and, where necessary, shall be protected from freezing.

1002.8 Recess for trap connection. A recess provided for connection of the underground trap, such as one serving a bathtub in slab-type construction, shall have sides and a bottom of corrosion-resistant, insect- and [~~vermin proof~~] vermin-proof construction.

1002.9 Acid-resisting traps. Where a vitrified clay or other brittleware, acid-resisting trap is installed underground, such trap shall be embedded in concrete extending 6 inches (152 mm) beyond the bottom and sides of the trap.

1002.10 Plumbing in mental health centers. In mental health centers, pipes and traps shall not be exposed.

SECTION PC *1003*
INTERCEPTORS AND SEPARATORS

1003.1 Where required. Interceptors and separators shall be provided to prevent the discharge of oil, grease, sand and other substances harmful or hazardous to the building drainage system, the public sewer, the private sewage [~~disposal~~] system[~~,~~] or the sewage treatment plant or processes.

1003.2 Approval. The size, type and location of each interceptor and of each separator shall be designed and installed in accordance with the manufacturer's instructions and the requirements of this section based on the anticipated conditions of use. Wastes that do not require treatment or separation shall not be discharged into any interceptor or separator.

1003.3 Grease interceptors. Grease interceptors shall comply with the requirements of Sections 1003.3.1 through [~~1003.3.5~~] 1003.3.6.

1003.3.1 Grease interceptors and automatic grease removal devices required. A grease interceptor or automatic grease removal device shall be required to receive the [~~direct and indirect discharges~~] drainage from fixtures and equipment with [~~grease-laden~~] waste containing fats, oils, or grease located in food preparation areas[~~,such as in restaurants, kitchens, hospitals, bars, cafeterias (including school cafeterias), butcher shops, slaughterhouses, fish markets, supermarket food processing areas, delicatessens, or clubs. Fixtures and equipment shall include pot sinks, prerinse sinks, soup kettles or similar devices, wok stations, floor drains or sinks into which kettles are drained, food scrap sinks, scraper sinks, scullery sinks, meat and/or poultry and/or fish preparation sinks, automatic hood wash units, and dishwashers with a maximum discharge temperature in compliance~~] and shall be in accordance with the requirements of the Department of Environmental Protection. Grease interceptors and automatic grease removal devices shall receive waste only from fixtures and equipment that [~~allows~~] allow fats, oils or grease to be discharged.

1003.3.2 Reserved.

1003.3.3 Grease interceptors and automatic grease removal devices not required. A grease interceptor or an automatic grease removal device shall not be required for individual dwelling units, any private living quarters, or non-culinary schools which only contain residential type stoves and sinks intended for teaching basic home cooking skills.

1003.3.4 Grease interceptor and automatic grease removal device sizing and standards. Grease interceptors and automatic grease removal devices shall be sized in accordance with the rules of the Department of Environmental Protection. Grease interceptors and automatic grease removal devices shall be designed and tested in accordance with PDI G101, ASME A112.14.3 or ASME A112.14.4 and shall be installed in accordance with the manufacturer's instructions.

1003.3.4.1 Grease interceptor capacity. Grease interceptors shall have a grease retention capacity in accordance with the rules of the Department of Environmental Protection.

1003.3.4.2 Rate of flow controls. Grease interceptors shall be equipped with devices to control the rate of water flow so that the water flow does not exceed the rated flow. The flow-control device shall be vented and terminate not less than 6 inches (152 mm) above the flood rim level or be installed in accordance with the manufacturer's instructions.

1003.3.5 Automatic grease removal devices. Where automatic grease removal devices are installed, such devices shall be located downstream of each fixture or multiple fixtures in accordance with the manufacturer's instructions. The automatic grease removal device shall be sized to pretreat the measured or calculated flows for all connected fixtures or equipment in accordance with the sizing requirements of the Department of Environmental Protection. Ready access shall be provided for inspection and maintenance.

1003.3.6 Direct connection. The discharge piping from a grease interceptor shall be directly connected to the sanitary drainage system.

1003.4 Oil separators required. At repair garages where floor or trench drains are provided, car washing facilities with engine or undercarriage cleaning capability, [~~and at~~] factories where oily and flammable liquid wastes are produced[~~,~~] and hydraulic elevator pits, oil separators shall be installed into which [~~all~~] oil-bearing, grease-bearing or flammable wastes shall be discharged before emptying [~~in~~] into the building drainage system or other point of disposal.

Exception: An oil separator is not required in hydraulic elevator pits where an automatic shut-down system is installed for the prevention of accidental discharge of oil-laden waste water into the sanitary system. Such systems shall not terminate the operation of pumps utilized to maintain emergency operation of the elevator by fire fighters.

1003.4.1 Separation of liquids. A mixture of treated or untreated light and heavy liquids with various specific gravities shall be separated in an approved receptacle.

1003.4.2 Oil separator design. Oil separators shall be listed and labeled, or designed in accordance with Sections 1003.4.2.1 and 1003.4.2.2.

1003.4.2.1 General design requirements. Oil separators shall have a depth of not less than 2 feet (610 mm) below the invert of the discharge drain. The outlet opening of the separator shall have not less than an 18-inch (457 mm) water seal.

1003.4.2.2 Garages and service stations. Where automobiles are serviced, greased, repaired or washed or where gasoline is dispensed, oil separators shall have a [~~minimum~~] capacity of not less than 6 cubic feet [~~(0.17 m^3)~~] (0.168 m^3) for the first 100 square feet (9.3 m^2) of area to be drained, plus 1 cubic foot (0.028 m^3) for each additional 100 square feet (9.3 m^2) of area to be drained into the separator. Parking garages in which servicing, repairing or washing is not conducted, and in which gasoline is not dispensed, shall not require a separator. Areas of commercial garages utilized only for storage of automobiles are not required to be drained through a separator.

1003.5 Sand interceptors in commercial establishments. Sand and similar interceptors for heavy solids shall be designed and located so as to be provided with ready access for cleaning, and shall have a water seal of not less than 6 inches (152 mm).

1003.6 [~~Laundries~~] Clothes washer discharge interceptor. [~~Laundry facilities not installed within an individual dwelling unit or intended for individual family use shall be equipped with an~~] Clothes washers shall discharge through an interceptor that is provided with a wire basket or similar device, removable for cleaning, that prevents passage into the drainage system of solids ½ inch (12.7 mm) or larger in size, string, rags, buttons or other materials detrimental to the public sewage system.

Exceptions:

1. Clothes washers in individual dwelling units shall not be required to discharge through an interceptor.
2. A single clothes washer designed for use in individual dwelling units and installed in a location other than an individual dwelling unit shall not be required to discharge through an interceptor.

1003.7 Bottling establishments. Bottling plants shall discharge process wastes into an interceptor that will provide for the separation of broken glass or other solids before discharging waste into the drainage system.

1003.8 Slaughterhouses. Slaughtering room and dressing room drains shall be equipped with approved separators. The separator shall prevent the discharge into the drainage system of feathers, entrails and other materials that cause clogging.

1003.9 Venting of interceptors and separators. Interceptors and separators shall be designed so as not to become air bound[~~ where tight covers are utilized~~]. [~~Each interceptor or separator~~] Interceptors and separators shall be vented [~~where subject to a loss of trap seal~~] in accordance with one of the methods in Chapter 9.

1003.10 Access and maintenance of interceptors and separators. Access shall be provided to each interceptor and separator for service and maintenance, and for inspection by the department and the Department of Environmental Protection. Interceptors and separators shall be maintained by periodic removal of accumulated grease, scum, oil, or other floating substances and solids deposited in the interceptor or separator.

SECTION **PC** *1004*
MATERIALS, JOINTS AND CONNECTIONS

1004.1 General. The materials and methods utilized for the construction and installation of traps, interceptors and separators shall comply with this chapter and the applicable provisions of Chapters 4 and 7. The fittings shall not have ledges, shoulders or reductions capable of retarding or obstructing flow [~~in~~]of the piping[~~ system~~].

PART K

CHAPTER 11

§1. Chapter 11 of the New York city plumbing code is REPEALED and a new chapter 11 is added to read as follows:

CHAPTER 11

STORM DRAINAGE

SECTION **PC** *1101*
GENERAL

1101.1 Scope. The provisions of this chapter shall govern the materials, design, construction and installation of storm drainage. Storm water discharge shall be in accordance with Department of Environmental Protection requirements. Extension requirements from the public storm or combined sewer to the building sewer shall be determined by the Department of Environmental Protection.

1101.2 Where required. All roofs, paved areas, yards, courts and courtyards shall drain into a separate storm sewer system, or a combined sewer system, or to a place of disposal approved by the commissioner and in accordance with the requirements of the Department of Environmental Protection. An approved system for beneficial collection and use of storm water may be installed, in which case overflow from such a system shall be discharged to a safe location subject to the approval of the commissioner and the Department of Environmental Protection. See Section 107.6.2 of this code for required construction documents relating to provisions for discharge for stormwater runoff.

1101.2.1 Increases in existing impervious surfaces. Whenever impervious surfaces on the lot are increased, such impervious surfaces shall drain into a storm sewer system, or a combined sewer system, or to an approved place of disposal.

Exception: An existing one- or two-family dwelling where the area of a proposed horizontal building enlargement plus any proposed increase in impervious surfaces in total is less than or equal to 200 square feet (19 m^2). In such cases, the storm water discharge may be accommodated by existing facilities. For the purposes of this exception, the 200 square feet (19 m^2) shall include all enlargements and increases cumulatively after July 1, 2008.

1101.2.2 Availability of public storm or combined sewer. The determination as to whether a public storm sewer or public combined sewer is available to a building shall be made in accordance with applicable requirements of the Department of Environmental Protection.

1101.2.3 Feasibility of connecting to an available public storm or combined sewer. The determination as to whether connection to an available public storm sewer or combined public sewer is feasible shall be made in accordance with applicable requirements of the Department of Environmental Protection.

1101.2.4 Extensions of public storm or combined sewers. Extensions of public storm or combined sewers shall be made in accordance with the rules of the Department of Environmental Protection.

1101.3 Prohibited drainage. Storm water shall not be drained into sewers intended for sewage only.

1101.4 Tests. The conductors and the building storm drain shall be tested in accordance with Section 312.

1101.5 Change in size. The size of a drainage pipe shall not be reduced in the direction of flow.

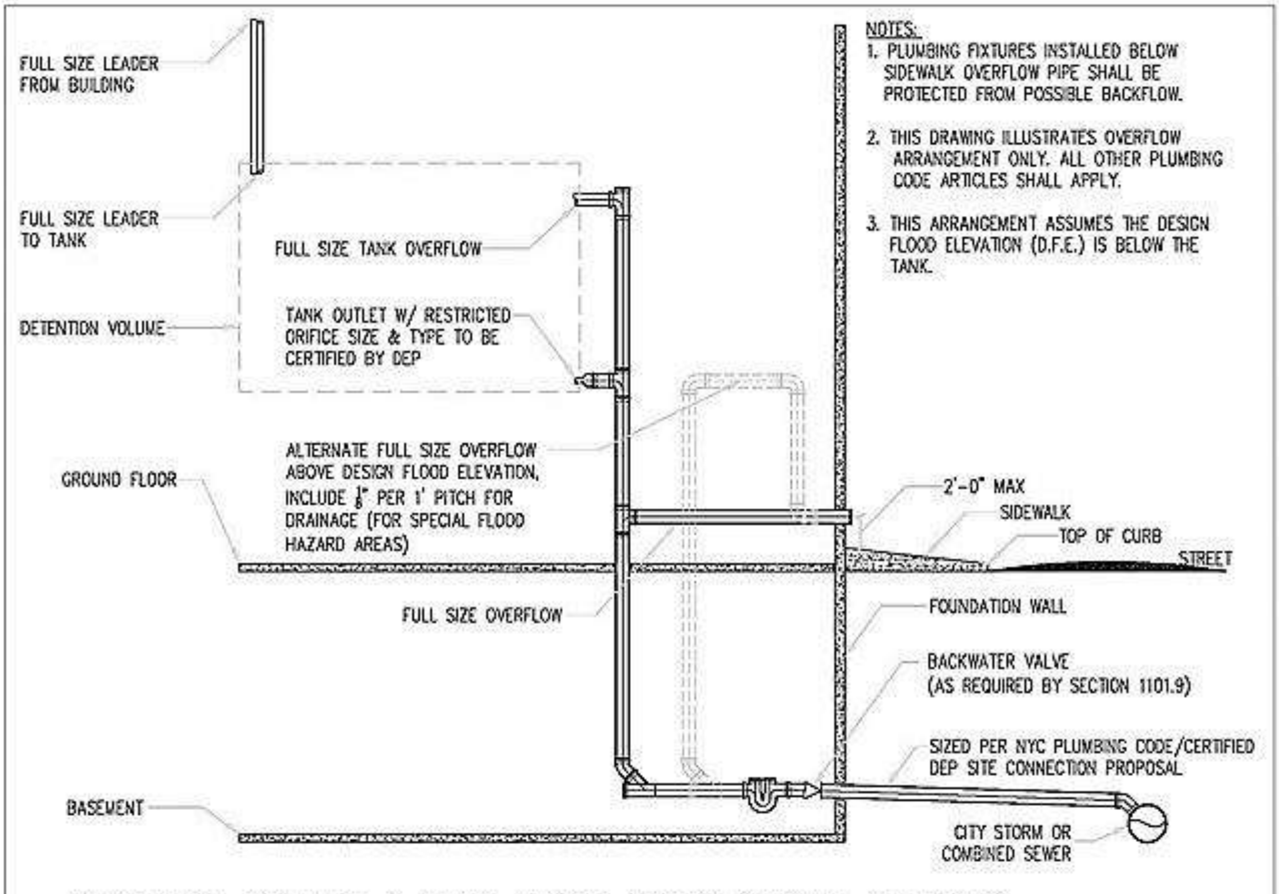
Exception: Drainage pipe that is part of an approved detention or retention system.

1101.5.1 Detention systems. Where a detention system is provided, the pipe leaving the detention tank shall be permitted to be reduced to the flow allowed by the Department of Environmental Protection, provided, however, that an emergency overflow shall be provided to protect the building from internal flooding.

1101.5.2 Detention and retention tanks. Detention and retention tanks located within buildings in flood hazard areas shall be located above the design flood elevation or shall be designed and constructed to withstand the static pressure conditions the system will experience in the event of a flood condition.

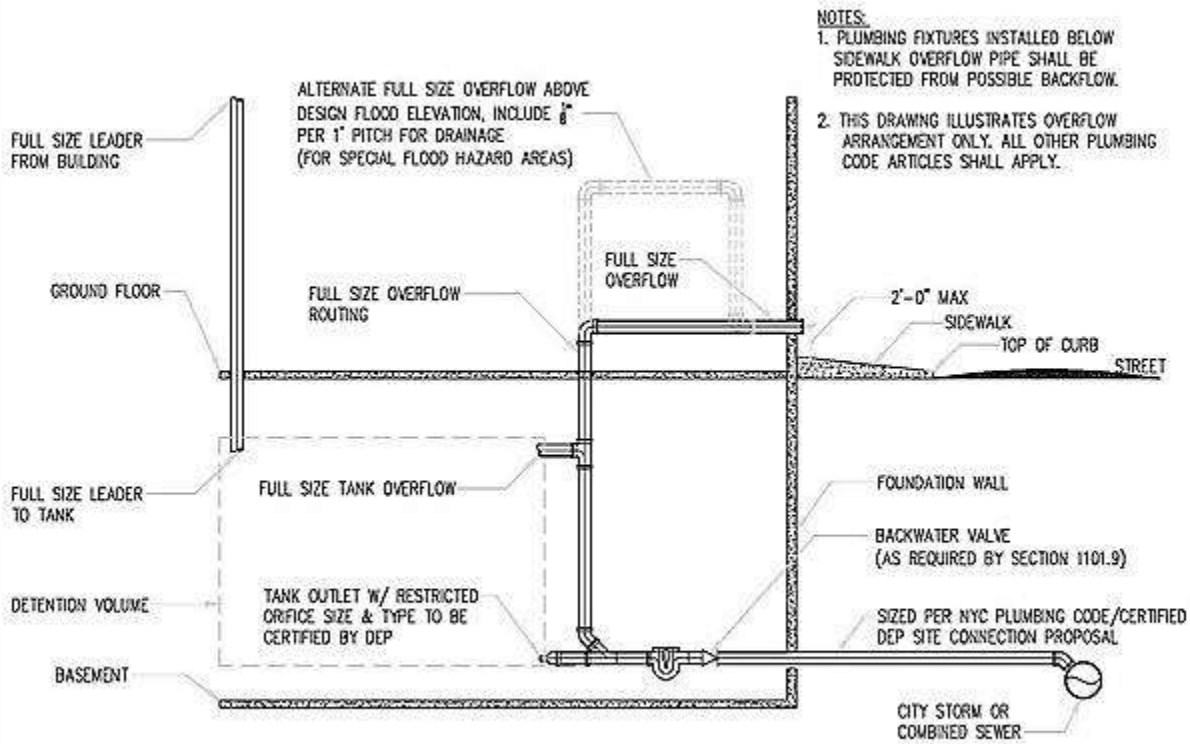
1101.5.2.1 Emergency overflow. Emergency overflow piping shall equal the full size of the incoming storm water flow. Emergency overflows and vent terminations for buildings located in flood hazard areas shall be located above the design flood elevation. Such emergency overflow shall discharge the overflow outside of the building into either of the following locations:

1. The tax lot; or
2. The public sewer, provided that the overflow piping is provided with a vent, of the same diameter as the overflow piping, that terminates on the front wall of the building facing the street and no more than 2 feet (610 mm) above the sidewalk See Figures 1101.5.2.1(1), 1101.5.2.1(2) and 1101.5.2.1(3).



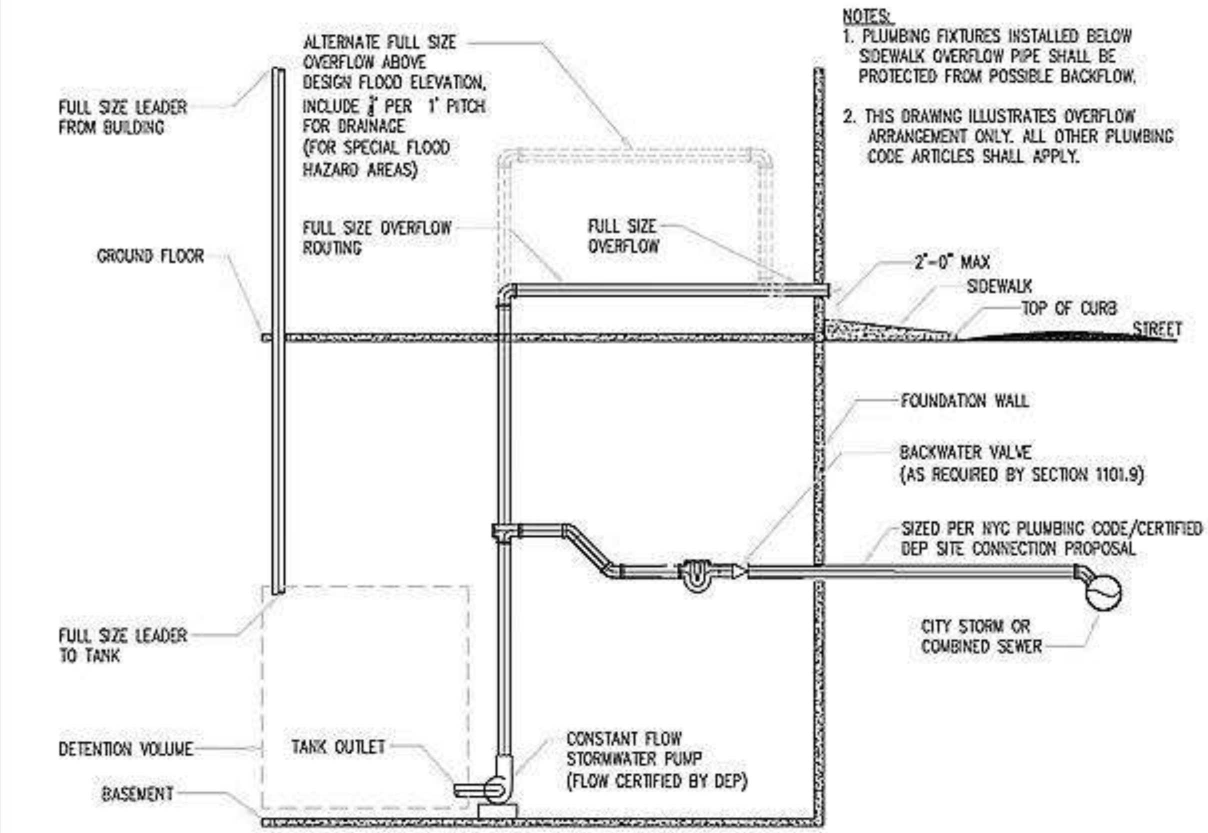
DETENTION VOLUME & TANK ABOVE GRADE (WITHIN BUILDING)

FIGURE 1101.5.2.1(1)



DETENTION VOLUME ABOVE SEWER, TANK BELOW GRADE (WITHIN BUILDING)

FIGURE 1101.5.2.1(2)



DETENTION VOLUME & TANK BELOW GRADE (WITHIN BUILDING)

FIGURE 1101.5.2.1(3)

1101.6 Fittings and connections. All connections and changes in direction of the storm drainage system shall be made with approved drainage-type fittings in accordance with Table 706.3. The fittings shall not obstruct or retard flow in the system.

1101.7 Roof design. Roofs shall be designed for the maximum possible depth of water that will pond thereon as determined by the relative levels of roof deck and overflow weirs, scuppers, edges or serviceable drains in combination with the deflected structural elements. In determining the maximum possible depth of water, all primary roof drainage means shall be assumed to be blocked. The maximum possible depth of water on the roof shall include the height of the water required above the inlet of the secondary roof drainage means to achieve the required flow rate of the secondary drainage means to accommodate the design rainfall rate as required by Section 1106.

1101.8 Cleanouts required. Cleanouts shall be installed in the storm drainage system and shall comply with the provisions of this code for sanitary drainage pipe cleanouts.

Exception: Subsurface drainage system.

1101.9 Backwater valves. Storm drainage systems shall be provided with backwater valves as required for sanitary drainage systems in accordance with Section 715.

1101.9.1 Backwater valves in flood hazard areas. Backwater valves for all buildings located in flood hazard areas shall be installed in storm drainage systems in accordance with the requirements of this code and the additional requirements of Section 7.3.4 of ASCE 24 as modified by Appendix G of the *New York City Building Code*.

1101.10 Plastic pipe. Plastic piping and fittings shall not be used.

Exceptions:

1. Plastic piping and fittings may be used in residential buildings five stories or less in height.
2. Corrugated polyethylene and corrugated polypropylene piping and fittings, with a diameter of 12 inches (305 mm) or more may be used in connection with any type of building for underground yard drainage and storm water piping when used outside of the foundation wall of the building and not connecting to any piping system from the interior of the building.

1101.11 Cured-in-place pipe. Cured-in-place pipe (CIPP) and epoxy spray pipe lining systems shall not be used.

1101.12 Site grading. Except as otherwise permitted by this code, no person shall perform site grading or land contour work, as defined in Section 19-137 of the *Administrative Code*, that would cause storm water to flow across sidewalks or onto an adjacent property. Site grading or land contour work performed on the site of a covered development project shall comply with the rules of the Department of Environmental Protection and this code.

SECTION **PC** *1102*
MATERIALS

1102.1 General. The materials and methods utilized for the construction and installation of storm drainage systems shall comply with this section and the applicable provisions of Chapter 7.

1102.2 Storm drainage conductors and leaders. Storm drainage conductors and leaders shall conform to Sections 1102.2.1 and 1102.2.2.

1102.2.1 Inside storm drainage conductors. Inside storm drainage conductors installed above ground shall conform to one of the standards listed in Table 702.1.

1102.2.2 Exterior storm drainage leaders. Exterior storm drainage leaders installed above ground shall conform to one of the standards listed in Table 702.1.

Exception: Exterior storm drainage leaders installed above ground for buildings in occupancy group R-3 and bulkheads draining to other roof surfaces.

1102.3 Underground building storm drain pipe. Underground building storm drain pipe shall conform to one of the standards listed in Table 702.2.

1102.4 Building storm sewer pipe. Building storm sewer pipe shall conform to one of the standards listed in Table 1102.4.

TABLE 1102.4
BUILDING STORM SEWER PIPE

MATERIAL	STANDARD
Cast-iron pipe	ASTM A 74; ASTM A 888; CISPI 301
Chlorinated polyvinyl chloride (CPVC) plastic[b]	ASTM F 437; ASTM F 438; ASTM F 439
Concrete pipe	ASTM C 14; ASTM C 76; CSA A257.1M; CSA A257.2M
Copper or copper-alloy tubing (Type K or L)	ASTM B 75; ASTM B 88; ASTM B 251
Ductile-iron pipe	AWWA C151
Galvanized steel pipe	ASTM A 53; ASTM A 123
High density polyethylene pipe (HDPE)[a]	ASTM D 3350
Polyvinyl chloride (PVC) plastic pipe (Type DWV, SDR26, SDR35, SDR41, PS50 or PS100)[b]	ASTM D 2665; ASTM D 3034; ASTM F 891; CSA B182.4; CSA B181.2; CSA B182.2
Stainless steel drainage systems, Type 316L	ASME A112.3.1
Vitrified clay pipe	ASTM C 4; ASTM C 700

a. Approved plastic sewer for piping 12 inches and larger in accordance with Section 1101.10, Exception 2.

b. Limited to residential buildings five stories or less in height.

1102.5 Subsoil drain pipe. Subsoil drains shall be open jointed, horizontally split or perforated pipe conforming to one of the standards listed in Table 1102.5.

TABLE 1102.5
SUBSOIL DRAIN PIPE

MATERIAL	STANDARD
Cast-iron pipe	ASTM A 74; ASTM A 888; CISPI 301
Polyethylene (PE) plastic pipe	ASTM F 405; CSA B182.1; CSA B182.6; CSA B182.8
Polypropylene (PP) plastic pipe	ASTM F 2764; ASTM F 3219
Polyvinyl chloride (PVC) Plastic pipe (type sewer pipe, SDR35, PS25, PS50 or PS100)[a]	ASTM D 2729; ASTM D 3034; ASTM F 891; CSA B182.2; CSA B182.4
Porous concrete pipe	ASTM C 654
Stainless steel drainage systems, Type 316L	ASME A112.3.1
Vitrified clay pipe	ASTM C 4; ASTM C 700

a. Limited to residential buildings five stories or less in height.

1102.6 Roof drains. Roof drains shall conform to ASME A112.6.4 or ASME A112.3.1.

1102.7 Fittings. Pipe fittings shall be approved for installation with the piping material installed, and shall conform to the respective pipe standards or one of the standards listed in Table 1102.7. The fittings shall not have ledges, shoulders or reductions capable of retarding or obstructing flow in the piping. Threaded drainage pipe fittings shall be of the recessed drainage type.

TABLE 1102.7
PIPE FITTINGS

MATERIAL	STANDARD
Acrylonitrile butadiene styrene (ABS) plastic pipe in IPS diameters[a]	ASTM D 2661; ASTM F 628; CSA B181.1
Acrylonitrile butadiene styrene (ABS) plastic pipe in sewer and drain diameters	ASTM D 2751
Brass	ASTM B 62
Cast-iron	ASME B16.4; ASME B16.12; ASTM A 888; CISPI 301; ASTM A 74
Chlorinated polyvinyl chloride (CPVC) plastic[a]	ASTM F 437; ASTM F 438; ASTM F 439
Copper or copper-alloy tubing (Type K, L)	ASTM B 75; ASTM B 88; ASTM B 251

MATERIAL	STANDARD
Ductile iron	AWWA C110
Galvanized steel	ASTM A 153; ASME B16.3
High-density polyethylene (HDPE)	ASTM D 3350
Malleable iron	ASME B16.3
Polyethylene (PE) plastic pipe[a]	ASTM F 2306/F 2306M
Polyolefin[a]	CSA B 181.3; ASTM F 1412; ASTM D 2657
Polypropylene (PP) plastic pipe[a]	ASTM F 2764; ASTM F 3219
Polyvinyl chloride (PVC) plastic[a]	ASTM D 2464; ASTM D 2466; ASTM D 2467; CSA B137.2; ASTM D 2665; ASTM D 3311; ASTM F 1866
Polyvinyl chloride (PVC) plastic pipe in sewer and drain diameters[a]	ASTM D 3034
Polyvinylidene fluoride (PVDF) plastic pipe[a]	ASTM F 1673; CSA B181.3
Stainless steel drainage systems, Type 316L	ASME A112.3.1
Vitrified clay	ASTM C 425

a. Limited to residential buildings five stories or less in height.

SECTION PC *1103*
TRAPS

1103.1 Main trap. Leaders and storm drains connected to a combined sewer shall be trapped. Individual storm water traps shall be installed on the storm water drain branch serving each conductor, or a single trap shall be installed in the main storm drain just before its connection with the combined building sewer or the public sewer. A hooded catch basin located within the property line shall be the equivalent of a building-house trap for the connection to a public sewer.

1103.2 Material. Storm water traps shall be of an approved material in accordance with Table 1102.7.

1103.3 Size. Traps for individual conductors shall be the same size as the horizontal drain to which they are connected.

1103.4 Cleanout. An accessible cleanout shall be installed on the building side of the trap.

SECTION PC *1104*
CONDUCTORS AND CONNECTIONS

1104.1 Prohibited use. Conductor pipes shall not be used as soil, waste or vent pipes, and soil, waste or vent pipes shall not be used as conductors.

1104.2 Floor drains. Floor drains shall not be connected to a storm drain.

1104.3 Combining storm with sanitary drainage. The sanitary and storm drainage systems of a structure shall be entirely separate except for minor modifications to existing buildings having combined systems. Where a combined building drain is utilized, the building storm drain shall be connected in the same horizontal plane through a single-wye fitting to the building drain at least 10 feet (3048 mm) downstream from any soil stack. If a separate city storm sewer is not available, building sanitary drains shall be separate and shall only be permitted to connect to a common building combined drain downstream of building (house) trap.

1104.4 Clear water drains. Drains carrying clear water, i.e., air-conditioning drips, pump drips, cooling water, etc., may discharge into the storm water drainage system through an indirect waste connection discharging into a trapped funnel or raised lip floor drain.

Exception: Cooling tower blow-down shall discharge into the sanitary drainage system.

1104.5 Parking garage floor drains. Floor drains provided in open or enclosed parking garages shall drain to the storm drainage system.

Exception: Where the storm drainage system discharges to a dedicated storm sewer, parking garage floor drains shall be connected to the sanitary drainage system.

SECTION **PC** *1105*
ROOF DRAINS

1105.1 General. Roof drains shall be installed in accordance with the manufacturer's instructions. The inside opening for the roof drain shall not be obstructed by the roofing membrane material.

1105.2 Roof drain flow rate. The published roof drain flow rate, based on the head of water above the roof drain, shall be used to size the storm drainage system in accordance with Section 1106. The flow rate used for sizing the storm drainage piping shall be based on the maximum anticipated ponding at the roof drain.

SECTION **PC** *1106*
SIZE OF CONDUCTORS, LEADERS AND STORM DRAINS

1106.1 General. The size of the vertical conductors and leaders, gutters, building storm drains, building storm sewersand any horizontal branches of such drains or sewers shall be based on the 100-year hourly rainfall rate of 3 inches (76 mm) per hour. Sizing for secondary and combined primary and secondary conductors, leaders and drains shall be in accordance with Section 1108.

1106.2 Size of storm drain piping. Vertical and horizontal storm drain piping shall be sized based on the flow rate through the roof drain. The flow rate in storm drain piping shall not exceed that specified in Table 1106.2.

TABLE 1106.2
STORM DRAIN PIPE SIZING

PIPE SIZE (inches)	CAPACITY (gpm)				
		SLOPE OF HORIZONTAL DRAIN			
	VERTICAL DRAIN	$^1/_{16}$ inch per foot	$^1/_8$ inch per foot	$^1/_4$ inch per foot	$^1/_2$ inch per foot
2	34	15	22	31	44
3	87	39	55	79	111
4	180	81	115	163	231
5	311	117	165	234	331

PIPE SIZE (inches)	CAPACITY (gpm)				
	VERTICAL DRAIN	SLOPE OF HORIZONTAL DRAIN			
		$^{1}/_{16}$ inch per foot	$^{1}/_{8}$ inch per foot	$^{1}/_{4}$ inch per foot	$^{1}/_{2}$ inch per foot
6	538	243	344	487	689
8	1,117	505	714	1,010	1,429
10	2,050	927	1,311	1,855	2,623
12	3,272	1,480	2,093	2,960	4,187
14	4,204	1,312	1,856	2,621	3,713
15	5,543	2,508	3,546	5,016	7,093
16	5,543	2,508	3,546	5,016	7,093
18	8.218	3,100	4,386	6,192	8,773

1106.2.1 Values for continuous flow. Where there is a continuous or semicontinuous discharge into the building storm drain or building storm sewer, such as from a pump, ejector, air conditioning plant or similar device, each gallon per minute of such discharge shall be computed as being equivalent to 32 square feet (2.97 m^2) of roof area, based on a rainfall rate of 3 inches (75 mm) per hour.

1106.3 Vertical leader sizing. Vertical leaders shall be sized based on the flow rate from horizontal gutters or the maximum flow rate through roof drains. The flow rate through vertical leaders shall not exceed that specified in Table 1106.3.

TABLE 1106.3
VERTICAL LEADER SIZING

SIZE OF LEADER (inches)	CAPACITY (gpm)
2	30
2 × 2	30
$1^{1}/_{2} \times 2^{1}/_{2}$	30
$2^{1}/2$	54
$2^{1}/_{2} \times 2^{1}/_{2}$	54
3	92
2 × 4	92

SIZE OF LEADER (inches)	CAPACITY (gpm)
$2^{1}/_{2} \times 3$	92
4	192
$3 \times 4^{1}/_{4}$	192
$3^{1}/_{2} \times 4$	192
5	360
4 × 5	360
$4^{1}/_{2} \times 4^{1}/_{2}$	360
6	563
5 × 6	563
$5^{1}/_{2} \times 5^{1}/_{2}$	563
8	1208
6 × 8	1208

For SI: 1 inch = 25.4 mm, 1 gallon per minute = 3.785 L/m.

1106.4 Vertical walls. In sizing roof drains and storm drainage piping, one-fourth of the area of any vertical wall that diverts rainwater to the roof or the setback roof of a building shall be added to the projected roof area for inclusion in calculating the required size of vertical conductors, leaders and horizontal storm drainage piping.

Exceptions:

1. Where vertical conductors or leaders and downstream piping has been sized for secondary roof drainage in accordance with Section 1108, the contribution from vertical walls need not be added to the projected roof area.
2. Section 1106.4 shall not be applicable to vertical walls fronting a public right-of-way.

1106.5 Parapet wall scupper location. Parapet wall roof drainage scupper and overflow scupper location shall comply with the requirements of Section 1503.4 of the *New York City Building Code*.

1106.6 Size of roof gutters. Horizontal gutters shall be sized based on the flow rate from the roof surface. The flow rate in horizontal gutters shall not exceed that specified in Table 1106.6.

TABLE 1106.6
HORIZONTAL GUTTER SIZING

GUTTER DIMENSIONS[a] (inches)	SLOPE (inch per foot)	CAPACITY (gpm)
$1^1/_2 \times 2^1/_2$	$^1/_4$	26
$1^1/_2 \times 2^1/_2$	$^1/_2$	40
4	$^1/_8$	39
$2^1/_4 \times 3$	$^1/_4$	55
$2^1/_4 \times 3$	$^1/_2$	87
5	$^1/_8$	74
$4 \times 2^1/_2$	$^1/_4$	106
$3 \times 3^1/_2$	$^1/_2$	156
6	$^1/_8$	110
3 × 5	$^1/_4$	157
3 × 5	$^1/_2$	225
8	$^1/_{16}$	172
8	$^1/_8$	247
$4^1/_2 \times 6$	$^1/_4$	348
$4^1/_2 \times 6$	$^1/_2$	494
10	$^1/_{16}$	331
10	$^1/_8$	472
5 × 8	$^1/_4$	651
4 × 10	$^1/_2$	1055

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 gallon per minute = 3.785 L/m, 1 inch per foot = 83.3 mm/m.

a. Dimensions are width by depth for rectangular shapes. Single dimensions are diameters of a semicircle.

SECTION PC *1107*
SIPHONIC ROOF DRAINAGE SYSTEMS

1107.1 General. Siphonic roof drains and drainage systems shall be designed in accordance with ASME A112.6.9 and ASPE 45.

SECTION PC 1108
SECONDARY (EMERGENCY) ROOF DRAINS

1108.1 Secondary (emergency overflow) drains or scuppers. Where roof drains are required, secondary (emergency overflow) roof drains or scuppers shall be provided where the roof perimeter construction extends above the roof in such a manner that water will be entrapped if the primary drains allow buildup for any reason. The inlet elevation of secondary (overflow) drains and the invert elevation of overflow scuppers should be not less than 2 inches (51 mm) or more than 4 inches (102 mm) above the low point of the (adjacent to) roof surface unless a safer water depth loading, including the required hydraulic head to maintain required flow rate out of the overflow drainage system that has been determined by the structural design. Where primary and secondary roof drains are manufactured as a single assembly, the inlet and outlet for each drain shall be independent.

1108.2 Separate systems required. Secondary roof drain systems shall have the end point of discharge separate from the primary system. Discharge shall be above grade, in a location that would normally be observed by the building occupants or maintenance personnel.

Exception: Secondary drainage system may tie into the primary drainage system in the vertical conductors where separate systems are impractical or to prevent water from flowing over sidewalk or pedestrian walkways.

1108.3 Sizing of secondary drains. Secondary (emergency) roof drain systems shall be sized in accordance with Section 1106 based on the rainfall rate of 3 inches (76 mm) per hour. Scuppers shall be sized to prevent the depth of ponding water from exceeding that for which the roof was designed as determined by Section 1101.7. Scuppers shall have an opening dimension of not less than 4 inches (102 mm). The flow through the primary system shall not be considered when sizing the secondary roof drain system.

Exception: Where secondary drainage systems tie into primary drainage systems, the combined primary and secondary system shall be sized based on their combined rainfall rate of 6 inches (152 mm) per hour.

SECTION PC 1109
COMBINED SANITARY AND STORM SYSTEM

1109.1 Size of combined drains and sewers. Combined sanitary and storm sewers are not permitted in new installations. All sanitary and storm systems shall be separate up to a point located in accordance with the applicable requirements of the Department of Environmental Protection. With respect to repair of combined systems installed prior to the effective date of this section, the size of a combination sanitary and storm drain or sewer shall be computed in accordance with the method in Section 1106. The fixture units shall be converted into an equivalent projected roof or paved area. Where the total fixture load on the combined drain is less than or equal to 256 fixture units, the equivalent drainage area in horizontal projection shall be taken as 1,333 square feet (124 m^2). Where the total fixture load exceeds 256 fixture units, each additional fixture unit shall be considered the equivalent of 5.2 square feet (0.48 m^2) of drainage area. These values are based on a rainfall rate of 3 inch (75 mm) per hour.

SECTION PC 1110
CONTROLLED FLOW ROOF DRAIN SYSTEMS

1110.1 General. The roof of a structure shall be designed for the storage of water where the storm drainage system is engineered for controlled flow. The controlled flow roof drain system shall be an engineered system in accordance with this section and Section 28-113.2.2 of the *Administrative Code*. The controlled flow system shall be designed based on the design rainfall rate in accordance with Section 1106.1.

1110.2 Control devices. The control devices shall be installed so that the rate of discharge of water per minute shall not exceed the values for controlled flow as allowed by the Department of Environmental Protection.

1110.3 Installation. Runoff control shall be by control devices. Control devices shall be protected by strainers.

1110.4 Minimum number of roof drains. Not less than two roof drains shall be installed in roof areas 10,000 square feet (929 m^2) or less and not less than four roof drains shall be installed in roofs over 10,000 square feet (929 m^2) in area.

SECTION* PC *1111
SUBSOIL DRAINS

1111.1 Subsoil drains. Subsoil drains carrying groundwater shall be open-jointed, horizontally split or perforated pipe conforming to one of the standards listed in Table 1102.5. Such drains shall not be less than 4 inches (102 mm) in diameter. Where the building is subject to backwater, the subsoil drain shall be protected by an accessibly located backwater valve. Subsoil drainage discharged into a public sewer shall be approved by the Department of Environmental Protection. The subsoil drains shall discharge into a readily accessible silt and sand interceptor before being connected into the gravity drainage or sump system. Subsoil drainage shall discharge to a trapped area drain, sump, dry well or approved location above ground. The subsoil sump shall not be required to have either a gas-tight cover or a vent. The sump and pumping system shall comply with Section 1113.1.

SECTION* PC *1112
BUILDING SUBDRAINS

1112.1 Building subdrains. Building subdrains located below the public sewer level shall discharge into a sump or receiving tank, the contents of which shall be automatically lifted and discharged into the drainage system as required for building sumps. The sump and pumping equipment shall comply with Section 1113.1.

SECTION* PC *1113
SUMPS AND PUMPING SYSTEMS

1113.1 Pumping system. The sump pump, pit and discharge piping shall conform to Sections 1113.1.1 through 1113.1.4.

1113.1.1 Pump capacity and head. The sump pump shall be of a capacity and head appropriate to anticipated use requirements.

1113.1.2 Sump pit. The sump pit shall be not less than 18 inches (457 mm) in diameter and not less than 24 inches (610 mm) in depth, unless otherwise approved. The pit shall be accessible and located such that all drainage flows into the pit by gravity. The sump pit shall be constructed of tile, steel, plastic, cast iron, concrete or other approved material, with a removable cover adequate to support anticipated loads in the area of use. The pit floor shall be solid and provide permanent support for the pump.

1113.1.3 Electrical. Electrical service outlets, when required, shall meet the requirements of the *New York City Electrical Code*.

1113.1.4 Piping. Discharge piping shall meet the requirements of Section 1102.2, 1102.3 or 1102.4 and shall include a gate valve and a full flow check valve. Pipe and fittings shall be the same size as, or larger than, the pump discharge tapping.

Exception: In one- and two-family dwellings, only a check valve shall be required, located on the discharge piping from the pump or ejector.

SECTION PC 1114
PRIVATE ON-SITE STORMWATER DISPOSAL SYSTEMS

1114.1 General. Private on-site stormwater disposal systems shall comply with the provisions of Section 1114.

1114.1.1 When permitted. The use of private on-site stormwater disposal systems shall be permitted only in the following circumstances:

1. Pursuant to a certification issued by the New York City Department of Environmental Protection that a public storm or combined sewer is not available or that connection thereto is not feasible in accordance with Section 107.6.2.2, Item 1(i);
2. Pursuant to a certification submitted by the applicant to the New York City Department of Environmental Protection that a public storm or combined sewer is not available or that connection thereto is not feasible, in such cases where the availability and feasibility of connection to a public storm or combined sewer are allowed to be certified by the applicant pursuant to rules of the New York City Department of Environmental Protection, in accordance with Section 107.6.2.2, Item 1(ii);
3. Pursuant to a certification submitted by the applicant to the New York City Department of Environmental Protection authorizing on-site stormwater disposal in accordance with Section 107.6.2.1, Item 1;
4. For enlargements less than 1000 square feet (93 m^2) in accordance with Section 107.6.2, Exception 2;
5. For outdoor drinking fountains; or
6. The disposal of foundation drainage as described in Section 1807.4.3 of the *New York City Building Code*.

1114.1.2 Acceptable systems. Acceptable on-site stormwater disposal systems shall include:

1. Drywells;
2. Gravel beds;
3. Perforated pipe;
4. Stormwater chambers that facilitate infiltration; and
5. Alternate method of on-site disposal as approved by the department and the New York City Department of Environmental Protection.

1114.1.3 Minimum setbacks. On-site stormwater disposal systems shall be located at least 5 feet (1524 mm) from all lot lines except where the lot line abuts a public right of way and 10 feet (3048 mm) from all foundations or walls existing on the date of application for a building permit or proposed under the application to construct the on-site stormwater disposal system. Systems shall be located 20 feet (6096 mm) from disposal fields and 20 feet (6096 mm) from seepage pits. On-site stormwater disposal systems shall not be located within the building footprint.

1114.2 Field investigation. The size of an on-site stormwater disposal system shall be predicated on a field investigation performed prior to construction document approval that is performed at the site of a proposed on-site stormwater disposal system to assess the suitability of the soil and site. The investigation shall conform to Sections 1114.2.1 and 1114.2.2 and shall occur prior to approval of construction documents for the system. The field investigation shall be subject to special inspection in accordance with Section 1704.21 of the *New York City Building Code*.

1114.2.1 Classification of soil based on borings and testpits. At least one boring and one test pit shall be made at the approximate site of each proposed on-site stormwater disposal system. Soil borings and sampling procedures shall in accordance with ASTM D 1586 and ASTM D 1587, and generally accepted engineering practice. Soil and rock samples shall be classified in accordance with Section 1802.3 of the *New York City Building Code*.

1114.2.2 Soil infiltration capabilities. The suitability of the subsurface soils must be verified in place by either a percolation test or a permeability test. Where testing determines that the infiltration rate of the subsurface soils is less than ½ inch (12.7 mm) per hour, private on-site stormwater disposal systems shall not be permitted. Such tests shall conform to Section 1114.2.2.1 or 1114.2.2.2, as applicable.

1114.2.2.1 Percolation tests and procedures. The infiltration rate of subsurface soils shall be verified with a percolation test. Percolation tests shall be performed in accordance with Sections 1114.2.2.1.1 through 1114.2.2.1.3 under the supervision of a special inspection agency in accordance with Section 1704.21.1 of the *New York City Building Code*. At least one percolation test in each system area shall be conducted. The holes shall be spaced uniformly in relation to the bottom depth of the proposed absorption system. More percolation tests shall be made where necessary, depending on system design. The results of the percolation tests shall be filed with the department stating the suitability of the site and the capacity of the subsoil for the proposed use.

1114.2.2.1.1 Percolation test hole. The test hole shall be dug or bored. The test hole shall have vertical sides and a horizontal dimension of 4 inches to 8 inches (102 mm to 203 mm). The bottom and sides of the hole shall be scratched with a sharp-pointed instrument to expose the natural soil. All loose material shall be removed from the hole and the bottom shall be covered with 2 inches (51 mm) of gravel or coarse sand.

1114.2.2.1.2 Test procedure, sandy soils. The hole shall be filled with clear water to a minimum of 12 inches (305 mm) above the bottom of the hole for tests in sandy soils. The time for this amount of water to seep away shall be determined, and this procedure shall be repeated if the water from the second filling of the hole seeps away in 10 minutes or less. The test shall proceed as follows: Water shall be added to a point not more than 6 inches (152 mm) above the gravel or coarse sand. Thereupon, from a fixed reference point, water levels shall be measured at 10-minute intervals for a period of 1 hour. Where 6 inches (152 mm) of water seeps away in less than 10 minutes, a shorter interval between measurements shall be used, but in no case shall the water depth exceed 6 inches (152 mm). Where 6 inches (152 mm) of water seeps away in less than 2 minutes, the test shall be stopped and a rate of less than 3 minutes per inch (7.2 s/mm) shall be reported. The final water level drop shall be used to calculate the percolation rate. Soils not meeting the above requirements shall be tested in accordance with Section 1114.2.2.1.3.

1114.2.2.1.3 Test procedure, other soils. The hole shall be filled with clear water, and a minimum water depth of 12 inches (305 mm) shall be maintained above the bottom of the hold for a 4-hour period by refilling whenever necessary or by use of an automatic siphon. Water remaining in the hole after 4 hours shall not be removed. Thereafter, the soil shall be allowed to swell not less than 16 hours or more than 30 hours. Immediately after the soil swelling period, the measurements for determining the percolation rate shall be made as follows: Any soil sloughed into the hole shall be removed and the water level shall be adjusted to 6 inches (152 mm) above the gravel or coarse sand. Thereupon, from a fixed reference point, the water level shall be measured at 30-minute intervals for a period of 4 hours, unless two successive water level drops do not vary by more than $^{1}/_{16}$ inch (1.59 mm). At least three water level drops shall be observed and recorded. The hole shall be filled with clear water to a point not more than 6 inches (152 mm) above the gravel or coarse sand whenever it becomes nearly empty. Adjustments of the water level shall not be made during the three measurement periods except to the limits of the last measured water level drop. When the first 6 inches (152 mm) of water seeps away in less than 30 minutes, the time interval between measurements shall be 10 minutes and the test run for 1 hour. The water depth shall not exceed 5 inches (127 mm) at any time during the measurement period. The drop that occurs during the final measurement period shall be used in calculating the percolation rate.

1114.2.2.2 Permeability tests. Soil shall be evaluated for estimated percolation based on a permeability test performed in place, in accordance with procedures established by the New York City Department of Environmental Protection and accepted engineering practice.

1114.3 Design. The design of on-site stormwater disposal systems shall comply with the provisions of Section 1114.3.1.

1114.3.1 Runoff rate. The runoff rate shall be calculated using the rational method, Equation 11-1. The calculation shall incorporate the total site area with a rainfall intensity value of *I* = 5.95 inches per hour. The weighted runoff coefficient shall be calculated using Equation 11-2 and shall incorporate the different combinations of surfaces using the *C* values listed below.

$Q = C_w \times I \times A$ **(Equation 11-1)**

where:

Q = developed flow, cubic feet per second

C_w = weighted runoff coefficient

I = the rainfall intensity value, 5.95 in/hr

A = the total site area, acres (ac)

$C_w = (1/A) \sum (A_K \times C_K)$ **(Equation 11-2)**

where:

C_w = weighted runoff coefficient

A = The total site area, acres (ac)

A_K = The area of each surface coverage type, acres (ac)

C_K = The runoff coefficient associated with each surface coverage type

The following *C*-values shall be used for calculating a sites weighted runoff coefficient:

.95 = roof/concrete

.85 = asphalt

.7 = porous asphalt/concrete or permeable pavers

.7 = green roof with four or more inches of growing media

.65 = gravel parking lot

.3 = undeveloped areas

.2 = grass areas

.2 = rain gardens, vegetated swales and other surface green infrastructure practices

1114.3.1.1 Storage volume. The storage volume of an on-site stormwater disposal system shall be measured 3 feet (610 mm) above the level of the water table. The location of the water table shall be verified at the time of the field investigation conducted in accordance with Section 1114.2. Unless otherwise approved by the New York City Department of Environmental Protection, the storage volume of the on-site stormwater disposal system shall accommodate the total stormwater volume calculated in this section. The stormwater volume shall be calculated as follows:

1. Compute the runoff rate using Equations 11-1 and 11-2.
2. Calculate the outflow rate due to infiltration, in cubic feet per second, using Equation 11-3.
3. Calculate the outflow rate, in cubic feet per second per acre, of imperviousness using Equation 11-4.
4. Calculate the duration of the design storm in minutes using Equation 11-5.
5. Calculate the maximum required retention volume using Equation 11-6.

$Q_{inf} = (FA_{min} \times i_{soil})/43{,}200$ **(Equation 11-3)**

where:

$Q_{inf} =$ outflow rate due to infiltration in cubic feet per second

$FA_{min} =$ minimum footprint or surface area of the stormwater disposal system

$i_{soil} =$ soil infiltration rate in inches per hour

$\mathrm{Q}_o = \mathrm{C}_{WT} \times \mathrm{i} \times \mathrm{A}_T$ **(Equation 11-4)**

where:

$\mathrm{Q}_o =$ the average outflow rate in cubic feet per second during the rainfall event

$\mathrm{C}_{WT} =$ the weighted runoff coefficient for the tributary area

$\mathrm{i} =$ the average rainfall intensity in inches per hour for the event

$\mathrm{A}_T =$ the area tributary to the detention facility in acres

$\mathrm{t}_V = 0.27 \times (\mathrm{C}_{WT} \times \mathrm{A}_t/\mathrm{Q}_{DRR})^{0.5} - 15$ **(Equation 11-5)**

where:

$\mathrm{t}_V =$ the duration of the storm in minutes, with a 10 year return frequency, requiring the maximum detention volume with a variable outflow

$\mathrm{C}_{WT} =$ the weighted runoff coefficient for the area tributary to the detention facility

A_T the area tributary to the detention facility in square feet

$\mathrm{Q}_{DRR} =$ the detention facility maximum release rate in cubic feet per second

$\mathrm{V}_V = (0.19 \times \mathrm{C}_{WT} \times \mathrm{A}_t/(\mathrm{t}_V + 15) - 40 \times \mathrm{Q}_{DRR}) \times \mathrm{t}_V$ **(Equation 11-6)**

where:

$\mathrm{V}_V =$ the maximum required detention volume in cubic feet with a variable outflow

$\mathrm{C}_{WT} =$ the weighted runoff coefficient for the area tributary to the detention facility

$\mathrm{A}_t =$ the area tributary to the detention facility in square feet

$\mathrm{t}_V =$ the duration of the storm in minutes, with a 10 year return frequency, requiring the maximum detention volume with a variable outflow

$\mathrm{Q}_{DRR} =$ the detention facility maximum release rate in cubic feet per second

1114.4 Required components. On-site stormwater disposal systems shall be designed to provide adequate storage, support the use at the surface, and allow for operation and required maintenance. Systems shall be constructed with all necessary components and materials required by the manufacturers specifications. Drywell design shall incorporate a grit chamber, and where required, a sand column constructed in accordance with Figures 1114.4(1) and 1114.4(2), respectively.

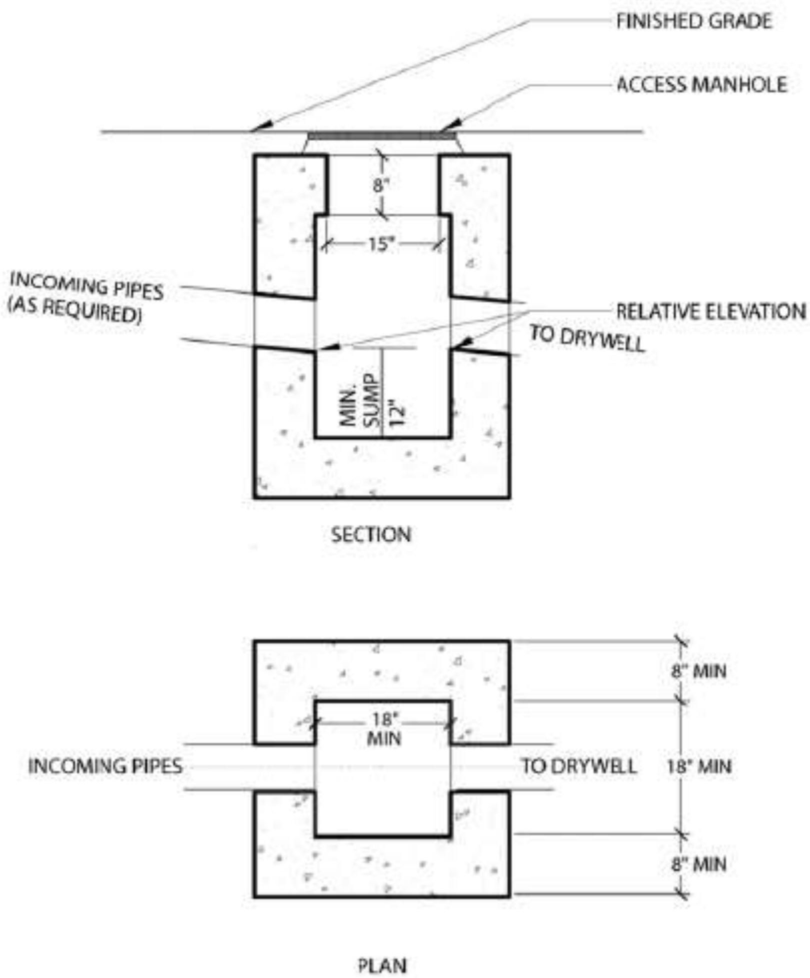


FIGURE 1114.4(1): GRIT CHAMBER

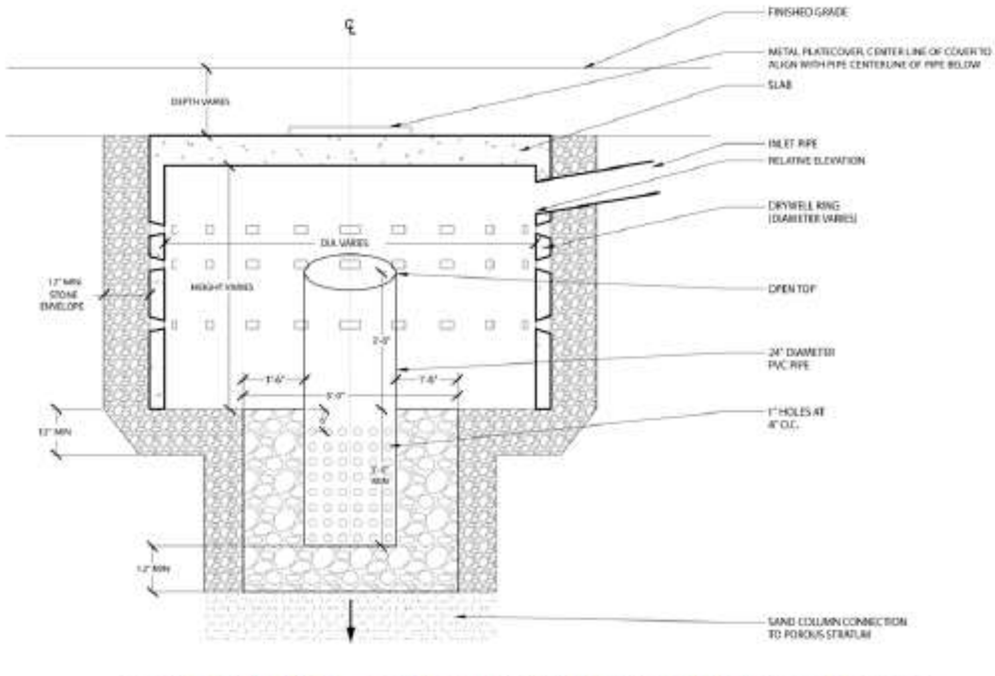


FIGURE 1114.4(2)
DETAIL OF DRYWELL WITH SAND COLUMN

1114.4.1 Grit chamber. All drywells shall contain a grit chamber as part of the drywell system. Grit chambers shall be constructed in accordance with the following requirements:

1. Solid access cover with a minimum diameter of 15 inches (381 mm).
2. Grit chamber designed to support the maximum anticipated load.
3. Outlet invert elevation shall be a minimum of 1 inch (25 mm) lower than the lowest inlet elevation.
4. The sump shall be a minimum of 18 inches (450 mm) or two times the largest inlet pipe diameter, whichever is greater, as measured to the outlet invert elevation.
5. The interior dimensions shall be a minimum of 18 inches (450 mm) or four times the largest inlet pipe diameter whichever is greater.

1114.4.2 Reserved.

1114.5 On-site stormwater disposal system installation. On-site stormwater disposal systems shall be installed in accordance the manufacturer's recommendations and shall conform to Sections 1114.5.1 through 1114.5.3.

1114.5.1 Support of excavation. When an on-site stormwater disposal system installation requires an excavation deeper than 5 feet (1524 mm), the sides of the excavation shall be protected and maintained in accordance with Section 3304.4 of the *New York City Building Code*.

1114.5.2 Sand column installation. Where the installation of an on-site stormwater disposal system requires the installation of a sand column, measures shall be taken to ensure the sand column is installed without contamination by impervious materials.

1114.5.3 Verification. The department reserves the right to require a 24-hour test to verify the absorption of water in the installed on-site stormwater disposal system prior to final approval.

1114.6 Special inspection. The installation of on-site stormwater disposal systems shall be subject to special inspection in accordance with Section 1704.21 of the *New York City Building Code*. Minor variations, based on actual site conditions, shall be acceptable at the discretion of the registered design professional of record.

1114.7 Maintenance. The property owner shall maintain any on-site stormwater disposal system in proper working order in accordance with the rules of the Department of Environmental Protection.

1114.8 Signage. Signage shall be attached to the house trap or fresh air pipe in the basement that states: AN ON-SITE STORMWATER DISPOSAL SYSTEM IS LOCATED ON THIS PROPERTY FOR STORMWATER DISPOSAL. INSPECTION AND MAINTENANCE OF THIS ON-SITE STORMWATER DISPOSAL SYSTEM IS REQUIRED BY THE RULES OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION. This signage shall depict the location of the system on the property.

1114.9 Post-construction stormwater management facilities required by stormwater pollution prevention plan. A post-construction stormwater management facility that is constructed as part of a covered development project shall be designed, installed and maintained in accordance with the rules of the Department of Environmental Protection and this code.

PART L

CHAPTER 12

§1. Chapter 12 of the New York city plumbing code, as added by local law number 99 for the year 2005, section 1202.1 and, section 1204.1, as amended by local law number 141 for the year 2013, is amended to read as follows:

CHAPTER 12
SPECIAL PIPING AND STORAGE SYSTEMS

SECTION PC 1201
GENERAL

1201.1 Scope. The provisions of this chapter shall govern the design and installation of piping and storage systems for nonflammable medical [~~gas systems~~] and nonmedical [~~oxygen~~] gas systems. [~~All maintenance and operations of such systems shall be in accordance with the *New York City Fire Code.*~~]

1201.2 Storage, handling, and use. The storage, handling, and use of medical and nonmedical gases shall be in accordance with the *New York City Fire Code.*

SECTION PC 1202
MEDICAL AND NONMEDICAL GASES

1202.1 Nonflammable medical and nonmedical gases. Nonflammable medical and nonmedical gas systems [~~, inhalation anesthetic systems and vacuum piping systems~~] shall be designed and installed in accordance with NFPA 99.

Exceptions:

1. This section shall not apply to portable systems or cylinder storage.
2. Vacuum system exhaust terminations shall comply with the *New York City Mechanical Code*.

SECTION PC 1203
NONMEDICAL OXYGEN SYSTEMS

1203.1 Design and installation. Nonmedical oxygen systems shall be designed and installed in accordance with NFPA 55 and NFPA 51.

SECTION PC 1204
OTHER CRYOGENIC SYSTEMS

1204.1 Design and installation. Design and installation of cryogenic systems shall be in accordance with Sections 1202 [~~,~~] and 1203 [~~and the *New York City Fire Code*~~].

1204.2 Storage, handling, and use. Storage, handling, and use of cryogenic gases and fluids shall be in accordance with the *New York City Fire Code*.

PART M

CHAPTER 13

§1. Chapter 13 of the New York city plumbing code is REPEALED and a new chapter 13 is added to read as follow:

CHAPTER 13
NONPOTABLE WATER SYSTEMS

SECTION PC 1301
GENERAL

1301.1 Scope. The provisions of Chapter 13 shall govern the materials, design, construction and installation of systems for the collection, storage, treatment and conveyance of nonpotable water. The use and application of nonpotable water shall comply with the New York City Construction Codes, and all applicable laws, and rules, including but not limited to those of the Department of Environmental Protection and the Department of Health and Mental Hygiene. Water from nonpotable systems shall be collected, stored, treated, conveyed and used on the same tax lot unless otherwise approved by the commissioner. The following water recycling uses are not addressed in this chapter:

1. Rainwater collected utilizing a retention system through rain barrels complying with the requirements of the Department of Environmental Protection;
2. Commercial car washing facilities; and
3. Water closet-sink combinations. A fixture that enables wastewater from a lavatory to discharge directly into the flushing tank of a water closet may be utilized provided it complies with the New York City Construction Codes, including all accessibility requirements. The water closet and lavatory shall be located in the same room.

1301.1.1 Uses of nonpotable water. Nonpotable water end use applications shall be in accordance with the requirements established by the Department of Health and Mental Hygiene.

1301.2 Water quality. Nonpotable water for each end use application shall meet the minimum water quality and treatment standards and requirements established by the Department of Health and Mental Hygiene.

1301.3 Identification required. Conveyance piping shall be identified as containing nonpotable water. Piping identification shall be in accordance with Section 608.8.

1301.3.1 Spigots and hose bibs. Spigots and hose bibs dispensing nonpotable water shall be secured from unauthorized use by a locking mechanism.

1301.3.2 Signage required. Nonpotable water outlets such as hose connections, open ended pipes and faucets shall be identified at the point of use for each outlet with signage that reads as follows: “Nonpotable water is utilized for [application name]. CAUTION: NONPOTABLE WATER – DO NOT DRINK.” The words shall be legibly and indelibly printed on a tag or sign constructed of corrosion-resistant waterproof material or shall be indelibly printed on the fixture. The letters of the words shall be not less than 0.5 inch (12.7 mm) in height and in colors in contrast to the background on which they are applied. In addition to the required wordage, the pictograph shown in Figure 1301.3 shall appear on the signage required by this section.

FIGURE 1301.3

PICTOGRAPH—DO NOT DRINK

1301.4 Permits. Permits shall be required for the construction, installation, and alteration of nonpotable water systems, and shall be required by the Department of Health and Mental Hygiene for review, commissioning and operation of nonpotable water systems.

Exception: Work outlined in Article 105.4 of Chapter 1 of Title 28 of the *Administrative Code*.

1301.5 Potable water connections. Where a potable system is connected to a nonpotable water system, the potable water supply shall be protected against backflow by an air gap.

1301.6 Approved components and materials. Piping, plumbing components and materials used in collection and conveyance systems shall be manufactured of material approved for the intended application and compatible with any disinfection and treatment systems used. Components and material shall comply with Sections 1301.6.1 through 1301.6.3.

1301.6.1 Above-ground piping. Above-ground drain, waste and vent piping for nonpotable water systems shall conform to one of the standards listed in Table 702.1.

1301.6.2 Underground piping. Underground building drainage and vent piping for nonpotable water systems shall conform to one of the standards listed in Table 702.2.

1301.6.3 Conveyance piping. Conveyance piping for nonpotable water systems shall conform to one of the standards listed in Table 1301.6 and shall be purple in color, either manufactured, painted, or covered in a purple jacket and labeled in accordance with Section 1301.3.

TABLE 1301.6
CONVEYANCE PIPE

MATERIAL	STANDARD
Brass pipe	ASTM B 43
Chlorinated Polyvinyl Chloride (CPVC)[a]	ASTM D 2846
Copper or copper-alloy pipe	ASTM B 42; ASTM B 302

MATERIAL	STANDARD
Copper or copper-alloy tubing (Type K, L)	ASTM B 75; ASTM B 88; ASTM B 251; ASTM B 447
Polypropylene[a]	ASTM F 2389
Stainless steel pipe (Type 304/304L)	ASTM A 312; ASTM A 778
Stainless steel pipe (Type 316/316L)	ASTM A 312; ASTM A 778

a. Limited to residential buildings five stories or less in height.

1301.7 Insect and vermin control. The system shall be protected to prevent the entrance of insects and vermin into storage tanks and piping systems. Screen materials shall be compatible with contacting system components and shall not accelerate the corrosion of system components.

1301.8 Freeze protection. Where installations are subject to freezing temperatures, provisions shall be made to keep storage tanks and the related piping from freezing.

1301.9 Nonpotable water storage tanks. Nonpotable water storage tanks shall comply with Sections 1301.9.1 through 1301.9.11. Nonpotable water storage tanks receving multiple sources shall also comply with requirements established by the Department of Environmental Protection and the Department of Health and Mental Hygiene.

1301.9.1 Sizing. The holding capacity of the storage tank shall be sized in accordance with the anticipated demand.

Exception: Storage tanks also used for rainwater detention may be sized for the combined volume of detained water and the anticipated demand.

1301.9.2 Location. Storage tanks shall be installed above or below grade. Above-grade storage tanks shall be protected from direct sunlight and shall be constructed using opaque, UV-resistant materials such as, but not limited to, heavily tinted plastic, fiberglass, lined metal, concrete, wood, or painted to prevent algae growth, or shall have specially constructed sun barriers including, but not limited to, installation in garages, crawl spaces or sheds. Storage tanks and their manholes shall not be located directly under soil piping, waste piping or any source of contamination.

1301.9.2.1 Separate nonpotable water storage tanks from multiple sources. Separate collection tanks or compartments shall be provided for influent wastewater and rainwater sources.

1301.9.3 Materials. Where collected on site, water shall be collected in an approved tank constructed of durable, nonabsorbent and corrosion-resistant materials. The storage tank shall be constructed of materials compatible with any disinfection systems used to treat water upstream of the tank and with any systems used to maintain water quality in the tank. Wooden storage tanks that are not equipped with a makeup water source shall be provided with a flexible liner.

1301.9.4 Foundation and supports. Storage tanks shall be supported on a firm base capable of withstanding the weight of the storage tank when filled to capacity. Storage tanks shall be supported in accordance with the *New York City Building Code*. Tanks within an area of special flood hazard shall be designed, constructed and installed in accordance with Appendix G of the *New York City Building Code*.

1301.9.4.1 Ballast. Where the soil can become saturated, an underground storage tank shall be ballasted, or otherwise secured, to prevent the tank from floating out of the ground when empty. The combined weight of the tank and hold down ballast shall meet or exceed the buoyancy force of the tank. Where the installation requires a foundation, the foundation shall be flat and shall be designed to support the weight of the storage tank when full, consistent with the bearing capability of adjacent soil.

1301.9.4.2 Structural support. Where installed below grade, storage tank installations shall be designed to withstand earth and surface structural loads without damage and with minimal deformation when empty or filled with water.

1301.9.5 Makeup water. Where an uninterrupted supply is required for the intended application, potable water shall be provided as a source of makeup water for the storage tank. The makeup water supply shall be protected against backflow by an airgap. A full-open valve located on the makeup water supply line to the storage tank shall be provided. Inlets to the storage tank shall be controlled by fill valves or other automatic supply valves installed to prevent the tank from overflowing and to prevent the water level from dropping below a predetermined point. Where makeup water is provided, the water level shall not be permitted to drop below the source water inlet or the intake of any attached pump.

Exception: Makeup water shall not be required for drip or subsurface landscape irrigation systems.

1301.9.6 Overflow. The storage tank shall be equipped with an overflow pipe having a diameter not less than that shown in Table 606.5.4. The overflow pipe shall be protected from insects or vermin. The overflow pipe shall be connected to the appropriate building drainage system in accordance with this code and the requirements of the Department of Environmental Protection. Overflow from a stormwater storage tank shall not discharge to the sanitary drainage system. Drainage from overflow pipes shall be directed to prevent freezing on roof walkways. The overflow drain shall not be equipped with a shutoff valve. A cleanout shall be provided on each overflow pipe in accordance with Section 708.

1301.9.7 Access. Not less than one access opening shall be provided to allow inspection and cleaning of the tank interior. Access openings shall have an approved locking device or other approved method of securing access. Below-grade storage tanks, located outside of the building, shall be provided with a manhole either not less than 24 inches (610 mm) square or with an inside diameter not less than 24 inches (610 mm). Manholes shall extend not less than 4 inches (102 mm) above ground or shall be designed to prevent water infiltration. Finished grade shall be sloped away from the manhole to divert surface water. Manhole covers shall be secured to prevent unauthorized access. Service ports in manhole covers shall be not less than 8 inches (203 mm) in diameter and shall be not less than 4 inches (102 mm) above the finished grade level. The service port shall be secured to prevent unauthorized access.

Exception: Storage tanks less than 800 gallons (3028L) in volume and installed below grade shall not be required to be equipped with a manhole, but shall have a service port not less than 8 inches (203 mm) in diameter.

1301.9.7.1 Tanks accessed from within buildings. Where access to a storage tank is provided from within a building, the tank access opening shall be gasketed and gas-tight.

1301.9.8 Venting. Storage tanks shall be provided with a vent sized in accordance with Chapter 9 and based on the aggregate diameter of all tank influent pipes. The reservoir vent shall not be connected to sanitary drainage system vents. Vents shall be protected from contamination by means of an approved cap or U-bend installed with the opening directed downward. Vent outlets shall extend not less than 4 inches (102 mm) above grade or as necessary to prevent surface water from entering the storage tank. Vent openings shall be protected against the entrance of vermin and insects in accordance with the requirements of Section 1301.7.

1301.9.9 Draining of tanks. Where tanks require draining for service or cleaning, tanks shall be drained by using a pump or by a drain located at the lowest point in the tank. The tank drain pipe shall be indirectly connected to the appropriate building drainage system and discharge as required for overflow pipes and shall not be smaller in size than specified in Table 606.5.7. Not less than one cleanout shall be provided on each drain pipe in accordance with Section 708.

1301.9.10 Marking and signage. Each nonpotable water storage tank shall be labeled with its rated capacity. The contents of storage tanks shall be identified with the words “CAUTION: NONPOTABLE WATER – DO NOT DRINK.” Where an opening is provided that could allow the entry of personnel, the opening shall be marked with the words, “DANGER – CONFINED SPACE.” Markings shall be indelibly printed on the tank or on a tag or sign constructed of corrosion-resistant waterproof material that is mounted on the tank. The letters of the words shall be not less than 0.5 inch (12.7 mm) in height and shall be of a color in contrast with the background on which they are applied.

1301.9.11 Storage tank tests. Storage tanks shall be tested in accordance with the following:

Storage tanks shall be filled with water to the overflow line prior to and during inspection. All seams and joints shall be left exposed and the tank shall remain water tight without leakage for a period of 24 hours.

1. After 24 hours, supplemental water shall be introduced for a period of 15 minutes to verify proper drainage of the overflow system and that there are no leaks.
2. The tank drain shall be observed for proper operation.
3. The makeup water system shall be observed for proper operation and successful automatic shutoff of the system at the refill threshold shall be verified.

1301.10 System abandonment. If the owner of an on-site nonpotable water reuse system or rainwater collection and conveyance system elects to cease use of, or fails to properly maintain such system and is so ordered by the Department of Health and Mental Hygiene, the system shall be abandoned and shall comply with the following:

1. The conveyance piping system shall be replaced with an approved potable water supply piping system.

Exception: Where an existing conveyance pipe system is already in place, the fixtures may remain connected to the existing piping and supplied by the potable water system, in accordance with all of the following requirements:

1. The piping material, design and size comply with the requirements of Chapter 6.
2. The piping system is disinfected in accordance with the requirements of Chapter 6.
3. All piping connections between the potable and conveyance piping system shall be protected against backflow by an approved method in accordance with Chapter 6.
4. The piping identification required by Section 1301.6.3 shall be maintained to identify the piping as nonpotable.
5. All piping connections to the abandoned components of the collection and treatment system shall be permanently disabled by removing a section of pipe.

2. The storage tank shall be secured from accidental access by sealing or locking tank inlets and access points, or filling with sand or equivalent.
3. Notification shall be provided to the Department and to the Department of Health and Mental Hygiene.

1301.11 Trenching requirements for nonpotable water piping. Nonpotable water collection and conveyance piping shall be separated from the building sewer and potable water piping underground by 5 feet (1524 mm) of undisturbed or compacted earth. Nonpotable water collection and conveyance piping shall not be located in, under or above cesspools, septic tanks, septic tank drainage fields or seepage pits. Buried nonpotable water piping shall comply with the requirements of Section 306.

Exceptions:

1. The required separation distance shall not apply where the bottom of the nonpotable water pipe within 5 feet (1524 mm) of the sewer is not less than 12 inches (305 mm) above the top of the highest point of the sewer and the pipe materials conform to Table 702.3.
2. The required separation distance shall not apply where the bottom of the potable water service pipe within 5 feet (1524 mm) of the nonpotable water pipe is a minimum of 12 inches (305 mm) above the top of the highest point of the nonpotable water pipe and the pipe materials comply with the requirements of Table 605.4.
3. Nonpotable water pipe is permitted to be located in the same trench with a building sewer, provided that such sewer is constructed of materials that comply with the requirements of Table 702.2.

4. The required separation distance shall not apply where a nonpotable water pipe crosses a sewer pipe, provided that the pipe is sleeved to at least 5 feet (1524 mm) horizontally from the sewer pipe centerline on both sides of such crossing, with pipe materials that comply with Table 702.2.
5. The required separation distance shall not apply where a potable water service pipe crosses a nonpotable water pipe, provided that the potable water service pipe is sleeved for a distance of at least 5 feet (1524 mm) horizontally from the centerline of the nonpotable pipe on both sides of such crossing, with pipe materials that comply with Table 702.2.
6. Irrigation piping located outside of a building and downstream of the backflow preventer is not required to meet the trenching requirements where nonpotable water is used for outdoor applications.

1301.12 Outdoor outlet access. Sillcocks, hose bibbs, wall hydrants, yard hydrants and other outdoor outlets supplied by nonpotable water shall be located in a locked vault and shall also be operable only by means of a removable key. Such outlets shall comply with Section 1301.3.

SECTION PC 1302
ON-SITE NONPOTABLE WATER REUSE SYSTEMS

1302.1 General. The provisions of Section 1302 shall govern the construction, installation, alteration and repair of on-site nonpotable water reuse systems for the collection, storage, treatment conveyance and application of on-site sources of nonpotable water as permitted by the New York City Construction Codes, and all applicable laws, and rules, including but not limited to those of the Department of Environmental Protection and the Department of Health and Mental Hygiene.

1302.2 Sources. On-site nonpotable water reuse systems shall be permitted to collect waste discharge from only the allowed sources as established by the Department of Health and Mental Hygiene.

1302.3 Traps. Traps serving fixtures and devices discharging waste water to on-site nonpotable water reuse systems shall comply with Section 1002.4.

1302.4 Collection pipe. On-site nonpotable water reuse systems shall utilize drainage piping approved for use in plumbing drainage systems to collect and convey untreated water for reuse. Vent piping approved for use in plumbing venting systems shall be utilized for vents in the nonpotable system. Collection and vent piping materials shall comply with Section 702, Table 702.1 and Table 702.2.

1302.4.1 Installation. Collection piping conveying untreated water for reuse shall be installed in accordance with Section 704.

1302.4.2 Joints. Collection piping conveying untreated water for reuse shall utilize joints approved for use with the conveyance piping and appropriate for the intended applications as specified in Section 705.

1302.4.3 Size. Collection piping conveying untreated water for reuse shall be sized in accordance with drainage sizing requirements specified in Section 710.

1302.4.4 Labeling and marking. Additional marking of collection piping containing untreated water for reuse shall be identified in accordance with Section 704.7.

1302.5 Filtration. Untreated water collected for reuse shall be filtered as required for the intended nonpotable end use as established by the Department of Health and Mental Hygiene. Filters shall be accessible for inspection and maintenance. Filters shall utilize a pressure gauge or other approved method to provide indication when a filter requires servicing or replacement. Filters shall be installed with shutoff valves immediately upstream and downstream to allow for isolation during maintenance.

1302.5.1 Filtration required. Nonpotable water utilized for water closet and urinal flushing applications shall be filtered by a 100-micron or finer filter.

1302.6 Disinfection and treatment. Untreated water collected for reuse shall be disinfected and treated as required for the intended nonpotable end use as established by the Department of Health and Mental Hygiene.

1302.7 Storage tanks. Storage tanks utilized in on-site nonpotable water reuse systems shall comply with Sections 1301.9 and 1302.7.1 through 1302.7.4.

1302.7.1 Location. Storage tanks shall be located with a minimum horizontal distance between various elements as indicated in Table 1302.7.1.

TABLE 1302.7.1
LOCATION OF NONPOTABLE WATER REUSE STORAGE TANKS

ELEMENT	MINIMUM HORIZONTAL DISTANCE FROM STORAGE TANK (feet)
Critical root zone (CRZ) of protected trees	2
Lot line adjoining private lots	5
Seepage pits	5
Septic tanks	5
Water wells	50
Streams and lakes	50
Water service	5
Public water main	10

For SI: 1 foot = 304.8 mm.

1302.7.2. Design and construction. Storage tanks shall be designed and constructed in accordance with Chapters 16 through 22 of the *New York City Building Code* and in accordance with the following standards, as appropriate for the material of the storage tank: AWWA D100, AWWA D115, AWWA D120, UL 58, UL 1746, UL 1316, UL 142, API 12F or API 12D.

1302.7.3 Inlets. Storage tank inlets shall be designed to introduce collected water into the tank with minimum turbulence, and shall be located and designed to avoid agitating the contents of the storage tank.

1302.7.4 Outlets. Outlets shall be located not less than 4 inches (102 mm) above the bottom of the storage tank and shall not skim water from the surface.

1302.8 Valves. Valves shall be provided in accordance with Sections 1302.8.1 through 1302.8.3.

1302.8.1 Collection piping bypass valve. One full-size three-way diverter valve shall be installed on collection piping upstream of each storage tank, or drainfield, as applicable, to divert untreated on-site reuse sources to the sanitary sewer to allow servicing and inspection of the system. Bypass valves shall be installed downstream of fixture traps and vent connections. Bypass valves shall be marked to indicate the direction of flow, connection and storage tank or drainfield connection. Bypass valves shall be installed in accessible locations. Two shutoff valves shall not be installed to serve as a bypass valve.

1302.8.2 Backwater valve. One or more backwater valves shall be installed on each overflow and tank drain pipe. Backwater valves shall be in accordance with Section 715.

1302.8.3 Conyeance piping bypass valve. One full-size three-way diverter valve shall be installed on the conveyance piping system upstream and downstream of all treated storage tanks, as applicable, to divert treated on-site nonpotable reuse water to the sanitary sewer to allow system testing, commissioning and bypass conditions.

1302.9 Pumping and control system. Mechanical equipment including pumps, valves and filters shall be easily accessible and removable in order to perform repair, maintenance and cleaning. The minimum flow rate and flow pressure delivered by the pumping system shall be appropriate for the application and in accordance with Section 604.

1302.10 Water pressure-reducing valve or regulator. Where the water pressure supplied by the pumping system exceeds 85 psi (587 kPa) static, a pressure-reducing valve shall be installed to reduce the pressure in the nonpotable water conveyance system piping to 85 psi (587 kPa) static or less. Pressure-reducing valves shall be specified and installed in accordance with Section 604.8.

1302.11 Conveyance pipe. Conveyance piping utilized in on-site nonpotable water reuse systems shall comply with Sections 1302.11.1 through 1302.11.3.

Exception: Irrigation piping located outside of the building and downstream of a backflow preventer.

1302.11.1 Materials, joints and connections. Conveyance piping shall conform to the standards and requirements specified in Section 1301.6.

1302.11.2 Design. On-site nonpotable water reuse conveyance piping systems shall be designed and sized in accordance with Section 604 for the intended application.

1302.11.3 Marking. On-site nonpotable water conveyance piping labeling and marking shall comply with Section 1301.6.

1302.12 Tests and inspections. Tests and inspections shall be performed in accordance with Sections 108, 312, and Sections 1302.12.1 through 1302.12.7. Special inspections of the nonpotable water systems shall be conducted in accordance with Chapter 17 of the *New York City Building Code*.

1302.12.1 Collection pipe and vent test. Drain, waste and vent piping used for on-site water reuse systems shall be tested in accordance with Section 312.

1302.12.2 Storage tank test. Storage tanks shall be tested in accordance with Section 1301.9.11.

1302.12.3 Water supply system test. The testing of makeup water supply piping and conveyance piping shall be conducted in accordance with Section 312.5.

1302.12.4 Inspection and testing of backflow prevention assemblies. The testing of backflow preventers and backwater valves shall be conducted in accordance with Section 312.10.

1302.12.5 Inspection of vermin and insect protection. Inlets and vents to the system shall be inspected to verify that each is protected to prevent the entrance of insects and vermin into the storage tank and piping systems in accordance with Section 1301.7.

1302.12.6 Water quality test. Water quality testing and monitoring shall be conducted in accordance with requirements of the Department of Health and Mental Hygiene.

1302.12.7 Inspection and testing of cross connection control. Cross connection control inspection and testing shall be conducted in accordance with the requirements of the Department of Health and Mental Hygiene.

1302.13 Operation and maintenance manuals. Operation and maintenance materials shall be supplied with nonpotable on-site water reuse systems in accordance with Sections 1302.13.1 through 1302.13.4 and in accordance with the requirements of the Department of Health and Mental Hygiene.

1302.13.1 Manual. A detailed operations and maintenance manual shall be supplied in hardcopy form with all systems**.**

1302.13.2 Schematics. The manual shall include a detailed system schematic, and the locations and a list of all system components, including manufacturer and model number.

1302.13.3 Maintenance procedures. The manual shall provide a schedule and procedures for all system components requiring periodic maintenance. Consumable parts, including filters, shall be noted along with part numbers.

1302.13.4 Operations procedures. The manual shall include system startup and shutdown procedures. The manual shall include detailed operating procedures for the system.

SECTION PC 1303
NONPOTABLE RAINWATER COLLECTION AND CONVEYANCE SYSTEMS

1303.1 General. The provisions of Section 1303 shall govern the construction, installation, alteration and repair of rainwater collection and conveyance systems for the collection, storage, treatment and conveyance of rainwater for nonpotable applications, as permitted by the New York City Construction Codes, and all applicable laws, and rules, including but not limited to those of the Department of Environmental Protection and the Department of Health and Mental Hygiene.

1303.2 Collection surface. Rainwater shall be collected only from above-ground impervious roofing surfaces constructed from approved materials. Collection of water from vehicular parking or pedestrian surfaces shall be prohibited except where the water is used exclusively for landscape irrigation.

1303.2.1 Prohibited sources. Roof mounted appliances and equipment including but not limited to evaporative coolers, cooling towers, water heaters, and solar water heaters shall not discharge onto rainwater collection surfaces.

1303.3 Debris excluders. Downspouts and leaders shall be connected to a roof washer and shall be equipped with a debris excluder or equivalent device to prevent the contamination of collected rainwater with leaves, sticks, pine needles and similar material. Debris excluders and equivalent devices shall be self-cleaning.

1303.4 Roof washer. A sufficient amount of rainwater shall be diverted at the beginning of each rain event, and not allowed to enter the storage tank, to wash accumulated debris from the collection surface. The amount of rainfall to be diverted shall be field adjustable as necessary to minimize storage tank water contamination. The roof washer shall not rely on manually operated valves or devices, and shall operate automatically. Diverted rainwater shall not be drained to the roof surface, and shall be discharged in a manner consistent with the storm water runoff requirements of the Department of Environmental Protection and this code. Roof washers shall be accessible for maintenance and service.

1303.5 Roof gutters and downspouts. Gutters and downspouts shall be constructed of materials that are compatible with the collection surface and the rainwater quality for the desired end use. Joints shall be water tight.

1303.5.1 Slope. Roof gutters, leaders and rainwater collection piping shall slope continuously toward collection inlets. Gutters and downspouts shall have a slope of not less than 1/8 inch per foot (10.4 mm/m) along their entire length, and shall not permit the collection or pooling of water at any point.

Exception: Siphonic drainage systems installed in accordance with the manufacturer's instructions shall not be required to have a slope.

1303.5.2 Size. Gutters and downspouts shall be installed and sized in accordance with Section 1106.

1303.5.3 Cleanouts. Cleanouts shall be provided in accordance with Chapter 11 of this code in the water conveyance system and to allow access to all filters, flushes, pipes and downspouts.

1303.6 Drainage. Water drained from the roof washer or debris excluder shall not be drained to the sanitary sewer. Such water shall be diverted from the storage tank and discharge in a location that will not cause erosion or damage to property in accordance with the *New York City Building Code*. Roof washers and debris excluders shall be provided with an automatic means of self-draining between rain events, and shall not drain onto roof surfaces.

1303.7 Collection pipe. Rainwater collection and conveyance systems shall utilize drainage piping approved for use within plumbing drainage systems to collect and convey captured rainwater. Vent piping approved for use within plumbing venting systems shall be utilized for vents within the rainwater system. Collection and vent piping materials shall comply with Section 1102.

1303.7.1 Installation. Collection piping conveying captured rainwater shall be installed in accordance with Chapter 11.

1303.7.2 Joints. Collection piping conveying captured rainwater shall utilize joints approved for use with the piping and appropriate for the intended applications as specified in Chapter 11.

1303.7.3 Size. Collection piping conveying captured rainwater shall be sized in accordance with drainage sizing requirements specified in Section 1106.

1303.7.4 Labeling and marking. Additional marking of collection piping containing captured rainwater for reuse shall be identified in accordance with Section 704.7.

1303.8 Filtration. Untreated rainwater collected for reuse shall be filtered as required for the intended nonpotable end use as established by the Department of Health and Mental Hygiene. Filters shall be accessible for inspection and maintenance. Filters shall utilize a pressure gauge or other approved method to provide indication when a filter requires servicing or replacement. Filters shall be installed with shutoff valves installed immediately upstream and downstream to allow for isolation during maintenance.

1303.8.1 Filtration required. Nonpotable water utilized for water closet and urinal flushing applications shall be filtered by a 100-micron or finer filter.

1303.9 Disinfection. Untreated rainwater collected for reuse shall be disinfected and treated as required for the intended nonpotable end use as established by the Department of Health and Mental Hygiene.

1303.10 Storage tanks. Storage tanks utilized in nonpotable rainwater collection and conveyance systems shall comply with Sections 1301.9 and 1303.10.1 through 1303.10.4.

1303.10.1 Location. Storage tanks shall be located with a minimum horizontal distance between various elements as indicated in Table 1303.10.1.

TABLE 1303.10.1
LOCATION OF RAINWATER STORAGE TANKS

ELEMENT	MINIMUM HORIZONTAL DISTANCE FROM STORAGE TANK (feet)
Critical root zone (CRZ) of protected trees	2
Lot line adjoining private lots	5
Seepage pits	5
Septic tanks	5

For SI: 1 foot = 304.8 mm.

1303.10.2. Design and construction. Storage tanks shall be designed and constructed in accordance with Chapters 16 through 22 of the *New York City Building Code* and in accordance with the following standards, as appropriate for the material of the storage tank: AWWA D100, AWWA D115, AWWA D120, UL 58, UL 1746, UL 1316, UL 142, API 12F or API 12D.

1303.10.3 Inlets. Storage tank inlets shall be designed to introduce collected rainwater into the tank with minimum turbulence, and shall be located and designed to avoid agitating the contents of the storage tank.

1303.10.4 Outlets. Outlets shall be located at least 4 inches (102 mm) above the bottom of the storage tank and shall not skim water from the surface.

1303.11 Valves. Valves shall be provided in accordance with Sections 1303.11.1 through 1303.11.3.

1303.11.1 Collection piping bypass valve. One full-size three-way diverter valve shall be installed on collection piping upstream of each storage tank, or drainfield, as applicable, to divert untreated rainwater to the storm or combined sewer to allow servicing and inspection of the system. Bypass valves shall be marked to indicate the direction of flow, connection and storage tank or drainfield connection. Bypass valves shall be installed in accessible locations. Two shutoff valves shall not be installed to serve as a bypass valve.

1303.11.2 Backwater valve. One or more backwater valves shall be installed on each overflow and tank drain pipe. Backwater valves shall be in accordance with Section 1101.

1303.11.3 Conveyance piping bypass valve. One full-size three-way diverter valve shall be installed on the conveyance piping system upstream and downstream of all treated storage tanks, as applicable, to divert treated on-site nonpotable reuse water to the sanitary sewer to allow system testing, commissioning and bypass conditions.

1303.12 Pumping and control system. Mechanical equipment including pumps, valves and filters shall be easily accessible and removable in order to perform repair, maintenance and cleaning. The minimum flow rate and flow pressure delivered by the pumping system shall be appropriate for the application and in accordance with Section 604.

1303.13 Water pressure-reducing valve or regulator. Where the water pressure supplied by the pumping system exceeds 85 psi (587 kPa) static, a pressure-reducing valve shall be installed to reduce the pressure in the rainwater conveyance system piping to 85 psi (587 kPa) static or less. Pressure-reducing valves shall be specified and installed in accordance with Section 604.8.

1303.14 Conveyance pipe. Conveyance piping utilized in rainwater collection and conveyance systems shall comply with Sections 1303.14.1 through 1303.14.3.

Exception: Irrigation piping located outside of the building and downstream of a backflow preventer.

1303.14.1 Materials, joints and connections. Conveyance piping shall conform to the standards and requirements specified in Section 1301.6.

1303.14.2 Design. Rainwater reuse conveyance piping systems shall be designed and sized in accordance with Section 604 for the intended application.

1303.14.3 Marking. Nonpotable rainwater conveyance piping labeling and marking shall comply with Section 1301.6.

1303.15 Tests and inspections. Tests and inspections shall be performed in accordance with Sections 108, 312, and Sections 1303.15.1 through 1303.15.9. Special inspections of the nonpotable water systems shall be conducted in accordance with Chapter 17 of the *New York City Building Code*.

1303.15.1 Reserved.

1303.15.2 Roofwasher test. Roofwashers shall be tested by introducing water into the gutters. Proper diversion of the first quantity of water in accordance with the requirements of Section 1303.4 shall be verified.

1303.15.3 Collection pipe and vent test. Drain, waste and vent piping used for rainwater collection and conveyance systems shall be tested in accordance with Section 312.

1303.15.4 Storage tank test. Storage tanks shall be tested in accordance with Section 1301.9.11.

1303.15.5 Water supply system test. The testing of makeup water supply piping and conveyance piping shall be conducted in accordance with Section 312.5.

1303.15.6 Inspection and testing of backflow prevention assemblies. The testing of backflow preventers and backwater valves shall be conducted in accordance with Section 312.10.

1303.15.7 Inspection of vermin and insect protection. Inlets and vents to the system shall be inspected to verify that each is protected to prevent the entrance of insects and vermin into the storage tank and piping systems in accordance with Section 1301.7.

1303.15.8 Water quality test. Water quality testing and monitoring shall be conducted in accordance with requirements of the Department of Health and Mental Hygiene.

1303.15.9 Inspection and testing of cross connection control. Cross connection control inspection and testing shall be conducted in accordance with the requirements of the Department of Health and Mental Hygiene.

1303.16 Operation and maintenance manuals. Operation and maintenance manuals shall be supplied with rainwater collection and conveyance systems in accordance with Sections 1303.16.1 through 1303.16.4.

1303.16.1 Manual. A detailed operations and maintenance manual shall be supplied in hardcopy form with all systems.

1303.16.2 Schematics. The manual shall include a detailed system schematic, and locations and a list of all system components, including manufacturer and model number.

1303.16.3 Maintenance procedures. The manual shall provide a maintenance schedule and procedures for all system components requiring periodic maintenance. Consumable parts, including filters, shall be noted along with part numbers.

1303.16.4 Operations procedures. The manual shall include system startup and shutdown procedures. The manual shall include detailed operating procedures for the system.

SECTION PC 1304
RESERVED

PART N

CHAPTER 14

§1. The New York city plumbing code is amended by adding a new chapter 14 to read as follows:

CHAPTER 14
SUBSURFACE LANDSCAPE IRRIGATION SYSTEMS

SECTION PC 1401
GENERAL

1401.1 Scope. The provisions of Chapter 14 shall govern the materials, design, construction and installation of subsurface landscape irrigation systems connected to nonpotable water from on-site water reuse systems.

1401.2 Materials. Above-ground drain, waste and vent piping for subsurface landscape irrigation systems shall conform to one of the standards listed in Table 702.1. Subsurface landscape irrigation, underground building drainage and vent pipe shall conform to one of the standards listed in Table 702.2.

1401.3 Tests. Drain, waste and vent piping for subsurface landscape irrigation systems shall be tested in accordance with Section 312.

1401.4 Inspections. Subsurface landscape irrigation systems shall be inspected in accordance with Section 107.

1401.5 Disinfection. Disinfection shall not be required for on-site nonpotable water reuse for subsurface landscape irrigation systems.

1401.6 Coloring. On-site nonpotable water reuse for subsurface landscape irrigation systems shall not be required to be dyed.

SECTION PC 1402
SYSTEM DESIGN AND SIZING

1402.1 Sizing. The system shall be sized in accordance with the sum of the output of all water sources connected to the subsurface irrigation system. Where gray water collection piping is connected to subsurface landscape irrigation systems, gray water output shall be calculated according to the gallons-per-day-per-occupant number based on the type of fixtures connected. The gray water discharge shall be calculated by the following equation:

$C = A \times B$ **(Equation 14-1)**

where:

$A =$ Number of occupants:

Residential – Number of occupants shall be determined by the actual number of occupants, but not less than two occupants for one bedroom and one occupant for each additional bedroom.

Commercial – Number of occupants shall be determined by the *New York City Building Code*.

$B =$ Estimated flow demands for each occupant*:

Residential – 25 gallons per day (94.6 lpd) per occupant for showers, bathtubs and lavatories and 15 gallons per day (56.7 lpd) per occupant for clothes washers or laundry trays.

Commercial – Based on type of fixture or water use records minus the discharge of fixtures other than those discharging gray water.

*Alternative estimated flow demands for each occupant shall be permitted based on actual calculated water usage for the building.

$C =$ Estimated gray water discharge based on the total number of occupants.

1402.2 Percolation tests. The permeability of the soil in the proposed absorption system shall be determined by percolation tests or permeability evaluation.

1402.2.1 Percolation tests and procedures. At least three percolation tests in each system area shall be conducted. The holes shall be spaced uniformly in relation to the bottom depth of the proposed absorption system. More percolation tests shall be made where necessary, depending on system design.

1402.2.1.1 Percolation test hole. The test hole shall be dug or bored. The test hole shall have vertical sides and a horizontal dimension of 4 inches to 8 inches (102 mm to 203 mm). The bottom and sides of the hole shall be scratched with a sharp-pointed instrument to expose the natural soil. All loose material shall be removed from the hole and the bottom shall be covered with 2 inches (51 mm) of gravel or coarse sand.

1402.2.1.2 Test procedure, sandy soils. The hole shall be filled with clear water to a minimum of 12 inches (305 mm) above the bottom of the hole for tests in sandy soils. The time for this amount of water to seep away shall be determined, and this procedure shall be repeated if the water from the second filling of the hole seeps away in 10 minutes or less. The test shall proceed as follows: Water shall be added to a point not more than 6 inches (152 mm) above the gravel or coarse sand. Thereupon, from a fixed reference point, water levels shall be measured at 10-minute intervals for a period of 1 hour. Where 6 inches (152 mm) of water seeps away in less than 10 minutes, a shorter interval between measurements shall be used, but in no case shall the water depth exceed 6 inches (152 mm). Where 6 inches (152 mm) of water seeps away in less than 2 minutes, the test shall be stopped and a rate of less than 1 minute per inch (2.4 s/mm) shall be reported. The final water level drop shall be used to calculate the percolation rate. Soils not meeting the above requirements shall be tested in accordance with Section 1402.2.1.3.

1402.2.1.3 Test procedure, other soils. The hole shall be filled with clear water, and a minimum water depth of 12 inches (305 mm) shall be maintained above the bottom of the hole for a 4-hour period by refilling whenever necessary or by use of an automatic siphon. Water remaining in the hole after 4 hours shall not be removed. Thereafter, the soil shall be allowed to swell not less than 16 hours or more than 30 hours. Immediately after the soil swelling period, the measurements for determining the percolation rate shall be made as follows: any soil sloughed into the hole shall be removed and the water level shall be adjusted to 6 inches (152 mm) above the gravel or coarse sand. Thereupon, from a fixed reference point, the water level shall be measured at 30-minute intervals for a period of 4 hours, unless two successive water level drops do not vary by more than $^{1}/_{16}$ inch (1.59 mm). At least three water level drops shall be observed and recorded. The hole shall be filled with clear water to a point not more than 6 inches (152 mm) above the gravel or coarse sand whenever it becomes nearly empty. Adjustments of the water level shall not be made during the three measurement periods except to the limits of the last measured water level drop. When the first 6 inches (152 mm) of water seeps away in less than 30 minutes, the time interval between measurements shall be 10 minutes and the test run for 1 hour. The water depth shall not exceed 5 inches (127 mm) at any time during the measurement period. The drop that occurs during the final measurement period shall be used in calculating the percolation rate.

1402.2.1.4 Mechanical test equipment. Mechanical percolation test equipment shall be of an approved type.

1402.2.2 Permeability evaluation. Soil shall be evaluated for estimated percolation based on structure and texture in accordance with accepted soil evaluation practices. Borings shall be made in accordance with Section 1402.2.1.1 for evaluating the soil.

1402.3 Subsurface landscape irrigation site location. The surface grade of all soil absorption systems shall be located at a point lower than the surface grade of any water well or reservoir on the same or adjoining lot. Where this is not possible, the site shall be located so surface water drainage from the site is not directed toward a well or reservoir. The soil absorption system shall be located with a minimum horizontal distance between various elements as indicated in Table 1402.3. Private sewage disposal systems in compacted areas, such as parking lots and driveways, are prohibited. Surface water shall be diverted away from any soil absorption site on the same or neighboring lots.

TABLE 1402.3
LOCATION OF SUBSURFACE IRRIGATION SYSTEM

ELEMENT	MINIMUM HORIZONTAL DISTANCE	
	Storage tank (feet)	Irrigation disposal field (feet)
Buildings	5	10
Lot line adjoining private property	5	5
Water wells	50	100
Streams and lakes	50	50
Seepage pits	5	20

ELEMENT	MINIMUM HORIZONTAL DISTANCE	
	Storage tank (feet)	Irrigation disposal field (feet)
Septic tanks	0	5
Water service	5	5
Public water main	10	10

For SI: 1 foot = 304.8 mm.

SECTION PC 1403
INSTALLATION

1403.1 Installation. Absorption systems shall be installed in accordance with Sections 1403.1.1 through 1403.1.5 to provide landscape irrigation without surfacing of water.

1403.1.1 Absorption area. The total absorption area required shall be computed from the estimated daily gray water discharge and the design-loading rate based on the percolation rate for the site. The required absorption area equals the estimated gray water discharge divided by the design-loading rate from Table 1403.1.1.

TABLE 1403.1.1
DESIGN LOADING RATE

PERCOLATION RATE (minutes per inch)	DESIGN LOADING FACTOR (gallons per square foot per day)
< 1	Not suitable
1-5	1.20
6-7	1.00
8-10	0.90
11-15	0.80
16-20	0.70
21-30	0.60
31-45	0.50
46-60	0.45
61-120	0.20
> 120	Not Suitable

For SI: 1 minute per inch = min/25.4 mm, 1 gallon per square foot = 40.7 L/m^2.

1403.1.2 Seepage trench excavations. Seepage trench excavations shall be not less than 1 foot (304 mm) in width and not greater than 5 feet (1524 mm) in width. Trench excavations shall be spaced not less than 2 feet (610 mm) apart. The soil absorption area of a seepage trench shall be computed by using the bottom of the trench area (width) multiplied by the length of pipe. Individual seepage trenches shall be not greater than 100 feet (30 480 mm) in developed length.

1403.1.3 Seepage bed excavations. Seepage bed excavations shall be not less than 5 feet (1524 mm) in width and have more than one distribution pipe. The absorption area of a seepage bed shall be computed by using the bottom of the trench area. Distribution piping in a seepage bed shall be uniformly spaced not greater than 5 feet (1524 mm) and not less than 3 feet (914 mm) apart, and greater than 3 feet (914 mm) and not less than 1 foot (305 mm) from the sidewall or headwall.

1403.1.4 Excavation and construction. The bottom of a trench or bed excavation shall be level. Seepage trenches or beds shall not be excavated where the soil is so wet that such material rolled between the hands forms a soil wire. All smeared or compacted soil surfaces in the sidewalls or bottom of seepage trench or bed excavations shall be scarified to the depth of smearing or compaction and the loose material removed. Where rain falls on an open excavation, the soil shall be left until sufficiently dry so a soil wire will not form when soil from the excavation bottom is rolled between the hands. The bottom area shall then be scarified and loose material removed.

1403.1.5 Aggregate and backfill. Not less than 6 inches in depth of aggregate, ranging in size from ½ to 2 ½ inches (12.7 mm to 64 mm), shall be laid into the trench below the distribution piping elevation. The aggregate shall be evenly distributed not less than 2 inches (51 mm) in depth over the top of the distribution pipe. The aggregate shall be covered with approved synthetic materials or 9 inches (229 mm) of uncompacted marsh hay or straw. Building paper shall not be used to cover the aggregate. Not less than 9 inches (229 mm) of soil backfill shall be provided above the covering.

1403.2 Distribution piping. Distribution piping shall be not less than 3 inches (76 mm) in diameter. Materials shall comply with Table 1403.2. The top of the distribution pipe shall be not less than 4 inches (100 mm) or greater than 12 inches (300 mm) below the original surface. The slope of the distribution pipes shall be not less than 2 inches (51 mm) and not greater than 4 inches (102 mm) per 100 feet (30 480 mm).

TABLE 1403.2
DISTRIBUTION PIPE

MATERIAL	STANDARD
Polypropylene (PP) pipe	ASTM F 2389
Polyethylene (PE) plastic pipe	ASTM F 405
Polyvinyl chloride (PVC) plastic pipe[a]	ASTM D 2729
Polyvinyl chloride (PVC) plastic pipe with a 3.5-inch O.D. and solid cellular core or composite wall[a]	ASTM F 1488

a. Limited to residential buildings five stories or less in height.

1403.2.1 Joints and fittings. Joints and fittings in distribution pipe shall be made in accordance with Table 1403.2.1.

TABLE 1403.2.1
JOINTS AND FITTINGS

MATERIAL	STANDARD
Polyethylene (PE) plastic pipe	ASTM F 405
Polypropylene (PP) pipe	ASTM F 2389
Polyvinyl chloride (PVC) plastic in IPS diameters[a]	ASTM D 2665; ASTM F 1866
Polyvinyl chloride (PVC) plastic pipe in sewer and drain diameters[a]	ASTM D 3034
Polyvinyl chloride (PVC) plastic pipe with a 3.25-inch O.D.[a]	ASTM D 2949

For SI: 1 inch = 25.4 mm.

a. Limited to residential buildings five stories or less in height.

1403.2.2 Diversion valves. Systems shall include a diversion valve to divert gray water to the building sanitary system when soils are saturated or frozen, there is a blockage or backup in the system, the maximum allowed gallons per day is reached, or when system maintenance is necessary.

1403.2.3 Overflow connection. Systems shall have a piped connection to the building drainage system to accommodate tank overflow.

PART O

CHAPTER 15

§1. The New York city plumbing code is amended by adding a new chapter 15 to read as follows:

CHAPTER 15

REFERENCED STANDARDS

SECTION PC 1501
GENERAL

1501.1 General. This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title and the section or sections of this document that reference the standard.

1501.2 Subsequent additions, modifications or deletions. Refer to the rules of the department for any subsequent additions, modifications or deletions that may have been made to the referenced national standards set forth herein in accordance with the exception contained in Section 28-103.19 of the *Administrative Code.*

1501.3 Applicability. The application of the referenced standards shall be as specified in Section 102.8.

SECTION PC 1502
STANDARDS

AHRI	Air-Conditioning, Heating, & Refrigeration Institute 4100 North Fairfax Drive, Suite 200 Arlington, VA 22203	
Standard reference number	Title	Referenced in code section number
1010—02	Self-contained, Mechanically Refrigerated Drinking-Water Coolers	410.1
810—16 Addendum 1	Performance Rating of Automatic Commercial Ice-makers	428.1.1

ANSI	American National Standards Institute 25 West 43rd Street, Fourth Floor New York, NY 10036	
Standard reference number	Title	Referenced in code section number
A118.10—99	pecifications for Load Bearing, Bonded, Waterproof Membranes for Thin Set Ceramic Tile and Dimension Stone Installation	417.5.2.5, 417.5.2.6
Z4.3—95	inimum Requirements for Nonsewered Waste-disposal Systems	311.1
Z21.22—99 (R2003)	elief Valves for Hot Water Supply Systems with Addenda Z21.22a—2000 (R2003) and Z21.22b—2001 (R2003)	504.2, 504.4, 504.4.1
CSA B45.5—11/ IAPMO Z124—11	Plastic Plumbing Fixtures	407.1, 415.1, 416.1, 416.2, 417.1, 418.1, 419.1, 420.1

API	American Petroleum Institute 1220 L Street NW Washington, DC 20005-4070	
Standard reference number	Title	Referenced in code section number
12D – 2008	Specification for Field Welded Tanks for Storage of Production Liquids, effective April 1, 2009	1302.7.2, 1303.10.2
12F – 2008	Specification for Shop Welded Tanks for Storage of Production Liquids, effective April 1, 2009	1302.7.2, 1303.10.2

ASCE/SEI	American Society of Civil Engineers Structural Engineering Institute 1801 Alexander Bell Drive Reston, VA 20191-4400	
Standard reference number	Title	Referenced in code section number
24—14	Flood Resistant Design and Construction	715.1, 1101.9.1

ASME	American Society of Mechanical Engineers Three Park Avenue New York, NY 10016-5990	
Standard reference number	Title	Referenced in code section number
A112.1.2—2004	Air Gaps in Plumbing Systems	406.1, 409.2, Table 608.1, 608.13.1
A112.1.3—2000 (R2011)	ir Gap Fittings for Use with Plumbing Fixtures, Appliances and Appurtenances	406.1, 409.2, Table 608.1, 608.13.1
A112.3.1—2007	ainless Steel Drainage Systems for Sanitary, DWV, Storm and Vacuum Applications Above and Below Ground	412.1, Table 702.1, Table 702.2, Table 702.3, Table 702.4, Table 1102.4, 1102.6, Table 1102.7
ASME A112.3.4—2013/ CSA B45.9—2013	acerating Toilet Systems and Related Components	712.4.1
A112.4.1— 2009	Water Heater Relief Valve Drain Tubes	504.6
A112.4.2—2009	Water Closet Personal Hygiene Devices	424.9
A112.4.3—1999 (R2010)	astic Fittings for Connecting Water Closets to the Sanitary Drainage System	405.4
A112.4.14—2004 (R2010)	anually Operated, Quarter-Turn Shutoff Valves for Use in Plumbing Systems	Table 605.7
A112.6.1M—1997 (R2008)	oor-affixed Supports for Off-the-floor Plumbing Fixtures for Public Use	405.4.3
A112.6.2—2000 (R2010)	aming-affixed Supports for Off-the-floor Water Closets with Concealed Tanks	405.4.3
A112.6.3—2001 (R2007)	Floor and Trench Drains	412.1
A112.6.4—2003 (R2008)	Roof, Deck, and Balcony Drains	1102.6
A112.6.7— 2010	ameled and Epoxy-coated Cast-iron and PVC Plastic Sanitary Floor Sinks	427.1

ASME	American Society of Mechanical Engineers Three Park Avenue New York, NY 10016-5990	
Standard reference number	Title	Referenced in code section number
A112.6.9—2005 (R2010)	Siphonic Roof Drains	1107.1
A112.14.1—2003	Backwater Valves	715.2
A112.14.3—2000	Grease Interceptors	1003.3.4
A112.14.4—2001 (Reaffirmed 2007)	Grease Removal Devices	1003.3.4
A112.18.1—2012/ CSA B125.1—2012	Plumbing Supply Fittings	424.1, 424.2, 424.3, 424.4, 424.6, 424.8, Table 605.7, 607.4, 608.2
A112.18.2—2011/ CSA B125.2—2011	Plumbing Waste Fittings	424.1.2
A112.18.3—2002 (Reaffirmed 2008)	Performance Requirements for Backflow Protection Devices and Systems in Plumbing Fixture Fittings	424.2, 424.6
A112.18.6/ CSA B125.6—2009	Flexible Water Connectors	605.6
A112.18.9—2011	Protectors/Insulators for Exposed Waste and Supplies on Accessible Fixtures	404.3
A112.19.1—2013/ CSA B45.2—2013	Enameled Cast Iron and Enameled Steel Plumbing Fixtures	407.1, 410.1, 415.1, 416.1, 418.1
A112.19.2—2013/ CSA B45.1—13	Ceramic Plumbing Fixtures	401.2, 405.9, 407.1, 408.1, 410.1, 415.1, 416.1, 417.1, 418.1, 419.1, 420.1
A112.19.3— 2008/ CSA B45.4—08(R2013)	Stainless Steel Plumbing Fixtures	405.9, 407.1, 415.1, 416.1, 418.1, 420.1
A112.19.5—2011/ CSA B45.15—2011	Flush Valves and Spuds for Water-closets, Urinals, and Tanks	425.4

ASME	American Society of Mechanical Engineers Three Park Avenue New York, NY 10016-5990	
Standard reference number	Title	Referenced in code section number
A112.19.7M—2012/ CSA B45.10—2012	Hydromassage Bathtub Systems	421.1, 421.4
A112.19.12—2006	Wall Mounted and Pedestal Mounted, Adjustable, Elevating, Tilting and Pivoting Lavatory, Sink and Shampoo Bowl Carrier Systems and Drain Systems	416.4, 418.3
A112.19.14-2006(R2011)	Six-Liter Water Closets Equipped with a Dual Flushing Device	420.1
A112.19.15—2005	Bathtub/Whirlpool Bathtubs with Pressure Sealed Doors	407.4, 421.6
A112.19.19—2006	Vitreous China Nonwater Urinals	419.1
A112.21.3-1985(R2007)	Hydrants for Utility and Maintenance Use	Table 608.1, 608.13.6
A112.36.2M—1991 (R2008)	Cleanouts	709.1.10.2
ASSE 1016/ ASME A112.1016/ CSA B125.16-2011	Performance Requirements for Individual Thermostatic, Pressure Balancing and Combination Control Valves for Individual Fixture Fittings	424.3, 424.4, 607.4
B1.20.1—1983(R2006)	Pipe Threads, General Purpose (inch)	605.11.3, 605.13.4, 705.2.3, 705.3.3, 705.6.4, 705.9.1, 705.11.3, 803.3.4.1.3
B16.3—2011	Malleable Iron Threaded Fittings Classes 150 and 300	Table 702.4, Table 1102.7
B16.4—2011	Gray Iron Threaded Fittings Classes 125 and 250	Table 605.5, Table 702.4, Table 1102.7
B16.12— 2009	Cast-iron Threaded Drainage Fittings	Table 702.4, Table 1102.7
B16.15—2011	Cast Bronze Threaded Fittings	Table 605.5, Table 702.4

ASME	American Society of Mechanical Engineers Three Park Avenue New York, NY 10016-5990	
Standard reference number	Title	Referenced in code section number
B16.18— 2012	Cast Copper Alloy Solder Joint Pressure Fittings	Table 605.5, Table 702.4
B16.22—2001 (R2010)	Wrought Copper and Copper Alloy Solder Joint Pressure Fittings	Table 605.5, Table 702.4
B16.23—2011	Cast Copper Alloy Solder Joint Drainage Fittings (DWV)	Table 702.4
B16.26—2011	Cast Copper Alloy Fittings for Flared Copper Tubes	Table 605.5, Table 702.4
B16.29—2012	Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings (DWV)	Table 702.4
B31.9 — 2017	Building Services Piping	605.23.2
BPVC—2010	Boiler and Pressure Vessel Code	312.11.1, 501.2

ASPE	American Society of Plumbing Engineers 8614 Catalpa Avenue, Suite 1007 Chicago, IL 60656-1116	
Standard reference number	Title	Referenced in code section number
45—2013	Siphonic Roof Drainage Systems	1107.1

ASSE	American Society of Sanitary Engineering 901 Canterbury Road, Suite A Westlake, OH 44145	
Standard reference number	Title	Referenced in code section number
1001—08	Performance Requirements for Atmospheric Type Vacuum Breakers	425.2, Table 608.1, 608.13.6, 608.16.4.1

ASSE	American Society of Sanitary Engineering 901 Canterbury Road, Suite A Westlake, OH 44145	
Standard reference number	Title	Referenced in code section number
1002—08	Performance Requirements for Antisiphon Fill Valves (Ballcocks) for Gravity Water Closet Flush Tanks	425.3.1, Table 608.1
1003—09	Performance Requirements for Water Pressure Reducing Valves	604.8
1004—08	Performance Requirements for Backflow Prevention Requirements for Commercial Dishwashing Machines	409.1
1008—06	Performance Requirements for Plumbing Aspects of Food Waste Disposer Units	413.1
1010—04	Performance Requirements for Water Hammer Arresters	604.9
1011—04	Performance Requirements for Hose Connection Vacuum Breakers	Table 608.1, 608.13.6
1012—09	Performance Requirements for Backflow Preventers with Intermediate Atmospheric Vent	Table 608.1, 608.13.3, 608.16.2
1013—09	Performance Requirements for Reduced Pressure Principle Backflow Preventers and Reduced Pressure Principle Fire Protection Backflow Preventers	Table 608.1, 608.13.2, 608.16.2
1015—09	Performance Requirements for Double Check Backflow Prevention Assemblies and Double Check Fire Protection Backflow Prevention Assemblies	Table 608.1, 608.13.7
ASSE 1016/ ASME A112.1016/ CSA B125.16—2011	Performance Requirements for Individual Thermostatic, Pressure Balancing and Combination Control Valves for Individual Fixture Fittings	424.3, 424.4, 607.4, 613.1
1017—2010	Performance Requirements for Temperature Actuated Mixing Valves for Hot Water Distribution Systems	501.2.3, 613.1
1018—2010	Performance Requirements for Trap Seal Primer Valves; Potable Water Supplied	1002.4.1.1, 1002.4.1.2
1019—2010	Performance Requirements for Vacuum Breaker Wall Hydrants, Freeze Resistant, Automatic Draining Type	Table 608.1, 608.13.6,
1020—04	Performance Requirements for Pressure Vacuum Breaker Assembly	Table 608.1, 608.13.5
1022—03	Performance Requirements for Backflow Preventer for Beverage Dispensing Equipment	Table 608.1, 608.16.1, 608.16.10

ASSE	American Society of Sanitary Engineering 901 Canterbury Road, Suite A Westlake, OH 44145	
Standard reference number	Title	Referenced in code section number
1024—04	Performance Requirements for Dual Check Valve Type Backflow Preventers (for Residential Supply Service or Individual Outlets)	Table 608.1, 608.13.10
1035—08	Performance Requirements for Laboratory Faucet Backflow Preventers	Table 608.1, 608.13.6
1037—90	Performance Requirements for Pressurized Flushing Devices for Plumbing Fixtures	425.2
1047—2009	Performance Requirements for Reduced Pressure Detector Fire Protection Backflow Prevention Assemblies	Table 608.1, 608.13.2
1048—2009	Performance Requirements for Double Check Detector Fire Protection Backflow Prevention Assemblies	Table 608.1, 608.13.7
1052—04	Performance Requirements for Hose Connection Backflow Preventers	Table 608.1, 608.13.6
1055—2009	Performance Requirements for Chemical Dispensing Systems	608.13.9
1056—2010	Performance Requirements for Spill Resistant Vacuum Breaker	Table 608.1, 608.13.5, 608.13.8
1060—2006	Performance Requirements for Outdoor Enclosures for Fluid Conveying Components	608.14.1
1061—2010	Performance Requirements for Removable and Nonremovable Push Fit Fittings	Table 605.5, 605.14.4
1062—2006	Performance Requirements for Temperature Actuated, Flow Reduction Valves to Individual Supply Fittings	424.7
1066—2009	Performance Requirements for Individual Pressure Balancing In-line Valves for Individual Fixture Fittings	604.11
1069—05	Performance Requirements for Automatic Temperature Control Mixing Valves	424.4
1070—04	Performance Requirements for Water-temperature Limiting Devices	408.3, 416.5, 423.3, 424.5, 607.1.2
1079—2005	Performance Requirements for Dielectric Pipe Unions	605.24.1, 605.24.3

ASSE	American Society of Sanitary Engineering 901 Canterbury Road, Suite A Westlake, OH 44145	
Standard reference number	Title	Referenced in code section number
5013—2009	Performance Requirements for Testing Reduced Pressure Principle Backflow Prevention Assembly (RPA) and Reduced Pressure Fire Protection Backflow Preventers (RFP)	312.10.2
5015—2009	Performance Requirements for Testing Double Check Valve Backflow Prevention Assemblies (DC) and Double Check Fire Protection Backflow Prevention Assemblies (DCF)	312.10.2
5020—2009	Performance Requirements for Testing Pressure Vacuum Breaker Assemblies (PVBA)	312.10.2
5047—98	Performance Requirements for Testing Reduced Pressure Detector Fire Protection Backflow Prevention Assemblies (RPDA)	312.10.2
5048—2009	Performance Requirements for Testing Double Check Valve Detector Assembly (DCDA)	312.10.2
5052—98	Performance Requirements for Testing Hose Connection Backflow Preventers	312.10.2
5056—98	Performance Requirements for Testing Spill Resistant Vacuum Breaker (SRVB)	312.10.2

ASTM	ASTM International 100 Barr Harbor Drive West Conshohocken, PA 19428-2959	
Standard reference number	Title	Referenced in code section number
A 53/A 53M—12	Specification for Pipe, Steel, Black and Hot-dipped, Zinc-coated Welded and Seamless	Table 702.1, Table 702.3, Table 1102.4

ASTM	ASTM International 100 Barr Harbor Drive West Conshohocken, PA 19428-2959	
Standard reference number	Title	Referenced in code section number
A 74—13A	Specification for Cast-iron Soil Pipe and Fittings	Table 702.1, Table 702.2, Table 702.3, Table 702.4, 708.1.6, Table 1102.4, Table 1102.5, Table 1102.7
A 123 – 12	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products	Table 702.3, Table 1102.4
A 153/A 153M—16a	Specifications for Zinc Coating (Hot Dip) on Iron and Steel Hardware	Table 702.4, Table 1102.7
A 312/A 312M—13a	Specification for Seamless, Welded, And Heavily Cold Worked Austenitic Stainless Steel Pipes	Table 605.4, Table 605.4.1, Table 605.5, Table 1301.6
A 403/A 403M—11	Specification for Wrought Austenitic Stainless Steel Piping Fittings	Table 605.5, Table 605.8
A 518/A 518M—99 (2012)	Standard Specification for Corrosion-Resistant High-Silicon Iron Castings	Table 803.3.1
A 778—01(2009)e1	Specification for Welded Unannealed Austenitic Stainless Steel Tubular Products	Table 605.4, Table 605.4.1, Table 605.5, Table 1301.6
A 861—04 (2017)	Standard Specification for High-Silicon Iron Pipe and Fittings	Table 803.3.2
A 888—13A	Specification for Hubless Cast-iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Application	Table 702.1, Table 702.2, Table 702.3, Table 702.4, Table 1102.4, Table 1102.5, Table 1102.7
B 32—08	Specification for Solder Metal	605.14.6, 705.6.3, 705.7.3
B 42—10	Specification for Seamless Copper Pipe, Standard Sizes	Table 605.4, Table 605.4.1, 702.1, Table 1301.6

ASTM	ASTM International 100 Barr Harbor Drive West Conshohocken, PA 19428-2959	
Standard reference number	Title	Referenced in code section number
B 43—09	Specification for Seamless Red Brass Pipe, Standard Sizes	Table 605.4, Table 605.4.1, Table 702.1, Table 1301.6
B 62—17	Specification for Composition Bronze or Ounce Metal Castings	Table 605.5, Table 702.4, Table 1102.7
B 75—11	Specification for Seamless Copper Tube	Table 605.4, Table 605.4.1, Table 702.1, Table 702.2, Table 702.3, Table 1102.4, Table 1102.7, Table 1301.6
B 88—09	Specification for Seamless Copper Water Tube	Table 605.4, Table 605.4.1, Table 702.1, Table 702.2, Table 702.3, Table 1102.4, Table 1102.7, Table 1301.6, Figure E103.3(2), Figure E103.3(3)
B 152/B 152M—13	Specification for Copper Sheet, Strip Plate and Rolled Bar	402.3, 417.5.2.4, 425.3.3, 902.2
B 251—10	Specification for General Requirements for Wrought Seamless Copper and Copper-alloy Tube	Table 605.3, Table 605.4, Table 605.4.1, Table 702.1, Table 702.2, Table 702.3, Table 1102.4, Table 1102.7, Table 1301.6
B 302—12	Specification for Threadless Copper Pipe, Standard Sizes	Table 605.4, Table 605.4.1, Table 702.1, Table 1301.6

ASTM	ASTM International 100 Barr Harbor Drive West Conshohocken, PA 19428-2959	
Standard reference number	Title	Referenced in code section number
B 447—12a	Specification for Welded Copper Tube	Table 605.4, Table 605.4.1, Table 1301.6
B 687— (2011)	Specification for Brass, Copper and Chromium-plated Pipe Nipples	Table 605.8
B 813—10	Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube	605.14.6, 705.6.3, 705.7.3
B 828—02(2010)	Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings	605.14.6, 705.6.3, 705.7.3
C 4—04(2009)	Specification for Clay Drain Tile and Perforated Clay Drain Tile	Table 702.3, Table 1102.4, Table 1102.5
C 14—11	Specification for Nonreinforced Concrete Sewer, Storm Drain and Culvert Pipe	Table 702.3, Table 1102.4
C 76—13a	Specification for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe	Table 702.3, Table 1102.4
C 425—04(2009)	Specification for Compression Joints for Vitrified Clay Pipe and Fittings	Table 702.4, 705.12, 705.16, Table 1102.7
C 443—12	Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets	705.5, 705.16
C 564—12	Specification for Rubber Gaskets for Cast-iron Soil Pipe and Fittings	705.4.2, 705.4.3, 705.16
C 654—15	Standard Specification for Porous Concrete Pipe	Table 1102.5
C 700—13	Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated	Table 702.3, Table 702.4, Table 1102.4, Table 1102.5
C 1053—00 (2010)	Specification for Borosilicate Glass Pipe and Fittings for Drain, Waste, and Vent (DWV) Applications	Table 803.3.1, Table 803.3.2

ASTM	ASTM International 100 Barr Harbor Drive West Conshohocken, PA 19428-2959	
Standard reference number	Title	Referenced in code section number
C 1173—10e1	Specification for Flexible Transition Couplings for Underground Piping System	705.2.1, 705.5, 705.11.1, 705.12, 705.13.2, 705.16,
C 1277—12	Specification for Shielded Coupling Joining Hubless Cast-iron Soil Pipe and Fittings	705.4.3
C 1440—08	Specification for Thermoplastic Elastomeric (TPE) Gasket Materials for Drain, Waste, and Vent (DWV), Sewer, Sanitary and Storm Plumbing Systems	705.16
C 1460—08	Specification for Shielded Transition Couplings for Use with Dissimilar DWV Pipe and Fittings Above Ground	705.16
C 1461—08	Specification for Mechanical Couplings Using Thermoplastic Elastomeric (TPE) Gaskets for Joining Drain, Waste and Vent (DWV) Sewer, Sanitary and Storm Plumbing Systems for Above and Below Ground Use	705.16
C 1540—11	Specification for Heavy Duty Shielded Couplings Joining Hubless Cast-iron Soil Pipe and Fittings	705.4.3
C 1563—13	Standard Test Method for Gaskets for Use in Connection with Hub and Spigot Cast Iron Soil Pipe and Fittings for Sanitary Drain, Waste, Vent and Storm Piping Applications	705.4.2
D 1586—11	Standard Test Method for Standard Penetration Test (SPT) and Split-barrel Sampling of Soils	1114.2.1
D 1587—15	Standard Practice for Thin-walled Tube Sampling of Soils for Geotechnical Purposes	1114.2.1
D 2235—04(2011)	Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings	705.2.2
D 2464—15	Specification for Threaded Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80	Table 1102.7
D 2466—17	Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40	Table 1102.7
D 2467—15	Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80	Table 1102.7

ASTM	ASTM International 100 Barr Harbor Drive West Conshohocken, PA 19428-2959	
Standard reference number	Title	Referenced in code section number
D 2564—12	Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems	705.11.2
D 2657—07	Practice for Heat Fusion-joining of Polyolefin Pipe and Fitting Waste, and Vent Pipe and Fittings	705.13.1, Table 1102.7
D 2661—11	Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings	Table 702.1, Table 702.4, 705.2.2, Table 1102.7
D 2665—12	Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings	Table 702.1, Table 702.2, Table 702.3, Table 702.4, Table 1102.4, Table 1102.7, Table 1403.2.1
D 2729—11	Specification for Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings	Table 1102.5, Table 1403.2
D 2751—05	Specification for Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings	Table 702.4, Table 1102.7
D 2846 – 09be1	Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Hot and Cold Water Distribution Systems	Table 1301.6
D 2855—96 (2010)	Standard Practice for Making Solvent-cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings	705.11.2
D 2949—10	Specification for 3.25-in Outside Diameter Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings	Table 702.1, Table 702.4, Table 1403.2.1
D 3034—08	Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings	Table 702.3, Table 702.4, Table 1102.4, Table 1102.5, Table 1102.7, Table 1403.2.1
D 3212—07	Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals	705.2.1, 705.11.1, 705.13.2

ASTM	ASTM International 100 Barr Harbor Drive West Conshohocken, PA 19428-2959	
Standard reference number	Title	Referenced in code section number
D 3311—11	Specification for Drain, Waste and Vent (DWV) Plastic Fittings Patterns	Table 1102.7
D 3350—14	Specification for High Density Polyethylene Pipe (HPDE)	Table 1102.4, Table 1102.7
D 4068—09	Specification for Chlorinated Polyethlene (CPE) Sheeting for Concealed Water-containment Membrane	417.5.2.2
D 4551— 12	Specification for Poly (Vinyl Chloride) (PVC) Plastic Flexible Concealed Water-containment Membrane	417.5.2.1
F 405—05	Specification for Corrugated Polyethylene (PE) Pipe and Fittings	Table 1102.5, Table 1403.2, Table 1403.2.1
F 409—12	Specification for Thermoplastic Accessible and Replaceable Plastic Tube and Tubular Fittings	424.1.2
F 437—15	Specification for Threaded Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80	Table 702.3, Table 702.4, Table 1102.4, Table 1102.7
F 438—17	Specification for Socket-type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40	Table 702.3, Table 702.4, Table 1102.4, Table 1102.7
F 439—13	Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80	Table 702.3, Table 702.4, Table 1102.4, Table 1102.7
F 477—10	Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe	705.16
F 628—08	Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe with a Cellular Core	Table 702.1, Table 702.4, 705.2.2, Table 1102.7
F 656—10	Specification for Primers for Use in Solvent Cement Joints of Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings	705.11.2

ASTM	ASTM International 100 Barr Harbor Drive West Conshohocken, PA 19428-2959	
Standard reference number	Title	Referenced in code section number
F 891—10	Specification for Coextruded Poly (Vinyl Chloride) (PVC) Plastic Pipe with a Cellular Core	Table 702.1 Table 702.2, Table 702.3, Table 1102.4, Table 1102.5
F 1412—09	Specification for Polyolefin Pipe and Fittings for Corrosive Waste Drainage	Table 702.2, Table 803.3.1, Table 803.3.2, 803.3.4.4.1, 803.3.4.5.1, Table 1102.7
F 1488—09e1	Specification for Coextruded Composite Pipe	Table 702.1, Table 702.2, Table 1403.2
F 1673—10	Polyvinylidene Fluoride (PVDF) Corrosive Waste Drainage Systems	Table 803.3.1, Table 803.3.2, 803.3.4.6.1, Table 1102.7
F 1866—07	Specification for Poly (Vinyl Chloride) (PVC) Plastic Schedule 40 Drainage and DWV Fabricated Fittings	Table 702.4, Table 1102.7, Table 1403.2.1
F 2306/F 2306M—13	12" to 60" Annular Corrugated Profile-wall Polyethylene (PE) Pipe and Fittings for Gravity Flow Storm Sewer and Subsurface Drainage Applications	Table 702.4, Table 1102.7
F 2389—10	Specification for Pressure-rated Polypropylene (PP) Piping Systems	Table 1301.6, Table 1403.2, Table 1403.2.1
F 2618 —15	Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Fittings for Chemical Waste Drainage Systems	Table 803.3.1, Table 803.3.2, 803.3.4.1.2
F 2764 —17e1	Standard Specification for 6 to 60 in. [150 to 1500 mm] Polypropylene (PP) Corrugated Double and Triple Wall Pipe	Table 1102.5
F 3219 —17	Standard Specification for 3 to 30 in. (75 To 750 mm) Polypropylene (PP) Corrugated Single Wall Pipe and Fittings	Table 1102.5

AWS	American Welding Society 8669 NW 36 Street, #130 Doral, FL 33166	
Standard reference number	Title	Referenced in code section number
A5.8 M/A5.8—2011	Specifications for Filler Metals for Brazing and Braze Welding	605.11.1, 605.13.1, 605.14.1, 705.3.1, 705.6.1, 705.7.1,

AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235	
Standard reference number	Title	Referenced in code section number
C110/A21.10—12	Ductile-iron and Gray-iron Fittings	Table 605.5, Table 702.4, Table 1102.7
C111/A21.11-12	Rubber-gasket Joints for Ductile-iron Pressure Pipe and Fittings	605.12
C115/A21.15—11	Flanged Ductile-iron Pipe with Ductile-iron or Gray-iron Threaded Flanges	Table 605.4, Table 605.4.1
C151/A21.51—02	Standard for Ductile-iron Pipe, Centrifugally Cast for Water	Table 605.4, Table 605.4.1, Table 702.1, Table 702.2. Table 702.3, Table 1102.4
C153—00/A21.53—11	Ductile-iron Compact Fittings for Water Service	Table 605.5
C500—09	Standard for Metal-Seated Gate Valves for Water Supply Service	Table 605.7
C504—10	Standard for Rubber-Seated Butterfly Valves	Table 605.7
C507—11	Standard for Ball Valves, 6 In. Through 60 In	Table 605.7
C510—07	Double Check Valve Backflow Prevention Assembly	Table 608.1, 608.13.7

AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235	
Standard reference number	Title	Referenced in code section number
C511—07	Reduced-pressure Principle Backflow Prevention Assembly	Table 608.1, 608.13.2, 608.16.2
C651—05	Disinfecting Water Mains	610.1
C652—11	Disinfection of Water-storage Facilities	610.1
D100 – 2005	Standard for Welded Carbon Steel Tanks for Water Storage	1302.7.2, 1303.10.2
D115 – 2006	Standard for Tendon Prestressed-Concrete Water Tanks	1302.7.2, 1303.10.2
D120 – 2009	Standard for Thermosetting Fiberglass Reinforced Plastic Tanks	1302.7.2, 1303.10.2

CISPI	Cast Iron Soil Pipe Institute 5959 Shallowford Road, Suite 419 Chattanooga, TN 37421	
Standard reference number	Title	Referenced in code section number
301—04a	Specification for Hubless Cast-iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste and Vent Piping Applications	Table 702.1, Table 702.2, Table 702.3, Table 702.4, Table 1102.4, Table 1102.5, Table 1102.7
310—11	Specification for Coupling for Use in Connection with Hubless Cast-iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste and Vent Piping Applications	308.5.1, 308.6.1, 705.4.3

CSA	CSA Group 8501 East Pleasant Valley Cleveland, OH 44131-5516	
Standard reference number	Title	Referenced in code section number
A257.1M—2009	Circular Concrete Culvert, Storm Drain, Sewer Pipe and Fittings	Table 702.3, Table 1102.4
A257.2M—2009	Reinforced Circular Concrete Culvert, Storm Drain, Sewer Pipe and Fittings	Table 702.3, Table 1102.4
A257.3M—2009	Joints for Circular Concrete Sewer and Culvert Pipe, Manhole Sections and Fittings Using Rubber Gaskets	705.5, 705.16
ASME A112.3.4—2013/ CSA B45.9—2013	Macerating Systems and Related Components	712.4.1
ASME A112.18.1—2012/ CSA B125.1—2012	Plumbing Supply Fittings	424.1, 424.2, 424.3, 424.4, 424.6, 424.8, Table 605.7, 607.4, 608.2
ASME A112.18.2—2011/ CSA B125.2—2011	Plumbing Waste Fittings	424.1.2
ASME A112.19.1—2013/ CSA B45.2—2013	Enameled Cast-iron and Enameled Steel Plumbing Fixtures	407.1, 410.1, 415.1, 416.1, 418.1
ASME A112.19.2—2013/ CSA B45.1—2013	Ceramic Plumbing Fixtures	401.2, 405.9, 407.1, 408.1, 410.1, 415.1, 416.1, 417.1, 418.1, 419.1, 420.1
ASME A112.19.3—2008/ CSA B45.4—08(R2013)	Stainless-steel Plumbing Fixtures	405.9, 407.1, 415.1, 416.1, 418.1, 420.1
ASME A112.19.5—2011/ CSA B45.15—2011	Flush Valves and Spuds for Water-closets, Urinals and Tanks	425.4

CSA	CSA Group 8501 East Pleasant Valley Cleveland, OH 44131-5516	
Standard reference number	Title	Referenced in code section number
ASME A112.19.7—2012/ CSA B45.10—2012	Hydromassage Bathtub Systems	421.1, 421.4
ASSE 1016/ ASME A112.1016/ CSA B125.16—2011	Performance Requirements for Individual Thermostatic, Pressure Balancing and Combination Control Valves for Individual Fixture Fittings	424.3, 424.4, 607.4
CSA B45.5—11/ IAPMO Z124-2011	Plastic Plumbing Fixtures	407.1, 415.1, 416.1, 416.2, 417.1, 418.1, 419.1, 420.1
B64.1.1—11	Vacuum Breakers, Atmospheric Type (AVB)	425.2, Table 608.1, 608.13.6, 608.16.4.1
B64.1.2—11	Pressure Vacuum Breakers, (PVB)	Table 608.1, 608.13.5
B64.1.3—11	Spill Resistant Pressure Vacuum Breaks (SRPVB)	608.13.8
B64.2—11	Vacuum Breakers, Hose Connection Type (HCVB)	Table 608.1, 608.13.6
B64.2.1—11	Vacuum Breakers, Hose Connection (HCVB) with Manual Draining Feature	Table 608.1, 608.13.6
B64.2.1.1—11	Hose Connection Dual Check Vacuum Breakers, (HCDVB)	Table 608.1, 608.13.6
B64.2.2—11	Vacuum Breakers, Hose Connection Type (HCVB) with Automatic Draining Feature	Table 608.1, 608.13.6
B64.3—11	Backflow Preventers, Dual Check Valve Type with Atmospheric Port (DCAP)	Table 608.1, 608.13.3, 608.16.2
B64.4—11	Backflow Preventers, Reduced Pressure Principle Type (RP)	Table 608.1, 608.13.2
B64.4.1—11	Reduced Pressure Principle for Fire Sprinklers (RPF)	Table 608.1, 608.13.2
B64.5—11	Double Check Backflow Preventers (DCVA)	Table 608.1, 608.13.7

CSA	CSA Group 8501 East Pleasant Valley Cleveland, OH 44131-5516	
Standard reference number	Title	Referenced in code section number
B64.5.1—11	Double Check Valve Backflow Preventer for Fire Systems (DCVAF)	Table 608.1 608.13.7
B64.6—11	Dual Check Backflow Preventers Valve (DuC)	Table 608.1, 608.13.10
B64.7—11	Laboratory Faucet Vacuum Breakers (LFVB)	Table 608.1, 608.13.6
B64.10—11	Manual for the Selection and Installation of Backflow Prevention Devices	312.10.2
B64.10.1—11	Maintenance and Field Testing of Backflow Preventers	312.10.2
B79— 08(R2013)	Commercial and Residential Drains, and Cleanouts	412.1
B125.3—2012	Plumbing Fittings	408.3, 423.3, 424.4, 424.5, 425.2, 425.3.1, Table 605.7
B137.2—02	PVC Injection-Moulded Gasketed Fittings for Pressure Applications	Table 1102.7
B137.3—13	Rigid Poly (Vinyl Chloride) (PVC) Pipe for Pressure Applications	705.11.2
B181.1—11	Acrylonitrile-butadiene-styrene ABS Drain, Waste and Vent Pipe and Pipe Fittings	Table 702.1, Table 702.4, 705.2.2, 715.2, Table 1102.7
B181.2—11	Polyvinylchloride PVC and chlorinated polyvinylchloride (CPVC) Drain, Waste, and Vent Pipe and Pipe Fittings	Table 702.1 Table 702.2, Table 702.3, 705.11.2, 715.2, Table 1102.4
B181.3—11	Polyolefin and Polyvinylidene Fluoride (PVDF) Laboratory Drainage Systems	Table 803.3.1, Table 803.3.2, 803.3.4.4.1, Table 1102.7
B182.1—11	Plastic Drain and Sewer Pipe and Pipe Fittings	705.11.2, Table 1102.5

CSA	CSA Group 8501 East Pleasant Valley Cleveland, OH 44131-5516	
Standard reference number	Title	Referenced in code section number
B182.2—11	PSM Type Polyvinylchloride PVC Sewer Pipe and Fittings	Table 702.3, Table 1102.4, Table 1102.5
B182.4—11	Profile Polyvinylchloride PVC Sewer Pipe and Fittings	Table 702.3, Table 1102.4, Table 1102.5
B182.6—11	Profile Polyethylene (PE) Sewer Pipe and Fittings for Leak-proof Sewer Applications	Table 1102.5
B182.8—11	Profile Polyethylene (PE) Storm Sewer and Drainage Pipe and Fittings	Table 1102.5
B356—10	Water Pressure Reducing Valves for Domestic Water Systems	604.8
B483.1—14	Drinking Water Treatment Units	611.1, 611.2
B602—10	Mechanical Couplings for Drain, Waste and Vent Pipe and Sewer Pipe	705.2.1, 705.4.3, 705.5, 705.11.1, 705.12, 705.13.2, 705.16

IAPMO	IAPMO Group 4755 E. Philadelphia Ontario, CA 91761	
Standard reference number	Title	Referenced in code section number
PS 117—08	Copper and Copper Allow Tubing System Incorporating Press-type or Nail-type Connections	605.14.4
CSA B45.5—11/ IAPMO Z124-2011	Plastic Plumbing Fixtures	407.1, 415.1, 416.1, 416.2, 417.1, 418.1, 419.1, 420.1

ICC	International Code Council, Inc. 500 New Jersey Ave, NW 6th Floor Washington, DC 20001	
Standard reference number	Title	Referenced in code section number
A117.1—2009	Accessible and Usable Buildings and Facilities	404.2, 410.1

ISEA	International Safety Equipment Association 1901 N. Moore Street, Suite 808 Arlington, VA 22209	
Standard reference number	Title	Referenced in code section number
ANSI/ISEA Z358.1—2009	Emergency Eyewash and Shower Equipment	411.1

MSS	Manufacturers Standardization Society Of the Valve and Fittings Industry, Inc. 127 Park St. NE Vienna, VA 22180-4602	
Standard reference number	Title	Referenced in code section number
SP-67—2011	Butterfly Valves	Table 605.7
SP-70—2011	Gray Iron Gate Valves, Flanged and Threaded Ends	Table 605.7
SP-71—2011	Gray Iron Swing Check Valves, Flanged and Threaded Ends	Table 605.7
SP-72—2010	Ball Valves with Flanged or Butt-Welding Ends for General Service	Table 605.7
SP-78—2011	Cast Iron Plug Valves, Flanged and Threaded Ends	Table 605.7
SP-80—2008	Bronze Gate, Globe, Angle and Check Valves	Table 605.7
SP-110—2010	Ball Valves, Threaded, Socket Welded, Solder Joint, Grooved and Flared Ends	Table 605.7

NFPA	National Fire Protection Association 1 Batterymarch Park Quincy, MA 02169-7471	
Standard reference number	Title	Referenced in code section number
51—13	Design and Installation of Oxygen-fuel Gas Systems for Welding, Cutting and Allied Processes	1201.1, 1203.1
55—13	Compressed Gases and Cryogenic Fluids Code	1201.1, 1203.1
99—15	Health Care Facilities Code	1201.1, 1202.1

NSF	NSF International 789 Dixboro Road Ann Arbor, MI 48105	
Standard reference number	Title	Referenced in code section number
3—2010	Commercial Warewashing Equipment	409.1
14—2011	Plastic Piping System Components and Related Materials	303.3, 611.3
18—2012	Manual Food and Beverage Dispensing Equipment	426.1
42—2011	Drinking Water Treatment Units-Aesthetic Effects	611.1, 611.3
44—2012	Residential Cation Exchange Water Softeners	611.1, 611.3
53—2011a	Drinking Water Treatment Units—Health Effects	611.1, 611.3
58—2012	Reverse Osmosis Drinking Water Treatment Systems	611.2, 611.3
61—2012	Drinking Water System Components—Health Effects	410.1, 424.1, 605.4, 605.4.1, 605.5, 605.7, 606.5.4.2, 611.3
62—2012	Drinking Water Distillation Systems	611.1
372—2010	Drinking Water Systems Components—Lead Content	605.2

PDI	Plumbing and Drainage Institute 800 Turnpike Street, Suite 300 North Andover, MA 01845	
Standard reference number	Title	Referenced in code section number
G101 (2012)	Testing and Rating Procedure for Grease Interceptors with Appendix of Sizing and Installation Data	1003.3.4

UL	UL LLC 333 Pfingsten Road Northbrook, IL 60062-2096	
Standard reference number	Title	Referenced in code section number
58 – 1996	Steel Underground Tanks for Flammable and Combustible Liquids-with revisions through July 27, 1998	1302.7.2, 1303.10.2
142 – 2006	Steel Aboveground Tanks for Flammable and Combustible Liquids-with revisions through February 12, 2010	1302.7.2, 1303.10.2
174—2004	Household Electric Storage Tank Water Heaters—with revisions through September 2012	502.1
430—2009	Waste Disposers—with revisions through March 23, 2011	413.1
732—1995	Oil-fired Storage Tank Water Heaters—with revisions through April 2010	502.1
921—2004	Integral gas fired heating commercial dishwashers	409.1
1316 – 1994	Glass-Fiber Reinforced Plastic Underground Storage Tanks for Petrolium Products, Alcohols and Alcohol Gasoline Mixtures-with revisions through May 12, 2006	1302.7.2, 1303.10.2
1453—2004	Electric Booster and Commercial Storage Tank Water Heaters—with revisions through July 2011	502.1
1746 – 2007	External Corrosion Protection Systems for Steel Underground Storage Tanks	1302.7.2, 1303.10.2
1795—2009	Hydromassage Bathtubs including revisions through August 23, 2011	421.1

WaterSense	WaterSense U.S. Environmental Protection Agency Office of Wastewater Management (4204M) 1200 Pennsylvania Avenue, N.W. Washington, D.C. 20460	
Standard reference number	Title	Referenced in code section number
v.1.0—October 1, 2007	High-efficiency Lavatory Faucet Specifications	604.4.1
v.1.0—October 8, 2009	WaterSense Specification for Flushing Urinals	604.4.1
v.1.0—December 17, 2015	WaterSense Specification for Flushometer-Valve Water Closets	604.4.1
v.1.1—July 26, 2018	WaterSense Specification for Showerheads	604.4.1
v.1.2—June 2, 2014	WaterSense Specification for Tank-Type Toilets	604.4.1

PART P

APPENDICES

§1. The title of appendix A of the New York city plumbing code, as added by local law number 99 for the year 2005, is amended to read as follows:

APPENDIX A
[~~PLUMBING PERMIT FEE SCHEDULE~~]

RESERVED

§2. The title of appendix B of the New York city plumbing code, as added by local law number 99 for the year 2005, is amended to read as follows:

APPENDIX B
[~~RATES OF RAINFALL FOR VARIOUS CITIES~~]

RESERVED

§3. Appendix C of the New York city plumbing code is REPEALED and a new appendix C is added to read as follows:

APPENDIX C

STRUCTURAL SAFETY

SECTION PC C101
CUTTING, NOTCHING AND BORING

C101.1 Cutting, notching and boring in wood members. The cutting, notching and boring of wood members shall comply with Sections C101.1.1 through C101.1.5.

C101.1.1 Engineered wood products. Cuts, notches and holes bored in trusses, structural composite lumber, structural glued-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.

C101.1.2 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 (51 mm) of the top or bottom of the joist, and the diameter of any such hole shall not exceed one-third of 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 (51 mm). See Figure 2308.5.8 of the *New York City Building Code*.

C101.1.3 Stud cutting and notching. In exterior walls and bearing partitions, wood studs are permitted to be cut or notched to a depth not exceeding 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*.

C101.1.4 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 $^5/_8$ 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*.

C101.1.5 Drilling and notching of top plate. When piping 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 $1^1/_2$ inches (38 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 $1^1/_2$ inches (38 mm) at each side or equivalent. The metal tie must extend a minimum of 6 inches 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.

C101.2 Cutting, notching and boring in steel members. The cutting, notching and boring of steel members shall comply with Sections C101.2.1 through C101.2.4.

C101.2.1 Structural steel framing. The cutting, notching and boring of holes in structural steel framing members shall be as prescribed by the registered design professional.

C101.2.2 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.

C101.2.3 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 1½ inches (38 mm) in width or 4 inches (102 mm) in length, and the holes shall not be spaced less than 24 inches (610 mm) center to center from another hole or less than 10 inches (254 mm) from the bearing end.

C101.2.4 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.

C101.3 Cutting, notching and coring into concrete. The cutting, notching or coring of concrete must comply with provisions of Chapter 19 of the *New York City Building Code* and is not permitted without prior approval of the registered design professional.

§4. The title to appendix D of the New York city plumbing code, as added by local law number 99 for the year 2005, is amended to read as follows:

APPENDIX D

[~~DEGREE DAY AND DESIGN TEMPERATURES~~]

RESERVED

§5. Appendix E of the New York city plumbing code, as added by local law number 99 for the year 2005, section E101.1.1, "Line B" of "Step 2" of section E103.3, "Step 7 Column 6" of section E103.3, "Example E103.3(1)" following "Step 7 Column 6" of section E103.3, "Step 10 Column 9" of section E103.3, "Example E103.3(2)" following "Step 10 Column 9" of section E103.3, and the title of Figure E103.3(7) as amended by local law number 41 for the year 2012, section E103.2.2 and item 3.7 of section E103.3 as amended by local law number 141 for the year 2013, and Figure E 103.3(1) and section E202 as added by local law number 41 for the year 2012, is amended to read as follows:

APPENDIX E

SIZING OF WATER PIPING SYSTEM

SECTION PC E101
GENERAL

E101.1 Scope.

E101.1.1 This appendix outlines [~~two procedures which~~] <u>the procedure that</u> may be utilized for sizing a water piping system (see Section E103.3). The design [~~procedures are~~] <u>procedure is</u> based on the minimum static pressure available from the supply source, the head changes in the system caused by friction and elevation, and the rates of flow necessary for operation of various fixtures.

SECTION* PC *E102
INFORMATION REQUIRED

E102.1 Preliminary. Obtain the necessary information regarding the minimum daily static service pressure in the area where the building is to be located. If the building supply is to be metered, obtain information regarding friction loss relative to the rate of flow for meters in the range of sizes likely to be used. Friction loss data can be obtained from most manufacturers of water meters.

E102.2 Demand load.

E102.2.1 Estimate the supply demand of the building main and the principal branches and risers of the system by totaling the corresponding demand from the applicable part of Table E103.3(3).

E102.2.2 Estimate continuous supply demands in gallons per minute (L/m) for lawn sprinklers, air conditioners, etc., and add the sum to the total demand for fixtures. The result is the estimated supply demand for the building supply.

SECTION* PC *E103
SELECTION OF PIPE SIZE

E103.1 General. Decide from Table 604.3 what is the desirable minimum residual pressure that should be maintained at the highest fixture in the supply system. If the highest group of fixtures contains [~~flush~~] <u>flushometer</u> valves, the pressure for the group should <u>be</u> not [~~be~~] less than 15 [~~psi~~] <u>pounds per square inch (psi)</u> (103.4 kPa) flowing. For flush tank supplies, the available pressure should <u>be</u> not [~~be~~] less than 8 psi (55.2 kPa) flowing, except blowout action fixtures must <u>be</u> not [~~be~~] less than 25 psi (172.4 kPa) flowing.

E103.2 Pipe sizing.

E103.2.1 Pipe sizes can be selected according to the following procedure or by other design methods conforming to acceptable engineering practice and approved by the department. The sizes selected must not be less than the minimum required by this code.

E103.2.2 Water pipe sizing procedures are based on a system of pressure requirements and losses, the sum of which must not exceed the minimum pressure available at the supply source. These pressures are as follows:

1. Pressure required at fixture to produce required flow. See [~~Section~~] Sections 604.3 and [~~Section~~]604.5.
2. Static pressure loss or gain (due to head) is computed at 0.433 psi per foot (9.8 kPa/m) of elevation change.

Example: Assume that the highest fixture supply outlet is 20 feet (6096 mm) above or below the supply source. This produces a static pressure differential of 20 feet by 0.433 psi/foot (6096 mm by 9.8 kPa/m), equaling 8.66 psi (59.8 kPa) [~~loss~~].

3. Loss through water meter. The friction or pressure loss can be obtained from meter manufacturers.
4. Loss through taps in water main.
5. Losses through special devices such as filters, softeners, backflow prevention devices and pressure regulators. These values must be obtained from the manufacturers.
6. Loss through valves and fittings. Losses for these items are calculated by converting to equivalent length of piping and adding to the total pipe length.
7. Loss due to pipe friction can be calculated when the pipe size, the pipe length and the flow through the pipe are known. With these three items, the friction loss can be determined using Figures E103.3(2), E103.3(3), E103.3(5), E103.3(6), and E103.3(7). For piping flow charts not included, use manufacturers' tables and velocity recommendations.

Note: For the purposes of all examples, the following metric conversions are applicable:

1 cubic foot per minute = 0.4719 L/s

1 square foot = 0.0929 m^2

1 degree = 0.0175 rad

1 pound per square inch = 6.895 kPa

1 inch = 25.4 mm

1 foot = 304.8 mm

1 gallon per minute = [~~3.7 85~~] 3.785 L/m

E103.3 Segmented loss method. The size of water service mains, branch mains and risers by the segmented loss method, must be determined according to water supply demand gpm (L/m), available water pressure psi (kPa) and friction loss caused by the water meter and developed length of pipe feet (m), including equivalent length of fittings. This design procedure is based on the following parameters:

- [~~Calculate~~] Calculation of the friction loss through each length of the pipe.
- [~~Based on a system~~] Evaluation of pressure losses, the sum of which must not exceed the minimum pressure available at the street main or other source of supply.
- Pipe sizing shall be based on (1) estimated peak demand, (2) total pressure losses caused by difference in elevation, equipment, developed length and pressure required at most remote fixture, (3) loss through taps in water main, (4) losses through fittings, filters, backflow prevention devices, valves and pipe friction.

Because of the variable conditions encountered in hydraulic design, it is impractical to specify definite and detailed rules for sizing of the water piping system. Current sizing methods do not address the differences in the probability of use and flow characteristics of fixtures between types of occupancies. Creating an exact model of predicting the demand for a building is impossible and final studies assessing the impact of water conservation on demand are not yet complete. The following steps are necessary for the segmented loss method.

1. **Preliminary.** Obtain the necessary information regarding the minimum daily static service pressure in the area where the building is to be located. If the building supply is to be metered, obtain information regarding friction loss relative to the rate of flow for meters in the range of sizes to be used. Friction loss data can be obtained from manufacturers of water meters. It is essential that enough pressure be available to overcome all system losses caused by friction and elevation so that plumbing fixtures operate properly. Section 604.6 requires the water distribution system to be designed for the minimum pressure available taking into consideration pressure fluctuations. The lowest pressure must be selected to guarantee a continuous, adequate supply of water. The lowest pressure in the public main usually occurs in the summer because of lawn sprinkling and supplying water for air-conditioning cooling towers. Future demands placed on the public main as a result of large growth or expansion should also be considered. The available pressure will decrease as additional loads are placed on the public system.

2. **Demand load.** Estimate the supply demand of the building main and the principal branches and risers of the system by totaling the corresponding demand from the applicable part of Table E103.3(3). When estimating peak demand sizing methods typically use water supply fixture units (see Table E103.3(2)). This numerical factor measures the load-producing effect of a single plumbing fixture of a given kind. The use of such fixture units can be applied to a single basic probability curve (or table), found in the various sizing methods (Table E103.3(3)). The fixture units are then converted into gallons per minute (L/m) flow rate for estimating demand.

2.1. Estimate continuous supply demand in gallons per minute (L/m) for lawn sprinklers, air conditioners, etc., and add the sum to the total demand for fixtures. The result is the estimated supply demand for the building supply. Fixture units cannot be applied to constant use fixtures such as hose bibbs, lawn sprinklers and air conditioners. These types of fixtures must be assigned the gallon per minute (L/m) value.

3. **Selection of pipe size.** This water pipe sizing procedure is based on a system of pressure requirements and losses, the sum of which must not exceed the minimum pressure available at the supply source. These pressures are as follows:

3.1. Pressure required at the fixture to produce required flow. See [~~Section~~] Sections 604.3 and [~~Section~~] 604.5.

3.2. Static pressure loss or gain ([~~due to~~] because of head) is computed at 0.433 psi per foot (9.8 kPa/m) of elevation change.

3.3. Loss through a water meter. The friction or pressure loss can be obtained from the manufacturer.

3.4. Loss through taps in water main (see Table E103.3(4)).

3.5. Losses through special devices such as filters, softeners, backflow prevention devices and pressure regulators. These values must be obtained from the manufacturers.

3.6. Loss through valves and fittings. Losses for these items are calculated by converting to equivalent length of piping and adding to the total pipe length. [~~[see Tables E103.3(5) and E103.3(6)]~~] (see Tables E103.3(5) and E103.3(6)).

3.7. Loss due to pipe friction can be calculated when the pipe size, the pipe length and the flow through the pipe are known. With these three items, the friction loss can be determined using Figures E103.3(2), E103.3(3), E103.3(5), E103.3(6), and E103.3(7). When using charts, use pipe inside diameters. For piping flow charts not included, use manufacturers' tables and velocity recommendations. Before attempting to size any water supply system, it is necessary to gather preliminary information [~~which~~] that includes available pressure, piping material, select design velocity, elevation differences and developed length to most remote fixture. The water supply system is divided into sections at major changes in elevation or where branches lead to fixture groups. The peak demand must be determined in each part of the hot and cold water supply system which includes the corresponding water supply fixture unit and conversion to gallons per minute (L/m) flow rate to be expected through each section. Sizing methods require the determination of the "most hydraulically remote" fixture to compute the pressure loss caused by pipe and fittings. The hydraulically remote fixture represents the most downstream fixture along the circuit of piping requiring the most available pressure to operate properly. Consideration must be given to all pressure demands and losses, such as friction caused by pipe, fittings and equipment, elevation and the residual pressure required by Table 604.3. The two most common and frequent complaints about the water supply system operation are lack of adequate pressure and noise.

Problem: What size Type L copper water pipe, service and distribution will be required to serve a two-story factory building having on each floor, back-to-back, two toilet rooms each equipped with hot and cold water? The highest fixture is 21 feet (6401 mm) above the street main, which is tapped with a 2-inch (51 mm) corporation cock at which point the minimum pressure is 55 psi (379.2 kPa). In the building basement, a 2-inch (51 mm) meter with a maximum pressure drop of 11 psi (75.8 kPa) and 3-inch (76 mm) reduced pressure principle backflow preventer with a maximum pressure drop of 9 psi (621 kPa) are to be installed. The system is shown by Figure E103.3(1). To be determined are the pipe sizes for the service main and the cold and hot water distribution pipes.

Solution: A tabular arrangement such as shown in Table E103.3(1) should first be constructed. The steps to be followed are indicated by the tabular arrangement itself as they are in sequence, [~~columns~~] Columns 1 through 10 and [~~lines~~] Lines A through L.

Step 1 Columns 1 and 2: Divide the system into sections breaking at major changes in elevation or where branches lead to fixture groups. After point B (see Figure E103.3(1)), separate consideration will be given to the hot and cold water piping. Enter the sections to be considered in the service and cold water piping in Column 1 of the tabular arrangement. Column 1 of Table E103.3(1) provides a line-by-line recommended tabular arrangement for use in solving pipe sizing.

The objective in designing the water supply system is to ensure an adequate water supply and pressure to all fixtures and equipment. Column 2 provides the pounds per square inch (psi) to be considered separately from the minimum pressure available at the main. Losses to take into consideration are the following: the differences in [~~elevations~~] elevation between the water supply source and the highest water supply outlet, meter pressure losses, the tap in main loss, special fixture devices such as water softeners and prevention devices and the pressure required at the most remote fixture outlet. The difference in elevation can result in an increase or decrease in available pressure at the main. Where the water supply outlet is located above the source, this results in a loss in the available pressure and is subtracted from the pressure at the water source. Where the highest water supply outlet is located below the water supply source, there will be an increase in pressure that is added to the available pressure of the water source.

Column 3: According to Table E103.3(3), determine the gpm (L/m) of flow to be expected in each section of the system. These flows range from 28.6 to 108 gpm. Load values for fixtures must be determined as water supply fixture units and then converted to a gallon-per-minute (gpm) rating to determine peak demand. When calculating peak demands, the water supply fixture units are added and then converted to the gallon-per-minute rating. For continuous flow fixtures such as hose bibbs and lawn sprinkler systems, add the gallon-per-minute demand to the intermittent demand of fixtures. For example, a total of 120 water supply fixture units is converted to a demand of 48 gallons per minute. Two hose bibbs × 5 gpm demand = 10 gpm. Total gpm rating = 48.0 gpm + 10 gpm = 58.0 gpm demand.

Step 2 Line A: Enter the minimum pressure available at the main source of supply in Column 2. This is 55 psi (379.2 kPa). The local water authorities generally keep records of pressures at different times of day and year. The available pressure can also be checked from nearby buildings or from fire department hydrant checks.

Line B: Determine from Table 604.3 the highest pressure required for the fixtures on the system, which is 15 psi (103.4 kPa), to operate a flushometer valve. The most remote fixture outlet is necessary to compute the pressure loss caused by pipe and fittings, and represents the most downstream fixture along the circuit of piping requiring the available pressure to operate properly as indicated by Table 604.3.

Line C: Determine the pressure loss for the meter size given or assumed. The total water flow from the main through the service as determined in Step 1 will serve to aid in the meter selected. There are three common types of water meters; the pressure losses are determined by the American Water Works Association Standards for displacement type, compound type and turbine type. The maximum pressure loss of such devices takes into consideration the meter size, safe operating capacity (gpm) and maximum rates for continuous operations (gpm). Typically, equipment imparts greater pressure losses than piping.

Line D: Select from Table E103.3(4) and enter the pressure loss for the tap size given or assumed. The loss of pressure through taps and tees in pounds per square inch (psi) [~~are~~] is based on the total gallon-per-minute flow rate and size of the tap.

Line E: Determine the difference in elevation between the main and source of supply and the highest fixture on the system. Multiply this figure, expressed in feet, by 0.43 psi (2.9 kPa). Enter the resulting psi loss on Line E. The difference in elevation between the water supply source and the highest water supply outlet has a significant impact on the sizing of the water supply system. The difference in elevation usually results in a loss in the available pressure because the water supply outlet is generally located above the water supply source. The loss is caused by the pressure required to lift the water to the outlet. The pressure loss is subtracted from the pressure at the water source. Where the highest water supply outlet is located below the water source, there will be an increase in pressure [~~which~~] that is added to the available pressure of the water source.

Lines F, G and H: The pressure losses through filters, backflow prevention devices or other special fixtures must be obtained from the manufacturer or estimated and entered on these lines. Equipment such as backflow prevention devices, check valves, water softeners, instantaneous or tankless water heaters, filters and strainers can impart a much greater pressure loss than the piping. The pressure losses can range from 8 psi to 30 psi.

Step 3 Line I: The sum of the pressure requirements and losses that affect the overall system (Lines B through H) is entered on this line. Summarizing the steps, all of the system losses are subtracted from the minimum water pressure. The remainder is the pressure available for friction, defined as the energy available to push the water through the pipes to each fixture. This force can be used as an average pressure loss, as long as the pressure available for friction is not exceeded. Saving a certain amount for available water supply pressures as an area incurs growth, or because of aging of the pipe or equipment added to the system is recommended.

Step 4 Line J: Subtract Line I from Line A. This gives the pressure that remains available from overcoming friction losses in the system. This figure is a guide to the pipe size that is chosen for each section, incorporating the total friction losses to the most remote outlet (measured length is called developed length).

Exception: When the main is above the highest fixture, the resulting psi must be considered a pressure gain (static head gain) and omitted from the sums of Lines B through H and added to Line J.

The maximum friction head loss that can be tolerated in the system during peak demand is the difference between the static pressure at the highest and most remote outlet at no-flow conditions and the minimum flow pressure required at that outlet. If the losses are within the required limits, then every run of pipe will also be within the required friction head loss. Static pressure loss is the most remote outlet in feet × 0.433 = loss in psi caused by elevation differences.

Step 5 Column 4: Enter the length of each section from the main to the most remote outlet (at Point E). Divide the water supply system into sections breaking at major changes in elevation or where branches lead to fixture groups.

Step 6 Column 5: When selecting a trial pipe size, the length from the water service or meter to the most remote fixture outlet must be measured to determine the developed length. However, in systems having a [~~flush~~] flushometer valve or temperature controlled shower at the [~~top most~~] topmost floors the developed length would be from the water meter to the most remote [~~flush~~] flushometer valve on the system. A rule of thumb is that size will become progressively smaller as the system extends farther from the main source of supply. Trial pipe size may be arrived at by the following formula:

[~~Line J~~] Line J: (Pressure available to overcome pipe friction) × 100/equivalent length of run total developed length to most remote fixture × percentage factor of 1.5 (note: a percentage factor is used only as an estimate for friction losses imposed for fittings for initial trial pipe size) = psi (average pressure drops per 100 feet of pipe).

For trial pipe size, see Figure [~~E 103.3(3)~~] E103.3(3) (Type L copper) based on 2.77 psi and a 108 gpm = 2½ inches. To determine the equivalent length of run to the most remote outlet, the developed length is determined and added to the friction losses for fittings and valves. The developed lengths of the designated pipe sections are as follows:

A - B 54 feet

B - C 8 feet

C - D 13 feet

D - E 150 feet

Total developed length = 225 feet

The equivalent length of the friction loss in fittings and valves must be added to the developed length (most remote outlet). Where the size of fittings and valves is not known, the added friction loss should be approximated. A general rule that has been used is to add 50 percent of the developed length to allow for fittings and valves. For example, the equivalent length of run equals the developed length of run (225 ft × 1.5 = [~~338 feet~~] 338 ft). The total equivalent length of run for determining a trial pipe size is 338 feet.

Example: 9.36 (pressure available to overcome pipe friction) × 100/338 (equivalent length of run = 225 × 1.5) = 2.77 psi (average pressure drop per 100 feet of pipe).

Step 7 Column 6: Select from Table E103.3(6) the equivalent lengths for the trial pipe size of fittings and valves on each pipe section. Enter the sum for each section in Column 6. (The number of fittings to be used in this example must be an estimate.) The equivalent length of piping is the developed length plus the equivalent lengths of pipe corresponding to friction head losses for fittings and valves. Where the size of fittings and valves is not known, the added friction head losses must be approximated. An estimate for this example is found in [~~Example E103.3(1):~~] Table E.1.

[~~EXAMPLE E103.3(1)~~] TABLE E.1

COLD WATER PIPE SECTION	FITTINGS/ VALVES	PRESSURE LOSS EXPRESSED AS EQUIVALENT LENGTH OF TUBE (FEET)	HOT WATER PIPE SECTION	FITTINGS/ VALVES	PRESSURE LOSS EXPRESSED AS EQUIVALENT OF TUBE (FEET)
A-B	3-2$^{1}/_{2}$" Gate valves	3	A-B	3-2$^{1}/_{2}$" Gate valves	3
	1-2$^{1}/_{2}$" Side branch tee	12		1-2$^{1}/_{2}$" Side branch tee	12
B-C	1-2$^{1}/_{2}$" Straight run tee	0.5	B-C	1-2" Straight run tee	7
				1-2" 90-degree ell	0.5
C-F	1-2$^{1}/_{2}$" Side branch tee	12	C-F	1-1$^{1}/_{2}$" Side branch tee	7
C-D	1-2$^{1}/_{2}$" 90-degree ell	7	C-D	1-$^{1}/_{2}$" 90-degree ell	4
D-E	1-2$^{1}/_{2}$" Side branch tee	12	D-E	1-1$^{1}/_{2}$" Side branch tee	7

Step 8 Column 7: Add the figures from Column 4 and Column 6, and enter in Column 7. Express the sum in hundreds of feet.

Step 9 Column 8: Select from Figure E103.3(3) the friction loss per 100 feet (30 480 mm) of pipe for the gallon-per-minute flow in a section (Column 3) and trial pipe size (Column 5). Maximum friction head loss per 100 feet is determined on the basis of total pressure available for friction head loss and the longest equivalent length of run. The selection is based on the gallon-per-minute demand, the uniform friction head loss[~~,~~] and the maximum design velocity. Where the size indicated by hydraulic table indicates a velocity in excess of the selected velocity, a size must be selected [~~which~~] that produces the required velocity.

Step 10 Column 9: Multiply the figures in Columns 7 and 8 for each section and enter in Column 9.

Total friction loss is determined by multiplying the friction loss per 100 feet (30 480 mm) for each pipe section in the total developed length by the pressure loss in fittings expressed as equivalent length in feet. Note: [~~section~~] Section C-F should be considered in the total pipe friction losses only if greater loss occurs in [~~section~~] Section C-F than in pipe [~~section~~] Section D-E. [~~section~~] Section C-F is not considered in the total developed length. Total friction loss in equivalent length is determined in [~~Example E103.3(2)~~] Table E.2.

[~~EXAMPLE E103.3(2)~~] TABLE E.2

PIPE SECTIONS	FRICTION LOSS EQUIVALENT LENGTH (feet)	
	Cold Water	**Hot Water**
A-B	0.69 × 3.2 = 2.21	0.69 × 3.2 = 2.21
B-C	0.085 × 3.1 = 0.26	0.16 × 1.4 = 0.22
C-D	0.20 × 1.9 = 0.38	0.17 × 3.2 = 0.54
D-E	1.62 × 1.9 = 3.08	1.57 × 3.2 = 5.02
Total pipe friction losses (Line K)	5.93	7.99

For SI: 1 foot = 304.8 mm, 1 gpm = 3.785 L/m.

Step 11 Line K: Enter the sum of the values in Column 9. The value is the total friction loss in equivalent length for each designated pipe section.

Step 12 Line L: Subtract Line J from Line K and enter in Column 10.

The result should always be a positive or plus figure. If it is not, repeat the operation using Columns 5, 6, 8 and 9 until a balance or near balance is obtained. If the difference between Lines J and K is a high positive number, it is an indication that the pipe sizes are too large and should be reduced, thus saving materials. In such a case, the operations using Columns 5, 6, 8 and 9 should again be repeated.

The total friction losses are determined and subtracted from the pressure available to overcome pipe friction for trial pipe size. This number is critical as it provides a guide to whether the pipe size selected is too large and the process should be repeated to obtain an economically designed system.

Answer: The final figures entered in Column 5 become the design pipe size for the respective sections. Repeating this operation a second time using the same sketch but considering the demand for hot water, it is possible to size the hot water distribution piping. This has been worked up as a part of the overall problem in the tabular arrangement used for sizing the service and water distribution piping. Note that consideration must be given to the pressure losses from the street main to the water heater ([~~section~~] Section A-B) in determining the hot water pipe sizes.

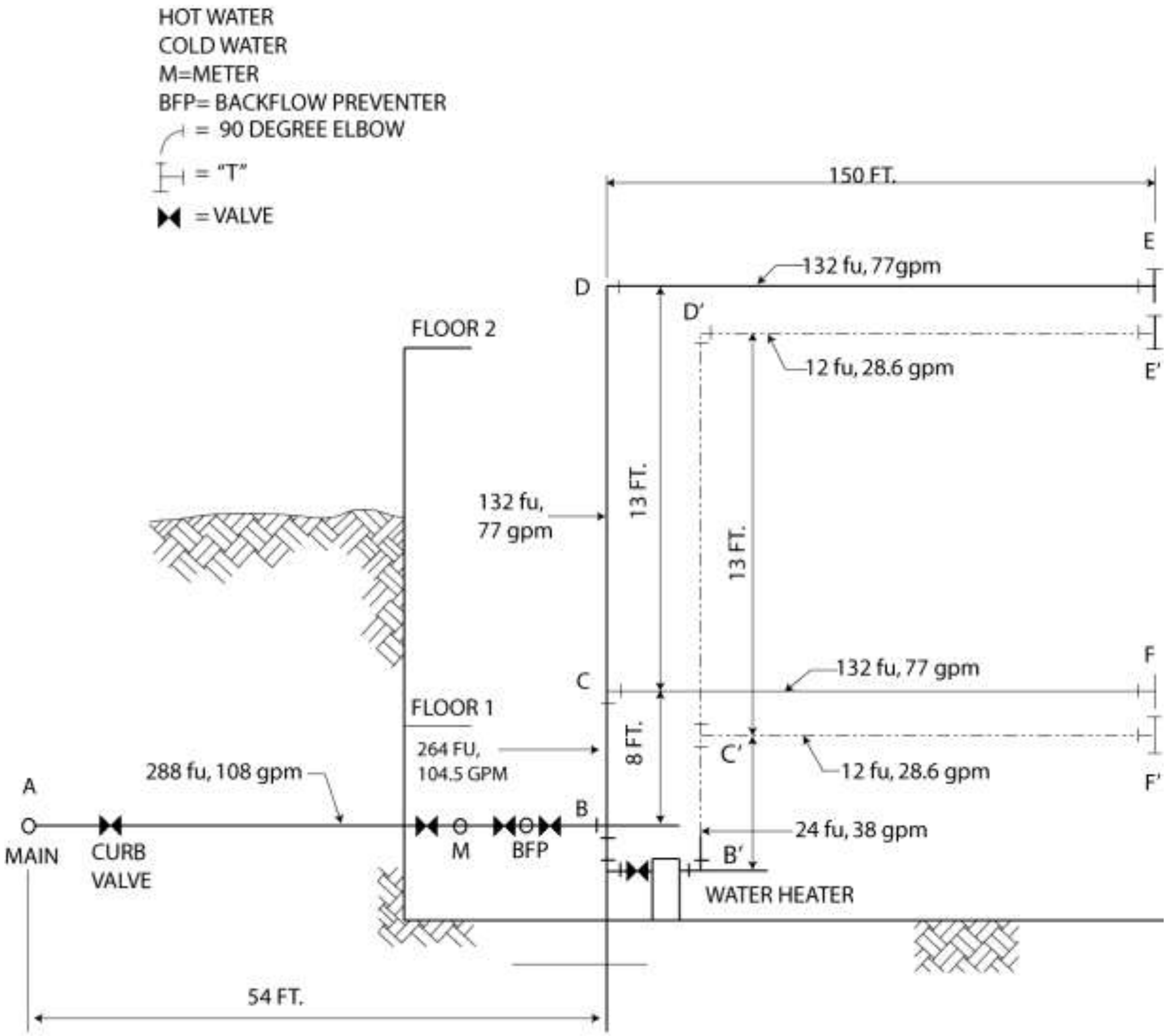


FIGURE E103.3(1)
EXAMPLE-SIZING

For SI: 1 foot = 304.8 mm, 1 gpm = 3.785 L/m.

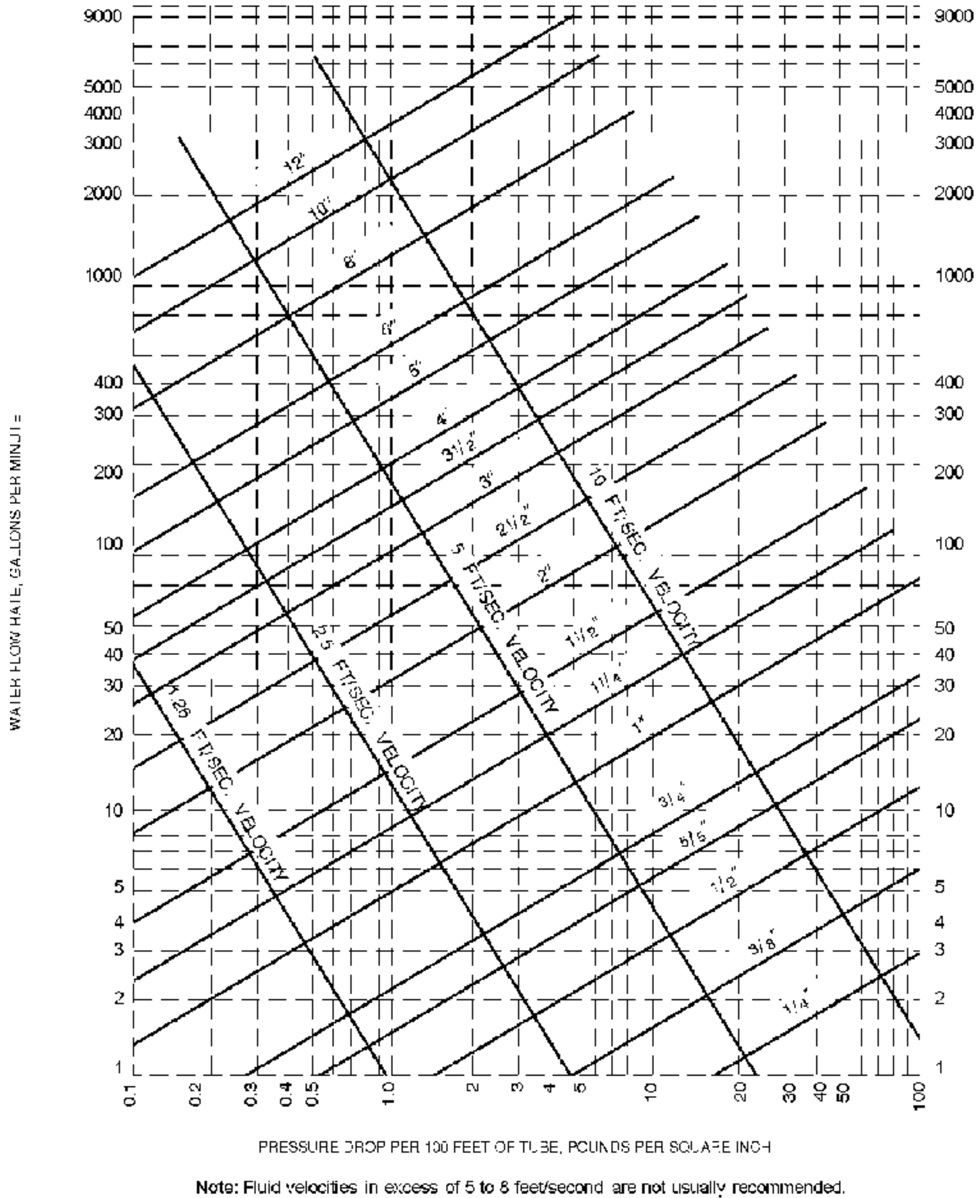
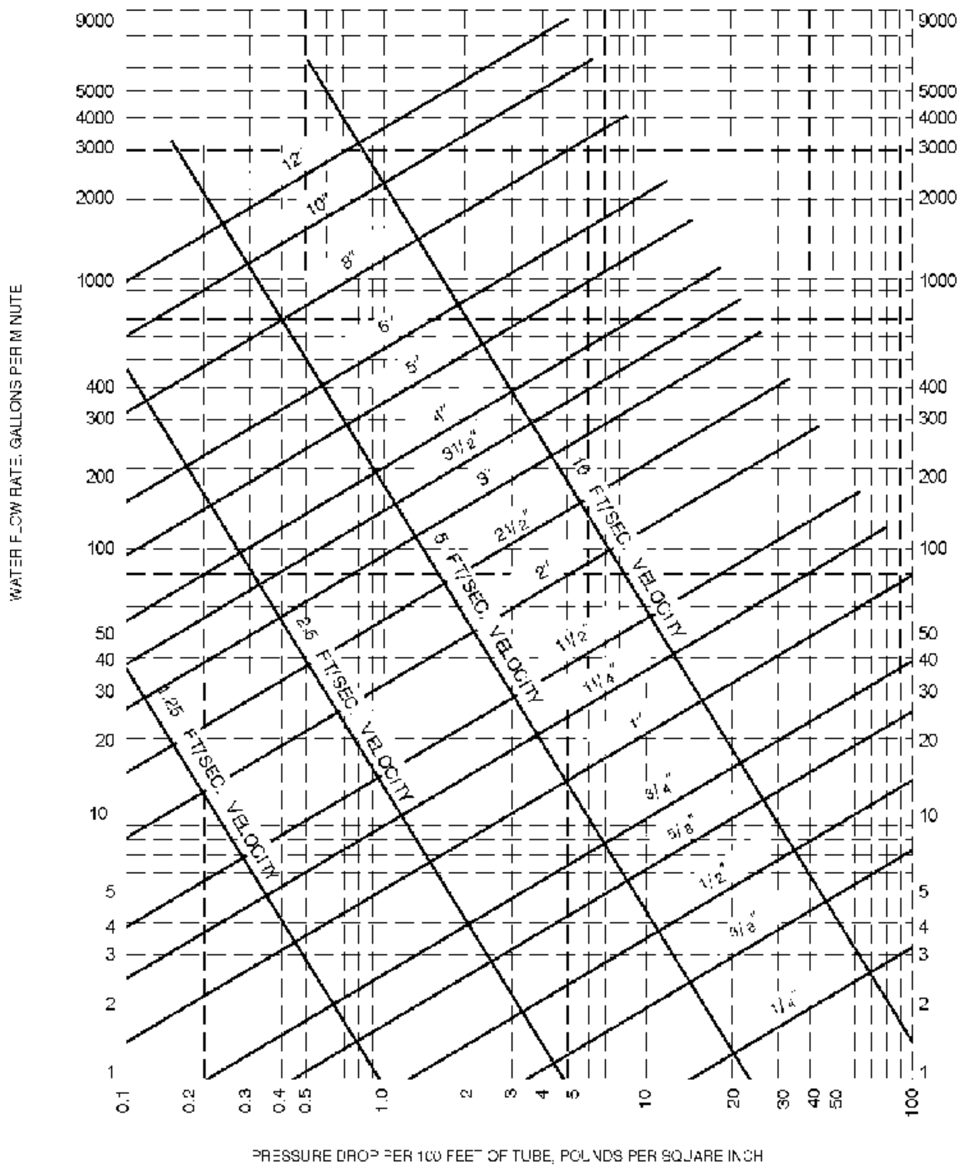


FIGURE E103.3(2)
FRICTION LOSS IN SMOOTH PIPE[a] (TYPE K, ASTM B 88 COPPER TUBING)

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 gpm = 3.785 L/m, 1 psi = 6.895 kPa, 1 foot per second = 0.305 m/s.

a. This chart applies to smooth new copper tubing with recessed (streamline) soldered joints and to the actual sizes of types indicated on the diagram.



Note: Fluid velocities in excess of 5 to 8 feet/second are not usually recommended.

FIGURE E103.3(3)
FRICTION LOSS IN SMOOTH PIPE[a] (TYPE L, ASTM B 88 COPPER TUBING)

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 gpm = 3.785 L/m, 1 psi = 6.895 kPa, 1 foot per second = 0.305 m/s.

a. This chart applies to smooth new copper tubing with recessed (streamline) soldered joints and to the actual sizes of types indicated on the diagram.

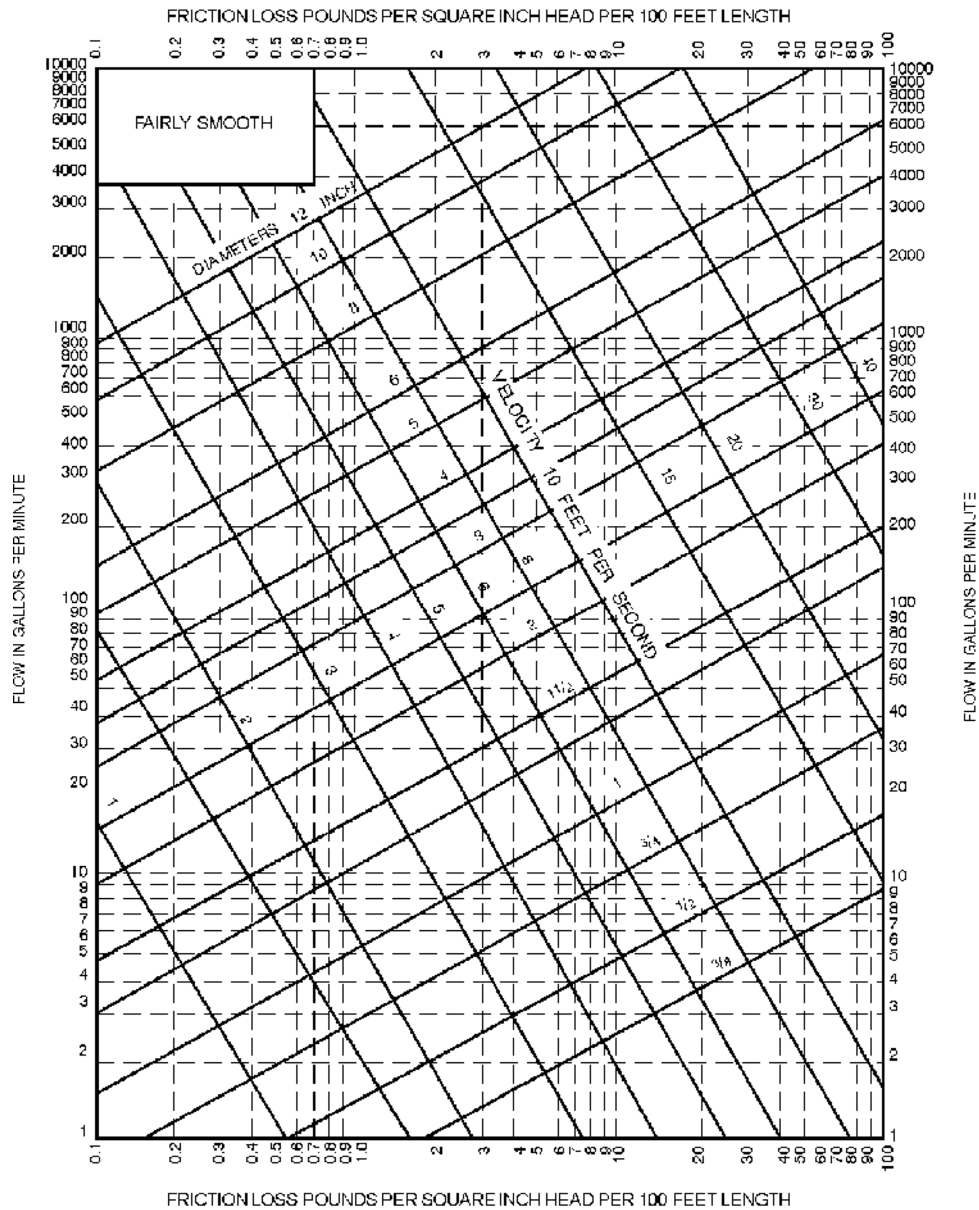


FIGURE E103.3(5)
FRICTION LOSS IN FAIRLY SMOOTH PIPE[a]

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 gpm = 3.785 L/m, 1 psi = 6.895 kPa, 1 foot per second = 0.305 m/s.

a. This chart applies to smooth new steel (fairly smooth) pipe and to actual diameters of standard-weight pipe.

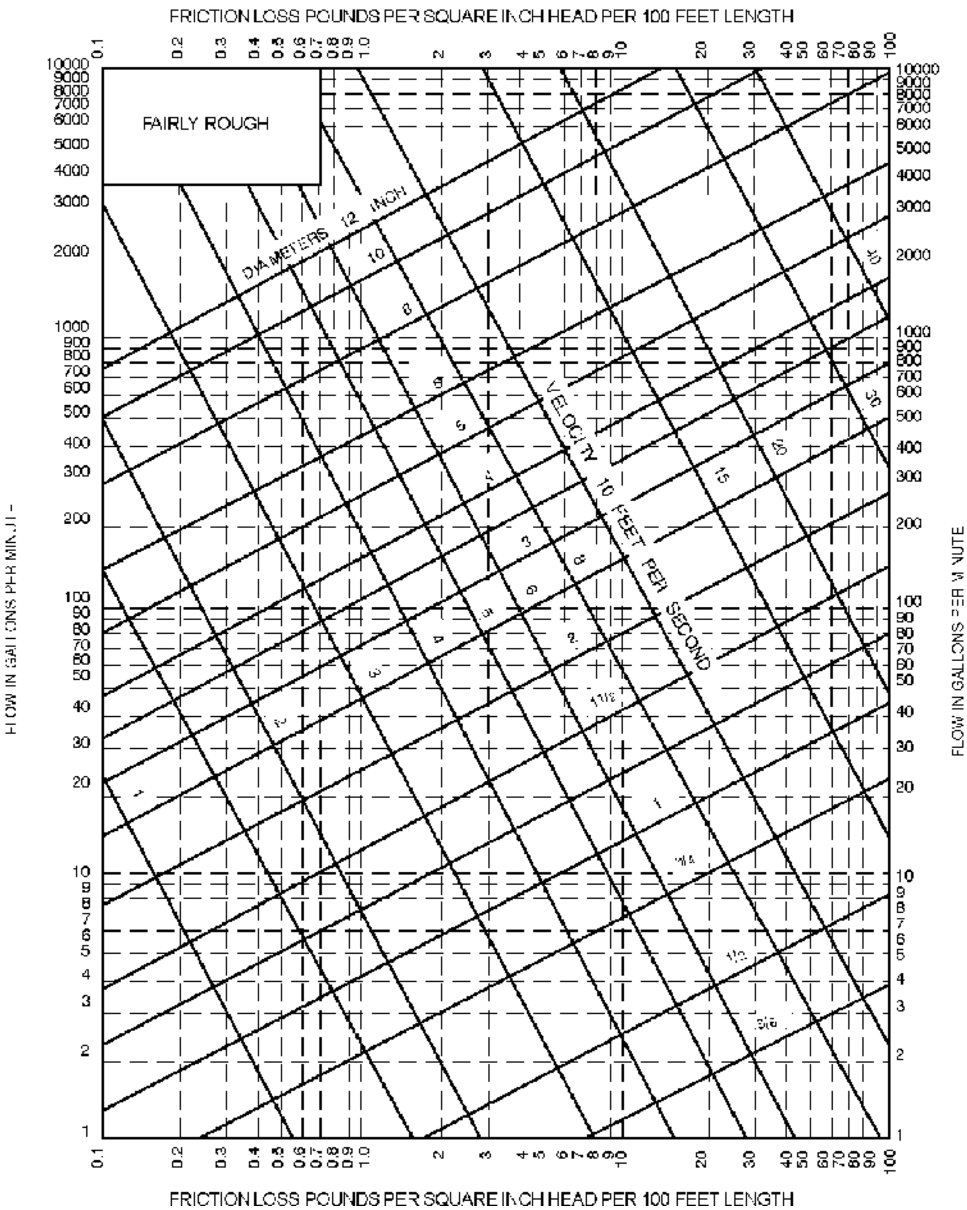


FIGURE E103.3(6)
FRICTION LOSS IN FAIRLY ROUGH PIPE[a]

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 gpm = 3.785 L/m, 1 psi = 6.895 kPa, 1 foot per second = 0.305 m/s.

a. This chart applies to fairly rough pipe and to actual diameters which in general will be less than the actual diameters of the new pipe of the same kind.

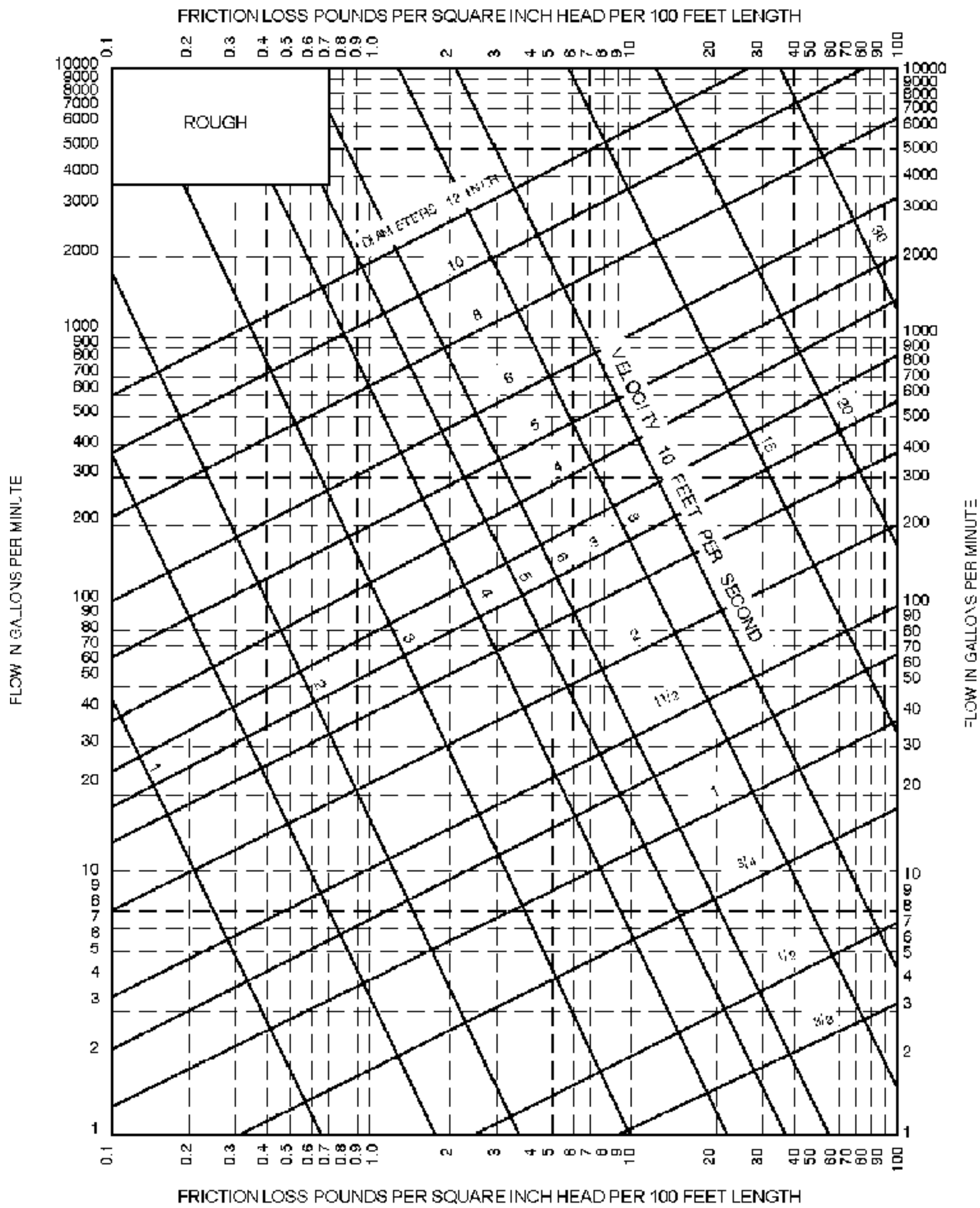


FIGURE E103.3(7)
FRICTION LOSS IN ROUGH PIPE[a]

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 gpm = 3.785 L/m, 1 psi = 6.895 kPa, 1 foot per second = 0.305 m/s.

a. This chart applies to very rough pipe and existing pipe and to their actual diameters.

TABLE E103.3(1)
RECOMMENDED TABULAR ARRANGEMENT FOR USE IN SOLVING PIPE SIZING PROBLEMS

COLUMN	1		2	3	4	5	6	7	8	9	10
Line	**Description**		**Lb per square inch (psi)**	**Gal. per min through section**	**Length of section (feet)**	**Trial pipe size (inches)**	**Equivalent length of fittings and valves (feet)**	**Total equivalent length col. 4 and col. 6 (100 feet)**	**Friction loss per 100 feet of trial size pipe (psi)**	**Friction loss in equivalent length col. 8 × col. 7 (psi)**	**Excess pressure over friction losses (psi)**
A	Service and cold water distribution piping[a]	Minimum pressure available at main	55.00								
B		Highest pressures required at a fixture ([~~Section~~] Table 604.3)	15.00								
C		Meter loss 2" meter	11.00								
D		Tap in main loss 2" tap [~~(Table E103A)~~] (Table E103.3(4))	1.61								
E		Static head loss 21 × 43 psi	9.03								
F		Special fixture loss backflow preventer	9.00								
G		Special fixture loss – Filter	0.00								
H		Special fixture loss – Other	0.00								

COLUMN	1		2	3	4	5	6	7	8	9	10
Line	**Description**		**Lb per square inch (psi)**	**Gal. per min through section**	**Length of section (feet)**	**Trial pipe size (inches)**	**Equivalent length of fittings and valves (feet)**	**Total equivalent length col. 4 and col. 6 (100 feet)**	**Friction loss per 100 feet of trial size pipe (psi)**	**Friction loss in equivalent length col. 8 × col. 7 (psi)**	**Excess pressure over friction losses (psi)**
I		otal overall losses and requirements (Sum of Lines B through H)	45.64								
J		ressure available to overcome pipe friction (Line A minus Lines B to H)	9.36								
	DESIGNATION	FU................................	[~~FU~~] 264								
	Pipe section (from diagram)	AB................................	288	108.0	54	$2^{1}/_{2}$	15.00	0.69	3.2	2.21	--
	Cold water	BC................................	264	104.5	8	$2^{1}/_{2}$	0.5	0.85	3.1	0.26	--
	Distribution piping	CD................................	132	77.0	13	$2^{1}/_{2}$	7.00	0.20	1.9	0.38	--
		CF[b]................................	132	77.0	150	$2^{1}/_{2}$	12.00	1.62	1.9	3.08	--
		DE[b]................................	132	77.0	150	$2^{1}/_{2}$	12.00	1.62	1.9	3.08	--
K	Total pipe friction losses (cold)			--	--	--	--	--	--	5.93	--

COLUMN	1		2	3	4	5	6	7	8	9	10
Line	Description		Lb per square inch (psi)	Gal. per min through section	Length of section (feet)	Trial pipe size (inches)	Equivalent length of fittings and valves (feet)	Total equivalent length col. 4 and col. 6 (100 feet)	Friction loss per 100 feet of trial size pipe (psi)	Friction loss in equivalent length col. 8 × col. 7 (psi)	Excess pressure over friction losses (psi)
L	Difference (Line J minus Line K)			--	--	--	--	--	--	--	3.43
	Pipe section (from diagram)	A'B'................................	288	108.0	54	$2^1/_2$	12.00	0.69	3.3	2.21	--
	Diagram	B'C'................................	24	38.0	8	2	7.5	0.16	1.4	0.22	--
	Hot water	C'D'................................	12	28.6	13	$1^1/_2$	4.0	0.17	3.2	0.54	--
	Distribution	C'F'[b]................................	12	28.6	150	$1^1/_2$	7.00	1.57	3.2	5.02	--
	Piping	D'E'[b]................................	12	28.6	150	$1^1/_2$	7.00	1.57	3.2	5.02	--
K	Total pipe friction losses (hot)			--	--	--	--	--	--	7.99	--
L	Difference (line) minus Line K			--	--	--	--	--	--	--	1.37

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 psi = 6.895 kPa, 1 gpm = 3.785 L/m.

a. To be considered as pressure gain for fixtures below main (to consider separately, omit from "I" and add to "J").

b. To consider separately, in K use C-F only if greater loss than above.

TABLE E103.3(2)
LOAD VALUES ASSIGNED TO FIXTURES[a]

FIXTURE	OCCUPANCY	TYPE OF SUPPLY CONTROL	LOAD VALUES, IN WATER SUPPLY FIXTURE		
			Cold	Hot	Total
Bathroom group	Private	Flush tank	2.7	1.5	3.6
Bathroom group	Private	[~~Flush~~] Flushometer valve	6.0	3.0	8.0
Bathtub	Private	Faucet	1.0	1.0	1.4
Bathtub	Public	Faucet	3.0	3.0	4.0
Bidet	Private	Faucet	1.5	1.5	2.0
Combination fixture	Private	Faucet	2.25	2.25	3.0
Dishwashing machine	Private	Automatic	—	1.4	1.4
Drinking fountain	Offices, etc.	$^3/_8$" valve	0.25	—	0.25
Kitchen sink	Private	Faucet	1.0	1.0	1.4
Kitchen sink	Hotel, restaurant	Faucet	3.0	3.0	4.0
Laundry trays (1 to 3)	Private	Faucet	1.0	1.0	1.4
Lavatory	Private	Faucet	0.5	0.5	0.7
Lavatory	Public	Faucet	1.5	1.5	2.0
Service sink	Offices, etc.	Faucet	2.25	2.25	3.0
Shower head	Public	Mixing valve	3.0	3.0	4.0
Shower head	Private	Mixing valve	1.0	1.0	1.4
Urinal	Public	1" [~~flush~~] flushometer valve	10.0	—	10.0

FIXTURE	OCCUPANCY	TYPE OF SUPPLY CONTROL	LOAD VALUES, IN WATER SUPPLY FIXTURE		
			Cold	**Hot**	**Total**
Urinal	Public	$^3/_4$" [~~flush~~] flushometer valve	5.0	—	5.0
Urinal	Public	Flush tank	3.0	—	3.0
Washing machine (8 lb)	Private	Automatic	1.0	1.0	1.4
Washing machine (8 lb)	Public	Automatic	2.25	2.25	3.0
Washing machine (15 lb)	Public	Automatic	3.0	3.0	4.0
Water closet	Private	[~~Flush~~] Flushometer valve	6.0	—	6.0
Water closet	Private	Flush tank	2.2	—	2.2
Water closet	Public	[~~Flush~~] Flushometer valve	10.0	—	10.0
Water closet	Public	Flush tank	5.0	—	5.0
Water closet	Public or private	Flushometer tank	2.0	—	2.0

For SI: 1 inch = 25.4 mm, 1 pound = 0.454 kg.

a. For fixtures not listed, loads should be assumed by comparing the fixture to one listed using water in similar quantities and at similar rates. The assigned loads for fixtures with both hot and cold water supplies are given for separate hot and cold water loads and for total load. The separate hot and cold water loads being three-fourths of the total load for the fixture in each case.

TABLE E103.3(3)
TABLE FOR ESTIMATING DEMAND

SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSH TANKS			**SUPPLY SYSTEMS PREDOMINANTLY FOR [~~FLUSH~~] FLUSHOMETER VALVES**		
Load	**Demand**		**Load**	**Demand**	
(Water supply fixture units)	**(Gallons per minute)**	**(Cubic feet per minute)**	**(Water supply fixture units)**	**(Gallons per minute)**	**(Cubic feet per minute)**
1	3.0	0.04104	—	—	—
2	5.0	0.0684	—	—	—
3	6.5	0.86892	—	—	—
4	8.0	1.06944	—	—	—
5	9.4	1.256592	5	15.0	2.0052
6	10.7	1.430376	6	17.4	2.326032
7	11.8	1.577424	7	19.8	2.646364
8	12.8	1.711104	8	22.2	2.967696
9	13.7	1.831416	9	24.6	3.288528
10	14.6	1.951728	10	27.0	3.60936
11	15.4	2.058672	11	27.8	3.716304
12	16.0	2.13888	12	28.6	3.823248
13	16.5	2.20572	13	29.4	3.930192
14	17.0	2.27256	14	30.2	4.037136
15	17.5	2.3394	15	31.0	4.14408
16	18.0	2.90624	16	31.8	4.241024
17	18.4	2.459712	17	32.6	4.357968
18	18.8	2.513184	18	33.4	4.464912
19	19.2	2.566656	19	34.2	4.571856
20	19.6	2.620128	20	35.0	4.6788
25	21.5	2.87412	25	38.0	5.07984
30	23.3	3.114744	30	42.0	5.61356
35	24.9	3.328632	35	44.0	5.88192

SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSH TANKS			SUPPLY SYSTEMS PREDOMINANTLY FOR [~~FLUSH~~] FLUSHOMETER VALVES		
Load	**Demand**		**Load**	**Demand**	
(Water supply fixture units)	**(Gallons per minute)**	**(Cubic feet per minute)**	**(Water supply fixture units)**	**(Gallons per minute)**	**(Cubic feet per minute)**
40	26.3	3.515784	40	46.0	6.14928
45	27.7	3.702936	45	48.0	6.41664
50	29.1	3.890088	50	50.0	6.684
60	32.0	4.27776	60	54.0	7.21872
70	35.0	4.6788	70	58.0	7.75344
80	38.0	5.07984	80	61.2	8.181216
90	41.0	5.48088	90	64.3	8.595624
100	43.5	5.81508	100	67.5	9.0234
120	48.0	6.41664	120	73.0	9.75864
140	52.5	7.0182	140	77.0	10.29336
160	57.0	7.61976	160	81.0	10.82808
180	61.0	8.15448	180	85.5	11.42964
200	65.0	8.6892	200	90.0	12.0312
225	70.0	9.3576	225	95.5	12.76644
250	75.0	10.026	250	101.0	13.50168
275	80.0	10.6944	275	104.5	13.96956
300	85.0	11.3628	300	108.0	14.43744
400	105.0	14.0364	400	127.0	16.97736
500	124.0	16.57632	500	143.0	19.11624
750	170.0	22.7256	750	177.0	23.66136
1,000	208.0	27.80544	1,000	208.0	27.80544
1,250	239.0	31.94952	1,250	239.0	31.94952
1,500	269.0	35.95992	1,500	269.0	35.95992
1,750	297.0	39.70296	1,750	297.0	39.70296
2,000	325.0	43.446	2,000	325.0	43.446

SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSH TANKS			SUPPLY SYSTEMS PREDOMINANTLY FOR [~~FLUSH~~] FLUSHOMETER VALVES		
Load	**Demand**		**Load**	**Demand**	
(Water supply fixture units)	**(Gallons per minute)**	**(Cubic feet per minute)**	**(Water supply fixture units)**	**(Gallons per minute)**	**(Cubic feet per minute)**
2,500	380.0	50.7984	2,500	380.0	50.7984
3,000	433.0	57.88344	3,000	433.0	57.88344
4,000	535.0	70.182	4,000	525.0	70.182
5,000	593.0	79.27224	5,000	593.0	79.27224

TABLE E103.3(4)
LOSS OF PRESSURE THROUGH TAPS AND TEES IN POUNDS PER SQUARE INCH (psi)

GALLONS PER MINUTE	SIZE OF TAP OR TEE (inches)						
	$^5/_8$	$^3/_4$	1	$1^1/_4$	$1^1/_2$	2	3
10	1.35	0.64	0.18	0.08	—	—	—
20	5.38	2.54	0.77	0.31	0.14	—	—
30	12.10	5.72	1.62	0.69	0.33	0.10	—
40	—	10.20	3.07	1.23	0.58	0.18	—
50	—	15.90	4.49	1.92	0.91	0.28	—
60	—	—	6.46	2.76	1.31	0.40	—
70	—	—	8.79	3.76	1.78	0.55	0.10
80	—	—	11.50	4.90	2.32	0.72	0.13
90	—	—	14.50	6.21	2.94	0.91	0.16
100	—	—	17.94	7.67	3.63	1.12	0.21
120	—	—	25.80	11.00	5.23	1.61	0.30
140	—	—	35.20	15.00	7.12	2.20	0.41
150	—	—	—	17.20	8.16	2.52	0.47
160	—	—	—	19.60	9.30	2.92	0.54
180	—	—	—	24.80	11.80	3.62	0.68
200	—	—	—	30.70	14.50	4.48	0.84
225	—	—	—	38.80	18.40	5.60	1.06
250	—	—	—	47.90	22.70	7.00	1.31
275	—	—	—	—	27.40	7.70	1.59
300	—	—	—	—	32.60	10.10	1.88

For SI: 1 inch = 25.4 mm, 1 pound per square inch = 6.895 kpa, 1 gallon per minute = 3.785 L/m.

TABLE E103.3(5)
ALLOWANCE IN EQUIVALENT LENGTHS OF PIPE FOR FRICTION LOSS IN VALVES AND THREADED FITTINGS (feet)

FITTING OR VALVE	PIPE SIZE (inches)							
	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
45-degree elbow	1.2	1.5	1.8	2.4	3.0	4.0	5.0	6.0
90-degree elbow	2.0	2.5	3.0	4.0	5.0	7.0	8.0	10.0
Tee, run	0.6	0.8	0.9	1.2	1.5	2.0	2.5	3.0
Tee, branch	3.0	4.0	5.0	6.0	7.0	10.0	12.0	15.0
Gate valve	0.4	0.5	0.6	0.8	1.0	1.3	1.6	2.0
Balancing valve	0.8	1.1	1.5	1.9	2.2	3.0	3.7	4.5
Plug-type cock	0.8	1.1	1.5	1.9	2.2	3.0	3.7	4.5
Check valve, swing	5.6	8.4	11.2	14.0	16.8	22.4	28.0	33.6
Globe valve	15.0	20.0	25.0	35.0	45.0	55.0	65.0	80.0
Angle valve	8.0	12.0	15.0	18.0	22.0	28.0	34.0	40.0

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 degree = 0.0175 rad.

TABLE E103.3(6)
PRESSURE LOSS IN FITTINGS AND VALVES EXPRESSED AS EQUIVALENT LENGTH OF TUBE[a] (feet)

NOMINAL OR STANDARD SIZE (inches)	FITTINGS				Coupling	VALVES			
	Standard Ell		90-Degree Tee						
	90 Degree	45 Degree	Side Branch	Straight Run		Ball	Gate	Butterfly	Check
$^{3}/_{8}$	0.5	—	1.5	—	—	—	—	—	1.5
$^{1}/_{2}$	1	0.5	2	—	—	—	—	—	2
$^{5}/_{8}$	1.5	0.5	2	—	—	—	—	—	2.5
$^{3}/_{4}$	2	0.5	3	—	—	—	—	—	3
1	2.5	1	4.5	—	—	0.5	—	—	4.5
$1^{1}/_{4}$	3	1	5.5	0.5	0.5	0.5	—	—	5.5
$1^{1}/_{2}$	4	1.5	7	0.5	0.5	0.5	—	—	6.5
2	5.5	2	9	0.5	0.5	0.5	0.5	7.5	9
$2^{1}/_{2}$	7	2.5	12	0.5	0.5	—	1	10	11.5
3	9	3.5	15	1	1	—	1.5	15.5	14.5
$3^{1}/_{2}$	9	3.5	14	1	1	—	2	—	12.5
4	12.5	5	21	1	1	—	2	16	18.5
5	16	6	27	1.5	1.5	—	3	11.5	23.5
6	19	7	34	2	2	—	3.5	13.5	26.5
8	29	11	50	3	3	—	5	12.5	39

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 degree = 0.0 1745 rad.

a. Allowances are for streamlined soldered fittings and recessed threaded fittings. For threaded fittings, double the allowances shown in the table. The equivalent lengths presented above are based on a C factor of 150 in the Hazen-Williams friction loss formula. The lengths shown are rounded to the nearest half-foot.

SECTION **PC** *E201*
[~~SELECTION OF PIPE SIZE~~]
RESERVED

SECTION **PC** *E202*
DETERMINATION OF PIPE VOLUMES

E202.1 Determining volume of piping systems. Where required for engineering design purposes, Table E202.1 shall be used to determine the approximate internal volume of water distribution piping.

TABLE E202.1
INTERNAL VOLUME OF VARIOUS WATER DISTRIBUTION TUBING

OUNCES OF WATER PER FOOT OF TUBE			
Size Nominal, Inch	**[~~Copper Type M~~]**	**Copper Type L**	**Copper Type K**
3/8	[~~1.06~~]	0.97	0.84
1/2	[~~1.69~~]	1.55	1.45
3/4	[~~3.43~~]	3.22	2.90
1	[~~5.81~~]	5.49	5.17
1 1/4	[~~8.70~~]	8.36	8.09
1 1/2	[~~12.18~~]	11.83	11.45
2	[~~21.08~~]	20.58	20.04

For SI: 1 ounce = 0.030 liter.

§6. Appendix F of the New York city plumbing code is REPEALED.

§7. Appendix G of the New York city plumbing code is REPEALED.

§3. Notwithstanding any other law or rule tables, figures or equations in graphic or PDF format to be added to the New York city plumbing code pursuant to this local law need not be underlined to denote new matter being added. The absence of underlining to denote new matter being added shall not affect the validity of such tables, figures or equations.

§4. This local law shall take effect on the same date as the effective date of a local law amending the administrative code of the city of New York in relation to bringing the New York city building code up to date with the 2015 edition of the International Building Code published by the International Code Council.

ROBERT E. CORNEGY, Jr., *Chairperson*; FERNANDO CABRERA, RAFAEL L. ESPINAL, Jr., RITCHIE J. TORRES, BARRY S. GRODENCHIK, BILL PERKINS, MARK GJONAJ, FARAH N. LOUIS; Committee on Housing and Buildings, December 9, 2019.

On motion of the Speaker (Council Member Johnson), and adopted, the foregoing matter was coupled as a General Order for the day (see ROLL CALL ON GENERAL ORDERS FOR THE DAY).

Report for Int. No. 1482-B

Report of the Committee on Housing and Buildings in favor of approving and adopting, as amended, a Local Law to amend the administrative code of the city of New York and the New York city building code, in relation to bird friendly materials.

The Committee on Housing and Buildings, to which the annexed proposed amended local law was referred on March 28, 2019 (Minutes, page 1214), respectfully

REPORTS:

(For text of report, please see the Report of the Committee on Housing and Buildings for Int. No. 1481-A printed in these Minutes)

The following is the text of the Fiscal Impact Statement for Int. No. 1482-B:

THE COUNCIL OF THE CITY OF NEW YORK
FINANCE DIVISION

LATONIA MCKINNEY, DIRECTOR

FISCAL IMPACT STATEMENT

PROPOSED INTRO. NO: 1482-B

COMMITTEE: Housing and Buildings

TITLE: A Local Law to amend the administrative code of the city of New York and the New York city building code, in relation to bird friendly materials.	**SPONSORS:** By Council Members Espinal, the Speaker (Council Member Johnson), Rosenthal, Brannan, Koslowitz, Levin, Perkins, Dromm, Constantinides, Grodenchik, Rivera, Powers, Levine, Van Bramer, Reynoso, Lander, Ayala, Kallos, Chin and the Public Advocate (Mr. Williams).

SUMMARY OF LEGISLATION: Proposed Int. No. 1482-B would require that newly constructed or altered buildings be constructed with materials that reduce the likelihood of bird strike fatalities.

EFFECTIVE DATE: This local law would take effect one year after it becomes law and would not apply to applications for construction document approval filed prior to such effective date, except that the Commissioner of the Department of Buildings may take such measures as are necessary for the implementation of this local law, including the promulgation of rules, prior to such effective date.

FISCAL YEAR IN WHICH FULL FISCAL IMPACT ANTICIPATED: Fiscal 2022

FISCAL IMPACT STATEMENT:

	Effective FY21	FY Succeeding Effective FY22	Full Fiscal Impact FY22
Revenues	$0	$0	$0
Expenditures	$0	$0	$0
Net	$0	$0	$0

IMPACT ON REVENUES: It is estimated that there would be no impact on revenues resulting from the enactment of this legislation.

IMPACT ON EXPENDITURES: It is anticipated that there would be no impact on expenditures resulting from the enactment of this legislation.

SOURCE OF FUNDS TO COVER ESTIMATED COSTS: N/A.

SOURCE OF INFORMATION: New York City Council Finance Division
Mayor's Office of City Legislative Affairs
New York City Department of Buildings

ESTIMATE PREPARED BY: Luke Zangerle, Financial Analyst

ESTIMATED REVIEWED BY: Chima Obichere, Unit Head
Stephanie Ruiz, Assistant Counsel

LEGISLATIVE HISTORY: This legislation was introduced to the full council on March 28, 2019 as Int. No. 1482 and was referred to the Committee on Housing and Buildings (Committee). The legislation was amended after introduction and a hearing was held by the Committee on the amended version, Proposed Int. No. 1482-A, on September 10, 2019, and the bill was laid over. The legislation was subsequently amended a second time, and the amended version, Proposed Int. No. 1482-B, will be considered by the Committee on December 9, 2019. Following a successful vote by the Committee, the legislation will be submitted to the full Council for a vote on December 10, 2019.

DATE PREPARED: December 5, 2019.

Accordingly, this Committee recommends its adoption, as amended.

(The following is the text of Int. No. 1482-B:)

Int. No. 1482-B

By Council Members Espinal, the Speaker (Council Member Johnson), Rosenthal, Brannan, Koslowitz, Levin, Perkins, Dromm, Constantinides, Grodenchik, Rivera, Powers, Levine, Van Bramer, Reynoso, Lander, Ayala, Kallos, Chin, Louis, Menchaca, Moya and the Public Advocate (Mr. Williams).

A Local Law to amend the administrative code of the city of New York and the New York city building code, in relation to bird friendly materials

Be it enacted by the Council as follows:

Section 1. Section 28-101.4.3 of the administrative code of the city of New York is amended by adding a new exception 20 to read as follows:

20. Where the alteration of a building includes the replacement of all exterior glazing, such alteration shall comply with section 1403.8 of the New York city building code.

§ 2. Article 103 of title 28 of the administrative code of the city of New York is amended by adding a new section 28-103.36 to read as follows:

§ 28-103.36. Bird friendly design and construction requirements. *The department shall issue, and update as necessary, bird friendly building design and construction requirements. No later than October 1, 2020, the department shall post on its website such requirements and information about compliance with section 1403.8 of the New York city building code.*

§ 3. Section 1402.1 of the New York city building code is amended by adding new definitions of "BIRD FRIENDLY MATERIAL", "BIRD HAZARD INSTALLATIONS" and "FLY-THROUGH CONDITIONS" in appropriate alphabetical order to read as follows:

BIRD FRIENDLY MATERIAL. *A material or assembly that has, or has been treated to have a maximum threat factor of 25 in accordance with the American Bird Conservancy Bird Collision Deterrence Material Threat Factor Reference Standard, or with the American Bird Conservancy Bird-friendly Materials Evaluation Program at Carnegie Museum's Avian Research Center test protocol, or with a relevant ASTM standard.*

BIRD HAZARD INSTALLATIONS. *Monolithic glazing installations that provide a clear line of sight on the exterior of buildings, including, but not limited to, glass awnings, glass handrails and guards, glass wind break panels, or glass acoustic barriers.*

FLY-THROUGH CONDITIONS. *One or more panels of glass that provide a clear line of sight through such elements creating the illusion of a void leading to the other side, including parallel glass elements, at a distance of 17 feet (5182 mm) or less, or a convergence of glass sides creating a perpendicular, acute or obtuse corner.*

§ 4. Section BC 1403 of the New York city building code is amended by adding a new section 1403.8 to read as follows:

1403.8 Bird friendly materials. *Bird friendly materials shall be required in accordance with sections 1403.8.1 through 1403.8.4.*

1403.8.1 Exterior wall envelope. *The exterior wall envelope, and any associated openings, shall be constructed with bird friendly materials up to 75 feet (22 860 mm) above grade. Materials other than bird friendly materials* *shall not exceed an aggregate of 10 square feet (0.93 m²) within any 10 feet (3048 mm) by 10 feet (3048 mm) square area of exterior wall below 75 feet (22 860 mm) above grade.*

Exceptions:

1. Where ground floor transparency is required by the New York City Zoning Resolution, transparent bird friendly material with a UV-reflective pattern and a maximum threat factor of 27 shall be provided.

2. In areas of special flood hazard and shaded X-Zones where flood resistant glazing is proposed and ground floor transparency is required by the New York City Zoning Resolution, transparent bird friendly material with a UV-reflective pattern and a maximum threat factor of 36 shall be provided.

1403.8.2 Bird hazard installations. *Bird hazard installations shall be constructed of bird friendly materials regardless of their height above grade.*

1403.8.3 Fly-through conditions. *Fly-through conditions located 75 feet (22 860 mm) or less above grade shall be constructed with bird friendly materials.*

1403.8.4 Adjacency to green roofs. *The exterior wall envelope, and any associated openings, installed adjacent to a green roof system on the same building shall be constructed with bird friendly materials up to 12 feet (3658 mm) above the walking surface.*

§ 5. This local law takes effect one year after it becomes law and shall not apply to applications for construction document approval filed prior to such effective date, except that the commissioner of buildings may take such measures as are necessary for the implementation of this local law, including the promulgation of rules, prior to such effective date.

ROBERT E. CORNEGY, Jr., *Chairperson*; FERNANDO CABRERA, RAFAEL L. ESPINAL, Jr., RITCHIE J. TORRES, BARRY S. GRODENCHIK, BILL PERKINS, MARK GJONAJ, FARAH N. LOUIS; Committee on Housing and Buildings, December 9, 2019.

On motion of the Speaker (Council Member Johnson), and adopted, the foregoing matter was coupled as a General Order for the day (see ROLL CALL ON GENERAL ORDERS FOR THE DAY).

Report of the Committee on Land Use

Report for L.U. No. 564

Report of the Committee on Land Use in favor of approving, as modified, Application No. C 190434 ZMM (La Hermosa) submitted by La Hermosa Christian Church, pursuant to Sections 197-c and 201 of the New York City Charter for an amendment of the Zoning Map, Section No. 6b, by changing from an R7-2 District to a C1-9 District property bounded by West 111th Street, Fifth Avenue, a line midway between Central Park North and West 111th Street, and a line 200 feet westerly of Fifth Avenue, and changing from an R8 District to a C1-9 District, property bounded by a line midway between Central Park North and West 111th Street, Fifth Avenue, Central Park North, and a line 200 feet westerly of Fifth Avenue (straight line portion) and its southerly prolongation, for property located in the Borough of Manhattan, Council District 9, Community District 10.

The Committee on Land Use, to which the annexed Land Use item was referred on October 17, 2019 (Minutes, page 3430), respectfully

REPORTS:

SUBJECT

MANHATTAN CB-10 - FOUR APPLICATIONS RELATED TO LA HERMOSA

C 190434 ZMM (L.U. No. 564)

City Planning Commission decision approving an application submitted by La Hermosa Christian Church pursuant to Sections 197-c and 201 of the New York City Charter for the amendment of the Zoning Map, Section No. 6b:

1. eliminating from within an existing R7-2 District a C1-4 District bounded by West 111th Street, Fifth Avenue, a line midway between Central Park North and West 111th Street, and a line 100 feet westerly of Fifth Avenue;

2. eliminating from within an existing R8 District a C1-4 District bounded by a line midway between Central Park North and West 111th Street, Fifth Avenue, Central Park North, and a line 100 feet westerly of Fifth Avenue (straight line portion) and its southerly prolongation;

3. changing from an R7-2 District to a C1-9 District property bounded by West 111th Street, Fifth Avenue, a line midway between Central Park North and West 111th Street, and a line 200 feet westerly of Fifth Avenue; and

4. changing from an R8 District to a C1-9 District property bounded by a line midway between Central Park North and West 111th Street, Fifth Avenue, Central Park North, and a line 200 feet westerly of Fifth Avenue (straight line portion) and its southerly prolongation;

as shown on a diagram (for illustrative purposes only) dated May 6, 2019 and subject to the CEQR declaration of E-538.

N 190433 ZRM (L.U. No. 565)

City Planning Commission decision approving an application submitted by La Hermosa Christian Church pursuant to Section 201 of the New York City Charter, for an amendment of the Zoning Resolution of the City of New York, modifying Appendix F for the purpose of establishing a Mandatory Inclusionary Housing area.

C 190435 ZSM (L.U. No. 566)

City Planning Commission decision approving an application submitted by La Hermosa Christian Church pursuant to Sections 197-c and 201 of the New York City Charter for the grant of a special permit pursuant to Section 74-851 of the Zoning Resolution to modify the street wall location requirements of Section 35-64 (Special Tower Regulations for Mixed Buildings), and the tower lot coverage requirements, tower floor area distribution requirements, and height and setback requirements of Section 23-651 (Tower-on-a-Base), in connection with a proposed mixed-use development on property located at 5 West 110th Street (Block 1594, Lots 30 and 41), in a C1-9 District.

C 190436 ZSM (L.U. No. 567)

City Planning Commission decision approving an application submitted by La Hermosa Christian Church pursuant to Sections 197-c and 201 of the New York City Charter for the grant of a special permit pursuant to Section 74-533 of the Zoning Resolution to waive the required number of accessory off-street parking spaces for dwelling units in a development within a Transit Zone, that includes at least 20 percent of all dwelling units as income-restricted housing units, in connection with a proposed mixed-use development on property located at 5 West 110th Street (Block 1594, Lots 30 and 41), in a C1-9 District.

INTENT

To approve an amendment to rezone the Project Area from R8, R8/C1-4, R7-2, R7-2/C1-4 to C1-9; amend zoning text to modify Appendix F and map the Project Area as a Mandatory Inclusionary Housing (MIH) area utilizing Options 1 and 2; grant an approval of the special permit pursuant to ZR Section 74-851 to modify the street wall location requirements, and the tower lot coverage requirements, tower floor area distribution requirements, and height and setback requirements; and grant an approval of the special permit pursuant to ZR Section 74-533 to waive the required number of accessory off-street parking spaces to facilitate the development of a mixed-use building at the northeast corner of Central Park, containing residential and community facility uses in Manhattan Community District 10.

PUBLIC HEARING

DATE: November 4, 2019

Witnesses in Favor: Eleven **Witnesses Against:** One

SUBCOMMITTEE RECOMMENDATION

DATE: December 3, 2019

The Subcommittee recommends that the Land Use Committee approve the decisions of the City Planning Commission on L.U. Nos. 564, 566, and 567 and approve with modifications the decision of the City Planning Commission on L.U. 565.

In Favor:
Moya, Levin, Richards, Lancman, Grodenchik, Rivera.

Against:	**Abstain:**
None	None

COMMITTEE ACTION

DATE: December 3, 2019

The Committee recommends that the Council approve the attached resolutions.

In Favor:
Salamanca, Gibson, Deutsch, Koo, Lancman, Levin, Miller, Richards, Treyger, Grodenchik, Diaz, Moya, Rivera.

Against:	**Abstain:**
None	Barron

RAFAEL SALAMANCA, Jr., *Chairperson*; PETER A. KOO, STEPHEN T. LEVIN, DONOVAN J. RICHARDS, VANESSA L. GIBSON, INEZ D. BARRON, CHAIM M. DEUTSCH, RORY I. LANCMAN, I. DANEEK MILLER, MARK TREYGER, BARRY S. GRODENCHIK, RUBEN DIAZ, Sr., FRANCISCO P. MOYA, CARLINA RIVERA; Committee on Land Use, December 3, 2019.

Approved with Modifications and Referred to the City Planning Commission pursuant to Section 197-(d) of the New York City Charter.

Report for L.U. No. 565

Report of the Committee on Land Use in favor of approving, as modified, Application No. N 190433 ZRM (La Hermosa) submitted by La Hermosa Christian Church, pursuant to Section 201 of the New York City Charter for an amendment of the Zoning Resolution of the City of New York, modifying Appendix F for the purpose of establishing a Mandatory Inclusionary Housing area, for property located in the Borough of Manhattan, Council District 9, Community District 10.

The Committee on Land Use, to which the annexed Land Use item was referred on October 17, 2019 (Minutes, page 3431), respectfully

REPORTS:

(For text of report, please see the Report of the Committee on Land Use for L.U. No. 564 printed in these Minutes)

Accordingly, this committee recommends its adoption, as modified.

RAFAEL SALAMANCA, Jr., *Chairperson*; PETER A. KOO, STEPHEN T. LEVIN, DONOVAN J. RICHARDS, VANESSA L. GIBSON, INEZ D. BARRON, CHAIM M. DEUTSCH, RORY I. LANCMAN, I. DANEEK MILLER, MARK TREYGER, BARRY S. GRODENCHIK, RUBEN DIAZ, Sr., FRANCISCO P. MOYA, CARLINA RIVERA; Committee on Land Use, December 3, 2019.

Approved with Modifications and Referred to the City Planning Commission pursuant to Section 197-(d) of the New York City Charter.

Report for L.U. No. 566

Report of the Committee on Land Use in favor of approving, as modified, Application No. C 190435 ZSM (La Hermosa) submitted by La Hermosa Christian Church, pursuant to Sections 197-c and 201 of the New York City Charter for the grant of a special permit pursuant to Section 74-581 of the Zoning Resolution to modify the street wall location requirements of Section 35-64, and the tower lot coverage requirements, tower floor area distribution requirements, and height and setback requirements of Section 23-651, in connection with a proposed mixed use development on property located at 5 West 110th Street (Block 1594, Lots 30 and 41), in a C1-9 District, Borough of Manhattan, Council District 9, Community District 10.

The Committee on Land Use, to which the annexed Land Use item was referred on October 17, 2019 (Minutes, page 3431), respectfully

REPORTS:

(For text of report, please see the Report of the Committee on Land Use for L.U. No. 564 printed in these Minutes)

Accordingly, this committee recommends its adoption, as modified.

RAFAEL SALAMANCA, Jr., *Chairperson*; PETER A. KOO, STEPHEN T. LEVIN, DONOVAN J. RICHARDS, VANESSA L. GIBSON, INEZ D. BARRON, CHAIM M. DEUTSCH, RORY I. LANCMAN, I. DANEEK MILLER, MARK TREYGER, BARRY S. GRODENCHIK, RUBEN DIAZ, Sr., FRANCISCO P. MOYA, CARLINA RIVERA; Committee on Land Use, December 3, 2019.

Approved with Modifications and Referred to the City Planning Commission pursuant to Section 197-(d) of the New York City Charter.

Report for L.U. No. 567

Report of the Committee on Land Use in favor of approving, as modified, Application No. N 190436 ZSM (La Hermosa) submitted by La Hermosa Christian Church, pursuant to Sections 197-c and 201 of the New York City Charter for the grant of a special permit pursuant to Section 74-533 of the Zoning Resolution to waive the required number of accessory off-street parking spaces for dwelling units in a development with a Transit Zone, that includes at least 20 percent of all dwelling units as income-restricted housing units, in connection with a proposed mixed-use development on property located at 5 West 110th Street (Block 1594, Lots 30 and 41), in a C1-9 District, Borough of Manhattan, Council District 9, Community District 10.

The Committee on Land Use, to which the annexed Land Use item was referred on October 17, 2019 (Minutes, page 3431), respectfully

REPORTS:

(For text of report, please see the Report of the Committee on Land Use for L.U. No. 564 printed in these Minutes)

Accordingly, this committee recommends its adoption, as modified.

RAFAEL SALAMANCA, Jr., *Chairperson*; PETER A. KOO, STEPHEN T. LEVIN, DONOVAN J. RICHARDS, VANESSA L. GIBSON, CHAIM M. DEUTSCH, RORY I. LANCMAN, I. DANEEK MILLER, MARK TREYGER, BARRY S. GRODENCHIK, RUBEN DIAZ, Sr., FRANCISCO P. MOYA, CARLINA RIVERA; Committee on Land Use, December 3, 2019.

Approved with Modifications and Referred to the City Planning Commission pursuant to Section 197-(d) of the New York City Charter.

Report for L.U. No. 572

Report of the Committee on Land Use in favor of approving Application No. C 190409 HAK (515 Blake Avenue) submitted by the Department of Housing Preservation and Development pursuant to Article 16 of the General Municipal Law and Section 197-c of the New York City Charter for the designation of an Urban Development Action Area, approval of an Urban Development Action Area Project for such area, and for the disposition of city owned property to a developer to be selected by HPD, for property located at of property located at Block 3766, Lot 1, Borough of Brooklyn, Council District 42, Community District 5.

The Committee on Land Use, to which the annexed Land Use item was referred on October 30, 2019 (Minutes, page 3636) and which same Land Use item was coupled with the resolution shown below, respectfully

REPORTS:

SUBJECT

BROOKLYN CB-5 - FOUR APPLICATIONS RELATED TO 515 BLAKE AVENUE

C 190409 HAK (L.U. No. 572)

City Planning Commission decision approving an application submitted by the New York City Department of Housing Preservation and Development (HPD);

1) pursuant to Article 16 of the General Municipal Law of New York State for:

a. the designation of property located at (Block 3766, Lot 1) as an Urban Development Action Area; and

b. Urban Development Action Area Project for such area; and

2) pursuant to Section 197-c of the New York City Charter for the disposition of such property to a developer to be selected by HPD;

to facilitate the construction of four new buildings containing approximately 195 redeveloped homeless shelter units and approximately 324 affordable housing units and commercial and community facility space.

C 190410 ZMK (L.U. No. 573)

City Planning Commission decision approving an application submitted by the New York City Department of Housing Preservation and Development pursuant to Sections 197-c and 201 of the New York City Charter for an amendment of the Zoning Map, Section No. 17d:

1. eliminating from within an existing R6 District a C2-3 District bounded by a line 150 feet northerly of Blake Avenue, Hinsdale Street, Blake Avenue, and Snediker Avenue;

2. changing from an R6 District to an R6A District property bounded by a line 150 feet southerly of Sutter Avenue, Hinsdale Street, a line 100 feet northerly of Blake Avenue, and Snediker Avenue;

3. changing from an R6 District to an R7D District property bounded by a line 100 feet northerly of Blake Avenue, Hinsdale Street, Blake Avenue, and Snediker Avenue;

4. changing from a C4-3 District to an R7D District property bounded by Sutter Avenue, Hinsdale Street, a line 150 feet southerly of Sutter Avenue, and Snediker Avenue;

5. establishing within a proposed R7D District a C1-4 District bounded by a line 100 feet northerly of Blake Avenue, Hinsdale Street, Blake Avenue, and Snediker Avenue; and

6. establishing within a proposed R7D District a C2-4 District bounded by Sutter Avenue, Hinsdale Street, a line 150 feet southerly of Sutter Avenue, and Snediker Avenue;

as shown on a diagram (for illustrative purposes only) dated May 20, 2019.

N 190411 ZRK (L.U. No. 574)

City Planning Commission decision approving an application submitted by the New York City Department of Housing Preservation and Development, pursuant to Section 201 of the New York City Charter, for an amendment of the Zoning Resolution of the City of New York, modifying Appendix F for the purpose of establishing a Mandatory Housing Inclusionary area.

C 190421 ZSK (L.U. No. 575)

City Planning Commission decision approving an application submitted by the New York City Department of Housing Preservation and Development pursuant to Sections 197-c and 201 of the New York City Charter for the grant of a special permit pursuant to the following Section 74-743(a) of the Zoning Resolution to allow the distribution of total allowable floor area without regard for zoning district lines in connection with a proposed mixed-use development, within a large-scale general development bounded by Sutter Avenue, Hinsdale Street, a line 50 feet northerly of Blake Avenue, a line midway between Snediker Avenue and Hinsdale Street, Blake Avenue, and Snediker Avenue (Block 3766, Lot 1), in R6A, R7D/C1-4, and R7D/C2-4 Districts.

INTENT

To approve an urban development action area designation, project approval, and disposition of city-owned property; to approve an amendment to rezone the project area from C4-3, R6, and R6/C2-3 zoning districts to R7D/C2-4, R7D/C1-4, and R6A zoning districts; amend zoning text to modify Appendix F and map the Project Area as a Mandatory Inclusionary Housing (MIH) area utilizing Option 1; and grant an approval of the special permit to modify bulk regulations to redistribute floor area across the development site within a large-scale general development, to facilitate the redevelopment of an existing 192-unit family homeless shelter with four new buildings providing approximately 324 affordable units, a new homeless family shelter with approximately 195 units, and commercial and community facility spaces located at 515 Blake Avenue (Block 3766, Lot 1) in the East New York neighborhood of Brooklyn, Community District 5.

PUBLIC HEARING

DATE: November 4, 2019

Witnesses in Favor: Twenty-one **Witnesses Against:** Two

SUBCOMMITTEE RECOMMENDATION

DATE: December 3, 2019

The Subcommittee recommends that the Land Use Committee approve the decisions of the City Planning Commission ("CPC") on L.U. Nos. 572 through 575.

In Favor:
Moya, Levin, Richards, Lancman, Grodenchik, Rivera.

Against:	**Abstain:**
None	None

COMMITTEE ACTION

DATE: December 3, 2019

The Committee recommends that the Council approve the attached resolutions.

In Favor:
Salamanca, Gibson, Barron, Deutsch, Koo, Lancman, Levin, Miller, Richards, Treyger, Grodenchik, Diaz, Moya, Rivera.

Against:	**Abstain:**
None	None

In connection herewith, Council Members Salamanca and Moya offered the following resolution:

Res. No. 1187

Resolution approving the application submitted by the New York City Department of Housing Preservation and Development ("HPD") and the decision of the City Planning Commission, ULURP No. C 190409 HAK, approving the designation of an Urban Development Action Area, an Urban Development Action Area Project, and the disposition of city-owned property located at 515 Blake Avenue (Block 3766, Lot 1), Borough of Brooklyn, Community District 5, to a developer selected by HPD (L.U. No. 572; C 190409 HAK).

By Council Members Salamanca and Moya.

WHEREAS, the City Planning Commission filed with the Council on October 25, 2019 its decision dated October 16, 2019 (the "Decision"), on the application submitted by the New York City Department of Housing Preservation and Development ("HPD") regarding city-owned property located at 515 Blake Avenue (Block 3766, Lot 1)**,** (the "Disposition Area"), approving:

a) pursuant to Article 16 of the General Municipal Law of New York State, the designation of the Disposition Area as an Urban Development Action Area;

b) pursuant to Article 16 of the General Municipal Law of New York State, an Urban Development Action Area Project for the Disposition Area (the "Project"); and

c) pursuant to Section 197-c of the New York City Charter, the disposition of the Disposition Area to a developer to be selected by the New York City Department of Housing Preservation and Development;

which in conjunction with the related actions would facilitate the redevelopment of an existing 192-unit family homeless shelter with four new buildings providing approximately 324 affordable units, a new homeless family shelter with approximately 195 units, and commercial and community facility spaces located at 515 Blake Avenue (Block 3766, Lot 1) in the East New York neighborhood of Brooklyn, Community District 5 (ULURP No. C 190409 HAK) (the "Application");

WHEREAS, the Application is related to applications C 190410 ZMK (L.U. No. 573), a zoning map amendment to change a C4-3 district, an R6 district and an R6/C2-3 district to an R6A district, an R7D/C1-4 district and an R7D/C2-4 district on the entirety of Block 3766; N 190411 ZRK (L.U. No. 574), a zoning text amendment to designate a Mandatory Inclusionary Housing Area on the entirety of Block 3766; and C 190421

ZSK (L.U. No. 575), a Large-Scale General Development (LSGD) special permit pursuant to ZR Section 74-743 to modify bulk regulations pursuant to ZR Section 77-22 to redistribute floor area across the development site;

WHEREAS, the City Planning Commission has certified its unqualified approval of UDAAP pursuant to Article 16 of the General Municipal Law and approved the disposition of the Disposition Area;

WHEREAS, the Application and Decision are subject to review and action by the Council pursuant to Article 16 of the General Municipal Law of New York State and Section 197-d of the City Charter;

WHEREAS, by letter dated October 25, 2019 and submitted to the Council on October 28, 2019, HPD submitted its requests (the "HPD Requests") respecting the Application including the submission of the project summaries for the Project (the "Project Summaries");

WHEREAS, upon due notice, the Council held a public hearing on the Application and Decision and the HPD Requests on November 4, 2019;

WHEREAS, on December 2, 2019, HPD submitted revised Project Summaries removing the references to transitional family shelter units, as well as other changes (the "Revised Project Summaries");

WHEREAS, the Council has considered the land use and financial implications and other policy issues relating to the Application; and

WHEREAS, the Council has considered the relevant environmental issues, including the negative declaration issued on May 16, 2019 (CEQR No. 19HPD058K) (the "Negative Declaration").

RESOLVED:

The Council finds that the action described herein will have no significant impact on the environment as set forth in the Negative Declaration.

Pursuant to Article 16 of the General Municipal Law of the New York State and Section 197-d of the New York City Charter, based on the environmental determination and the consideration described in the report C 190409 HAK and incorporated by reference herein, and the record before the Council, the Council approves the Decision of the City Planning Commission and the HPD Requests.

The Council finds that the present status of the Area tends to impair or arrest the sound growth and development of the City of New York and that a designation of the Project as an urban development action area project is consistent with the policy and purposes stated in Section 691 of the General Municipal Law.

The Council approves the designation of the Disposition Area as an urban development action area pursuant to Section 693 of the General Municipal Law.

The Council approves the Project as an Urban Development Action Area Project pursuant to Section 694 of the General Municipal Law and subject to the terms and conditions of the Revised Project Summaries.

The Council approves the disposition of the Disposition Area under Section 197-d of the New York City Charter, to a developer to be selected by the New York City Department of Housing Preservation and Development for the development of the Project consistent with the Project Summary.

PROJECT SUMMARY (REVISED 12/2/19)

PROGRAM:	EXTREMELY LOW AND LOW INCOME AFFORDABILITY PROGRAM
PROJECT:	515 Blake Avenue
3. LOCATION:	
a. BOROUGH:	Brooklyn
b. COMMUNITY DISTRICT:	5
c. COUNCIL DISTRICT:	42
d. DISPOSITION AREA:	BLOCKS: 3766; LOTS: 1; ADDRESSES: 515 Blake Avenue
4. BASIS OF DISPOSITION PRICE:	Nominal. Sponsor will pay one dollar per lot and deliver a note and mortgage for the remainder of the appraised value ("Land Debt"). For a period of at least thirty (30) years following completion of construction, the Land Debt will be repayable out of resale or refinancing profits. The remaining balance, if any, may be forgiven at the end of the term.
TYPE OF PROJECT:	New Construction
APPROXIMATE NUMBER OF BUILDINGS:	2
APPROXIMATE NUMBER OF UNITS:	254 dwelling units, plus one superintendent's unit
HOUSING TYPE:	Rental
9. ESTIMATE OF INITIAL RENTS	Rents will be affordable to families earning from 27% - 80% of the area median income ("AMI"). Formerly homeless tenants referred by DHS and other City agencies will pay up to 30% of their income as rent.
INCOME TARGETS	30% to 100% of AMI
PROPOSED FACILITIES:	Approximately 2,106 square feet of commercial space
PROPOSED CODES/ORDINANCES:	None
ENVIRONMENTAL STATUS:	Negative Declaration
PROPOSED TIME SCHEDULE:	Approximately 24 months from closing to completion of construction

PROJECT SUMMARY (REVISED 12/2/19)

PROGRAM: SUPPORTIVE HOUSING LOAN PROGRAM

PROJECT: 515 Blake Avenue

3. LOCATION:

a. BOROUGH: Brooklyn

b. COMMUNITY DISTRICT: 5

c. COUNCIL DISTRICT: 42

d. DISPOSITION AREA:

BLOCK	LOT	ADDRESS
3766	1	515 Blake Avenue

4. BASIS OF DISPOSITION PRICE: Nominal. The sponsor will pay one dollar per tax lot in cash and will deliver an enforcement note and mortgage for the remainder of the appraised value. For a period of at least thirty (30) years following completion of construction, the Land Debt will be repayable out of resale or refinancing profits. The remaining balance, if any, may be forgiven at the end of the term.

TYPE OF PROJECT: New Construction

APPROXIMATE NUMBER OF BUILDINGS: 1

APPROXIMATE NUMBER OF UNITS: 249 Rental including one superintendent unit

HOUSING TYPE: Rental

9. ESTIMATE OF INITIAL RENTS: Formerly homeless tenants referred by DHS and other City agencies will pay up to 30% of their income as rent. Other tenants will pay rents set at up to 30% of 60% of the area median income (AMI) on an annual basis.

10. INCOME TARGETS: Up to 60% of AMI

PROPOSED FACILITIES: Community Room, Social Service Offices, Security Desk, Commercial Space

PROPOSED CODES/ORDINANCES: None

ENVIRONMENTAL STATUS: Negative Declaration

PROPOSED TIME SCHEDULE: Approximately 24 months from closing to completion of construction

RAFAEL SALAMANCA, Jr., *Chairperson*; PETER A. KOO, STEPHEN T. LEVIN, DONOVAN J. RICHARDS, VANESSA L. GIBSON, INEZ D. BARRON, CHAIM M. DEUTSCH, RORY I. LANCMAN, I. DANEEK MILLER, MARK TREYGER, BARRY S. GRODENCHIK, RUBEN DIAZ, Sr., FRANCISCO P. MOYA, CARLINA RIVERA; Committee on Land Use, December 3, 2019.

On motion of the Speaker (Council Member Johnson), and adopted, the foregoing matter was coupled as a General Order for the day (see ROLL CALL ON GENERAL ORDERS FOR THE DAY).

Report for L.U. No. 573

Report of the Committee on Land Use in favor of approving Application No. C 190410 ZMK (515 Blake Avenue) submitted by the Department of Housing Preservation and Development pursuant to Sections 197-c and 201 of the New York City Charter for an amendment of the Zoning Map, Section No. 17d, eliminating from within an existing R6 District a C2-3 District, changing from an R6 District to an R6A District, changing from an R6 District to an R7D District, changing from a C4-3 District to an R7D District, establishing within a proposed R7D District a C1-4 District, and establishing within a proposed R7D District a C2-4 District, Borough of Brooklyn, Council District 42, Community District 5.

The Committee on Land Use, to which the annexed Land Use item was referred on October 30, 2019 (Minutes, page 3637) and which same Land Use item was coupled with the resolution shown below, respectfully

REPORTS:

(For text of report, please see the Report of the Committee on Land Use for L.U. No. 572 printed in these Minutes)

Accordingly, this Committee recommends its adoption.

In connection herewith, Council Members Salamanca and Moya offered the following resolution

Res. No. 1188

Resolution approving the decision of the City Planning Commission on ULURP No. C 190410 ZMK, a Zoning Map amendment (L.U. No. 573).

By Council Members Salamanca and Moya.

WHEREAS, the New York City Department of Housing Preservation and Development, filed an application pursuant to Sections 197-c and 201 of the New York City Charter for an amendment of the Zoning Map, Section No. 17d, eliminating from within an existing R6 District a C2-3 District, changing from an R6 District to an R6A District, changing from an R6 District to an R7D District, changing from a C4-3 District to an R7D District, establishing within a proposed R7D District a C1-4 District, and establishing within a proposed R7D District a C2-4 District, which in conjunction with the related actions would facilitate the redevelopment of an existing 192-unit family homeless shelter located at 515 Blake Avenue (Block 3766, Lot 1), with four new buildings providing 324 affordable units, a new homeless family shelter with 195 units, and commercial and community facility spaces located at 515 Blake Avenue in the East New York neighborhood of Brooklyn Community District 5 (ULURP No. C 190410 ZMK) (the "Application");

WHEREAS the City Planning Commission filed with the Council on October 25, 2019, its decision dated October 16, 2019 (the "Decision") on the Application;

WHEREAS, the Application is related to applications C 190409 HAK (L.U. No. 572), UDAAP designation, project approval, and disposition of City-owned property to dispose of the subject property; N 190411 ZRK (L.U. No. 574), a zoning text amendment to designate a Mandatory Inclusionary Housing Area on the entirety of Block 3766; and C 190421 ZSK (L.U. No. 575), a Large-Scale General Development (LSGD) special permit pursuant to ZR Section 74-743 to modify bulk regulations pursuant to ZR Section 77-22 to redistribute floor area across the development site;

WHEREAS, the Decision is subject to review and action by the Council pursuant to Section 197-d of the City Charter;

WHEREAS, upon due notice, the Council held a public hearing on the Decision and Application on November 4, 2019;

WHEREAS, the Council has considered the land use and other policy issues relating to the Decision and Application; and

WHEREAS, the Council has considered the relevant environmental issues, including the negative declaration issued on May 16, 2019 (CEQR No. 19HPD058K) (the "Negative Declaration").

RESOLVED:

The Council finds that the action described herein will have no significant impact on the environment as set forth in the Negative Declaration.

Pursuant to Sections 197-d and 200 of the City Charter and on the basis of the Decision and Application, and based on the environmental determination and consideration described in the report, C 190410 ZMK, incorporated by reference herein, and the record before the Council, the Council approves the Decision of the City Planning Commission.

The Zoning Resolution of the City of New York, effective as of December 15, 1961, and as subsequently amended, is further amended by changing the Zoning Map, Section No. 17d:

1. eliminating from within an existing R6 District a C2-3 District bounded by a line 150 feet northerly of Blake Avenue, Hinsdale Street, Blake Avenue, and Snediker Avenue;

2. changing from an R6 District to an R6A District property bounded by a line 150 feet southerly of Sutter Avenue, Hinsdale Street, a line 100 feet northerly of Blake Avenue, and Snediker Avenue;

3. changing from an R6 District to an R7D District property bounded by a line 100 feet northerly of Blake Avenue, Hinsdale Street, Blake Avenue, and Snediker Avenue;

4. changing from a C4-3 District to an R7D District property bounded by Sutter Avenue, Hinsdale Street, a line 150 feet southerly of Sutter Avenue, and Snediker Avenue;

5. establishing within a proposed R7D District a C1-4 District bounded by a line 100 feet northerly of Blake Avenue, Hinsdale Street, Blake Avenue, and Snediker Avenue; and

6. establishing within a proposed R7D District a C2-4 District bounded by Sutter Avenue, Hinsdale Street, a line 150 feet southerly of Sutter Avenue, and Snediker Avenue;

as shown on a diagram (for illustrative purposes only) dated May 20, 2019, Borough of Brooklyn, Community District 5.

RAFAEL SALAMANCA, Jr., *Chairperson*; PETER A. KOO, STEPHEN T. LEVIN, DONOVAN J. RICHARDS, VANESSA L. GIBSON, INEZ D. BARRON, CHAIM M. DEUTSCH, RORY I. LANCMAN, I. DANEEK MILLER, MARK TREYGER, BARRY S. GRODENCHIK, RUBEN DIAZ, Sr., FRANCISCO P. MOYA, CARLINA RIVERA; Committee on Land Use, December 3, 2019.

On motion of the Speaker (Council Member Johnson), and adopted, the foregoing matter was coupled as a General Order for the day (see ROLL CALL ON GENERAL ORDERS FOR THE DAY).

Report for L.U. No. 574

Report of the Committee on Land Use in favor of approving Application No. N 190411 ZRK (515 Blake Avenue) submitted by the Department of Housing Preservation and Development, pursuant to Section 201 of the New York City Charter, for an amendment of the Zoning Resolution of the City of New York, modifying APPENDIX F for the purpose of establishing a Mandatory Housing Inclusionary area, Borough of Brooklyn, Council District 42, Community District 5.

The Committee on Land Use, to which the annexed Land Use item was referred on October 30, 2019 (Minutes, page 3637) and which same Land Use item was coupled with the resolution shown below, respectfully

REPORTS:

(For text of report, please see the Report of the Committee on Land Use for L.U. No. 572 printed in these Minutes)

Accordingly, this Committee recommends its adoption.

In connection herewith, Council Members Salamanca and Moya offered the following resolution

Res. No. 1189

Resolution approving the decision of the City Planning Commission on Application No. N 190411 ZRK, for an amendment of the text of the Zoning Resolution (L.U. No. 574).

By Council Members Salamanca and Moya.

WHEREAS, the New York City Department of Housing Preservation and Development, filed an application pursuant to Section 201 of the New York City Charter, for an amendment of the text of the Zoning Resolution of the City of New York, modifying Appendix F for the purpose of establishing a Mandatory Housing Inclusionary area utilizing Option 1, which in conjunction with the related actions would facilitate the redevelopment of an existing 192-unit family homeless shelter located at 515 Blake Avenue (Block 3766, Lot 1), with four new buildings providing 324 affordable units, a new homeless family shelter with approximately 195 units, and commercial and community facility spaces, Borough of Brooklyn, Community District 5 (Application No. N 190411 ZRK) (the "Application");

WHEREAS, the City Planning Commission filed with the Council on October 25, 2019, its decision dated October 16, 2019 (the "Decision"), on the Application;

WHEREAS, the Application is related to applications C 190409 HAK (L.U. No. 572), UDAAP designation, project approval, and disposition of City-owned property to dispose of the subject property; C 190410 ZMK (L.U. No. 573), a zoning map amendment to change a C4-3 district, an R6 district and an R6/C2-3 district to an R6A district, an R7D/C1-4 district and an R7D/C2-4 district on the entirety of Block 3766; and C 190421 ZSK (L.U. No. 575), a Large-Scale General Development (LSGD) special permit pursuant to ZR Section 74-743 to modify bulk regulations pursuant to ZR Section 77-22 to redistribute floor area across the development site;

WHEREAS, the Decision is subject to review and action by the Council pursuant to Section 197-d of the City Charter;

WHEREAS, upon due notice, the Council held a public hearing on the Decision and Application on November 4, 2019;

WHEREAS, the Council has considered the land use implications and other policy issues relating to the Decision and Application; and

WHEREAS, the Council has considered the relevant environmental issues, including the negative declaration issued on May 16, 2019 (CEQR No. 19HPD058K) (the "Negative Declaration").

RESOLVED:

The Council finds that the action described herein will have no significant impact on the environment as set forth in the Negative Declaration.

Pursuant to Sections 197-d and 200 of the City Charter and on the basis of the Decision and Application, and based on the environmental determination and consideration described in the report, N 190411 ZRK, incorporated by reference herein, and the record before the Council, the Council approves the Decision of the City Planning Commission.

Matter underlined is new, to be added;
Matter ~~struck out~~ is to be deleted;
Matter within # # is defined in Section 12-10; and
* * * indicates where unchanged text appears in the Zoning Resolution.

* * *

APPENDIX F
Inclusionary Housing Designated Areas and Mandatory Inclusionary Housing Areas

* * *

BROOKLYN

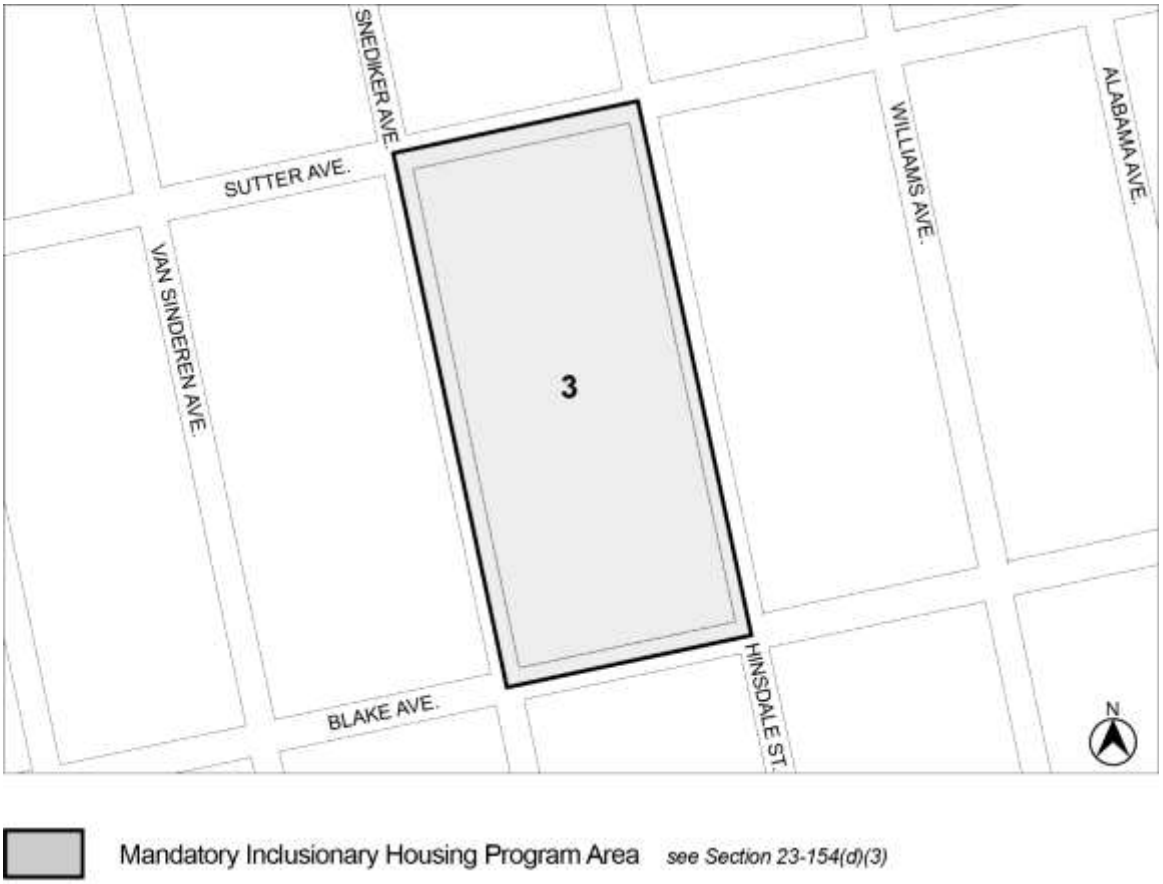
* * *

Brooklyn Community District 5

* * *

Map 3 - [date of adoption]

[PROPOSED MAP]



Portion of Community District 5, Brooklyn

* * *

RAFAEL SALAMANCA, Jr., *Chairperson*; PETER A. KOO, STEPHEN T. LEVIN, DONOVAN J. RICHARDS, VANESSA L. GIBSON, INEZ D. BARRON, CHAIM M. DEUTSCH, RORY I. LANCMAN, I. DANEEK MILLER, MARK TREYGER, BARRY S. GRODENCHIK, RUBEN DIAZ, Sr., FRANCISCO P. MOYA, CARLINA RIVERA; Committee on Land Use, December 3, 2019.

On motion of the Speaker (Council Member Johnson), and adopted, the foregoing matter was coupled as a General Order for the day (see ROLL CALL ON GENERAL ORDERS FOR THE DAY).

Report for L.U. No. 575

Report of the Committee on Land Use in favor of approving Application No. C 190421 ZSK (515 Blake Avenue) submitted by the Department of Housing Preservation and Development, pursuant to Sections 197-c and 201 of the New York City Charter for the grant of a special permit pursuant to the following Section 74-743(a) of the Zoning Resolution to allow the distribution of total allowable floor area without regard for zoning district lines in connection with a proposed mixed-use development, within a large-scale general development bounded by Sutter Avenue, Hinsdale Street, a line 50 feet northerly of Blake Avenue, a line midway between Snediker Avenue and Hinsdale Street, Blake Avenue, and Snediker Avenue (Block 3766, Lot 1), in proposed R6A, R7D/C1-4, and R7D/C2-4 Districts. Borough of Borough of Brooklyn, Council District 42, Community District 5.

The Committee on Land Use, to which the annexed Land Use item was referred on October 30, 2019 (Minutes, page 3637) and which same Land Use item was coupled with the resolution shown below, respectfully

REPORTS:

(For text of report, please see the Report of the Committee on Land Use for L.U. No. 572 printed in these Minutes)

Accordingly, this Committee recommends its adoption.

In connection herewith, Council Members Salamanca and Moya offered the following resolution

Res. No. 1190

Resolution approving the decision of the City Planning Commission on ULURP No. C 190421 ZSK, for the grant of a special permit (L.U. No. 575).

By Council Members Salamanca and Moya.

WHEREAS, the New York City Department of Housing Preservation and Development, filed an application pursuant to Sections 197-c and 201 of the New York City Charter for the grant of a special permit pursuant to the following Section 74-743(a) of the Zoning Resolution to allow the distribution of total allowable floor area without regard for zoning district lines in connection with a proposed mixed-use development, within a large-scale general development bounded by Sutter Avenue, Hinsdale Street, a line 50 feet northerly of Blake Avenue, a line midway between Snediker Avenue and Hinsdale Street, Blake Avenue, and Snediker Avenue (Block 3766, Lot 1), in R6A, R7D/C1-4, and R7D/C2-4 Districts, which in conjunction with the related actions would facilitate the redevelopment of an existing 192-unit family homeless shelter located at 515 Blake Avenue (Block 3766, Lot 1), with four new buildings providing 324 affordable units, a new homeless family shelter with 195 units, and commercial and community facility spaces located in 515 Blake Avenue in the East New York neighborhood of Brooklyn Community District 5 (ULURP No. C 190421 ZSK) (the "Application");

WHEREAS, the City Planning Commission filed with the Council on October 25, 2019, its decision dated October 16, 2019 (the "Decision") on the Application;

WHEREAS, the Application is related to applications C 190409 HAK (L.U. No. 572), UDAAP designation, project approval, and disposition of City-owned property to dispose of the subject property; C 190410 ZMK (L.U. No. 573), a zoning map amendment to change a C4-3 district, an R6 district and an R6/C2-3 district to an R6A district, an R7D/C1-4 district and an R7D/C2-4 district on the entirety of Block 3766; and N 190411 ZRK (L.U. No. 574), a zoning text amendment to designate a Mandatory Inclusionary Housing Area on the entirety of Block 3766;

WHEREAS, the Decision is subject to review and action by the Council pursuant to Section 197-d of the City Charter;

WHEREAS, the City Planning Commission has made the findings required pursuant to Section 74-903 of the Zoning Resolution of the City of New York;

WHEREAS, upon due notice, the Council held a public hearing on the Decision and Application on November 4, 2019;

WHEREAS, the Council has considered the land use and environmental implications and other policy issues relating to the Decision and Application; and

WHEREAS, the Council has considered the relevant environmental issues, including the negative declaration issued on May 16, 2019 (CEQR No. 19HPD058K) (the "Negative Declaration").

RESOLVED:

The Council finds that the action described herein will have no significant impact on the environment as set forth in the Negative Declaration.

Pursuant to Sections 197-d and 200 of the City Charter and on the basis of the Decision and Application, and based on the environmental determination and consideration described in the report, C 190421 ZSK, incorporated by reference herein, and the record before the Council, the Council approves the Decision of the City Planning Commission.

1. The property that is the subject of this application (C 190421 ZSK) shall be developed in size and arrangement substantially in accordance with the dimensions, specifications and zoning computations indicated on the following approved drawings, prepared by Curtis + Ginsberg Architects LLP, filed with this application and incorporated in this resolution:

Dwg. No.	Title	Last Date Revised
U-001	Site Plan	05/15/2019
Z-001	Zoning Analysis	05/15/2019
U-004	Sections I	05/15/2019
U-005	Sections II	05/15/2019

2. Such development shall conform to all applicable provisions of the Zoning Resolution, except for the modifications specifically granted in this resolution and shown on the plans listed above which have been filed with this application. All zoning computations are subject to verification and approval by the New York City Department of Buildings.

3. Such development shall conform to all applicable laws and regulations relating to its construction, operation and maintenance.

4. Development pursuant to this resolution shall be allowed only after the restrictive declaration attached hereto as Exhibit A, with such administrative changes as are acceptable to Counsel to the Department of City Planning, has been executed and recorded in the office of the Register of the city of New York, County of Kings. Such restrictive declaration shall be deemed incorporated herein as a condition of this resolution.

5. In the event that the property that is the subject of the application is developed as, sold as, or converted to condominium units, a homeowner's association or cooperative ownership, a copy of this report and resolution and any subsequent modification shall be provided to the Attorney General of the State of New York at the time

of application for any such condominium, homeowner's or cooperative offering plan and, if the Attorney General so directs, shall be incorporated in full in any offering documents relating to the property.

6. All leases, subleases, or other agreements for use or occupancy of space at the subject property shall give actual notice of this special permit to the lessee, sub-lessee or occupant.

7. Upon the failure of any party having any right, title or interest in the property that is the subject of this application, or the failure of any heir, successor, assign, or legal representative of such party, to observe any of the covenants, restrictions, agreements, terms or conditions of this resolution whose provisions shall constitute conditions of the special permit hereby granted, the City Planning Commission may, without the consent of any other party, revoke any portion of or all of said special permit. Such power of revocation shall be in addition to and not limited to any other powers of the City Planning Commission, or of any other agency of government, or any private person or entity. Any such failure as stated above, or any alteration in the development that is the subject of this application that departs from any of the conditions listed above, is grounds for the City Planning Commission or the City Council, as applicable, to disapprove any application for modification, cancellation or amendment of the special permit hereby granted.

8. Neither the City of New York nor its employees or agents shall have any liability for money damages by reason of the city's or such employee's or agent's failure to act in accordance with the provisions of this special permit.

RAFAEL SALAMANCA, Jr., *Chairperson*; PETER A. KOO, STEPHEN T. LEVIN, DONOVAN J. RICHARDS, VANESSA L. GIBSON, INEZ D. BARRON, CHAIM M. DEUTSCH, RORY I. LANCMAN, I. DANEEK MILLER, MARK TREYGER, BARRY S. GRODENCHIK, RUBEN DIAZ, Sr., FRANCISCO P. MOYA, CARLINA RIVERA; Committee on Land Use, December 3, 2019.

On motion of the Speaker (Council Member Johnson), and adopted, the foregoing matter was coupled as a General Order for the day (see ROLL CALL ON GENERAL ORDERS FOR THE DAY).

Report for L.U. No. 580

Report of the Committee on Land Use in favor of approving Application No. 20195733 TCK (Sur La Baie) pursuant to Section 20-226 of the Administrative Code of the City of New York, concerning the petition of Oy Compensation LLC d/b/a Sur La Baie, for a revocable consent to establish maintain and operate an unenclosed sidewalk café located at 3099 Emmons Avenue, Borough of Brooklyn, Council District 48, Community District 15. This application is subject to review and action by the Land Use Committee only if called-up by vote of the Council pursuant Section 11.20(c) of the Rules of the Council and Section 20-226 of the New York City Administrative Code.

The Committee on Land Use, to which the annexed Land Use item was referred on November 14, 2019 (Minutes, page 3924) and which same Land Use item was coupled with the resolution shown below, respectfully

REPORTS:

SUBJECT

BROOKLYN CB - 15 **20195733 TCK**

Application pursuant to Section 20-226 of the Administrative Code of the City of New York concerning the petition of OY Compensation, LLC, d/b/a Sur La Baie, for a new revocable consent to establish, maintain and operate an unenclosed sidewalk cafe located at 3099 Emmons Avenue, Brooklyn.

INTENT

To allow an eating or drinking place located on a property which abuts the street to establish, maintain, and operate an unenclosed service area on the sidewalk of such street.

PUBLIC HEARING

DATE: December 3, 2019

Witnesses in Favor: None **Witnesses Against:** None

SUBCOMMITTEE RECOMMENDATION

DATE: December 3, 2019

The Subcommittee recommends that the Land Use Committee approve the Petition.

In Favor:
Moya, Levin, Richards, Lancman, Grodenchik, Rivera

Against:	**Abstain:**
None	None

COMMITTEE ACTION

DATE: December 3, 2019

The Committee recommends that the Council approve the attached resolution.

In Favor:
Salamanca, Gibson, Barron, Deutsch, Koo, Lancman, Levin, Miller, Richards, Treyger, Grodenchik, Diaz, Moya, Rivera.

Against:	**Abstain:**
None	None

In connection herewith, Council Members Salamanca and Moya offered the following resolution:

Res. No. 1191

Resolution approving the petition for a new revocable consent for an unenclosed sidewalk café located at 3099 Emmons Avenue, Borough of Brooklyn (Non-ULURP No. 20195733 TCK; L.U. No. 580).

By Council Members Salamanca and Moya.

WHEREAS, the Department of Consumer Affairs filed with the Council on October 31, 2019 its approval dated October 25, 2019 of the petition of OY Compensations, d/b/a Sur La Baie, for a new revocable consent to establish, maintain, and operate an unenclosed sidewalk café located at 3099 Emmons Avenue, Borough of Brooklyn, Community District 15, comprised of ten (10) tables and twenty (20) chairs (the "Petition"), pursuant to Section 20-226 of the New York City Administrative Code (the "Administrative Code");

WHEREAS, the Petition is subject to review by the Council pursuant to Section 20-226 (f) of the Administrative Code;

WHEREAS, upon due notice, the Council held a public hearing on the Petition on December 3, 2019; and

WHEREAS, the Council has considered the land use implications and other policy issues relating to the Petition.

RESOLVED:

Pursuant to Section 20-226 (f) of the Administrative Code, the Council approves the Petition.

RAFAEL SALAMANCA, Jr., *Chairperson*; PETER A. KOO, STEPHEN T. LEVIN, DONOVAN J. RICHARDS, VANESSA L. GIBSON, INEZ D. BARRON, CHAIM M. DEUTSCH, RORY I. LANCMAN, I. DANEEK MILLER, MARK TREYGER, BARRY S. GRODENCHIK, RUBEN DIAZ, Sr., FRANCISCO P. MOYA, CARLINA RIVERA; Committee on Land Use, December 3, 2019.

On motion of the Speaker (Council Member Johnson), and adopted, the foregoing matter was coupled as a General Order for the day (see ROLL CALL ON GENERAL ORDERS FOR THE DAY).

Report for L.U. No. 581

Report of the Committee on Land Use in favor of approving, as modified, Application No. N 190408 ZRY (POPS Signage and Amenities Text Amendment) submitted by the Department of City Planning, pursuant to Section 201 of the New York City Charter, for an amendment of the Zoning Resolution of the City of New York, to facilitate the updating of Privately Owned Public Spaces (POPS) signage and furniture regulations, Citwide.

The Committee on Land Use, to which the annexed Land Use item was referred on November 14, 2019 (Minutes, page 3925), respectfully

REPORTS:

SUBJECT

CITYWIDE **N 190408 ZRY**

City Planning Commission decision approving an application submitted by the Department of City Planning, pursuant to Section 201 of the New York City Charter, for an amendment of the Zoning Resolution of the City of New York, to facilitate the updating of Privately Owned Public Spaces (POPS) signage and furniture regulations.

INTENT

To approve amendments to the Text of the Zoning Resolution, to facilitate the modification of existing Privately Owned Public Spaces (POPS) provisions, including required signage, amenities, and implementing a new POPS symbol.

PUBLIC HEARING

DATE: November 19, 2019

Witnesses in Favor: Two **Witnesses Against:** None

SUBCOMMITTEE RECOMMENDATION

DATE: December 3, 2019

The Subcommittee recommends that the Land Use Committee approve with modifications the decision of the City Planning Commission.

In Favor:
Moya, Levin, Richards, Lancman, Grodenchik, Rivera.

Against:	**Abstain:**
None	None

COMMITTEE ACTION

DATE: December 3, 2019

The Committee recommends that the Council approve with modifications the attached resolution.

In Favor:
Salamanca, Gibson, Barron, Deutsch, Koo, Lancman, Levin, Miller, Richards, Treyger, Grodenchik, Diaz, Moya, Rivera.

Against:	**Abstain:**
None	None

RAFAEL SALAMANCA, Jr., *Chairperson*; PETER A. KOO, STEPHEN T. LEVIN, DONOVAN J. RICHARDS, VANESSA L. GIBSON, INEZ D. BARRON, CHAIM M. DEUTSCH, RORY I. LANCMAN, I. DANEEK MILLER, MARK TREYGER, BARRY S. GRODENCHIK, RUBEN DIAZ, Sr., FRANCISCO P. MOYA, CARLINA RIVERA; Committee on Land Use, December 3, 2019.

Approved with Modifications and Referred to the City Planning Commission pursuant to Section 197-(d) of the New York City Charter.

Report for L.U. No. 591

Report of the Committee on Land Use in favor of approving Application No. 20205036 TCQ (Dai Hachi Sushi Corporation) pursuant to Section 20-226 of the Administrative Code of the City of New York, concerning the petition of Dai Hachi Sushi Corporation, for a revocable consent to establish maintain and operate an unenclosed sidewalk café located at 4618 Vernon Blvd., Borough of Queens, Council District 26, Community District 2. This application is subject to review and action by the Land Use Committee only if called-up by vote of the Council pursuant Section 11.20(c) of the Rules of the Council and Section 20-226 of the New York City Administrative Code.

The Committee on Land Use, to which the annexed Land Use item was referred on November 26, 2019 (Minutes, page 4036) and which same Land Use item was coupled with the resolution shown below, respectfully

REPORTS:

SUBJECT

QUEENS CB - 2 **20205036 TCQ**

Application pursuant to Section 20-226 of the Administrative Code of the City of New York concerning the petition of Dai Hachi Sushi Corporation, for a new revocable consent to establish, maintain and operate an unenclosed sidewalk cafe located at 4618 Vernon Boulevard, Queens.

INTENT

To allow an eating or drinking place located on a property which abuts the street to establish, maintain, and operate an unenclosed service area on the sidewalk of such street.

PUBLIC HEARING

DATE: December 3, 2019

Witnesses in Favor: None **Witnesses Against:** None

SUBCOMMITTEE RECOMMENDATION

DATE: December 3, 2019

The Subcommittee recommends that the Land Use Committee approve the Petition.

In Favor:
Moya, Levin, Richards, Lancman, Grodenchik, Rivera.

Against:	**Abstain:**
None	None

COMMITTEE ACTION

DATE: December 3, 2019

The Committee recommends that the Council approve the attached resolution.

In Favor:
Salamanca, Gibson, Barron, Deutsch, Koo, Lancman, Levin, Miller, Richards, Treyger, Grodenchik, Diaz, Moya, Rivera.

Against:	**Abstain:**
None	None

In connection herewith, Council Members Salamanca and Moya offered the following resolution

Res. No. 1192

Resolution approving the petition for a new revocable consent for an unenclosed sidewalk café located at 4618 Vernon Boulevard, Borough of Queens (Non-ULURP No. 20205036 TCQ; L.U. No. 591).

By Council Members Salamanca and Moya.

WHEREAS, the Department of Consumer Affairs filed with the Council on November 11, 2019 its approval dated November 7, 2019 of the petition of Dai Hachi Sushi Corporation, for a new revocable consent to establish, maintain, and operate an unenclosed sidewalk café located at 4618 Vernon Boulevard, Borough of Queens, Community District 2, comprised of five (5) tables and twelve (12) chairs (the "Petition"), pursuant to Section 20-226 of the New York City Administrative Code (the "Administrative Code");

WHEREAS, the Petition is subject to review by the Council pursuant to Section 20-226 (f) of the Administrative Code;

WHEREAS, upon due notice, the Council held a public hearing on the Petition on December 3, 2019; and

WHEREAS, the Council has considered the land use implications and other policy issues relating to the Petition.

RESOLVED:

Pursuant to Section 20-226 of the Administrative Code, the Council approves the Petition.

RAFAEL SALAMANCA, Jr., *Chairperson*; PETER A. KOO, STEPHEN T. LEVIN, DONOVAN J. RICHARDS, VANESSA L. GIBSON, INEZ D. BARRON, CHAIM M. DEUTSCH, RORY I. LANCMAN, I. DANEEK MILLER, MARK TREYGER, BARRY S. GRODENCHIK, RUBEN DIAZ, Sr., FRANCISCO P. MOYA, CARLINA RIVERA; Committee on Land Use, December 3, 2019.

On motion of the Speaker (Council Member Johnson), and adopted, the foregoing matter was coupled as a General Order for the day (see ROLL CALL ON GENERAL ORDERS FOR THE DAY).

Report of the Committee on Transportation

Report for Int. No. 1412-A

Report of the Committee on Transportation in favor of approving and adopting, as amended, a Local Law to amend the administrative code of the city of New York, in relation to removing vehicles obstructing a sidewalk, crosswalk, fire hydrant, bicycle lane, or bus lane.

The Committee on Transportation, to which the annexed proposed amended local law was referred on February 13, 2019 (Minutes, page 449), respectfully

REPORTS:

INTRODUCTION

On December 10, 2019, the Committee on Transportation, chaired by Council Member Ydanis Rodriguez, will hold a hearing on Proposed Int. No. 1412-A, a Local Law to amend the administrative code of the city of New York, in relation to removing vehicles obstructing a sidewalk, crosswalk, fire hydrant, bicycle lane, or bus lane. This is the second hearing that the Committee has held on this item. The first hearing on Int. No.1412 was held on March 27, 2019. At this hearing, the Committee heard testimony from the New York City Department of Transportation ("DOT"), the New York City Police Department ("NYPD"), members of the public and other interested stakeholders.

BACKGROUND

Parking Placards

In New York City, the NYPD, DOT and the Department of Education ("DOE") are the three agencies primarily responsible for issuing parking permits, also known as placards. Each of these agencies separately issues placards to their employees. DOT also issues placards to several dozen other agencies, to non-government individuals and entities such as non-profit organizations, people with disabilities, and members of the clergy.[1]

In 2018, there were approximately 125,500 City-issued placards in circulation.[2] Of these, 44,000 were issued by the NYPD, 50,000 were issued by DOT and 31,500 were issued by DOE.[3] The number of DOE placards was cut significantly under the Bloomberg Administration.[4] The Council of School Supervisors and Administrators ("CSA"), the union that represents school principals, filed suit to challenge these reductions for its members.[5] As the result of an arbitration ruling in May of 2017, the de Blasio Administration reissued placards to CSA members.[6] However, the de Blasio Administration also opted to reissue tens of thousands of placards distinct from the CSA arbitration—a placard for "[e]very school employee who has a car."[7]

DOT issues "City-wide Agency" and "Agency Business" placards to government personnel that permit parking in metered parking areas without paying the meter and in "No Parking" areas and "Commercial Vehicle Only" areas.[8] Some placards only allow the use of these types of privileges for a limited amount of time and

[1] N.Y.C. D.O.T., available at http://www.nyc.gov/html/dot/html/motorist/motorist.shtml

[2] Mayor Puts City on Path to Replacing Broken Placard System, The Official Website of the City of New York, February 21, 2019, available at https://www1.nyc.gov/office-of-the-mayor/news/106-19/mayor-puts-city-path-replacing-broken-placard-system#/0.

[3] *Id.*

[4] Brad Aaron, *De Blasio Administration Volunteered to Hand Out Tens of Thousands of New Parking Placards*, Streetsblog.com, May 12, 2017, available at https://nyc.streetsblog.org/2017/05/12/de-blasio-administration-volunteered-to-issue-tens-of-thousands-of-new-parking-placards/

[5] *Id.*

[6] *Id.*

[7] *Id.*

[8] Information from N.Y.C. D.O.T on file with committee staff

some are excluded from use in zones in lower Manhattan and downtown Brooklyn unless specifically authorized.[9] The NYPD issues law enforcement placards that are similar to these agency placards.[10]

DOT also issues "Agency Authorized" placards for parking in specific designated "authorized agency parking only" locations.[11] NYPD has similar placards for use in the immediate vicinity of police precincts.[12] Similarly, DOE's placards can only be used in "Authorized Parking Only - DOE" zones near schools.[13] DOT also issues other types of placards to non-government individuals and entities such as non-profit organizations, people with disabilities, and members of the clergy.[14]

Misuse of Parking Placards

Valid placard holders often misuse their placards by parking where even placard holders are not permitted. For example, many placard holders park their cars illegally in no standing zones, bus lanes and bicycle lanes.[15] This issue has existed for many years. A 2006 report by Transportation Alternatives found that citywide 77% of permit holders used their government issued parking permits illegally.[16] More recently, a segment produced by Fox 5 news on February 22, 2018 found numerous cars with placards parked illegally in Downtown Brooklyn. The news report found one car blocking a fire hydrant in a no standing zone, another car parked halfway in the street, and a line of cars parked in an active bus lane.[17] Additionally, it was reported last year that in St. George, Staten Island, police officers at the 120th precinct and workers reporting to the municipal buildings and court offices in the area often park on busy sidewalks and in crosswalks, and block fire hydrants and bus stops, with their city-issued placards on full display on their windshield.[18]

Media reports have also detailed city employees without placards parking their cars illegally and placing work-related items on the dashboard or windshield of the vehicles. These owners attempt to get away with parking illegally by displaying work-issued vests, baseball caps and patches with city agency logos, or their personal business cards.[19] It has been reported that even relatives or friends of city workers can avoid a ticket if they display an item that connects them to a city employee, like a courtesy badge or union card.[20]

Fraudulent Placards

In addition to the unlawful use of valid placards, the use of fraudulent parking placards has long been an issue. A 2011 report by Transportation Alternatives found that 57 percent of the permits they surveyed were either legal permits used illegally or illegitimate permits, and that one in four permits was fake.[21]

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[9] *Id.*
[10] *Id.*
[11] *Id.*
[12] *Id.*
[13] *Id.*
[14] N.Y.C. D.O.T., available at http://www.nyc.gov/html/dot/html/motorist/motorist.shtml
[15] NYC bills target parking placard scofflaws, Stacey Delikat, Fox 5 News, May 21, 2018, available at http://www.fox5ny.com/news/parking-placard-scofflaws
[16] *Above the Law, A Study of Government Parking Permit Abuse in New York City*, Transportation Alternatives, September 2006, available at https://transalt.org/sites/default/files/news/reports/2006/abovethelaw.pdf
[17] 160,000 parking placards in NYC; many used illegally, Stacey Delikat,, Fox 5 News, February 22, 2018, available at http://www.fox5ny.com/news/160000-parking-placards-in-nyc-many-used-illegally
[18] Vincent Barone, *Parking placard abuse remains a problem all over NYC*, amNewYork, Feb. 19, 2018, available at https://www.amny.com/transit/parking-placard-abuse-1.16871832.
[19] Michael Gannon, *Parking abuse down near Borough Hall*, Queens Chronicle, September 14, 2017, available at http://www.qchron.com/editions/queenswide/parking-abuse-down-near-borough-hall/article_21130958-9797-58f7-97ff-3f6829d6318b.html.
[20] Ben Fried, *Street Cheats: Who Needs a Placard When You've Got Law Enforcement Swag?,* STREETSBLOG NYC, August 10, 2018 available at https://nyc.streetsblog.org/2018/08/10/street-cheats-who-needs-a-placard-when-youve-got-law-enforcement-swag/.
[21] *Id.*

In October 2017, thirty individuals were charged with "using fake parking placards made to look like city-issued documents to park in special zones and to avoid paying tickets."[22] Individuals participating in this fake parking placard scam were parking in special zones with laminated placards for city agencies such as the Administration for Children's Services, the Department of Health, the Fire Department, and the Law Department, and for nongovernmental organizations such as the American Red Cross and the New York Blood Center.[23]

According to the Department of Investigation ("DOI"), the fraudulent placards "cost between $500 and $2,600 on the black market and the demand for them was high, spawning an underground industry."[24] The placards are most often used to thwart parking rules and sometimes used to avoid paying parking tickets altogether. DOI has thus compared the fraudulent use of placards to stealing city resources.[25] Additionally, the use of fraudulent placards frustrates the purpose of reserving parking privileges for those agencies and individuals that most need them, often for medical reasons. For example, one of the defendants in the 2017 case was accused of parking in a space reserved for an ambulette that transported people with disabilities to a health care facility and five defendants were accused of using handicapped zone passes.[26]

City employees are potentially subject to disciplinary action for placard fraud or abuse, including placard revocation, permanent ineligibility for parking privileges, discipline, suspension, or termination.[27] Further, pursuant to § 19-166 of the Administrative Code, it is unlawful for individuals to make, have in their possession, or use fraudulent "official cards," defined as "an official department of transportation special vehicle identification card or any other official card issued by the department of transportation." A violation of this law is punishable by a fine of not less than $250, or imprisonment for not more than 30 days, or both. Violators of this law can also be charged with a felony for forgery.

Effects of Placard Abuse

The abuse of the city's parking placard system has been such a conspicuous issue that there is even a Twitter account (@placardabuse) dedicated to documenting, on a daily basis, dozens of illegally parked cars with real but misused placards, fraudulent placards, or work-related items used as a stand-in for a valid placard. Even though holders of legitimate placards are still subject to certain parking rules (such as not blocking a fire hydrant), it has been widely observed that such rules are not consistently enforced when a placard is displayed.

Some transportation advocates have cited the frequent abuse of the placard system as a factor in many traffic issues, from cyclist and pedestrian safety to blocked bus lanes, gridlock, and traffic congestion more broadly. In fact, a 2008 study found that although City employees are less likely to own cars as compared to other New Yorkers, they are actually more likely to drive into Manhattan because placards ensure they will be able to park.[28] The problem of placard abuse is so pervasive and harmful that Governor Andrew Cuomo's "Fix NYC" advisory panel included a proposal to reform the system as a way to address traffic congestion.[29] Additionally, a recent

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[22] James C. McKinley Jr., *Dozens Charged With Using Fake Parking Placards to Avoid Tickets*, The New York Times, Oct. 3, 2017, available at https://www.nytimes.com/2017/10/03/nyregion/fake-parking-placards-new-york.html.
[23] *Id.*
[24] New York City Department of Investigation, "Summary of Investigation into Fraudulent Parking Placards," October 2017, available at https://www1.nyc.gov/assets/doi/reports/pdf/2017/Oct/Summary_of_Investigation_Fraudulent_Parking_Placards_FINAL_1.pdf.
[25] James C. McKinley Jr., *Dozens Charged With Using Fake Parking Placards to Avoid Tickets*, The New York Times, Oct. 3, 2017, available at https://www.nytimes.com/2017/10/03/nyregion/fake-parking-placards-new-york.html.
[26] *Id.*
[27] *City Hall in Your Borough: Mayor de Blasio Announces New Plan to Crack Down on Parking Placard Fraud and Abuse*, The Official Website of the City of New York, May 24, 2017, available at http://www1.nyc.gov/office-of-the-mayor/news/342-17/city-hall-your-borough-mayor-de-blasio-new-plan-crack-down-parking-placard.
[28] Rachel Weinberger, Mark Seaman, Carolyn Johnson, and John Kaehny, *Guaranteed Parking – Guaranteed Driving: Comparing Jackson Heights, Queens and Park Slope, Brooklyn shows that a guaranteed parking spot at home leads to more driving to work*, Prepared for Transportation Alternatives, October 2008, available at https://www.transalt.org/sites/default/files/news/reports/2008/Guaranteed_Parking.pdf
[29] *Fix NYC Advisory Panel Report*, Jan. 19, 2018, available at http://hntb.com/HNTB/media/HNTBMediaLibrary/Home/Fix-NYC-Panel-Report.pdf.

report released by the Metropolitan Transportation Sustainability Advisory Workgroup similarly included ending placard abuse as one of the group's recommendations to reduce congestion.[30]

The Role of Traffic Enforcement Agents

Traffic Enforcement Agents ("TEAs" or "agents") are civil servants falling under the Traffic Enforcement Division of the New York City Police Department ("NYPD").[31] TEAs are responsible for enforcing the City's myriad parking regulations and issuing tickets for parking violations.[32] Some agents are also responsible for directing traffic.[33] There are currently about 2,100 traffic enforcement agents in the City.[34]

It has been suggested that TEAs are given mixed signals related to the enforcement of parking violations for cars displaying a parking placard or other indicia of City employment. For example, on May 12, 2017 the Twitter account @placardabuse posted a video of an agent refusing to issue a summons to car with an NYPD placard that supposedly had an illegal license plate cover.[35] On a follow-up video posted the same day, the agent can be heard saying that they have orders to not issue tickets to NYPD placards.[36] These videos were posted several months after the de Blasio Administration announced a crackdown on the use of those type of license plate covers.[37] In another video clip, this one posted March 15, 2019, an agent is heard saying that they would have to talk to their supervisor after being informed that a car with what appears to be an expired NYPD placard was parked illegally in front of a fire hydrant.[38] In both of these instances it is not clear whether a violation was ultimately issued to the illegally parked vehicle.

Although these are more recent examples, the practice of not ticketing cars with NYPD placards has been going on for quite some time. In 2011, Streetsblog NYC posted a message that a reader had sent to the NYPD's Internal Affairs Bureau and the Manhattan District Attorney's Office informing them that a traffic agent refused to issue a ticket to car with an expired NYPD restricted placard that was parked in a metered space without proof of payment.[39] The reader claimed that agent told him that "he was not able to write a summons because his supervisor had instructed him not to issue summonses to any vehicles with NYPD placards."[40] Some argue that enforcement agents do not issue tickets to fellow NYPD officers because they are afraid of retaliation if they were to ticket uniformed officers.[41] For example, in 2004, it was reported that a DOT traffic agent was suspended without a pay for a month after issuing a ticket to an illegally parked car belonging to an NYPD Chief.[42] It appears that TEAs have little choice in the matter of placard abuse enforcement.

One of the bills in today's hearing, Int. No. 1393, seeks to address this core issue by requiring TEAs to perform at least 50 weekly sweeps of areas with a high number of complaints of illegally parked cars with placards, photograph the area and report on the enforcement action they take to the Department of Investigation thus protecting them from retaliation by supervisors.

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[30] *Metropolitan Transportation Sustainability Advisory Workgroup Report*, December 2018, available for download at https://pfnyc.org/wp-content/uploads/2018/12/2018-12-Metropolitan-Transportation-Sustainability-Advisory-Workgroup-Report.pdf
[31] *See* https://www1.nyc.gov/site/nypd/careers/civilians/traffic-enforcement-agents-benefits.page.
[32] Traffic Enforcement Agents, NYPD website, https://www1.nyc.gov/site/nypd/careers/civilians/traffic-enforcement-agents.page.
[33] Matthew Chayes, *NYC traffic agents to get 10% raise in contract deal*, Newsday, January 26, 2016, available at https://www.newsday.com/news/new-york/nyc-in-contract-deal-with-traffic-agents-1.11394582.
[34] *Id.*
[35] *See* https://twitter.com/placardabuse/status/863214975518736384.
[36] *Id.*
[37] Thomas Tracy and Reuven Blau, *City to crack down on license plate covers that let drivers — including cops — avoid traffic camera tickets*, NY Daily News, November 29, 2016, available at https://www.nydailynews.com/new-york/city-crack-plate-covers-trip-traffic-cameras-article-1.2891455.
[38] *See* https://twitter.com/placardabuse/status/1106656074839609345.
[39] Ben Fried, *NYPD Still Won't Ticket Their Own,* STREETSBLOG NYC, May 4, 2011, available at https://nyc.streetsblog.org/2011/05/04/nypd-still-wont-ticket-their-own/
[40] *Id.*
[41] David Meyer, *EXPLAINER: Why Mayor de Blasio's Placard Abuse Announcement Today Will Fall Short,* STREETSBLOG NYC, February 21, 2019, available at https://nyc.streetsblog.org/2019/02/21/why-mayor-de-blasios-placard-abuse-plan-will-likely-fall-short/
[42] Jennifer Steinhauer, *Penalty Eased for Parking Agent Who Cited a Police Chief's Car, The New York Times*, July 29, 2004, available at https://www.nytimes.com/2004/07/29/nyregion/penalty-eased-for-parking-agent-who-cited-a-police-chief-s-car.html.

Recent Placard Enforcement Actions

In recent years, the de Blasio Administration has made several pledges to crack down on placard fraud and abuse. In May 2017, the Mayor announced the formation of a new Placard Fraud Enforcement Unit in the NYPD and the hiring of 100 more traffic enforcement agents.[43] The Mayor's plan outlined stricter controls for the newly reissued DOE placards and tougher enforcement actions across all city agencies, which include new towing capacity, anti-placard enforcement units, new sanctions and penalties for placard fraud and abuse, and a new parking fine of up to $100 for the misuse of placards.[44]

Since the creation of the new enforcement unit, the number of summonses issued by the NYPD for illegally parking while displaying a parking placard has increased. In 2016, the City issued 28,269 summonses to drivers with placards who parked illegally.[45] In 2017, that number increased to 41,931 summonses.[46] In 2018, the number of summonses issued had increased to 54,608.[47] Additionally, between June 2017 and June 2018, the city towed 89 cars with placards that were parked illegally.[48] Despite the increase, critics have argued that it is not clear if these enforcement efforts have done anything to actually deter placard abuse.[49] Further, there is no guarantee that these enforcement measures are permanent.

Following the introduction of the placard-related bills first heard at the Transportation Committee's March 27, 2019 hearing, in February of 2019, the Mayor announced a new plan relating to placard reforms.[50] Many if not all components of this plan reflect bills already introduced and in some cases heard by the City Council. For example, the plan includes phasing out physical placards and moving to a digital parking management system by 2021.[51] This system is estimated to cost $52 million for installation and equipment, but will create an integrated parking management system that will link parking meters, handheld devices and license plates and be able to automatically read a license plate to determine whether or not a vehicle is violating parking and placard rules.[52] The system operationalizes the "electronic database" that would be required by Int. No. 927-2018, which was heard at the Transportation Committee's June 12, 2018 hearing,[53] and Int. No. 1422-2019, also introduced before the Mayor's announcement, which would create a placard registration program and require that all City-issued placards have unique identifiers for easy detection.[54]

In another component of the plan, DOT and the Department of Finance will increase the penalties for misuse or fraudulent use of placards, including a "strict three-strike policy" that will lead to the permanent revocation of a placard.[55] Int. No. 596-2018 would similarly increase the fine for fraudulent placards to $500,[56] and Int. No. 932-2018 would establish a three-strike policy for placard misuse.[57] Both of these bills were heard by the

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[43] James C. McKinley Jr., *Dozens Charged With Using Fake Parking Placards to Avoid Tickets*, The New York Times, Oct. 3, 2017, *available at* https://www.nytimes.com/2017/10/03/nyregion/fake-parking-placards-new-york.html.

[44] *City Hall in Your Borough: Mayor de Blasio Announces New Plan to Crack Down on Parking Placard Fraud and Abuse*, The Official Website of the City of New York, May 24, 2017, available at http://www1.nyc.gov/office-of-the-mayor/news/342-17/city-hall-your-borough-mayor-de-blasio-new-plan-crack-down-parking-placard.

[45] Vincent Barone, *Parking placard abuse remains a problem all over NYC*, amNewYork, Feb. 19, 2018, available at https://www.amny.com/transit/parking-placard-abuse-1.16871832.

[46] *Id.*

[47] *Mayor Puts City on Path to Replacing Broken Placard System*, The Official Website of the City of New York, February 21, 2019, available at https://www1.nyc.gov/office-of-the-mayor/news/106-19/mayor-puts-city-path-replacing-broken-placard-system#/0.

[48] Testimony of Deputy Chief Michael Pilecki, Commanding Officer, Traffic Enforcement District, New York City Police Department, before the City Council's Transportation Committee, June 12, 2018.

[49] David Meyer, *There Is No "Placard Crackdown" and That's How NYPD Wants It*, STREETSBLOG NYC, June 12, 2018, https://nyc.streetsblog.org/2018/06/12/there-is-no-placard-crackdown-and-thats-how-nypd-wants-it/.

[50] *Mayor Puts City on Path to Replacing Broken Placard System*, The Official Website of the City of New York, February 21, 2019, available at https://www1.nyc.gov/office-of-the-mayor/news/106-19/mayor-puts-city-path-replacing-broken-placard-system#/0.

[51] *Id.*

[52] *Id.*

[53] https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=3508925&GUID=BBF424D4-850C-4BF5-9530-9E9FB33CC08B&Options=&Search=

[54] https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=3860345&GUID=0F0D180E-7137-4CD1-8E5F-FD2F36AB870E&Options=ID|Text|Other|&Search=1422

[55] *Id.*

[56] https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=3508926&GUID=B503364C-8D20-4282-9A44-0B57C8B6A179&Options=&Search=

[57] https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=3508926&GUID=B503364C-8D20-4282-9A44-0B57C8B6A179&Options=&Search=

Transportation Committee in June of 2018. The Department of Transportation adopted their rules related to placard misuse in June of 2019.[58]

Rather than seek to reduce automobile dependence among City employees, Mayor de Blasio, as part of the February 2019 announcement, also pledged that the City "will purchase parking lots, we will lease parking lots, parking garages, whatever it takes . . . so that our firefighters, our police officers, our EMTs actually have a place that they know they can park."[59] This proposal is seemingly aimed at non-City residents; "officers coming in from very far away" who "feel they have no choice" but to drive and thus "deserve special consideration."[60] This aspect of the plan was not included in the Mayor's press release.[61]

While progress is being made, enforcement actions have been unreliable. Reports have indicated that complaints made to the 311 hotline are often ignored.[62] In fact, a reporter recently filed a complaint for a car parked illegally on a sidewalk, but the complaint was closed because contact information, which is not required, was not submitted.[63]

ANALYSIS

Section one of Proposed Int. No. 1412-A, amends Chapter 1 of title 14 of the administrative code by adding a new section 14-184.

New section 14-184 states that when a vehicle is situated so as to constitute an obstruction of a sidewalk, crosswalk, fire hydrant, bicycle lane, or bus lane and such vehicle is unattended or the person in charge of such vehicle has not arranged for its immediate removal, a person designated by the commissioner may direct its removal by a police department tow truck upon a determination that such vehicle poses a threat to safety or would inhibit the safe and expeditious passage of buses operated by the MTA.

Section two of Proposed Int. No.1412-A would state that no later than January 30, 2021, the police department shall post on its website and submit to the speaker of the council a report on the number of vehicles towed by the department in 2020 that were obstructing a sidewalk, crosswalk, fire hydrant, bicycle lane or bus lane, disaggregated by the police precinct in which such vehicles were located and by the month in which such vehicles were towed.

Section three of Proposed Int. No. 1412-A indicates that this local law takes effect 30 days after it becomes law.

(The following is the text of the Fiscal Impact Statement for Int. No. 1412-A:)

THE COUNCIL OF THE CITY OF NEW YORK

FINANCE DIVISION

LATONIA MCKINNEY, DIRECTOR

FISCAL IMPACT STATEMENT

PROPOSED INTRO. NO: 1412-A

COMMITTEE: Transportation

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58 https://rules.cityofnewyork.us/content/dot-notice-adoption-amending-traffic-rules-placards
59 https://www1.nyc.gov/office-of-the-mayor/news/107-19/transcript-mayor-de-blasio-puts-city-path-replacing-broken-placard-system
60 *Id.*
61 https://www1.nyc.gov/office-of-the-mayor/news/106-19/mayor-puts-city-path-replacing-broken-placard-system#/0
62 David Meyer, *EXPLAINER: Why Mayor de Blasio's Placard Abuse Announcement Today Will Fall Short,* STREETSBLOG NYC, February 21, 2019, available at https://nyc.streetsblog.org/2019/02/21/why-mayor-de-blasios-placard-abuse-plan-will-likely-fall-short/
63 *Id.*

TITLE: A Local Law to amend the administrative code of the city of New York, in relation to removing vehicles obstructing a sidewalk, crosswalk, fire hydrant, bicycle lane, or bus lane.

SPONSORS: Council Members Holden, the Speaker (Council Member Johnson), Brannan, Powers, the Public Advocate (Mr. Williams), Chin, Constantinides, Rivera and Kallos.

SUMMARY OF LEGISLATION: Proposed Intro. No. 1412-A would provide that Police Department tow trucks remove unattended vehicles that are obstructing a sidewalk, crosswalk, fire hydrant, bicycle lane, or bus lane if the vehicle poses a threat to safety or would inhibit the safe and expeditious passage of MTA buses. In addition, the Police Department would be required to issue a report no later than January 30, 2021 that includes, for each month in 2020, the number of vehicles towed disaggregated by police precinct.

EFFECTIVE DATE: This local law would take effect 30 days after it becomes law.

FISCAL YEAR IN WHICH FULL FISCAL IMPACT ANTICIPATED: Fiscal 2021

FISCAL IMPACT STATEMENT:

	Effective FY20	FY Succeeding Effective FY21	Full Fiscal Impact FY21
Revenues	$0	$0	$0
Expenditures	$0	$0	$0
Net	$0	$0	$0

IMPACT ON REVENUES: It is estimated that this legislation would have no impact on revenues.

IMPACT ON EXPENDITURES: It is estimated that this legislation would have no impact on expenditures because the relevant City agencies would utilize existing resources to fulfill its requirements.

SOURCE OF FUNDS TO COVER ESTIMATED COSTS: N/A

SOURCE OF INFORMATION: New York City Council Finance Division
Mayor's Office of Legislative Affairs

ESTIMATE PREPARED BY: John Basile, Financial Analyst

ESTIMATE REVIEWED BY: Nathan Toth, Deputy Director
Chima Obichere, Unit Head
Stephanie Ruiz, Assistant Counsel

LEGISLATIVE HISTORY: This legislation was introduced to the full Council as Intro. No. 1412 on February 13, 2019 and was referred to the Committee on Transportation (Committee). The Committee heard the legislation on March 27, 2019 and the legislation was laid over. The legislation was subsequently amended and the amended version, Proposed Intro. No. 1412-A, will be considered by the Committee on December 10, 2019. Upon a successful vote by the Committee, Proposed Intro. No. 1412-A will be submitted to the full Council for a vote on December 10, 2019.

DATE PREPARED: December 5, 2019.

Accordingly, this Committee recommends its adoption, as amended.

(The following is the text of Int. No. 1412-A:)

Int. No. 1412-A

By Council Members Holden, the Speaker (Council Member Johnson), Brannan, Powers, the Public Advocate (Mr. Williams), Chin, Constantinides, Rivera, Kallos, Ayala, Vallone and Rodriguez.

A Local Law to amend the administrative code of the city of New York, in relation to removing vehicles obstructing a sidewalk, crosswalk, fire hydrant, bicycle lane, or bus lane

Be it enacted by the Council as follows:

Section 1. Chapter 1 of title 14 of the administrative code of the city of New York is amended by adding a new section 14-184 to read as follows:

§ 14-184 Removal of vehicles obstructing traffic. When a vehicle is situated so as to constitute an obstruction of a sidewalk, crosswalk, fire hydrant, bicycle lane, or bus lane and such vehicle is unattended or the person in charge of such vehicle has not arranged for its immediate removal, a person designated by the commissioner may direct its removal by a police department tow truck upon a determination that such vehicle poses a threat to safety or would inhibit the safe and expeditious passage of buses operated by the metropolitan transportation authority.

§ 2. No later than January 30, 2021, the police department shall post on its website and submit to the speaker of the council a report on the number of vehicles towed by the department in 2020 that were obstructing a sidewalk, crosswalk, fire hydrant, bicycle lane or bus lane, disaggregated by the police precinct in which such vehicles were located and by the month in which such vehicles were towed.

§ 3. This local law takes effect 30 days after it becomes law.

YDANIS A. RODRIGUEZ, *Chairperson*; FERNANDO CABRERA, ANDREW COHEN, PETER A. KOO, CHAIM M. DEUTSCH, RAFAEL L. ESPINAL, Jr., MARK D. LEVINE, CARLOS MENCHACA, ANTONIO REYNOSO; Committee on Transportation, December 10, 2019. *Other Council Members Attending: Council Member Holden.*

On motion of the Speaker (Council Member Johnson), and adopted, the foregoing matter was coupled as a General Order for the day (see ROLL CALL ON GENERAL ORDERS FOR THE DAY).

GENERAL ORDER CALENDAR

Report for L.U. No. 561 & Res. No. 1193

Report of the Committee on Land Use in favor of approving, as modified, Application No. C 180524 ZMK (101 Fleet Place Rezoning) submitted by Fleet Center, Inc., pursuant to Sections 197-c and 201 of the New York City Charter for an amendment of the Zoning Map, Section No. 16c, by changing from an R6 District to a C6-4 District, and establishing a Special Downtown Brooklyn District, property bounded by the easterly centerline prolongation of former Fair Street, a line 200 feet easterly of Fleet Place, a line 150 feet northerly of Willoughby Street, and Fleet Place, for property located in the Borough of Brooklyn, Council District 35, Community District 2.

The Committee on Land Use, to which the annexed Land Use item was referred on October 17, 2019 (Minutes, page 3429) and which same Land Use item was coupled with the resolution shown below and referred to the City Planning Commission on November 26, 2019 (Minutes, page 3977), respectfully

REPORTS:

<u>SUBJECT</u>

BROOKLYN CB-2 - TWO APPLICATIONS RELATED TO 101 FLEET PLACE REZONING

C 180524 ZMK (Pre. L.U. No. 561)

City Planning Commission decision approving with modifications an application submitted by Fleet Center, Inc., pursuant to Sections 197-c and 201 of the New York City Charter for an amendment of the Zoning Map, Section No. 16c:

1. changing from an R6 District to a C6-4 District property bounded by the easterly centerline prolongation of former Fair Street, a line 200 feet easterly of Fleet Place, a line 150 feet northerly of Willoughby Street, and Fleet Place; and

2. establishing a Special Downtown Brooklyn District bounded by the easterly centerline prolongation of former Fair Street, a line 200 feet easterly of Fleet Place, a line 150 feet northerly of Willoughby Street, and Fleet Place;

as shown on a diagram (for illustrative purposes only) dated June 17, 2019, and subject to the conditions of CEQR Declaration E-539.

N 180525 ZRK (Pre. L.U. No. 562)

City Planning Commission decision approving an application submitted by Fleet Center, Inc., pursuant to Section 201 of the New York City Charter, for an amendment of the Zoning Resolution of the City of New York, modifying Article X, Chapter 1 (Special Downtown Brooklyn District) for the purpose of modifying the Special Downtown Brooklyn District boundary and modifying Appendix F for the purpose of establishing a Mandatory Inclusionary Housing area.

INTENT

The application sought a rezoning of the project area from an R6 district to a C6-4 district, to amend zoning text to modify the boundary of the Special Downtown Brooklyn District (SDBD), and to designate a Mandatory Inclusionary Housing (MIH) area utilizing Options 1 and 2, to facilitate the development of a new 14-story, approximately 200,000-square-foot, commercial office building at 101 Fleet Place (Block 2061, Lot 100) in Downtown Brooklyn, Community District 2. The City Planning Commission decision approved the application with a modification: the proposed C6-4 designation was changed to C6-1.

PUBLIC HEARING

DATE: October 16, 2019

Witnesses in Favor: Four **Witnesses Against:** One

SUBCOMMITTEE RECOMMENDATION

DATE: November 20, 2019

The Subcommittee recommends that the Land Use Committee approve with modifications the decision of the City Planning Commission on Pre. L.U. No. 561 and Pre. L.U. No. 562.

In Favor:
Moya, Levin, Richards, Lancman, Grodenchik, Rivera.

Against:	**Abstain:**
None	None

COMMITTEE ACTION

DATE: November 20, 2019

The Committee recommends that the Council approve the attached resolutions.

In Favor:
Salamanca, Gibson, Barron, Deutsch, Koo, Lancman, Levin, Miller, Richards, Grodenchik, Adams, Diaz, Moya, Rivera.

Against:	**Abstain:**
None	None

FILING OF MODIFICATIONS WITH THE CITY PLANNING COMMISSIONS

The City Planning Commission filed a letter dated December 2, 2019, with the Council on December 6, 2019, indicating that the proposed modifications are not subject to additional environmental review or additional review pursuant to Section 197-c of the City Charter.

In connection herewith, Council Members Salamanca and Moya offered the following resolution:

Res. No. 1193

Resolution approving with modifications the decision of the City Planning Commission on ULURP No. C 180524 ZMK, a Zoning Map amendment (Preconsidered L.U. No. 561).

By Council Members Salamanca and Moya.

WHEREAS, Fleet Center, Inc., filed an application pursuant to Sections 197-c and 201 of the New York City Charter for an amendment of the Zoning Map, Section No. 16c, changing from an R6 District to a C6-4 District and establishing a Special Downtown Brooklyn District, which in conjunction with related action would facilitate the development of a new 14-story, approximately 200,000-square-foot, commercial office building at 101 Fleet Place (Block 2061, Lot 100) in Downtown Brooklyn, Community District 2 (ULURP No. C 180524 ZMK) (the "Application");

WHEREAS the City Planning Commission filed with the Council on October 7, 2019, its decision dated September 25, 2019 (the "Decision") modifying the Application;

WHEREAS, the Application is related to application N 180525 ZRK (Pre. L.U. No. 562), a zoning text amendment to modify the boundary of the SDBD and to designate a Mandatory Inclusionary Housing (MIH) area;

WHEREAS, the Decision is subject to review and action by the Council pursuant to Section 197-d of the City Charter;

WHEREAS, upon due notice, the Council held a public hearing on the Decision and Application on October 16, 2019;

WHEREAS, the Council has considered the land use and other policy issues relating to the Decision and Application; and

WHEREAS, the Council has considered the relevant environmental issues, including the Revised Negative Declaration issued September 23rd, 2019, which supersedes the Negative Declaration issued June 17th, 2019, and Revised Environmental Assessment Statement issued September 23rd, 2019 (CEQR No. 19DCP069K) which include an (E) designation to avoid the potential for significant adverse impacts related to hazardous materials, air quality, and noise (the "E" Designation (E-539)).

RESOLVED:

The Council finds that the action described herein will have no significant impact on the environment as set forth in the (E) Designation (E-539) and Revised Negative Declaration.

Pursuant to Sections 197-d and 200 of the City Charter and on the basis of the Decision and Application, and based on the environmental determination and consideration described in the report, C 180524 ZMK, incorporated by reference herein, and the record before the Council, the Council approves the Decision of the City Planning Commission with the following modifications:

Matter ~~double struck out~~ is old, deleted by the City Council;
Matter double-underlined is new, added by the City Council

The Zoning Resolution of the City of New York, effective as of December 15, 1961, and as subsequently amended, is further amended by changing the Zoning Map, Section No. 16c:

~~1. changing from an R6 District to a C6-1 District property bounded by the easterly centerline prolongation of former Fair Street, a line 200 feet easterly of Fleet Place, a line 150 feet northerly of Willoughby Street, and Fleet Place; and~~

1. changing from an R6 District to a C6-4 District property bounded by the easterly centerline prolongation of former Fair Street, a line 200 feet easterly of Fleet Place, a line 150 feet northerly of Willoughby Street, and Fleet Place; and

2. establishing a Special Downtown Brooklyn District bounded by the easterly centerline prolongation of former Fair Street, a line 200 feet easterly of Fleet Place, a line 150 feet northerly of Willoughby Street, and Fleet Place;

as shown on a diagram (for illustrative purposes only) dated June 17, ~~September 25,~~ 2019, and subject to the conditions of CEQR Declaration E-539, Borough of Brooklyn, Community District 2.

RAFAEL SALAMANCA, *Chairperson*; PETER A. KOO, STEPHEN T. LEVIN, DONOVAN J. RICHARDS, VANESSA L. GIBSON, INEZ D. BARRON, CHAIM M. DEUTSCH, RORY I. LANCMAN, I. DANEEK MILLER, BARRY S. GRODENCHIK, ADRIENNE E. ADAMS, RUBEN DIAZ, Sr., FRANCISCO P. MOYA, CARLINA RIVERA; Committee on Land Use, November 20, 2019.

On motion of the Speaker (Council Member Johnson), and adopted, the foregoing matter was coupled as a General Order for the day (see ROLL CALL ON GENERAL ORDERS FOR THE DAY).

Report for L.U. No. 562 & Res. No. 1194

Report of the Committee on Land Use in favor of approving, as modified, Application No. N 180525 ZRK (101 Fleet Place Rezoning) submitted by Fleet Center, Inc., pursuant to Section 201 of the New York City Charter for an amendment of the Zoning Resolution of the City of New York, modifying Article X, Chapter 1 (Special Downtown Brooklyn District) for the purpose of modifying the Special Downtown Brooklyn District boundary and modifying Appendix F for the purpose of establishing a Mandatory Inclusionary Housing area, for property located in the Borough of Brooklyn, Council District 35, Community District 2.

The Committee on Land Use, to which the annexed Land Use item was referred on October 17, 2019 (Minutes, page 3429) and which same Land Use item was coupled with the resolution shown below and referred to the City Planning Commission on November 26, 2019 (Minutes, page 3979), respectfully

REPORTS:

(For text of report, please see the Report of the Committee on Land Use for L.U. No. 561 printed above in the General Order Calendar section of these Minutes)

Accordingly, this Committee recommends its adoption, as modified.

In connection herewith, Council Members Salamanca and Moya offered the following resolution:

Res. No. 1194

Resolution approving with modifications the decision of the City Planning Commission on Application No. N 180525 ZRK, for an amendment of the text of the Zoning Resolution (Preconsidered L.U. No. 562).

By Council Members Salamanca and Moya.

WHEREAS, Fleet Center, Inc., pursuant to Section 201 of the New York City Charter, applied for an amendment of the text of the Zoning Resolution of the City of New York, modifying Article X, Chapter 1 (Special Downtown Brooklyn District) and modifying Appendix F for the purpose of establishing a Mandatory Inclusionary Housing area, which in conjunction with the related action would facilitate the development of a new 14-story, approximately 200,000-square-foot, commercial office building at 101 Fleet Place (Block 2061, Lot 100) in the Downtown Brooklyn neighborhood of Brooklyn Community District 2 (Application No. N 180525 ZRK), (the "Application");

WHEREAS, the City Planning Commission filed with the Council on October 7, 2019 its decision dated September 25, 2019 (the "Decision"), on the Application;

WHEREAS, the Application is related to application C 180524 ZMK (Pre. L.U. No. 561), a zoning map amendment to change an R6 zoning district to a C6-4 zoning district, which was modified by the City Planning Commission;

WHEREAS, the Decision is subject to review and action by the Council pursuant to Section 197-d of the City Charter;

WHEREAS, upon due notice, the Council held a public hearing on the Decision and Application on October 16, 2019;

WHEREAS, the Council has considered the land use implications and other policy issues relating to the Decision and Application; and

WHEREAS, the Council has considered the relevant environmental issues, including the Revised Negative Declaration issued September 23rd, 2019, which supersedes the Negative Declaration issued June 17th, 2019, and Revised Environmental Assessment Statement issued September 23rd, 2019 (CEQR No. 19DCP069K) which include an (E) designation to avoid the potential for significant adverse impacts related to hazardous materials, air quality, and noise (the “E” Designation (E-539)).

RESOLVED:

The Council finds that the action described herein will have no significant impact on the environment as set forth in the (E) Designation (E-539) and Revised Negative Declaration.

Pursuant to Sections 197-d and 200 of the City Charter and on the basis of the Decision and Application, and based on the environmental determination and consideration described in the report, N 180525 ZRK, incorporated by reference herein, and the record before the Council, the Council approves the Decision of the City Planning Commission with the following modifications:

Matter underlined is new, to be added;
Matter ~~struck out~~ is to be deleted;
Matter within # # is defined in Section 12-10;
Matter ~~double struck out~~ is old, deleted by the City Council;
Matter double-underlined is new, added by the City Council
*   *   * indicates where unchanged text appears in the Zoning Resolution

*   *   *

Article X

Special Purpose Districts

Chapter 1

Special Downtown Brooklyn District

*   *   *

Appendix E

Special Downtown Brooklyn District Maps

Map 1 — Special Downtown Brooklyn District and Subdistricts ~~(10/31/17)~~ [date of adoption]

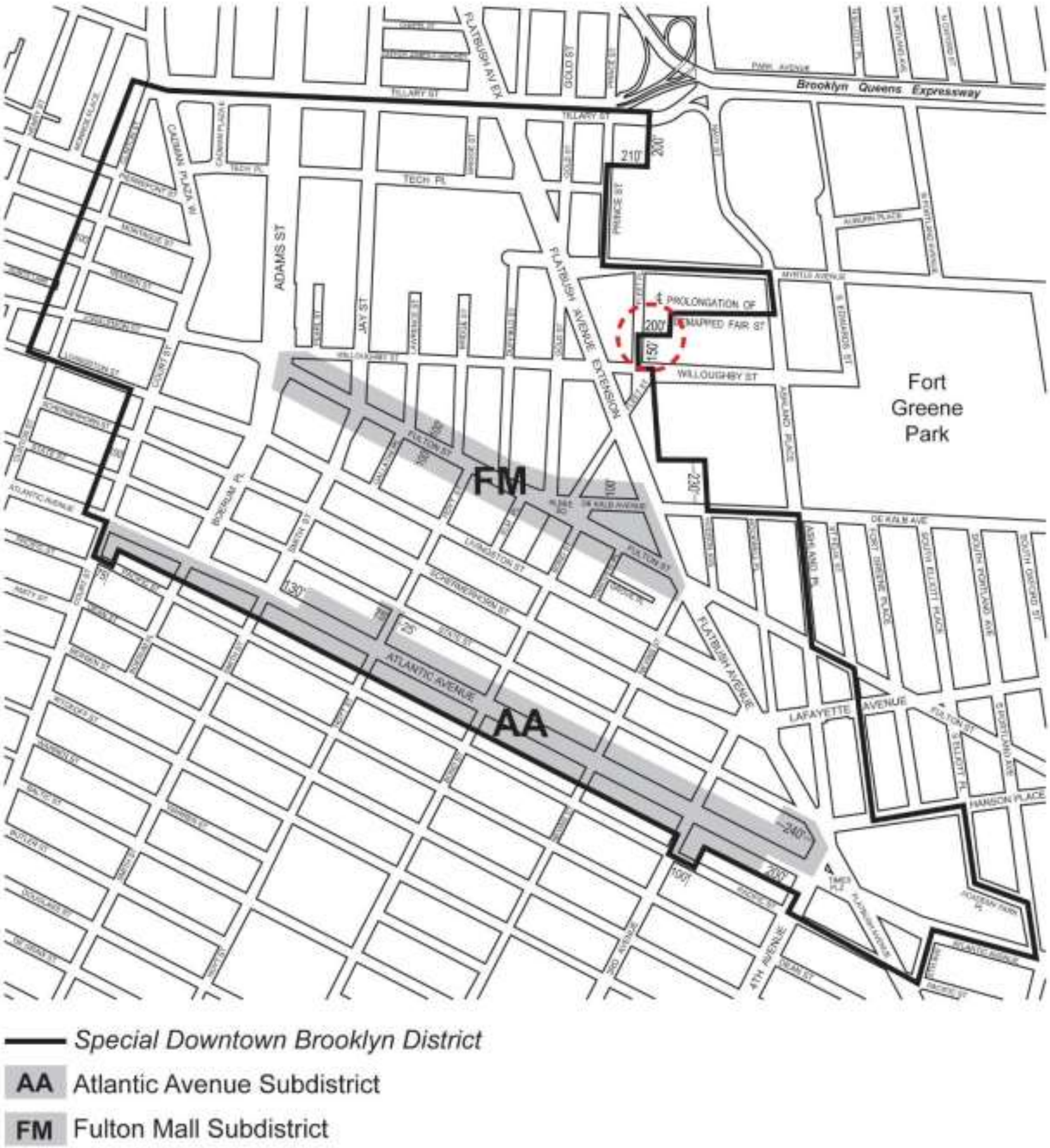
[EXISTING MAP]

— Special Downtown Brooklyn District

AA Atlantic Avenue Subdistrict

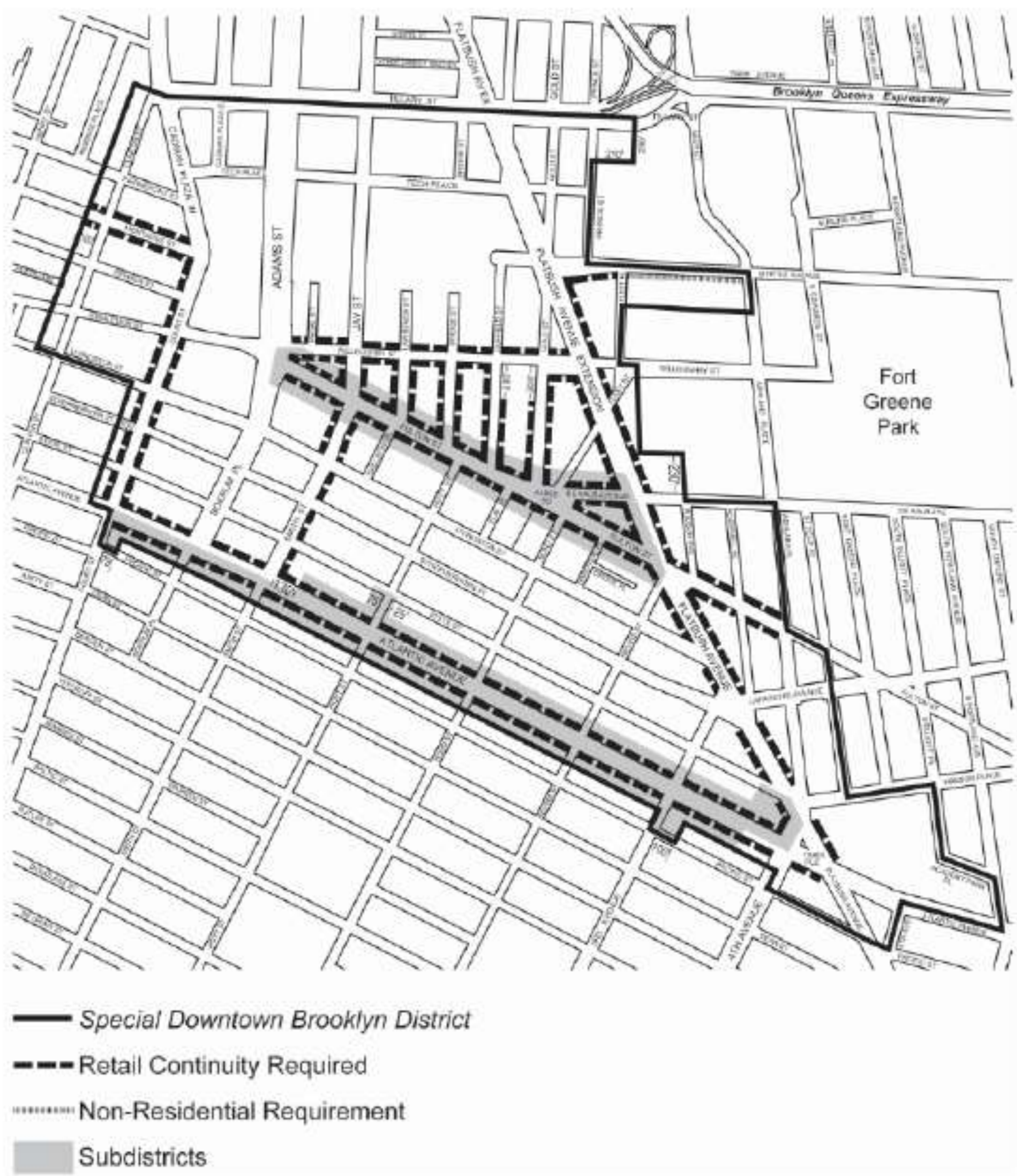
FM Fulton Mall Subdistrict

[PROPOSED MAP]

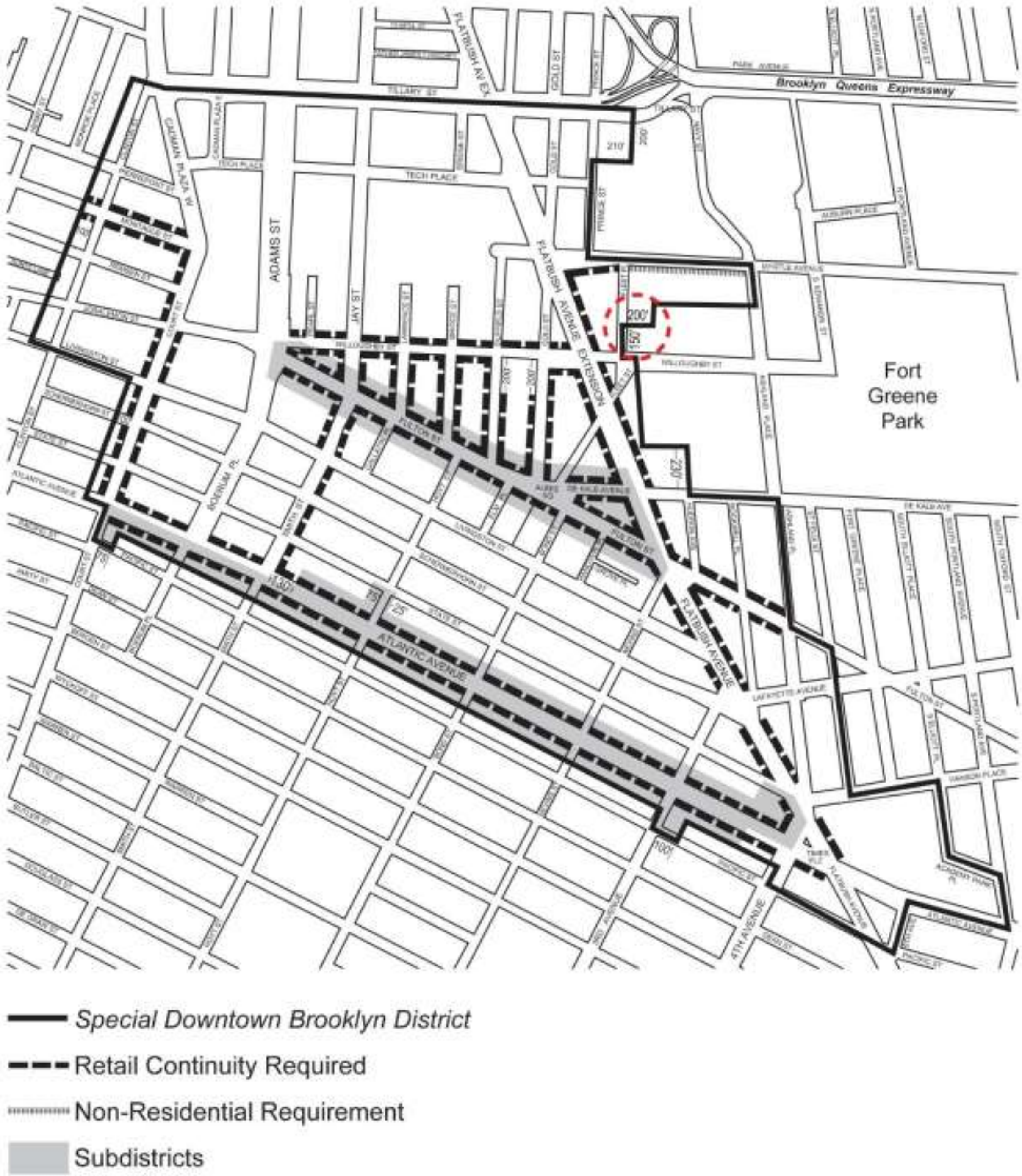


Map 2 — Ground Floor Retail Frontage ~~(10/17/18)~~ [date of adoption]

[EXISTING MAP]

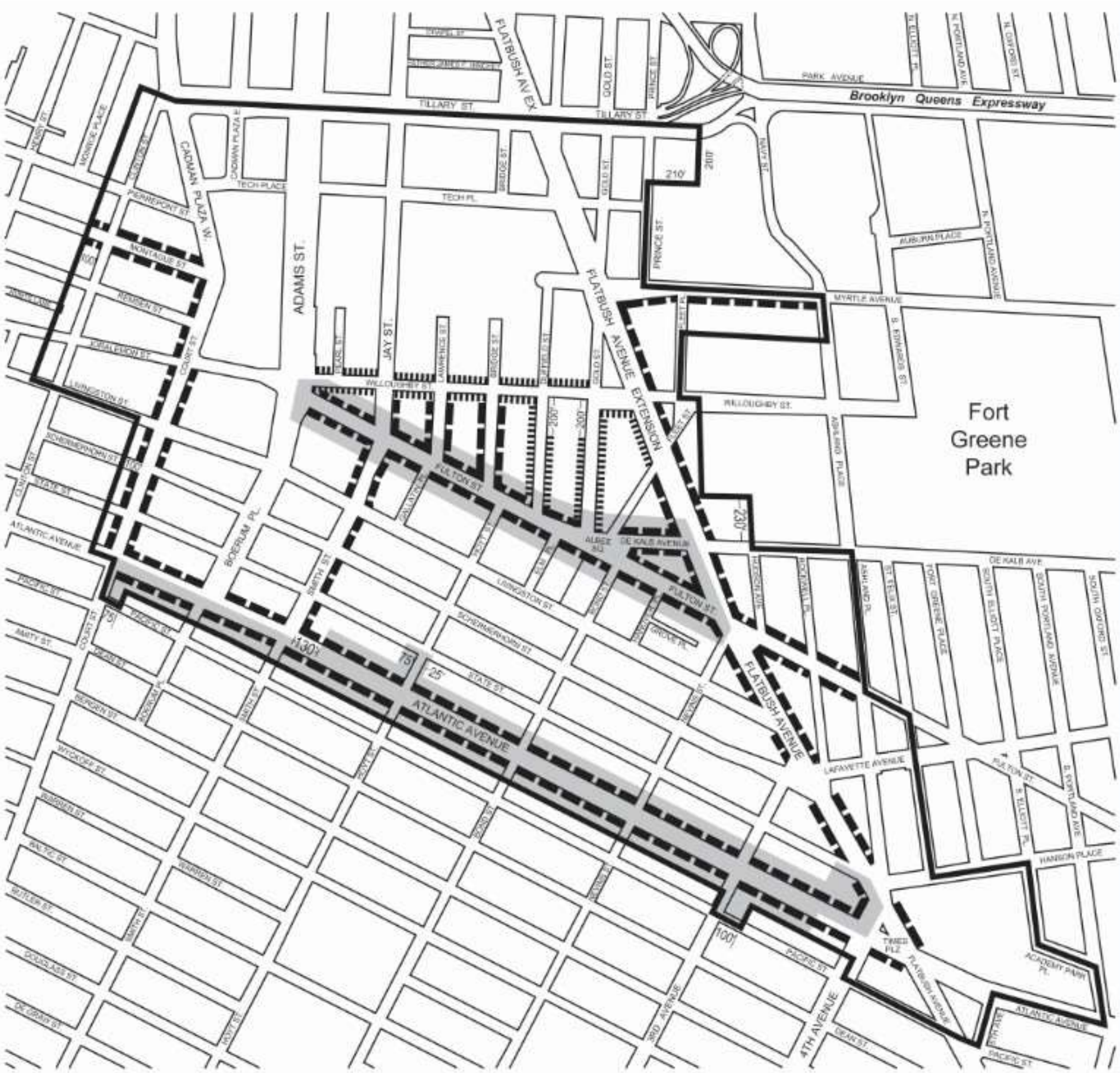


[PROPOSED MAP]



Map 3 — Ground Floor Transparency Requirements ~~(10/31/17)~~ [date of adoption]

[EXISTING MAP]



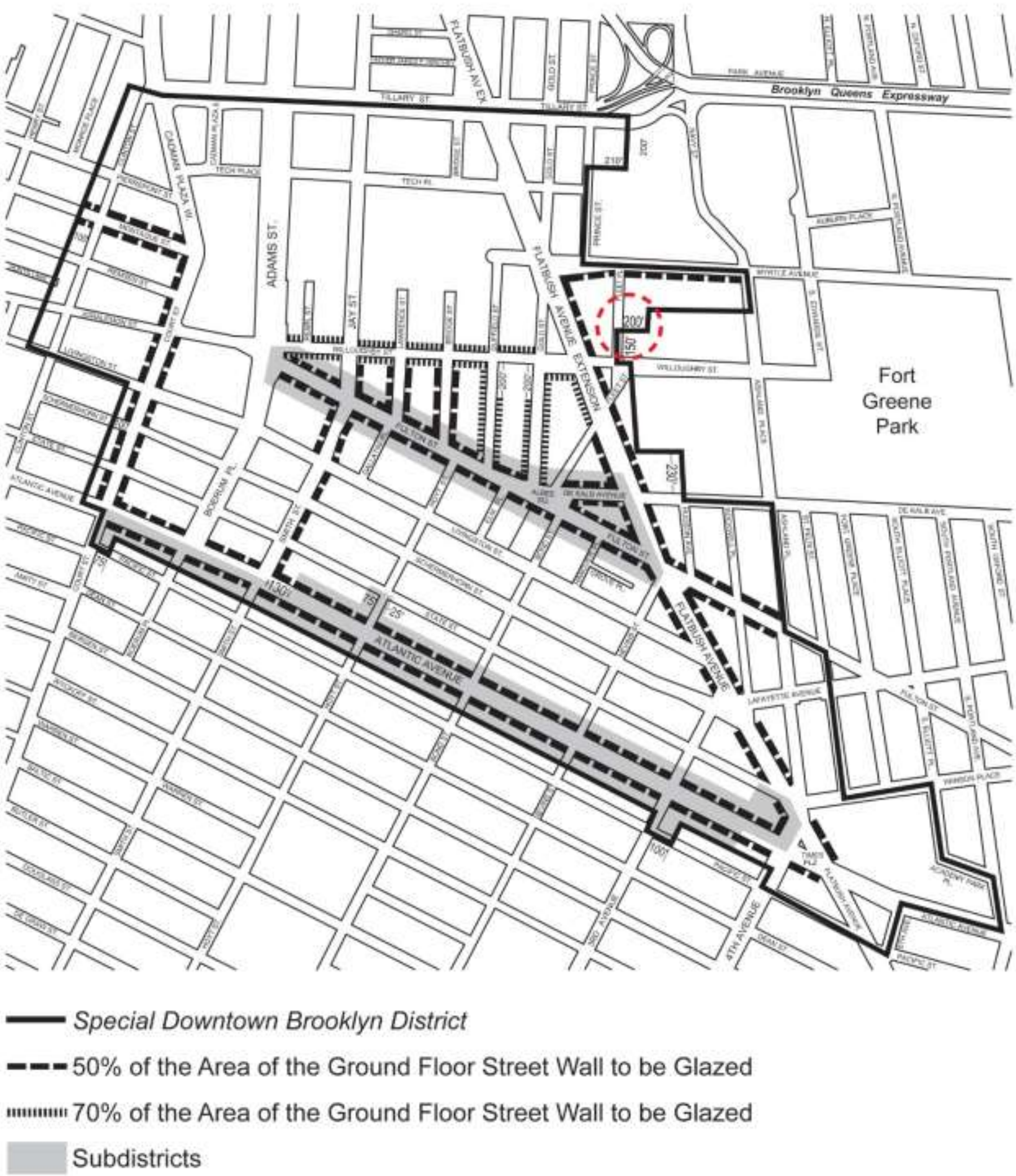
— *Special Downtown Brooklyn District*

- - - 50% of the Area of the Ground Floor Street Wall to be Glazed

ııııııııı 70% of the Area of the Ground Floor Street Wall to be Glazed

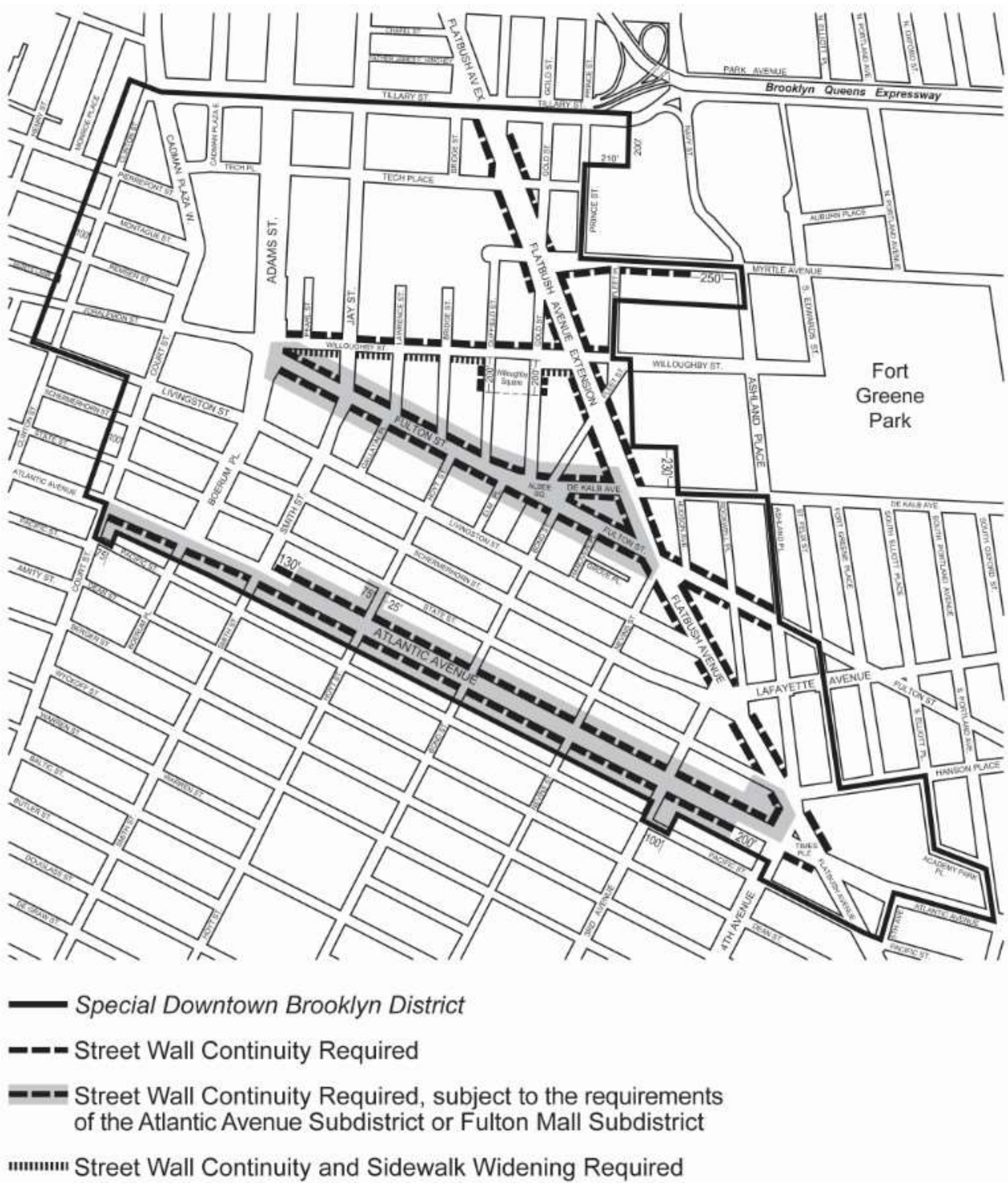
Subdistricts

[PROPOSED MAP]

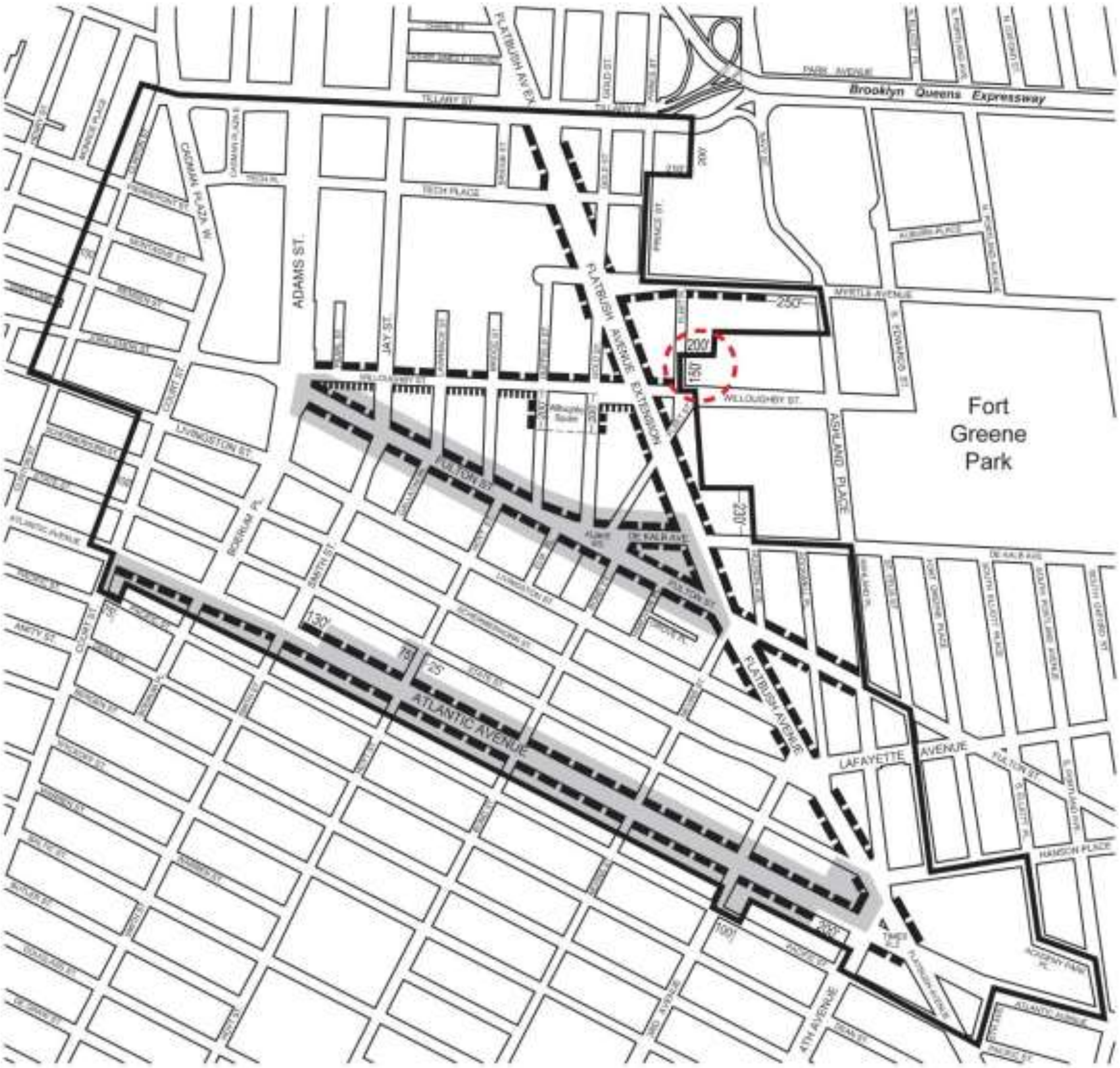


Map 4 — Street Wall Continuity and Mandatory Sidewalk Widenings ~~(10/31/17)~~ [date of adoption]

[EXISTING MAP]



[PROPOSED MAP]



Special Downtown Brooklyn District

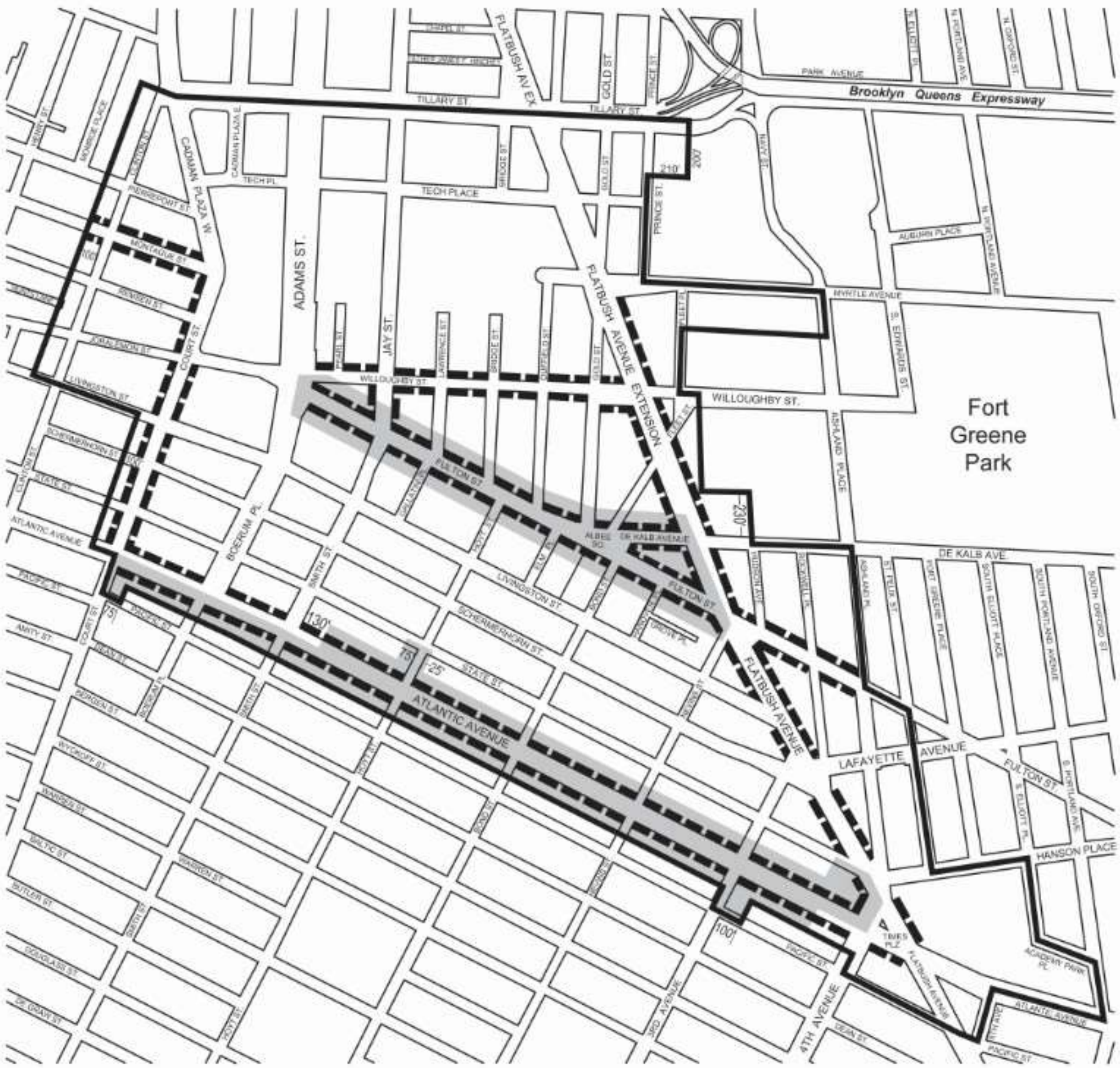
Street Wall Continuity Required

Street Wall Continuity Required, subject to the requirements of the Atlantic Avenue Subdistrict or Fulton Mall Subdistrict

Street Wall Continuity and Sidewalk Widening Required

Map 5 — Curb Cut Restrictions ~~(10/31/17)~~ [date of adoption]

[EXISTING MAP]

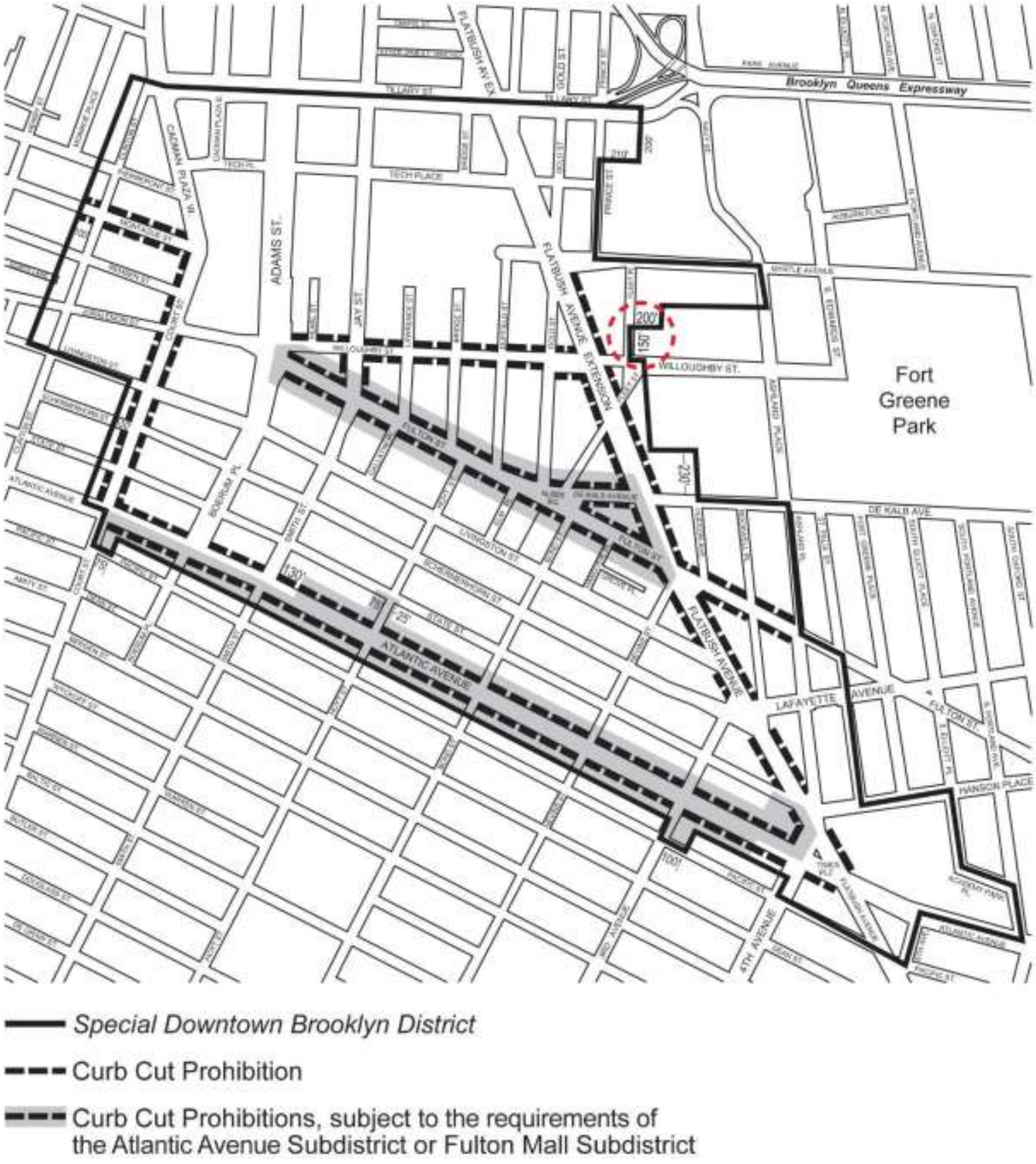


Special Downtown Brooklyn District

Curb Cut Prohibition

Curb Cut Prohibitions, subject to the requirements of the Atlantic Avenue Subdistrict or Fulton Mall Subdistrict

[PROPOSED MAP]



Map 6 — Height Limitation Areas ~~(10/31/17)~~ [date of adoption]

[EXISTING MAP]

Special Downtown Brooklyn District

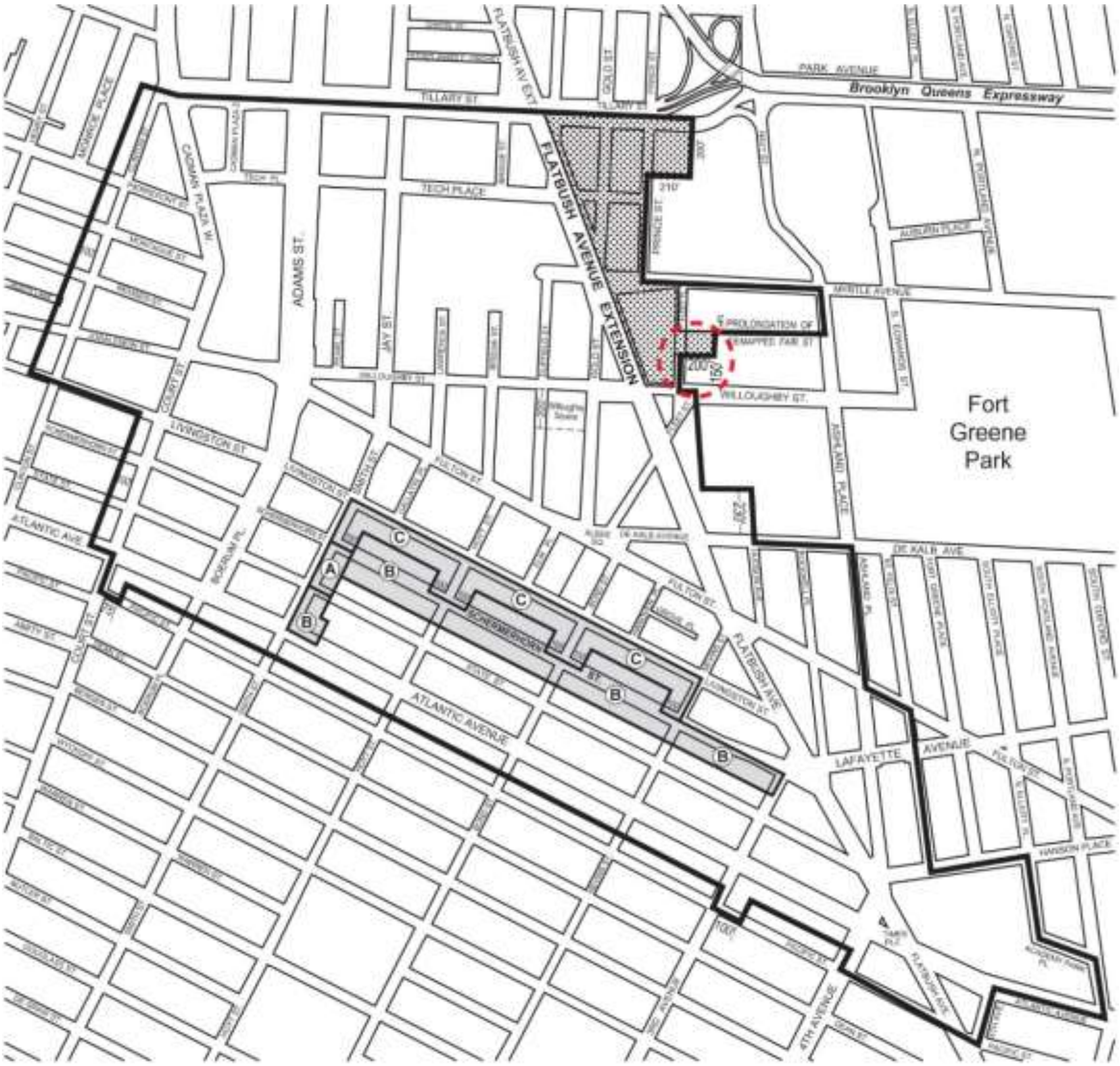
Ⓐ Schermerhorn Street Height Limitation Area: Height Restriction of 210 Feet

Ⓑ Schermerhorn Street Height Limitation Area: Height Restriction of 140 Feet

Ⓒ Schermerhorn Street Height Limitation Area: Height Restriction of 250 Feet

Flatbush Avenue Extension Height Limitation Area: Height Restriction of 400 Feet

[PROPOSED MAP]



Special Downtown Brooklyn District

(A) Schermerhorn Street Height Limitation Area: Height Restriction of 210 Feet

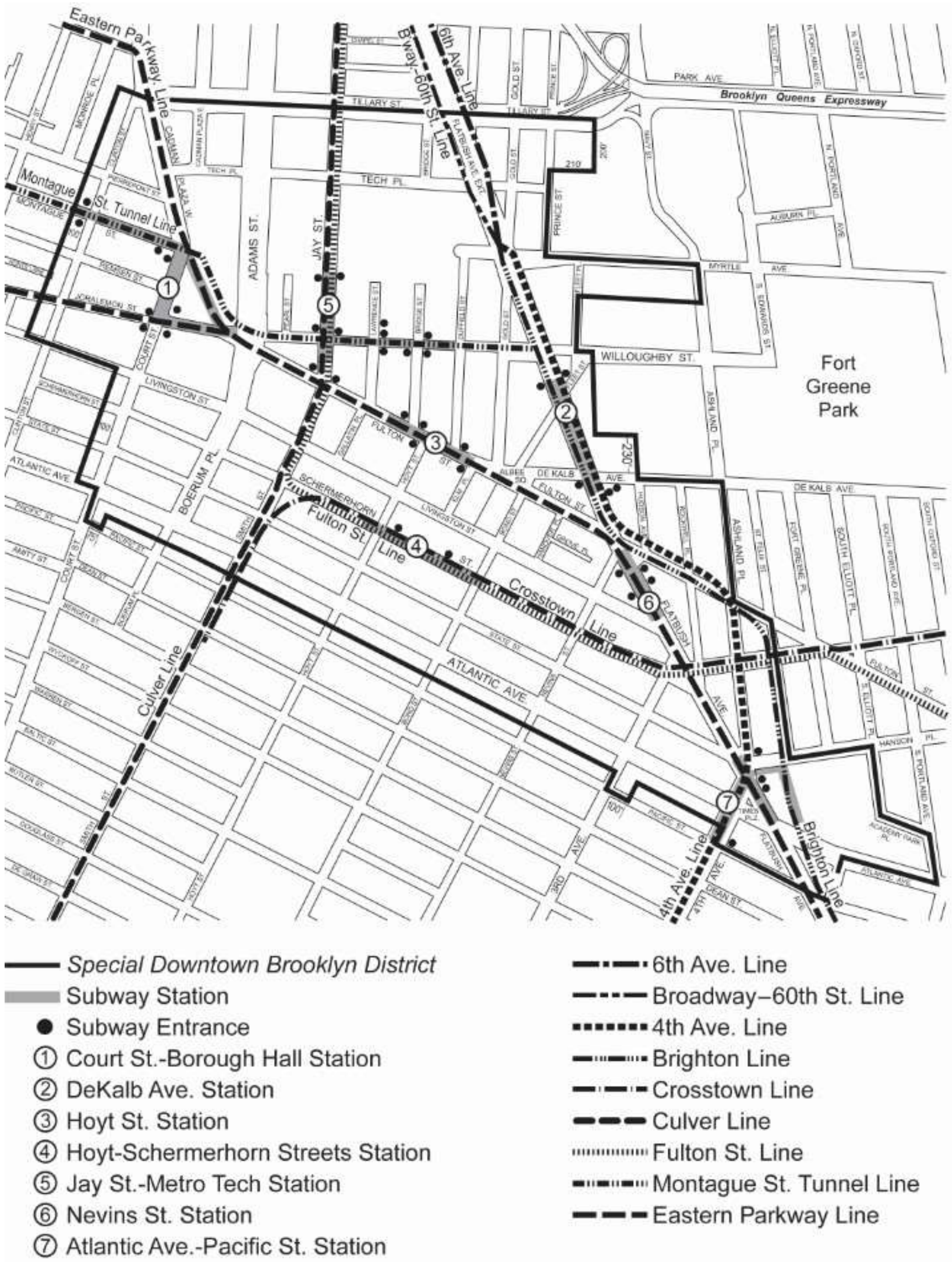
(B) Schermerhorn Street Height Limitation Area: Height Restriction of 140 Feet

(C) Schermerhorn Street Height Limitation Area: Height Restriction of 250 Feet

Flatbush Avenue Extension Height Limitation Area: Height Restriction of 400 Feet

Map 7 — Subway Station Improvement Areas ~~(10/31/17)~~ [date of adoption]

[EXISTING MAP]



[PROPOSED MAP]

* * *

APPENDIX F
Inclusionary Housing Designated Areas and Mandatory Inclusionary Housing Areas

* * *

Brooklyn

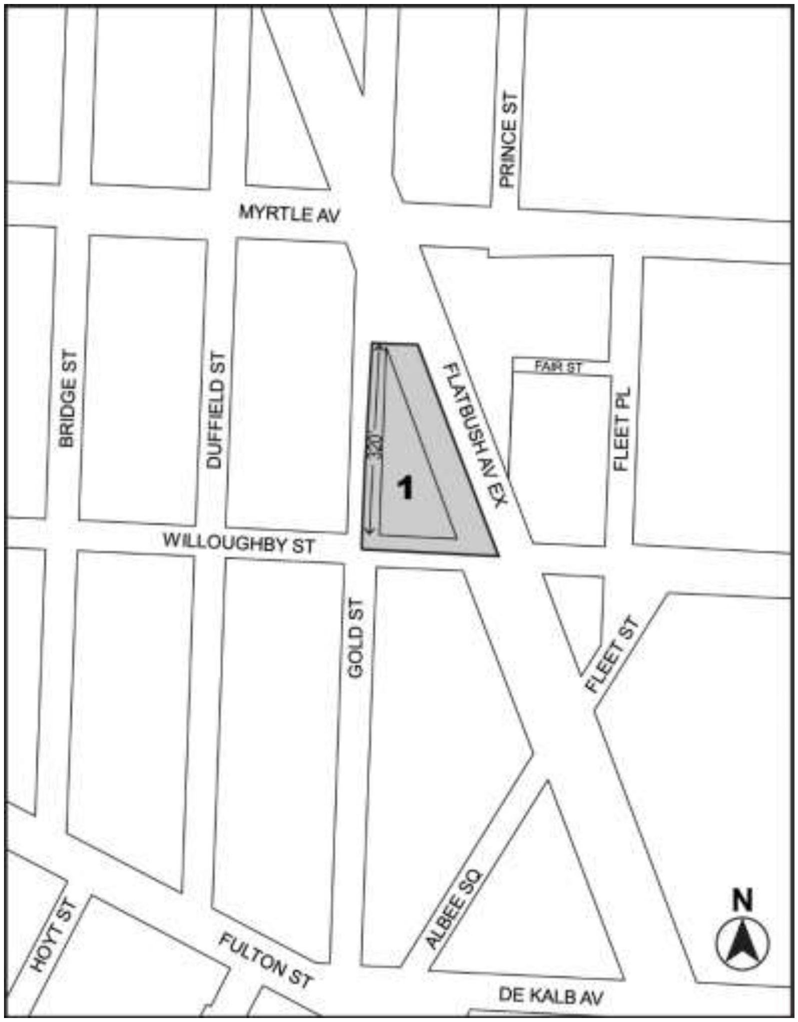
* * *

Brooklyn Community District 2

* * *

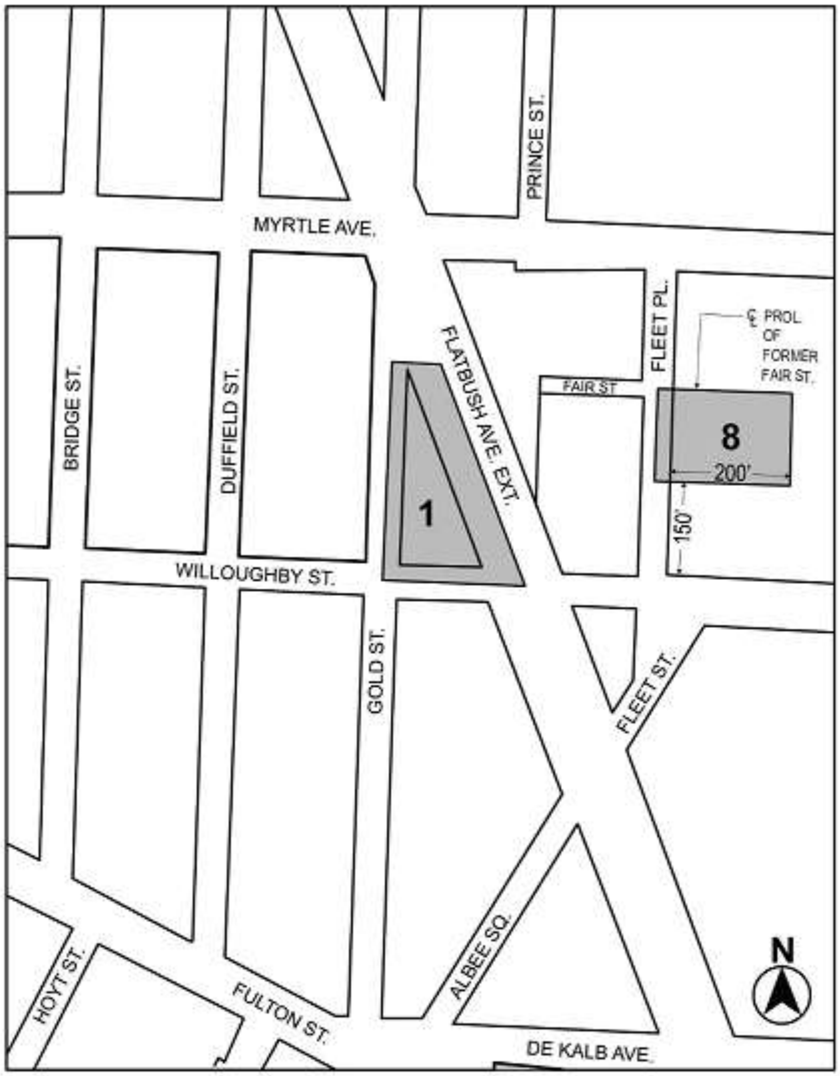
Map 5 ~~(11/16/16)~~ [date of adoption]

[EXISTING MAP]



Mandatory Inclusionary Housing Program Area *see Section 23-154(d)(3)*
Area **1** — 11/16/16 MIH Program Option 2

[PROPOSED MAP]



Mandatory Inclusionary Housing Program Area *see Section 23-154(d)(3)*

Area **1** - 11/16/16 MIH Program Option 2

Area **8** - [date of adoption] MIH Program Option 1~~and 2~~

Portion of Community District 2, Brooklyn

* * *

RAFAEL SALAMANCA, *Chairperson*; PETER A. KOO, STEPHEN T. LEVIN, DONOVAN J. RICHARDS, VANESSA L. GIBSON, INEZ D. BARRON, CHAIM M. DEUTSCH, RORY I. LANCMAN, I. DANEEK MILLER, BARRY S. GRODENCHIK, ADRIENNE E. ADAMS, RUBEN DIAZ, Sr., FRANCISCO P. MOYA, CARLINA RIVERA; Committee on Land Use, November 20, 2019.

On motion of the Speaker (Council Member Johnson), and adopted, the foregoing matter was coupled as a General Order for the day (see ROLL CALL ON GENERAL ORDERS FOR THE DAY).

Resolution approving various persons Commissioners of Deeds

By the Presiding Officer –

Resolved, that the following named persons be and hereby are appointed Commissioners of Deeds for a term of two years:

Approved New Applicants

Name	*Address*	*District #*
Gloria Cruz	575 East 140th St, Apt 2D Bronx, New York 10454	8
Katrina Straker	112.E 128th Street, apt 8F New York, New York 10035	9
Virginia Turner	400 E 147th Street; Apt 5B Bronx, New York 10455	9
Rachel Murgo	636 W 174th Street, Apt 12B New York, New York 10033	10
Sylvia Davidovicz	1316 Riverside Dr, Apt 1G New York, New York 10033	10
Jenelle Sherman Marshall	1500 Hone Ave, Apt 3C Bronx, New York 10460	13
Yocasta Pichardo	1541 Williamsbridge Rd Bronx, New York 10461	13
Madelyn Santana	2083 Mohegan Ave, Apt 4D Bronx, New York 10460	17

Viviana Perez	185 Nevins Street, Apt 15D Brooklyn, New York 11217	33
Xandra Elibeth Salazar	1082 Eastern Pkwy, Apt 2B Brooklyn, New York 11213	35
Isabel Cifarelli	200 Lawrence Ave, Apt 3 Bronx, New York 11230	44
Andrew Dunn	10 Seagate Court Staten Island, New York 10305	50

Approved Reapplicants

Name	*Address*	*District #*
Elba Feliciano	55 Rutgers Street #7B New York, New York 10002	1
Ellen T. Pine	245 East 25th Street #7L New York, New York 10010	2
Luis Soler	336 East 4th Street #4B New York, New York 10009	2
Rosemarie C. Vargas	228 East 3rd Street #2D New York, New York 10009	2
Kelly Francis Callahan	315 East 70th Street #3J New York, New York 10021	5
Martin J. Barrett	440 East 57th Street #6C New York, New York 10022	5
Kathleen Maria Hernandez	506 West 135th Street #34 New York, New York 10031	7
Pamela M. Gilbert	331 East 132nd Street #2F Bronx, New York 10454	8
Rosa G. Diaz	1951 Park Avenue #N607 New York, New York 10037	9
Sherry Johnson-O'Neal	101 West 147th Street #15G New York, New York 10039	9
Susan Perez	310 West 143rd Street #12E New York, New York 10030	9

Daisy DeJesus	15 Wadsworth Avenue #2E New York, New York 10033	10
Jaclyn Souhrada	820 Astor Avenue #3B Bronx, New York 10467	13
Laura M. Yangas	3150 Roberts Ave, Apt 5E Bronx, New York 10461	13
Norma Cruz-Meletich	2580 Stedman Place Bronx, New York 10469	13
Stephanie Rodriguez	1633 Hobart Avenue Bronx, New York 10461	13
Natasha O. Daniels	2130 Crotona Avenue #4K Bronx, New York 10457	15
Deniece Turner	779 Concourse Village East #7D Bronx, New York 10451	16
Aida Cruel	747 St. Ann's Avenue #D Bronx, New York 10456	17
Sandra Ocasio (c/o Santiago)	1230 Spofford Avenue #GB Bronx, New York 10474	17
Vera Ling Tu	35-32 157th Street Flushing, New York 11354	19
Athena Kiamos	67-21 Springfield Blvd Queens, New York 11364	23
Damaris Saunders	147-44 Village Road #87B Queens, New York 11435	24
Kunta Rawat	87-46 Chelsea Street #2E Jamaica, New York 11432	24
Michael T. Pariaug	166-05 Highland Avenue #20 Jamaica, New York 11432	24
Afusat Omotosho	120-23 167th Street #2 Jamaica, New York 11434	27
Irina Mikhaylov	99-53 65th Avenue Rego Park, New York 11374	29
Wendy Irizarry-Lopez	73-40 52nd Drive Maspeth, New York 11378	30
Kristi Porth	135-29 96th Street Ozone Park, New York 11417	32

Letticia Gonzalez	161-31 87th Street Howard Beach, New York 11414	32
Russell Pecunies	151 Beach 96th Street #6C Rockaway Beach, New York 11693	32
Lisa A. Ennis	215 Adams Street #16H Brooklyn, New York 11201	33
Massie] Perez	325 Roebling Street #7D Brooklyn, New York 11211	33
Joyce Washington	212 South Oxford Street #41 Brooklyn, New York 11217	35
Sian Lawrence	410 Saint Marks Avenue #4B Brooklyn, New York 11238	35
Joy A. Barbagallo	1211 65th Street #C Brooklyn, New York 11219	38
Marguerite Connelly	60 Sackett Street Brooklyn, New York 11231	39
James Lewis Jr.	177 Lenox Road #02 Brooklyn, New York 11226	40
Betty L. Fergerson	2204 Dean Street. Brooklyn, New York 11233	41
Jennifer Headley	617 Hinsdale Street Brooklyn, New York 11207	42
Donna Ceglecki	302 Bay 11th Street Brooklyn, New York 11228	43
Nicholas D. Lucas	1180 East 83rd Street Brooklyn, New York 11236	46
Yan Kabilov	3110 Brighton 4th Street #1A 'Brooklyn, New York 11235	48
Eugene R. Bleimann	317 Taylor Street Staten Island, New York 10310	49
Stephanie Applewhite.	90A Wolkoff Lane Staten Island, New York 10303	49
Donna M. Saccone	206 Mill Road Staten Island, New York 10306	50

Elena Suazo	30 Grissom Avenue Staten Island, New York 10314	50
Jack Elias	131 McKinley Avenue Staten Island, New York 10306	50
Vanessa S. Saulo-Canelo	123 Perry Avenue Staten Island, New York 10314	50
Vincent J. Bonadonna	37 Potter Avenue Staten Island, New York 10314	50
Alan D. Tognan	138 William Avenue Staten Island, New York 10308	51
Dawn Ponisi	212 Sinclair Avenue Staten Island, New York 10312	51
Gail E. Brennan	300 Mosely Avenue Staten Island, New York 10312	51
Gina N. Diaz	1152 Arden Avenue Staten Island, New York 10312	51
Melanie J. Gallego	39 Lorrain Avenue Staten Island, New York 10312	51
Tara Braccia	166 Spratt Avenue Staten Island, New York 10306	51

On motion of the Speaker (Council Member Johnson), and adopted, the foregoing matter was coupled as a General Order for the day (see ROLL CALL ON GENERAL ORDERS FOR THE DAY).

ROLL CALL ON GENERAL ORDERS FOR THE DAY
(Items Coupled on General Order Calendar)

(1)	**Int 1095 -**	Expiration of variances and special permits.
(2)	**Int 1249-B -**	Repealing the critical driver program and amending the persistent violators program.
(3)	**Int 1412-A -**	Removing vehicles obstructing a sidewalk, crosswalk, fire hydrant, bicycle lane, or bus lane.
(4)	**Int 1481-A -**	The City of New York and the New York City Plumbing Code in relation to bringing such code up to date with the 2015 edition of the international plumbing code.
(5)	**Int 1482-B -**	New York City Building Code, in relation to bird friendly materials.
(6)	**L.U. 561 & Res 1193 -**	App. **C 180524 ZMK (101 Fleet Place Rezoning)** Brooklyn District Brooklyn, Council District 35, Community District 2.
(7)	**L.U. 562 & Res 1194 -**	App. **N 180525 ZRK (101 Fleet Place Rezoning)** Brooklyn, Council District 35, Community District 2.
(8)	**L.U. 572 & Res 1187 -**	App. **C 190409 HAK (515 Blake Avenue)** Brooklyn, Council District 42, Community District 5.
(9)	**L.U. 573 & Res 1188 -**	App. **C 190410 ZMK (515 Blake Avenue)** Brooklyn, Council District 42, Community District 5.
(10)	**L.U. 574 & Res 1189 -**	App. **N 190411 ZRK (515 Blake Avenue)** Brooklyn, Council District 42, Community District 5.
(11)	**L.U. 575 & Res 1190 -**	App. **C 190421 ZSK (515 Blake Avenue)** Borough of Brooklyn, Council District 42, Community District 5.
(12)	**L.U. 580 & Res 1191 -**	App. **20195733 TCK (Sur La Baie)** Brooklyn, Council District 48, Community District 15.

(13) L.U. 591 & Res 1192 - App. **20205036 TCQ (Dai Hachi Sushi Corporation)** Queens, Council District 26, Community District 2.

(14) Resolution approving various persons Commissioners of Deeds.

The Majority Leader and Acting President Pro Tempore (Council Member Cumbo) put the question whether the Council would agree with and adopt such reports which were decided in the **affirmative** by the following vote:

Affirmative – Adams, Ayala, Borelli, Brannan, Cabrera, Chin, Cohen, Constantinides, Cornegy, Deutsch, Diaz, Dromm, Espinal, Eugene, Gibson, Gjonaj, Grodenchik, Holden, Kallos, Koo, Koslowitz, Lancman, Lander, Levin, Levine, Louis, Maisel, Menchaca, Miller, Moya, Perkins, Powers, Reynoso, Richards, Rivera, Rodriguez, Rosenthal, Salamanca, Torres, Treyger, Vallone, Van Bramer, Yeger, the Minority Leader (Council Member Matteo), the Majority Leader (Council Member Cumbo), and The Speaker (Council Member Johnson) – **46**.

The General Order vote recorded for this Stated Meeting was 46-0-0 as shown above with the exception of the votes for the following legislative items:

The following was the vote recorded for **Int. No. 1412-A**:

Affirmative – Adams, Ayala, Borelli, Brannan, Cabrera, Chin, Cohen, Constantinides, Cornegy, Deutsch, Diaz, Dromm, Espinal, Eugene, Gibson, Gjonaj, Grodenchik, Holden, Kallos, Koo, Koslowitz, Lancman, Lander, Levin, Levine, Louis, Maisel, Menchaca, Miller, Moya, Perkins, Powers, Reynoso, Richards, Rivera, Rodriguez, Rosenthal, Salamanca, Torres, Treyger, Vallone, Van Bramer, the Minority Leader (Council Member Matteo), the Majority Leader (Council Member Cumbo), and The Speaker (Council Member Johnson) – **45**.

Abstention -- Yeger **– 1.**

The following was the vote recorded for **Int. No. 1482-B**:

Affirmative – Adams, Ayala, Brannan, Cabrera, Chin, Cohen, Constantinides, Cornegy, Deutsch, Diaz, Dromm, Espinal, Eugene, Gibson, Gjonaj, Grodenchik, Holden, Kallos, Koo, Koslowitz, Lancman, Lander, Levin, Levine, Louis, Maisel, Menchaca, Miller, Moya, Perkins, Powers, Reynoso, Richards, Rivera, Rodriguez, Rosenthal, Salamanca, Torres, Treyger, Vallone, Van Bramer, the Majority Leader (Council Member Cumbo), and The Speaker (Council Member Johnson) – **43**.

Negative – Borelli, Yeger, and the Minority Leader (Council Member Matteo) – **3**.

The following Introductions were sent to the Mayor for his consideration and approval:

Int. Nos. 1095, 1249-B, 1412-A, 1481-A, and 1482-B.

INTRODUCTION AND READING OF BILLS

Int. No. 1815

By Council Members Borelli and Matteo.

A Local Law in relation to the creation of a task force to study and report on the feasibility of an independent city of Staten Island

Be it enacted by the Council as follows:

Section 1. Staten Island secession task force. a. There is hereby established a task force that shall study and assess the feasibility of the secession of Staten Island from the city of New York.

b. The task force shall consist of the following members:

1. The Staten Island borough president, or such borough president's designee, who shall serve as chair of the task force;

2. The clerk of Richmond County, or such clerk's designee;

3. The chair of the city planning commission, or such chair's designee;

4. The comptroller, or the comptroller's designee;

5. The chancellor of the city school district, or such chancellor's designee;

6. The commissioner of emergency management, or such commissioner's designee;

7. The Staten Island borough commissioner of transportation, or such borough commissioner's designee;

8. A representative from each of Staten Island's three community boards, appointed by the chair of the task force;

9. One member appointed by the public advocate; and

10. Each city council member representing a district located in Staten Island, or the respective designees of such members.

c. All members shall be appointed to the task force within 60 days of the effective date of this local law. The task force shall hold its first meeting no later than 30 days after the last member of the task force has been appointed pursuant to subdivision b of this section and shall meet at least quarterly. Members of the task force shall serve without compensation.

d. No member of the task force shall be removed except for cause and upon notice and hearing by the official who appointed that member. In the event of a vacancy, a successor shall be appointed in the same manner as the original appointment.

e. The task force shall create and conduct a survey of Staten Island residents and local businesses. Such survey shall include questions regarding the concerns and opinions on Staten Island secession. The findings of such survey shall be included in the report required pursuant to subdivision g of this section.

f. The task force shall hold at least four public meetings before submitting the report required pursuant to subdivision g of this section to solicit testimony and input from relevant city agencies, academics and experts with relevant professional experience, and members of the general public regarding Staten Island secession.

g. The task force shall submit a report to the mayor and the speaker of the council assessing the feasibility of an independent city of Staten Island, including but not limited to, the financial cost of secession, the legislative and political considerations necessary for secession, the service demands, allocation of resources, and overall cost to both the city of New York and to the borough of Staten Island of creating an independent and self-sustaining city of Staten Island. The report shall include input from all city agencies relevant to the secession analysis. The report shall be submitted to the mayor and the speaker of the city council no later than 18 months after the first meeting of the task force.

h. The task force shall dissolve 90 days after the submission of the report required pursuant to subdivision g of this section.

§ 2. This local law takes effect immediately.

Referred to the Committee on Governmental Operations.

Int. No. 1816

By Council Member Cornegy (by request of the Mayor).

A Local Law to amend the administrative code of the city of New York, in relation to conforming the New York city energy conservation code to the New York state energy code with amendments unique to construction in the city and incorporate therein provisions of the NYStretch energy code-2020, and to repeal section 28-1001.2 of such administrative code relating to such conforming amendments

Be it enacted by the Council as follows:

Section 1. Statement of findings and purpose. The New York State Energy Conservation Construction Code (the "New York State Energy Code") is promulgated by the State Fire Prevention and Building Code Council pursuant to Article 11 of the New York State Energy Law. In accordance with Article 11, the New York City Energy Conservation Code is stricter than the New York State Energy Code. The purpose of this local law is to conform the New York City Energy Conservation Code to recent changes in the New York State Energy Code with local law amendments unique to construction in the city and local law amendments in accordance with section 28-1001.3.3 of the administrative code relating to the NYStretch Energy Code-2020.

§ 2. The definition of "New York state energy code" in section 28-1001.1.1 of the administrative code of the city of New York, as amended by local law number 32 for the year 2018, is amended to read as follows:

NEW YORK STATE ENERGY CODE. The term "New York State Energy Code" means the New York State Energy Conservation Construction Code, constituting part 1240 of title 19 of the New York codes, rules and regulations (19 NYCRR Part 1240), and the publications incorporated by reference in such part, promulgated on [~~September 21, 2016~~] {{new date to be added here}}, by the State Fire Prevention and Building Code Council pursuant to Article 11 of the New York State Energy Law.

§ 3. Section 28-1001.2 of the administrative code of the city of New York is REPEALED and a new section 28-1001.2 is added to read as follows:

§ 28-1001.2 New York city amendments to the New York state energy code. The following New York city amendments to the New York state energy code are hereby adopted as set forth in sections 28-1001.2.1, 28-1001.2.2 and 28-1001.2.3.

§ 28-1001.2.1 New York city amendments to 19 NYCRR Part 1240.

1240.6 Exceptions.

1240.6 – Delete Exception (b) in its entirety.

§ 28-1001.2.2 New York city amendments to commercial and residential chapters of the New York state energy code.

Chapter 1 [CE] and Chapter 1 [RE]

Delete Chapter R1 and Chapter C1 in their entirety and replace with a new Chapter 1 to read as follows:

CHAPTER 1

ADMINISTRATION

Introductory Statement

The New York City Energy Conservation Code ("NYCECC") is comprised of the New York State Energy Conservation Construction Code with amendments as enacted into law by the city. Reflecting these amendments to the New York State Energy Conservation Construction Code, the NYCECC is divided into provisions relevant to commercial buildings and provisions relevant to residential buildings as follows:

1. The provisions of the NYCECC for commercial buildings are reflected in the state publications incorporated by reference in 19 NYCRR sections 1240.3 and 1240.4, as amended by sections 28-1001.2.1, 28-1001.2.2 and 28-1001.2.3 of the Administrative Code. Such state publications include (i) Chapters 1 [CE], 2 [CE], 3 [CE], 4 [CE], 5 [CE] and 6 [CE] of the publication entitled the 2020 Energy Conservation Construction Code of New York State ("ECCCNYS"); (ii) the October 2016 edition of Energy Standard for Buildings Except Low-Rise Residential Buildings ("ASHRAE 90.1-2016"), as amended by 19 NYCRR section 1240.3; and (iii) reference standards incorporated by reference in subdivision (c) of 19 NYCRR section 1240.4.
2. The provisions of the NYCECC for residential buildings are reflected in the state publications incorporated by reference in 19 NYCRR section 1240.5, as amended by sections 28-1001.2.1, 28-1001.2.2 and 28-1001.2.3 of the Administrative Code. Such state publications include (i) Chapters 1 [RE], 2 [RE], 3 [RE], 4 [RE], 5 [RE] and 6 [RE] of the publication entitled the 2020 Energy Conservation Construction Code of New York State ("ECCCNYS"); and (ii) the referenced standards incorporated by reference in subdivision (b) of 19 NYCRR section 1240.5.

SECTION ECC 101

SCOPE AND GENERAL REQUIREMENTS

101.1 General. These provisions shall be known and cited as the "New York City Energy Conservation Code," "NYCECC" or "ECC," and are referred to herein as "this code." All section numbers in this code shall be deemed to be preceded by the designation "ECC." Administration and enforcement of this code shall be in accordance with Title 28 of the Administrative Code.

101.1.1 Titles.

The publication entitled 2020 Energy Conservation Construction Code of New York State shall be known as the "ECCCNYS."

The 2016 edition of the Energy Standard for Buildings Except Low-Rise Residential Buildings shall be known as "ASHRAE 90.1-2016." All references in this code to ASHRAE 90.1-2016 shall be deemed to be references to ASHRAE 90.1-2016 (AS AMENDED).

The New York State Energy Conservation Construction Code, as contained in Part 1240 of Title 19 of the New York Codes, Rules and Regulations, along with the New York City amendments to such New York State Energy Conservation Construction Code shall be known collectively as the "New York City Energy Conservation Code."

101.2 Scope. This code applies to commercial buildings and residential buildings, as defined in Chapter C2 and Chapter R2 of this code, and the buildings' sites, associated systems and equipment.

101.2.1 References. Where reference is made within this code to the Building Code of New York State, Existing Building Code of New York State, Fire Code of New York State, Fuel Gas Code of New York State, Mechanical Code of New York State, Plumbing Code of New York State, Property Maintenance

Code of New York State or Residential Code of New York State, the reference shall be deemed to be to the analogous provision of the New York City Construction Codes (Title 28 of the Administrative Code), the 1968 Building Code (Chapter 1 of Title 27 of the Administrative Code), the New York City Fire Code (Title 29 of the Administrative Code) or the New York City Electrical Code (Chapter 3 of Title 27 of the Administrative Code).

101.2.2 Occupancy classifications. For determination of occupancy classification and use within this code, a comparable occupancy classification shall be made to the New York City Building Code.

101.2.3 Reconciliation with New York State Energy Conservation Construction Code. Whenever any provision of the New York State Energy Conservation Construction Code provides for a more stringent requirement than imposed by this code, the more stringent requirement shall govern.

101.2.4 Other laws. The provisions of this code shall not be deemed to nullify any federal, state or local law, rule or regulation relating to any matter as to which this code does not provide.

101.2.5 Exceptions. This code shall not apply to the alterations of existing buildings set forth in items 1 through 8, provided that the alteration will not increase the energy usage of the building:

1. Storm windows installed over existing fenestration.

2. Glass-only replacements in an existing sash and frame, provided that the U-factor and the solar heat gain coefficient (SHGC) shall be equal to or lower than before the glass replacement.

3. Alterations, renovations or repairs to roof/ceiling, wall or floor cavities, including spaces between furring strips, provided that such cavities are insulated to the full existing cavity depth with insulation having a minimum nominal value of R-3.0/inch (R-2.0/cm).

4. Alterations, renovations or repairs to walls and floors in cases where the existing structure is without framing cavities and no new framing cavities are created.

5. Reroofing where neither the sheathing nor the insulation is exposed. Roofs without insulation in the cavity and where the sheathing or insulation is exposed during reroofing shall be insulated either above or below the sheathing.

6. Replacement of existing doors that separate conditioned space from the exterior shall not require the installation of a vestibule or revolving door, provided, however, that an existing vestibule that separates a conditioned space from the exterior shall not be removed.

7. An alteration that replaces less than 20 percent of the luminaires in a space in residential building or less than 10 percent of the luminaires in a space in a commercial building, provided that such alteration does not increase the installed interior lighting power.

8. An alteration that replaces only the bulb and ballast within the existing luminaires in a space, provided that such alteration does not increase the installed interior lighting power.

101.3 Intent. This code shall regulate the design and construction of buildings for the use and conservation of energy over the life of each building. This code is intended to provide flexibility to permit the use of innovative approaches and techniques to achieve this objective. This code is not intended to abridge safety, health or environmental requirements contained in other applicable codes or ordinances. To the fullest extent feasible, use of modern technical methods, devices and improvements that tend to minimize consumption of energy without abridging reasonable requirements for the safety, health and security of the occupants or users of buildings shall be permitted. As far as may be practicable, the improvement of energy conservation construction practices, methods, equipment, materials and techniques shall be encouraged.

Nothing in this section or in any other provision of this code shall be construed to permit the commissioner to approve an application to waive, vary, modify or otherwise alter any provision of this code if such alteration would make such provision less restrictive than a standard or requirement of the New York State Energy Conservation Construction Code, unless the applicant has obtained approval for such alteration pursuant to Section 11-106 of the New York State Energy Law.

101.4 Applicability. The provisions of this code shall apply to the construction of buildings. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

101.4.1 Mixed occupancy. Where a building includes both commercial and residential occupancies, each occupancy shall be separately considered and shall meet the applicable provisions of Chapters C2, C3, C4 and C5 for commercial, and Chapters R2, R3, R4, and R5 for residential.

101.5 Compliance. Commercial buildings shall comply with the provisions of this code applicable to commercial buildings. Residential buildings shall comply with the provisions of this code applicable to residential buildings.

101.5.1 Compliance software. Compliance with the provisions of this code can be demonstrated through the use of computer software deemed acceptable by the New York State Secretary of State and the commissioner.

101.5.1.1 Mandatory provisions. The use of the software approach to demonstrate compliance with the commercial provisions, residential provisions, or Appendix CA of this code is not a defense for the failure to comply with any mandatory provision of this code. When using the software approach to demonstrate compliance with the provisions of this code, compliance with all applicable mandatory provisions of this code is required.

101.5.2 Demonstration of compliance. For a building project application or applications required to be submitted to the department, the following documentation, as further described in the rules of the department, shall be required in order to demonstrate compliance with this code:

101.5.2.1 Professional statement. Any registered design professional or lead energy professional filing an application or applications for a new building or alteration project shall provide on a signed and sealed drawing a statement of compliance or exemption in accordance with the rules of the department.

101.5.2.2 Energy analysis. For any application that is not exempt from this code and for which a work permit is required in accordance with Section 28-105 of the Administrative Code, an energy analysis shall be provided on a sheet or sheets within the construction drawing set. The energy analysis shall identify the compliance path followed, demonstrate how the design complies with this code and be in a format as prescribed in the rules of the department. The energy analysis shall meet the requirements of this code for the entire project. Projects that utilize trade-offs among disciplines shall use DOE2-based energy modeling programs or other energy-modeling programs as prescribed in the rules of the department and shall be signed and sealed by a lead energy professional.

101.5.2.3 Supporting documentation. For any application that is not exempt from this code and for which a work permit is required in accordance with Section 28-105 of the Administrative Code, supporting documentation shall be required in the approved construction drawings. See Section ECC 103 for further requirements.

101.6 Statutory Limitations. In the event of an addition to or alteration of an existing building or building system in an existing building, nothing in this code shall be interpreted to require any unaltered portion of such existing building or building system to comply with this code.

101.7 Historic Buildings. Historic Buildings, as defined in this code, are exempt from the requirements of this code.

SECTION ECC 102

ALTERNATE MATERIALS, METHOD OF CONSTRUCTION, DESIGN OR INSULATING SYSTEMS

102.1 General. This code is not intended to prevent the use of any material, method of construction, design or insulating system not specifically prescribed herein, provided that such material, method of construction, design or insulating system has been approved by the commissioner as (1) meeting the intent of this code, (2) achieving energy savings that are equivalent to or greater than would be achieved using prescribed materials, methods of construction, designs or insulating systems, and (3) meeting the requirements of Article 113 of Chapter 1 of Title 28 of the Administrative Code and the remaining New York City Construction Codes.

Nothing in this section shall be construed to permit the commissioner to approve an application that would waive, vary, modify, or otherwise alter any provision, standard, or requirement of this code if such alteration would make such provision less restrictive than a standard or requirement of the Energy Conservation Construction Code of New York State unless the applicant has obtained approval for such alteration pursuant to Section 11-106 of the New York State Energy Law.

SECTION ECC 103

CONSTRUCTION DOCUMENTS

103.1 General. Construction documents shall be prepared in accordance with the provisions of Chapter 1 of Title 28 of the Administrative Code, the New York City Construction Codes, including this code, and the rules of the department.

103.2 Supporting documentation on construction documents. Supporting documentation shall include those construction documents that demonstrate compliance with this code.

103.2.1 Intent. Supporting documentation shall accomplish the following:

1. Demonstrate conformance of approved drawings to the energy analysis for every element and value of the energy analysis;
2. Demonstrate conformance of approved drawings to other mandatory requirements of this code, including, but not limited to, sealing against air leakage from the building envelope and from ductwork as applicable, insulation of ducts and piping as applicable, mechanical and lighting controls with devices shown and operational narratives for each, and additional requirements as set forth in this section;
3. Identify required progress inspections in accordance with the scope of work, this code, the Administrative Code, the New York City Building Code and the rules of the department; and
4. Comply with other requirements as may be set forth in the rules of the department.

103.2.2 Detailed requirements. Construction documents shall be drawn to scale upon suitable material.

Electronic media documents are permitted to be submitted in accordance with department procedures. Construction documents for a project shall be fully coordinated and of sufficient clarity to indicate the location, nature and extent of the work proposed, and show in sufficient detail pertinent data and features of the building, building systems and equipment as herein governed. Details shall include, but are not limited to, as applicable, insulation materials and their R-values; fenestration U-factors and SHGCs; area-weighted U-factor and SHGC calculations; mechanical system design criteria; mechanical and service water heating system and equipment, types, sizes and efficiencies; economizer description; equipment and systems controls; fan motor horsepower and controls; duct sealing, duct and pipe insulation and location; lighting fixture schedule with wattages and control narrative; location of daylight zone on floor plans (as applicable), and air sealing details. The building's thermal envelope shall be represented on the construction documents.

103.3 Examination of documents. In accordance with Article 104 of Chapter 1 of Title 28 of the Administrative Code, the department shall examine or cause to be examined the accompanying construction documents and shall ascertain by such examinations whether the construction indicated and described is in accordance with the requirements of this code and other pertinent laws, rules and regulations.

103.4 Changes during construction. For changes during construction refer to Section 28-104.3 of the Administrative Code.

SECTION ECC 104

INSPECTIONS

104.1 General. Except as otherwise specifically provided, inspections required by this code or by the department during the progress of work may be performed on behalf of the owner by an approved agency. All inspections shall be performed at the sole cost and expense of the owner. Refer to Article 116 of Chapter 1 of Title 28 of the Administrative Code for additional provisions relating to inspections. In addition to any inspections otherwise required by this code or the rules of the department, the following inspections shall be required:

1. Progress inspections. Progress inspections shall be performed in accordance with the rules of the department.
2. Final inspection. Refer to Article 116 of Chapter 1 of Title 28 of the Administrative Code and the rules of the department.
3. Issuance of Certificate of Compliance. Refer to Section 28-116.4.1 of the Administrative Code.

The requirements of this Section shall not prohibit the operation of any heating equipment or appliances installed to replace existing heating equipment or appliances serving an occupied portion of a structure provided that a request for inspection of such heating equipment or appliances has been filed with the department not more than 48 hours after such replacement work is completed, and before any portion of such equipment or appliances is concealed by any permanent portion of the structure.

104.1.1 Approved agencies. Refer to Article 114 of Chapter 1 of Title 28 of the Administrative Code and the rules of the department.

104.1.2 Inspection of prefabricated construction assemblies. Prior to the issuance of a work permit for a prefabricated construction assembly having concealed mechanical work, the department shall require the submittal of an evaluation report by the manufacturer or approved agency on each prefabricated construction assembly, indicating the complete details of the mechanical system, including a description of the system and its components, the basis upon which the system is being evaluated for energy use, test results and similar information, and other data as necessary for the commissioner to determine conformance to this code.

104.1.2.1 Test and inspection records. Required test and inspection records shall be made available to the commissioner at all times during the fabrication of the mechanical system and the erection of the building; or such records as the commissioner designates shall be filed.

104.2 Testing. Envelope, heating, ventilating, air conditioning, service water heating, lighting and electrical systems shall be tested as required in this code and in accordance with Sections 104.2.1 through 104.2.3. Except as otherwise required in this code or in the rules of the department, tests shall be made by the permit holder and witnessed by an approved agency.

104.2.1 New, altered, extended, renovated or repaired systems. New envelope, heating, ventilating, air conditioning, service water heating, lighting and electrical installations or systems, and parts of existing systems that have been altered, extended, renovated or repaired, shall be tested as prescribed herein or in the rules of the department to disclose leaks and defects.

104.2.2 Apparatus, instruments, material and labor for tests. Apparatus, instruments, material and labor required for testing an envelope, heating, ventilating, air conditioning, service water heating, lighting or electrical installation or system, or part thereof, shall be furnished by the permit holder.

104.2.3 Reinspection and testing. Where any work or installation does not pass an initial test or inspection, the necessary corrections shall be made so as to achieve compliance with the New York City Construction Codes, including this code. The work or installation shall then be reinspected or retested by the approved agency.

104.3 Sign-off of completed work. In addition to the requirements of Article 116 of Chapter 1 of Title 28 of the Administrative Code, Section 103.4 of this code and other requirements for sign-off, the project team shall either certify that construction does not differ from the last approved energy analysis or provide a whole-project as-built energy analysis and supporting documents, signed and sealed, for approval prior to sign-off. The as-built energy analysis and supporting documents shall reflect the materials, equipment and values actually used in the construction of the project, and shall demonstrate compliance of the constructed project with this code. Such signed and sealed documents may be accepted with less than full examination by the department based on the professional certification of the registered design professional.

104.4 Temporary connection. The commissioner shall have the authority to allow the temporary connection of an installation to the sources of energy for the purpose of testing the installation or for use under a temporary certificate of occupancy.

SECTION ECC 105

REFERENCED STANDARDS

105.1 Referenced standards. The standards referenced in Chapters C2, C3, C4, and C5 of this code shall be those that are listed in Chapter C6 of this code, and in the rules of the department and such standards shall be considered part of the requirements of the commercial provisions of this code to the prescribed extent of each such reference. The standards referenced in Chapters R2, R3, R4, and R5, of this code shall be those that are listed in Chapter R6 of this code, and in the rules of the department and such standards shall be considered part of the requirements of the residential provisions of this code to the prescribed extent of each such reference. The standards referenced in Appendix CA of this code shall be those that are listed in Section 12 of Appendix CA of this code, and in the rules of the department and such standards shall be considered part of the requirements of the commercial provisions of this code to the prescribed extent of each such reference. Where differences occur between provisions of this code and the referenced standards, the provisions of this code shall apply. Refer to Article 103 of Chapter 1 of Title 28 of the Administrative Code for additional provisions relating to referenced standards.

CHAPTER C2

DEFINITIONS

SECTION C201

GENERAL

Section C201.1 Scope.

Section C201.1 - Revise Section C201.1 to read as follows:

C201.1 Scope. Unless stated otherwise, the following words and terms in chapters C2, C3, C4, C5 and C6 of this code shall have the meanings indicated in this chapter.

Section C201.3 Terms defined in other codes.

Section C201.3 - Revise Section C201.3 to read as follows:

C201.3 Terms defined in other codes. Terms that are not defined in this code but are defined in the New York City Construction Codes, New York City Fire Code, or the New York City Electrical Code shall have the meanings ascribed to them in those codes.

Section C201.4 Terms not defined.

Section C201.4 - Revise Section C201.4 to read as follows:

C201.4 Terms not defined. Terms not defined in this chapter or in the New York City Construction Codes, New York City Fire Code, or the New York City Electrical Code shall have ordinarily accepted meanings such as the context implies.

SECTION C202

GENERAL DEFINITIONS

Section C202 - Delete the definitions of “Fire Code of New York State,” “Fuel Gas Code of New York State,” “Mechanical Code of New York State,” “Plumbing Code of New York State,” “Residential Code of New York State,” and “Uniform Code.”

Section C202 – Delete the definition of “Air-impermeable insulation” after the definition of “Air curtain.”

Section C202 – Delete the definitions of “Area-weighted average,” “ASHRAE 90.1—2016,” “ASHRAE 90.1—2016 (as amended), “Approved” and “Approved agency” after the definition of “Alteration.”

Section C202 – Add the definitions of “Approval or approved,” “Approved agency,” “Area-weighted average,” “ASHRAE 90.1—2016,” “ASHRAE 90.1—2016 (AS AMENDED)” and “Authority having jurisdiction” after the definition of “Alteration,” to read as follows:

APPROVAL OR APPROVED. See Section 28-101.5 of the Administrative Code.

APPROVED AGENCY. See Section 28-101.5 of the Administrative Code.

AREA-WEIGHTED AVERAGE. A mathematical technique for combining different amounts of various components, based on proportional relevance, into a single number. Weighted averaging may be used where there is more than one R-value for floor, wall, or ceiling insulation, or more than one U-factor for fenestration in a building. As an example, the area-weighted average for window fenestration U-factors equals (Area 1 x U-factor 1) + (Area 2 x U-factor 2) + …/Total Area = maximum allowable fenestration U-factor.

ASHRAE 90.1—2016. The publication entitled "ANSI/ASHRAE/IES Standard 90.1—2016, Energy Standard for Buildings Except Low-rise Residential Buildings" (October 2016 printing) published by ASHRAE, formerly known as the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE 90.1—2016 is published by ASHRAE and jointly sponsored by the Illuminating Engineering Society of North America and the American National Standards Institute, and is also known as "ANSI/ASHRAE/IES 90.1—2016" or "ANSI/ASHRAE/IESNA 90.1—2016.")

ASHRAE 90.1-2016 (AS AMENDED). ASHRAE 90.1-2016, as amended by 19 NYCRR Part 1240 with revisions as set forth in Appendix CA of this code.

AUTHORITY HAVING JURISDICTION. The commissioner or the commissioner's designee.

Section C202 – Add a new definition of "Basement" after the definition of "Automatic," to read as follows:

BASEMENT. A story that is not a story above grade plane. See the definition of "Story above grade plane."

Section C202 – Revise the definition of "Building" after the definition of "Bubble point," to read as follows:

BUILDING. Any structure used or intended for supporting or sheltering any use or occupancy or for affording shelter to persons, animals or property, together with: (1) any mechanical systems, service water heating systems, and electric power and lighting systems located in such structure, and (2) any mechanical systems, service water heating systems, and electric power and lighting systems located on the building site and supporting such structure. The term "building" shall include, but not be limited to, factory manufactured homes, as defined in subdivision 8 of section 372 of the Executive Law, and mobile homes, as defined in subdivision 13 of section 372 of the Executive Law.

Section C202 - Revise the definition of "Building entrance" after the definition of "Building commissioning," to read as follows:

BUILDING ENTRANCE. Any doorway, set of doors, revolving door, vestibule, or other form of portal that is ordinarily used to gain access to the building or to exit from the building by its users and occupants. This does not include doors solely used to directly enter mechanical, electrical, and other building utility service equipment rooms.

Section C202 – Revise the definition of "Building official" after the definition of "Building entrance" to read as follows:

BUILDING OFFICIAL. The Commissioner of Buildings of the City of New York or his or her duly authorized representative. See Section 28-101.5 of the Administrative Code.

Section C202 - Revise the definition of "Conditioned space" after the definition of "Conditioned floor area," to read as follows:

CONDITIONED SPACE. An area, room or space that is enclosed within the building thermal envelope and is directly or indirectly heated or cooled. Spaces are indirectly heated or cooled where they communicate through openings with conditioned spaces, where they are separated from conditioned spaces by uninsulated walls, floors or ceilings, or where they contain uninsulated ducts, piping or other sources of heating or cooling.

Section C202 - Add a new definition of "**DX-dedicated outdoor air system units (DX-DOAS units)**" after the definition of "Dwelling unit," to read as follows:

DX-dedicated outdoor air system units (DX-DOAS units). A type of air-cooled, watercooled, or water source factory assembled product that dehumidifies 100% outdoor air to a low dew point and includes reheat that is capable of controlling the supply dry-bulb temperature of the dehumidified air to the designed supply air temperature. This conditioned outdoor air is then delivered directly or indirectly to the conditioned spaces. It may precondition outdoor air by containing an enthalpy wheel, sensible wheel, desiccant wheel, plate heat exchanger, heat pipes, or other heat or mass transfer apparatus.

Section C202 - Revise the definition of "Energy code" after the definition of "Energy analysis," to read as follows:

ENERGY CODE. The New York City Energy Conservation Code.

Section C202 - Add a new definition of "Grade plane" after the definition of "General lighting," to read as follows:

GRADE PLANE. A reference plane representing the average of finished ground level adjoining the building at exterior walls. Where the finished ground level slopes away from the exterior walls, the reference plane shall be established by the lowest points within the area between the building and the lot line or, where the lot line is more than 6 feet (1829 mm) from the building, between the building and a point 6 feet (1829 mm) from the building.

Section C202 - Add a new definition of "Integrated seasonal coefficient of performance (ISCOP)" after the definition of "Integrated part load value (IPLV)," to read as follows:

INTEGRATED SEASONAL COEFFICIENT OF PERFORMANCE (ISCOP). A seasonal efficiency number that is a combined value based on the formula listed in AHRI Standard 920 of the two COP values for the heating season of a DX-DOAS unit water or air source heat pump, expressed in W/W.

Section C202 - Add a new definition of "Integrated seasonal moisture removal efficiency (ISMRE)" after the definition of "Integrated seasonal coefficient of performance (ISCOP)," to read as follows:

INTEGRATED SEASONAL MOISTURE REMOVAL EFFICIENCY (ISMRE). A seasonal efficiency number that is a combined value based on the formula listed in AHRI Standard 920 of the four dehumidification moisture removal efficiency (MRE) ratings required for DX-DOAS units, expressed in lb of moisture/kWh.

Section C202 – Revise the definition of "Labeled" after the definition of "Isolation devices," to read as follows:

LABELED. See Section 28-101.5 of the Administrative Code.

Section C202 - Add a new definition of "Lead energy professional" after the definition of "Labeled," to read as follows:

LEAD ENERGY PROFESSIONAL. The registered design professional who signs and seals the energy analysis for an entire project. Such individual may be the same registered design professional who signs and seals the design drawings for the same project.

Section C202 – Revise the definition of "Listed" after the definition of "Liner system (Ls)," to read as follows:

LISTED. See Section 28-101.5 of the Administrative Code.

Section C202 - Add a new definition of "Moisture removal efficiency (MRE)" after the definition of "Manual," to read as follows:

MOISTURE REMOVAL EFFICIENCY (MRE). A ratio of the moisture removal **capacity in pounds of moisture per hour to the power input values in kilowatts at any given set of standard rating conditions expressed in lb of moisture/kWh.**

Section C202 - Add new definitions of "Professional certification" and "Project" after the definition of "Powered roof/wall ventilators," to read as follows:

PROFESSIONAL CERTIFICATION. See Section 28-101.5 of the Administrative Code.

PROJECT. A design and construction undertaking comprised of work related to one or more buildings and the site improvements. A project is represented by one or more plan/work applications, including construction documents compiled in accordance with Section 107 of the New York City Building Code, that relate either to the construction of a new building or buildings or to the demolition or alteration of an existing building or buildings. Applications for a project may have different registered design professionals and different job numbers, and may result in the issuance of one or more permits.

Section C202 - Add a new definition of "Spandrel panel" after the definition of "Solar heat gain coefficient (SHGC)," to read as follows:

SPANDREL PANEL. An opaque assembly within a fenestration framing system in a wall that is part of the building thermal envelope. Such panels are considered to be a portion of the opaque thermal envelope assembly.

Section C202 – Delete the definition of "Standard reference design".

Section C202 - Add new definitions of "Story," "Story above grade plane," and "Thermal bridge" after the definition of "Storefront," to read as follows:

STORY. The portion of a building included between the upper surface of a floor and the upper surface of the floor or roof next above. See the definitions of "Basement" and "Grade plane"). A story is measured as the vertical distance from top to top of two successive tiers of beams or finished floor surfaces and, for the topmost story, from the top of the floor finish to the top of the ceiling joists or, where there is not a ceiling, to the top of the roof rafters.

STORY ABOVE GRADE PLANE. Any story having its finished floor surface entirely above grade plane, or in which the finished surface of the floor next above is:

1. More than 6 feet (1829 mm) above grade plane; or
2. More than 12 feet (3658 mm) above the finished ground level at any point.

THERMAL BRIDGE: Thermal bridges are elements that interrupt areas of uniform thermal resistance in the building envelope.

Clear field thermal bridge: an area-based thermal transmittance associated with elements of a building envelope assembly which repeat at regular intervals. Examples of clear field thermal bridges include metal or wood studs, brick ties and cladding attachments such as z-girts.

Linear thermal bridge: a length-based thermal transmittance associated with horizontal, vertical, or diagonal elements within the building envelope and with length measured along the exterior surface of the building envelope. Examples of linear thermal bridges include balconies or floor assemblies which penetrate walls in the building envelope, fenestration perimeter interfaces, parapets, and shelf angles. Linear thermal transmittance is heat flow divided by length and by the temperature difference between the interior and exterior sides of the assembly, represented by a Ψ-value (Psi-Value) in units Btu/hr-ft-°F (W/mK).

Point thermal bridge: an element-based thermal transmittance associated with a discrete element that penetrates the building envelope. Examples of point thermal bridges include a beam penetrating a wall, a column penetrating a roof or floor, and an anchor or connection used to attach an element to the building and not otherwise addressed as a clear field thermal bridge or linear thermal bridge. Point thermal transmittance is heat flow divided by the temperature difference between the interior and exterior sides of the assembly, represented by a X-value (Chi-Value) in units Btu/hr-°F (W/K).

CHAPTER C3

GENERAL REQUIREMENTS

SECTION C301

Section C301 - Delete Section C301 in its entirety and add a new Section C301 to read as follows:

SECTION C301

CLIMATE ZONES

C301.1 General. For projects in the City of New York, Climate Zone 4A shall be used in determining the applicable requirements from Chapter C4.

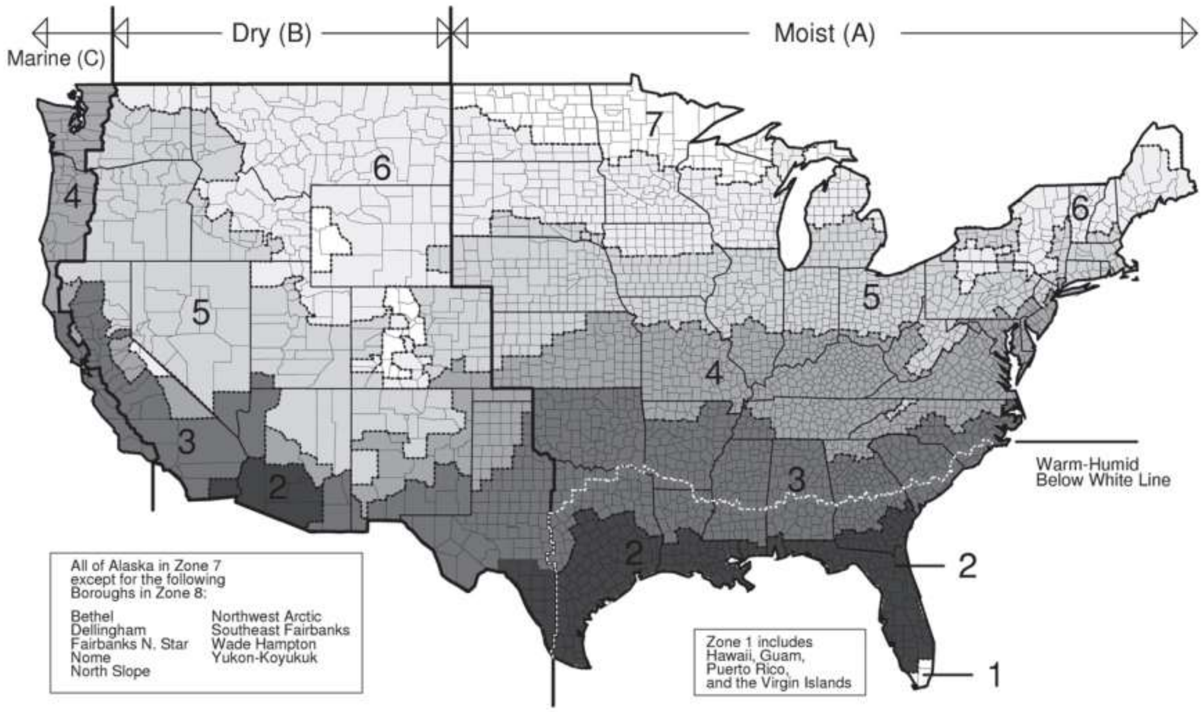


FIGURE C301.1

CLIMATE ZONES

SECTION C303

MATERIALS, SYSTEMS AND EQUIPMENT

Section C303.1.1 Building thermal envelope insulation.

Section C303.1.1 – Revise the exception to Section C303.1.1 to read as follows:

Exception: For roof insulation installed above the deck, the R-value shall be labeled as required by the material standards specified in Table 1508.2 of the New York City Building Code.

Section C303.2 Installation.

Section C303.2 **-** Revise Section C303.2 to read as follows:

C303.2 Installation. Materials, systems and equipment shall be installed in accordance with (i) the manufacturer's installation instructions and (ii) the applicable provisions of the New York City Construction Codes.

CHAPTER C4

COMMERCIAL ENERGY EFFICIENCY

SECTION C401

GENERAL

Section C401.2 Application.

Section C401.2 – Revise Section C401.2 to read as follows:

C401.2 Application. Commercial buildings shall comply with one of the following compliance paths:

1. ASHRAE Compliance Path: The requirements of ASHRAE 90.1-2016 (as amended), as set forth in Appendix CA.
2. Prescriptive Compliance Path: The requirements of Sections C402 through C405 and C408. In addition, commercial buildings shall comply with Section C406 and tenant spaces shall comply with Section C406.1.1.
3. Performance Compliance Path: The requirements of Section C407.

Section C401.2.1 – Delete Section C401.2.1 in its entirety, and add a new Section C401.2.1 to read as follows:

C401.2.1 Application to Group R-3 buildings. Where Group R-3 buildings must comply with Section C401.2, the requirements of Sections R401.3, R402.4.1.2, and R403.6.2 shall also be met.

SECTION C402

BUILDING ENVELOPE REQUIREMENTS

Section C402.1 General (Prescriptive).

Section C402.1 - Revise Item 1 of Section C402.1 to read as follows:

> 1. The opaque portions of the building thermal envelope shall comply with the specific insulation requirements of Section C402.2 and the thermal requirements of either the R-value-based method of Section C402.1.3; the U-, C- and F-factor-based method of Section C402.1.4; or the component performance alternative of Section C402.1.5. When the total area of penetrations from through-the-wall mechanical equipment or equipment listed in Table C403.3.2(3) exceeds 1 percent of the opaque above-grade wall area, the building thermal envelope shall comply with the U-, C- and F-factor-based method of Section C402.1.4.

Section C402.1 - Delete Item 4 of Section C402.1 in its entirety.

Section C402.1.3 Insulation component R-value-based method.

Section C402.1.3 – Revise the first sentence of Section C402.1.3 to read as follows:

> Building thermal envelope opaque assemblies shall comply with the requirements of Sections C402.2 and C402.4 based on the climate zone specified in Chapter C3.

Section C402.1.3 - Delete Table C402.1.3 in its entirety and add a new Table C402.1.3 to read as follows:

TABLE C402.1.3
OPAQUE THERMAL ENVELOPE INSULATION COMPONENT MINIMUM REQUIREMENTS, R-VALUE METHOD[a, h]

CLIMATE ZONE	4 EXCEPT MARINE		5 AND MARINE 4		6	
	All other	Group R	All other	Group R	All other	Group R
Roofs						
Insulation entirely above roof deck	R-33ci	R-33ci	R-30ci	R-30ci	R-30ci	R-30ci
Metal buildings[b]	R-19 + R-11 LS	R-19 + R-11 LS	R-19 + R-11 LS	R-19 + R-11 LS	R-25 + R-11 LS	R-25 + R-11 LS
Attic and other	R-53	R-53	R-38	R-49	R-49	R-49
Walls, above grade						
Mass[f]	R-11.2ci	R-13.25ci	R-11.4ci	R-13.3ci	R-13.3ci	R-15.2ci
Metal building	R-13 + R-13ci	R-13 + R-19.5ci	R-13 + R-13ci	R-13 + R-13ci	R-13 + R-13ci	R-13 + R-13ci
Metal framed	R-13 + R-8.5ci	R-13 + R-8.5ci	R-13 + R-7.5ci	R-13 + R-7.5ci	R-13 + R-7.5ci	R-13 + R-7.5ci
Wood framed and other	R-13 + R-4.5ci or R-19 + R-1.5ci	R-13 + R-4.5ci or R-19 + R-1.5ci	R-13 + R-3.8ci or R-20	R-13 + R-7.5ci or R-20 + R-3.8ci	R-13 + R-7.5ci or R-20 + R-3.8ci	R-13 + R-7.5ci or R-20 + R-3.8ci
Walls, below grade						
Below-grade wall[c]	R-7.5ci	R-10ci	R-7.5ci	R-7.5ci	R-7.5ci	R-7.5ci
Floors						
Mass[d]	R-14.6ci	R-16.7ci	R-10ci	R-12.5ci	R-12.5ci	R-12.5ci
Joist/framing	R-30	R-30	R-30	R-30	R-30	R-30[e]
Slab-on-grade floors						
Unheated slabs	R-15 for 24" below	R-15 for 24" below	R-10 for 24" below	R-10 for 24" below	R-10 for 24" below	R-15 for 24" below

Heated slabs[g]	R-20 for 48" below + R-5 full slab	R-20 for 48" below + R-5 full slab	R-15 for 36" below + R-5 full slab	R-15 for 36" below + R-5 full slab	R-15 for 36" below + R-5 full slab	R-20 for 48" below + R-5 full slab
Opaque doors						
Nonswinging	R-4.75	R-4.75	R-4.75	R-4.75	R-4.75	R-4.75

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 4.88 kg/m^2, 1 pound per cubic foot = 16 kg/m^3.
ci = Continuous insulation, NR = No Requirement, LS = Liner System.

a. Assembly descriptions can be found in ANSI/ASHRAE/IESNA Appendix A.
b. Where using R-value compliance method, a thermal spacer block shall be provided, otherwise use the U-factor compliance method in Table C402.1.4.
c. Where heated slabs are below grade, below-grade walls shall comply with the exterior insulation requirements for above grade mass walls.
d. "Mass floors" shall be in accordance with Section C402.2.3.
e. Steel floor joist systems shall be insulated to R-38.
f. "Mass walls" shall be in accordance with Section C402.2.2.
g. The first value is for perimeter insulation and the second value is for slab insulation. Perimeter insulation is not required to extend below the bottom of the slab.
h. Not applicable to garage doors. See Table C402.1.4.

Section C402.1.4 Assembly U-factor, C-factor or F-factor-based method.

Section C402.1.4 - Revise the first sentence of Section C402.1.4 to read as follows:

Building thermal envelope opaque assemblies shall meet the requirements of Sections C402.2 and C402.4 based on the climate zone specified in Chapter C3.

Section C402.1.4 - Revise the last sentence of Section C402.1.4 to read as follows:

Commercial buildings or portions of commercial buildings enclosing occupancies other than Group R shall use the U-, C- or F-factor from the "All other" column of Table C402.1.4.

Table C402.1.4 - Delete Table C402.1.4 in its entirety and add a new Table C402.1.4 to read as follows:

TABLE C402.1.4
OPAQUE THERMAL ENVELOPE ASSEMBLY MAXIMUM REQUIREMENTS, U-FACTOR METHOD[a, b]

CLIMATE ZONE	4 EXCEPT MARINE		5 AND MARINE 4		6	
	All other	Group R	All other	Group R	All other	Group R
Roofs						
Insulation entirely above roof deck	U-0.030	U-0.030	U-0.032	U-0.032	U-0.032	U-0.032
Metal buildings	U-0.035	U-0.035	U-0.035	U-0.035	U-0.031	U-0.031
Attic and other	U-0.020	U-0.020	U-0.027	U-0.021	U-0.021	U-0.021
Walls, above grade						
Mass[f]	U-0.099	U-0.086	U-0.090	U-0.080	U-0.080	U-0.071
Metal building	U-0.048	U-0.048	U-0.052	U-0.052	U-0.052	U-0.052
Metal framed	U-0.061	U-0.061	U-0.064	U-0.064	U-0.064	U-0.064
Wood framed and other[c]	U-0.061	U-0.061	U-0.064	U-0.064	U-0.051	U-0.051
Walls, below grade						
Below-grade wall[c]	C-0.119	C-0.092	C-0.119	C-0.119	C-0.119	C-0.119
Floors						
Mass[d]	U-0.057	U-0.051	U-0.074	U-0.064	U-0.064	U-0.064
Joist/framing	U-0.033	U-0.033	U-0.033	U-0.033	U-0.033	U-0.033
Slab-on-grade floors						
Unheated slabs	F-0.52	F-0.52	F-0.54	F-0.54	F-0.54	F-0.52
Heated slabs[e]	F-0.63 0.64	F-0.63 0.64	F-0.79 0.64	F-0.79 0.64	F-0.79 0.55	F-0.69 0.55
Opaque doors						
Swinging door	U-0.50	U-0.50	U-0.37	U-0.37	U-0.37	U-0.37
Garage door <14% glazing	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31

For SI: 1 pound per square foot = 4.88 kg/m^2, 1 pound per cubic foot = 16 kg/m^3.
ci = Continuous insulation, NR = No Requirement, LS = Liner System.

a. Where assembly U-factors, C-factors, and F-factors are established in ANSI/ASHRAE/IESNA 90.1 Appendix A, such opaque assemblies shall be a compliance alternative where those values meet the criteria of this table, and provided that the construction, excluding the cladding system on walls, complies with the appropriate construction details from ANSI/ASHRAE/ISNEA 90.1 Appendix A.
b. Where U-factors have been established by testing in accordance with ASTM C1363, such opaque assemblies shall be a compliance alternative where those values meet the criteria of this table. The R-value of continuous insulation shall be permitted to be added to or subtracted from the original tested design.
c. Where heated slabs are below grade, below-grade walls shall comply with the U-factor requirements for above-grade mass walls.
d. "Mass floors" shall be in accordance with Section C402.2.3.
e. The first value is for perimeter insulation and the second value is for full slab insulation.
f. "Mass walls" shall be in accordance with Section C402.2.2.

Section C402.1.4.2 Thermal resistance of spandrel panels.

Section C402.1.4.2 - Add a new Section C402.1.4.2 and a new Table C402.1.4.2 to read as follows:

C402.1.4.2 Thermal resistance of spandrel panels. U-factors of opaque assemblies within fenestration framing systems shall be determined in accordance with Table C402.1.4.2.

TABLE C402.1.4.2
EFFECTIVE U-FACTORS FOR SPANDREL PANELS[a]

Frame Type	Spandrel Panel	Rated R-value of Insulation between Framing Members						
		R-4	R-7	R-10	R-15	R-20	R-25	R-30
Aluminum without Thermal Break[b]	Single glass pane, stone, or metal panel	0.242	0.222	0.212	0.203	0.198	0.195	0.193
	Double glass with no low-e coatings	0.233	0.218	0.209	0.202	0.197	0.194	0.192
	Triple or low-e glass	0.226	0.214	0.207	0.200	0.196	0.194	0.192
Aluminum with Thermal Break[c]	Single glass pane, stone, or metal panel	0.211	0.186	0.173	0.162	0.155	0.151	0.149
	Double glass with no low-e coatings	0.200	0.180	0.170	0.160	0.154	0.151	0.148
	Triple or low-e glass	0.191	0.176	0.167	0.159	0.153	0.150	0.148
Structural Glazing[d]	Single glass pane, stone, or metal panel	0.195	0.163	0.147	0.132	0.123	0.118	0.114

	Double glass with no low-e coatings	0.180	0.156	0.142	0.129	0.122	0.117	0.114
	Triple or low-e glass	0.169	0.150	0.138	0.127	0.121	0.116	0.113
No framing or Insulation is Continuous[e]	Single glass pane, stone, or metal panel	0.148	0.102	0.078	0.056	0.044	0.036	0.031
	Double glass with no low-e coatings	0.136	0.097	0.075	0.054	0.043	0.035	0.030
	Triple or low-e glass	0.129	0.093	0.073	0.053	0.042	0.035	0.030

a. Opaque assembly U-factors based on designs tested in accordance with ASTM C 1363 or NFRC 100 shall be permitted. Interpolation outside of the table shall not be permitted. Spandrel panel assemblies in the table do not include metal backpans.

b. Aluminum frame without a thermal break shall be used for systems where the mullion provides a thermal bridge through the insulation.

c. Aluminum frame with a thermal break shall be used for systems where a urethane or other non-metallic element separates the metal exposed to the exterior from the metal that is exposed to the interior condition.

d. Structural glazing frame type shall be used for systems that have no exposed mullion on the interior.

e. No framing or insulation that is continuous shall be used for systems where there is no framing or the insulation is continuous and uninterrupted between framing.

Section C402.1.4.3 Thermal resistance of mechanical equipment penetrations.

Section C402.1.4.3 - Add a new Section C402.1.4.3 to read as follows:

C402.1.4.3 Thermal resistance of mechanical equipment penetrations. When the total area of penetrations from through-the-wall mechanical equipment or equipment listed in Table C403.3.2(3) exceeds 1 percent of the opaque above-grade wall area, the mechanical equipment penetration area shall be calculated as a separate wall assembly with a default U-factor of 0.5.

Exception: Where mechanical equipment has been tested in accordance with testing standards approved by the department, the mechanical equipment penetration area may be calculated as a separate wall assembly with the U-factor as determined by such test.

Section C402.2 Specific building thermal envelope insulation requirements (Prescriptive).

Section C402.2 – Revise Section C402.2 to read as follows:

C402.2 Specific building thermal envelope insulation requirements (Prescriptive). Insulation in building thermal envelope opaque assemblies shall comply with Sections C402.2.1 through C402.2.9 and Table C402.1.3.

Section C402.2.8 Fireplaces.

Section C402.2.8 – Revise Section C402.2.8 to read as follows:

C402.2.8 Fireplaces. New wood-burning fireplaces shall have tight-fitting flue dampers or doors, and outdoor combustion air as required by the fireplace construction provisions of the New York City Construction Codes, as applicable. Where using tight-fitting doors on factory-built fireplaces listed and labeled in accordance with UL 127, the doors shall be tested and listed for the fireplace.

Section C402.2.9 Continuous insulation.

Section C402.2.9 - Add a new Section C402.2.9 to read as follows:

C402.2.9 Continuous insulation. In new construction, balconies and parapets that interrupt the building thermal envelope shall comply with one of the following:

1. Shall be insulated with continuous insulation having a minimum thermal resistance equivalent to the continuous insulation component required in the adjacent wall assembly as listed in Table C402.1.3. Where more than one wall assembly is interrupted by an adjacent balcony, the higher thermal resistance shall be followed.

2. Shall incorporate a minimum R-3 thermal break where the structural element penetrates the building thermal envelope.

Table C402.4 Building Envelope Fenestration Maximum U-Factor and SHGC Requirements

Table C402.4 - Delete Table C402.4 in its entirety and add a new Table C402.4 to read as follows:

TABLE C402.4
BUILDING ENVELOPE FENESTRATION MAXIMUM U-FACTOR AND SHGC REQUIREMENTS

CLIMATE ZONE	**4 EXCEPT MARINE**	
Vertical fenestration		
U-factor[a]		
	Below 95'[b]	**95' and above[b]**
Non-metal framing (all)	0.28	0.28
Metal framing fixed	0.30	0.36
Metal framing operable	0.40	0.42
Curtainwall fixed	0.36	0.36
Entrance doors	0.77	
SHGC[c]		
PF < 0.2	0.36	
0.2 □ PF < 0.5	0.43	
PF □ 0.5	0.58	
Skylights		
U-factor[a]	0.48	
SHGC[c]	0.38	

PF = Projection Factor.

a. U-factor shall be rated in accordance with NFRC 100.
b. Where any portion of the fenestration frame is installed at or above 95’ (28 950 mm) above grade, the unit may meet the requirements for 95’ (28 950 mm) and above.
c. SHGC shall be rated in accordance with NFRC 200.

Section C402.5.1.2.1 Materials.

Section C402.5.1.2.1- Delete Item 16 of Section C402.5.1.2.1 in its entirety.

Section C402.5.1.3 Air barrier testing.

Section C402.5.1.3 - Add a new Section C402.5.1.3 to read as follows:

C402.5.1.3 Air barrier testing. New buildings and additions of a certain size must comply with the following requirements and the rules of the department:

1. New buildings and additions 10,000 square feet (929 m^2) and greater, but less than 50,000 square feet (4 645.2 m^2), and less than or equal to 75 feet (22.86 m) in height must show compliance through testing in accordance with ASTM E 779 or other approved standards. R-2 buildings may alternatively show compliance through testing in accordance with Section R402.4.1.3 of this code.

2. New buildings and additions 10,000 square feet (929 m^2) and greater, but less than 50,000 square feet (4 645.2 m^2), and greater than 75 feet (22.86 m) in height, shall test or inspect each type of unique air barrier joint or seam in the building envelope for continuity and defects, as per an Air Barrier Continuity Plan developed by a registered design professional. Alternatively, such buildings and additions may show compliance through testing in accordance with Item 1 of this Section.

3 New buildings and additions 50,000 square feet (4 645.2 m^2) and greater shall test or inspect each type of unique air barrier joint or seam in the building envelope for continuity and defects, as per an Air Barrier Continuity Plan developed by a registered design professional. Alternatively, such buildings and additions may show compliance through testing in accordance with Item 1 of this Section.

Section C402.5.3 Rooms containing fuel-burning appliances.

Section C402.5.3 – Revise Item 2.3 of Section C402.5.3 to read as follows:

2.3. The doors into the enclosed room or space shall be fully gasketed.

Section C402.5.3 – Revise the Exception to Section C402.5.3 to read as follows:

Exception: Fireplaces and stoves complying with Sections 901 through 905 of the New York City Mechanical Code, and the fireplace fireblocking requirements of the New York City Building Code.

Section C402.5.4 Doors and access opening to shafts, chutes, stairways, and elevator lobbies.

Section C402.5.4 - Revise Exceptions 1 and 2 of Section C402.5.4 to read as follows:

1. Door openings required to comply with the duct and air transfer opening requirements of the New York City Building Code.

2. Doors and door openings required to comply with UL 1784 by the New York City Building Code.

Section C402.5.7 Vestibules.

Section C402.5.7 - Revise Exception 4 of Section C402.5.7 to read as follows:

4. Doors that open directly from a space less than 3,000 square feet (298 m^2) in area, in buildings less than 75 feet (22.86 m) in height, and doors that open directly from a space less than 1,000 square feet (92.9 m^2) in area, in buildings 75 feet (22.86 m) and greater in height.

Section C402.5.7 - Delete Exception 7 of Section C402.5.7 in its entirety.

Section C402.6 Thermal bridges (Mandatory).

Section C402.6 – Add new Sections C402.6, C402.6.1, C402.6.2 and C402.6.3, and a new Table C402.6, to read as follows:

C402.6 Thermal bridges (Mandatory). Applications for construction document approval shall include the following documentation of thermal bridges:

C402.6.1 Clear field thermal bridges. Where otherwise not included in pre-calculated assembly U-factors, C-factors, or F-factors outlined in Appendix A of ASHRAE 90.1-2016 (as amended), as set forth in Appendix CA of this code , clear field thermal bridges in a wall, roof, or floor assembly shall be noted as such in the drawings.

C402.6.2 Point thermal bridges. Point thermal bridges greater than or equal in area to 12 in^2 (7744 mm^2) and not associated with HVAC or electrical systems shall be noted as thermal bridges in the drawings.

C402.6.3 Linear thermal bridges. Construction documents shall include the following documentation in tabular format for linear thermal bridges listed in Table C402.6:

1. Linear thermal bridge type.

2. Aggregate length of each type of linear thermal bridge.

3. Relevant detail in the construction documents showing a cross-section through the thermal bridge.

4. Ψ-value for each thermal bridge from Table C402.6.

Exception: Where linear thermal bridges have been tested or modeled using methods approved by the department, alternate values may be used.

TABLE C402.6

AVERAGE THERMAL TRANSMITTANCE FOR UNMITIGATED LINEAR THERMAL BRIDGES

Type of Thermal Bridge	**Ψ-value[a]** **[Btu / hr ft F]**
Balcony	0.50
Floor Slab	0.44
Fenestration Perimeter Transition[b]	0.32
Parapet	0.42
Shelf Angle	0.41

a. Psi-values are derived from the BC Hydro Building Envelope Thermal Bridging Guide V. 1.2 - Sept. 2018, and are based on poor performing details.

b. Fenestration Perimeter Transition is the thermal bridge between any fenestration frame and the typical wall, roof or floor assembly it abuts or is mounted within.

SECTION C403

BUILDING MECHANICAL SYSTEMS

Section C403.1.1 Calculation of heating and cooling loads (Mandatory).

Section C403.1.1 – Revise the first sentence of Section C403.1.1 to read as follows:

> Design loads associated with heating, ventilating and air conditioning of the building shall be determined in accordance with ANSI/ASHRAE/ACCA Standard 183 or by an approved equivalent computational procedure using the design parameters specified in Chapter C3.

Section C403.2.2 Ventilation (Mandatory).

Section C403.2.2 – Revise Section C403.2.2 to read as follows:

> **C403.2.2 Ventilation (Mandatory).** Ventilation, either natural or mechanical, shall be provided in accordance with Chapter 4 of the New York City Mechanical Code. Where mechanical ventilation is provided, the system shall provide the capability to reduce the outdoor air supply to the minimum required by Chapter 4 of the New York City Mechanical Code.

Section C403.3.2 HVAC equipment performance requirements (Mandatory).

Section C403.3.2 - Revise the first two sentences of Section C403.3.2 to read as follows:

> Equipment shall meet the minimum efficiency requirements of Tables C403.3.2(1) through C403.3.2(8) and Tables C403.3.2(10) through C403.3.2(14) when tested and rated in accordance with the applicable test procedure. Plate-type liquid-to-liquid heat exchangers shall meet the minimum requirements of Table C403.3.2(9).

Table C403.3.2(1) Minimum efficiency requirements: Electrically operated unitary air conditioners and condensing units

Table C403.3.2(1) - Delete Table C403.3.2(1) in its entirety and add a new Table C403.3.2(1) to read as follows:

TABLE C403.3.2(1)
MINIMUM EFFICIENCY REQUIREMENTS: ELECTRICALLY OPERATED UNITARY AIR CONDITIONERS AND CONDENSING UNITS

EQUIPMENT TYPE	SIZE CATEGORY	HEATING SECTION TYPE	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY[c]	TEST PROCEDURE[a]
Air conditioners, air cooled	< 65,000 Btu/h[b]	All	Split System, three phase	13.0 SEER	AHRI 210/240
			Single Package, three phase	14.0 SEER	
Through-the-wall (air cooled)	□ 30,000 Btu/h[b]	All	Split system, three phase	12.0 SEER	
			Single Package, three phase	12.0 SEER	
Small-duct high-velocity (air cooled)	< 65,000 Btu/h[b]	All	Split System, three phase	11.0 SEER	
Air conditioners, air cooled	□ 65,000 Btu/h and < 135,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	11.2 EER 12.9 IEER	AHRI 340/360
		All other	Split System and Single Package	11.0 EER 12.7 IEER	
	□ 135,000 Btu/h and	Electric Resistance (or None)	Split System and Single Package	11.0 EER 12.4 IEER	

	< 240,000 Btu/h	All other	Split System and Single Package	10.8 EER 12.2 IEER	
	≥ 240,000 Btu/h and < 760,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	10.0 EER 11.6 IEER	
		All other	Split System and Single Package	9.8 EER 11.4 IEER	
	≥ 760,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	9.7 EER 11.2 IEER	
		All other	Split System and Single Package	9.5 EER 11.0 IEER	
Air conditioners, water cooled	< 65,000 Btu/h[b]	All	Split System and Single Package	12.1 EER 12.3 IEER	AHRI 210/240
	≥ 65,000 Btu/h and < 135,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	12.1 EER 13.9 IEER	AHRI 340/360
		All other	Split System and Single Package	11.9 EER 13.7 IEER	
	≥ 135,000 Btu/h and < 240,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	12.5 EER 13.9 IEER	
		All other	Split System and Single Package	12.3 EER 13.7 IEER	
	≥ 240,000 Btu/h and < 760,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	12.4 EER 13.6 IEER	
		All other	Split System and Single Package	12.2 EER 13.4 IEER	
	≥ 760,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	12.2 EER 13.5 IEER	
		All other	Split System and Single Package	12.0 EER 13.3 IEER	

EQUIPMENT TYPE	SIZE CATEGORY	HEATING SECTION TYPE	SUB-CATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY[c]	TEST PROCEDURE[a]
Air conditioners, evaporatively cooled	< 65,000 Btu/h[b]	All	Split System and Single Package	12.1 EER 12.3 IEER	AHRI 210/240
	□□65,000 Btu/h and < 135,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	12.1 EER 12.3 IEER	AHRI 340/360
		All other	Split System and Single Package	11.9 EER 12.1 IEER	
	□□135,000 Btu/h and < 240,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	12.0 EER 12.2 IEER	
		All other	Split System and Single Package	11.8 EER 12.0 IEER	
	□ 240,000 Btu/h and < 760,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	11.9 EER 12.1 IEER	
		All other	Split System and Single Package	11.7 EER 11.9 IEER	
	□760,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	11.7 EER 11.9 IEER	
		All other	Split System and Single Package	11.5 EER 11.7 IEER	
Condensing units, air cooled	□ 135,000 Btu/h	—	—	10.5 EER 11.8 IEER	AHRI 365
Condensing units, water cooled	□ 135,000 Btu/h	—	—	13.5 EER 14.0 IEER	
Condensing units, evaporatively cooled	□ 135,000 Btu/h	—	—	13.5 EER 14.0 IEER	

For SI: 1 British thermal unit per hour = 0.2931 W.

a. Chapter C6 contains a complete specification of the referenced test procedure, including the reference year version of the test procedure.

b. Single-phase, air-cooled air conditioners less than 65,000 Btu/h are regulated by the U.S. Department of Energy Code of Federal Regulations 10 CFR 430. SEER values for single-phase products are set by the U.S. Department of Energy.

c. See ASHRAE 90.1-2016 Informative Appendix F for the U.S. Department of Energy minimum efficiency requirements of single-phase air conditioners.

Table C403.3.2(2) Minimum efficiency requirements: Electrically operated unitary and applied heat pumps

Table C403.3.2(2) - Delete Table C403.3.2(2) in its entirety and add a new Table C403.3.2(2) to read as follows:

TABLE C403.3.2(2)
MINIMUM EFFICIENCY REQUIREMENTS: ELECTRICALLY OPERATED UNITARY AND APPLIED HEAT PUMPS

EQUIPMENT TYPE	SIZE CATEGORY	HEATING SECTION TYPE	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY[c]	TEST PROCEDURE[a]
Air cooled (cooling mode)	< 65,000 Btu/h[b]	All	Split System, three phase	14.0 SEER	AHRI 210/240
			Single Package, three phase	14.0 SEER	
Through-the-wall, air cooled (cooling mode)	□□30,000 Btu/h[b]	All	Split System, three phase	12.0 SEER	
			Single Package, three phase	12.0 SEER	
Single-duct, high-velocity, air cooled	< 65,000 Btu/h[b]	All	Split System, three phase	11.0 SEER	
Air cooled (cooling mode)	□□65,000 Btu/h and < 135,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	11.0 EER 12.2 IEER	AHRI 340/360
		All other	Split System and Single Package	10.8 EER 12.0 IEER	
	□□135,000 Btu/h and < 240,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	10.6 EER 11.6 IEER	
		All other	Split System and Single Package	10.4 EER 11.4 IEER	
	□ 240,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	9.5 EER 10.6 IEER	
		All other	Split System and Single Package	9.3 EER 10.4 IEER	
Water to Air, Water Loop (cooling mode)	< 17,000 Btu/h	All	86°F entering water	12.2 EER	ISO 13256-1
	□ 17,000 Btu/h and	All	86°F entering water	13.0 EER	

	< 65,000 Btu/h				
	≥ 65,000 Btu/h and < 135,000 Btu/h	All	86°F entering water	13.0 EER	
Water to Air, Groundwater (cooling mode)	< 135,000 Btu/h	All	59°F entering water	18.0 EER	ISO 13256-1
Brine to Air, Ground Loop (cooling mode)	< 135,000 Btu/h	All	77°F entering fluid	14.1 EER	ISO 13256-1
Water to Water, Water Loop (cooling mode)	< 135,000 Btu/h	All	86°F entering water	10.6 EER	ISO 13256-2
Water to Water, Groundwater (cooling mode)	< 135,000 Btu/h	All	59°F entering water	16.3 EER	
Brine to Water, Ground Loop (cooling mode)	< 135,000 Btu/h	All	77°F entering fluid	12.1 EER	
Air cooled (heating mode)	< 65,000 Btu/h[b] (cooling capacity)	—	Split System, three phase	8.2 HSPF	AHRI 210/240
		—	Single Package, three phase	8.0 HSPF	
Through-the-wall, air cooled (heating mode)	≤ 30,000 Btu/h[b] (cooling capacity)	—	Split System, three phase	7.4 HSPF	
		—	Single Package, three phase	7.4 HSPF	
Small-duct, high velocity,	< 65,000 Btu/h[b]	—	Split System, three phase	6.8 HSPF	

air cooled (heating mode)					
Air cooled (heating mode)	□ 65,000 Btu/h and < 135,000 Btu/h (cooling capacity)	—	47ºF db/43ºF wb outdoor air	3.3 COP_H	AHRI 340/360
			17ºF db/15ºF wb outdoor air	2.25 COP_H	
	□ 135,000 Btu/h (cooling capacity)	—	47ºF db/43ºF wb outdoor air	3.2 COP_H	
			17ºF db/15ºF wb outdoor air	2.05 COP_H	
Water to Air, Water Loop (heating mode)	< 135,000 Btu/h (cooling capacity)	—	68°F entering water	4.3 COP_H	ISO 13256-1
Water to Air, Groundwater (heating mode)	< 135,000 Btu/h (cooling capacity)	—	50°F entering water	3.7 COP_H	
Brine to Air, Ground Loop (heating mode)	< 135,000 Btu/h (cooling capacity)	—	32°F entering fluid	3.2 COP_H	
Water to Water, Water Loop (heating mode)	< 135,000 Btu/h (cooling capacity)	—	68°F entering water	3.7 COP_H	ISO 13256-2
Water to Water, Groundwater (heating mode)	< 135,000 Btu/h (cooling capacity)	—	50°F entering water	3.1 COP_H	
Brine to Water, Ground Loop (heating mode)	< 135,000 Btu/h (cooling capacity)	—	32°F entering fluid	2.5 COP_H	

For SI: 1 British thermal unit per hour = 0.2931 W, °C = [(°F) - 32]/1.8.

a. Chapter C6 contains a complete specification of the referenced test procedure, including the reference year version of the test procedure.

b. Single-phase, air-cooled heat pumps less than 65,000 Btu/h are regulated by the U.S. Department of Energy Code of Federal Regulations 10 CFR 430. SEER and HSPF values for single-phase products are set by the U.S. Department of Energy.

c. See ASHRAE 90.1-2016 Informative Appendix F for the U.S. Department of Energy minimum efficiency requirements of single-phase air conditioners.

Table C403.3.2(3) Minimum efficiency requirements: Electrically operated packaged terminal air conditioners, packaged terminal heat pumps, single-package vertical air conditioners, single-package vertical heat pumps, room air conditioners and room air-conditioner heat pumps

Table C403.3.2(3) - Delete Table C403.3.2(3) in its entirety and add a new Table C403.3.2(3) to read as follows:

TABLE C403.3.2(3)
MINIMUM EFFICIENCY REQUIREMENTS: ELECTRICALLY OPERATED PACKAGED TERMINAL AIR CONDITIONERS,
PACKAGED TERMINAL HEAT PUMPS, SINGLE-PACKAGE VERTICAL AIR CONDITIONERS, SINGLE-PACKAGE VERTICAL HEAT PUMPS, ROOM AIR CONDITIONERS AND ROOM AIR-CONDITIONER HEAT PUMPS

EQUIPMENT TYPE	SIZE CATEGORY (INPUT)	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY	TEST PROCEDURE[a]
PTAC (cooling mode) standard size	All Capacities	95°F db outdoor air	14.0 – (0.300 × Cap/1000)[c] EER	AHRI 310/380

PTAC (cooling mode) nonstandard size[b]	All Capacities	95°F db outdoor air	10.9 - (0.213 × Cap/1000)[c] EER	
PTHP (cooling mode) standard size	All Capacities	95°F db outdoor air	14.0 - (0.300 × Cap/1000)[c] EER	
PTHP (cooling mode) nonstandard size[b]	All Capacities	95°F db outdoor air	10.8 - (0.213 × Cap/1000)[c] EER	
PTHP (heating mode) standard size	All Capacities	-	3.7 - (0.052 × Cap/1000)[c] COP_H	
PTHP (heating mode) nonstandard size[b]	All Capacities	-	2.9 - (0.026 × Cap/1000)[c] COP_H	
SPVAC (cooling mode)	< 65,000 Btu/h	95°F db/ 75°F wb outdoor air	11.0 EER	
	≥ 65,000 Btu/h and < 135,000 Btu/h		10.0 EER	
	≥ 135,000 Btu/h and < 240,000 Btu/h		10.0 EER	
SPVHP (cooling mode)	< 65,000 Btu/h	95°F db/ 75°F wb outdoor air	11.0 EER	AHRI 390
	≥ 65,000 Btu/h and < 135,000 Btu/h		10.0 EER	
	≥ 135,000 Btu/h and < 240,000 Btu/h		10.0 EER	
	< 65,000 Btu/h		3.3 COP_H	AHRI 390

SPVHP (heating mode)	□ 65,000 Btu/h and < 135,000 Btu/h	47°F db/ 43°F wb outdoor air	3.0 COP_H	
	□ 135,000 Btu/h and < 240,000 Btu/h		3.0 COP_H	
SPVAC (cooling mode), nonweatherized space constrained	≤ 30,000 Btu/h	95°F db/ 75°F wb outdoor air	9.2 EER	AHRI 390
	> 30,000 Btu/h and ≤ 36,000 Btu/h		9.0 EER	
SPVHP (cooling mode), nonweatherized space constrained	≤ 30,000 Btu/h	95°F db/ 75°F wb outdoor air	9.2 EER	
	> 30,000 Btu/h and ≤ 36,000 Btu/h		9.0 EER	
SPVHP (heating mode), nonweatherized space constrained	≤ 30,000 Btu/h	47°F db/ 43°F wb outdoor air	3.0 COP_H	
	> 30,000 Btu/h and ≤ 36,000 Btu/h		3.0 COP_H	
Room air conditioners, without reverse cycle, with louvered sides	< 6,000 Btu/h	—	11.0 CEER	10 CFR Part 430, Subpart B, Appendix F
	□ 6,000 Btu/h and < 8,000 Btu/h	—	11.0 CEER	
	□ 8,000 Btu/h and < 14,000 Btu/h	—	10.9 CEER	
	□ 14,000 Btu/h and < 20,000 Btu/h	—	10.7 CEER	
	□ 20,000 Btu/h and < 28,000 Btu/h	—	9.4 CEER	
	□ 28,000 Btu/h	—	9.0 CEER	
Room air conditioners, without reverse cycle, without louvered sides	< 6,000 Btu/h	—	10.0 CEER	
	□ 6,000 Btu/h and < 8,000 Btu/h	—	10.0 CEER	
	□ 8,000 Btu/h and < 11,000 Btu/h	—	9.6 CEER	
	□ 11,000 Btu/h and < 14,000 Btu/h	—	9.5 CEER	

	≥ 14,000 Btu/h and < 20,000 Btu/h	—	9.3 CEER	
	≥ 20,000 Btu/h	—	9.4 CEER	
Room air-conditioners, with reverse cycle, with louvered sides	< 20,000 Btu/h	—	9.8 CEER	
	≥ 20,000 Btu/h	—	9.3 CEER	
Room air-conditioners, with reverse cycle, without louvered sides	< 14,000 Btu/h	—	9.3 CEER	
	≥ 14,000 Btu/h	—	8.7 CEER	
Room air conditioner, casement only	All capacities	—	9.5 CEER	10 CFR Part 430, Subpart B, Appendix F
Room air conditioner, casement slider	All capacities	—	10.4 CEER	

For SI: 1 British thermal unit per hour = 0.2931 W, °C = [(°F) - 32]/1.8, wb = wet bulb, db = dry bulb.

a. Chapter C6 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

b. Nonstandard size units must be factory labeled as follows: “MANUFACTURED FOR NONSTANDARD SIZE APPLICATIONS ONLY: NOT TO BE INSTALLED IN NEW STANDARD PROJECTS.” Nonstandard size efficiencies apply only to units being installed in existing sleeves having an external wall opening of less than 16 inches (406 mm) high or less than 42 inches (1067 mm) wide and having a cross-sectional area less than 670 in^2.

c. “Cap” means the rated cooling capacity of the product in Btu/h. If the unit’s capacity is less than 7000 Btu/h, use 7000 Btu/h in the calculation. If the unit’s capacity is greater than 15,000 Btu/h, use 15,000 Btu/h in the calculations.

Table C403.3.2(4) Warm-air furnaces and combination warm-air furnaces/air conditioning units, warm-air duct furnaces and unit heaters, minimum efficiency requirements.

Table C403.3.2(4) - Delete Table C403.3.2(4) in its entirety and add a new Table C403.3.2(4) to read as follows:

TABLE C403.3.2(4)
WARM-AIR FURNACES AND COMBINATION WARM-AIR FURNACES/AIR-CONDITIONING UNITS, WARM-AIR DUCT FURNACES AND UNIT HEATERS, MINIMUM EFFICIENCY REQUIREMENTS

EQUIPMENT TYPE	SIZE CATEGORY (INPUT)	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY	TEST PROCEDURE[a]
Warm-air furnaces, gas fired	< 225,000 Btu/h	Maximum capacity[c]	80% AFUE or 80%E_t[b,d]	DOE 10 CFR Part 430 or Section 2.39, Thermal Efficiency, ANSI Z21.47
	□ 225,000 Btu/h		80%E_t[d]	Section 2.39, Thermal Efficiency, ANSI Z21.47
Warm-air furnaces, oil fired	< 225,000 Btu/h	Maximum capacity[c]	83% AFUE or 80%E_t[b,d]	DOE 10 CFR Part 430 or Section 42, Combustion, UL 727

	□ 225,000 Btu/h		81%E_t[d]	Section 42, Combustion, UL 727
Warm-air duct furnaces, gas fired	All capacities	Maximum capacity[c]	80%E_c[e]	Section 2.10, Efficiency, ANSI Z83.8
Warm-air unit heaters, gas fired	All capacities	Maximum capacity[c]	80%E_c[e,f]	Section 2.10, Efficiency, ANSI Z83.8
Warm-air unit heaters, oil fired	All capacities	Maximum capacity[c]	80%E_c[e,f]	Section 40, Combustion, UL 731

For SI: 1 British thermal unit per hour = 0.2931 W.

a. Chapter C6 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

b. Combination units not covered by the U.S. Department of Energy Code of Federal Regulations 10 CFR 430 (three-phase power or cooling capacity greater than or equal to 65,000 Btu/h) may comply with either rating.

c. Compliance of multiple firing rate units shall be at the maximum firing rate.

d. E_t = thermal efficiency. Units must also include an interrupted or intermittent ignition device (IID), have jacket losses not exceeding 0.75 percent of the input rating, and have either power venting or a flue damper. A vent damper is an acceptable alternative to a flue damper for those furnaces where combustion air is drawn from the conditioned space.

e. E_c = combustion efficiency (100% less flue losses). See test procedure for detailed discussion.

f. As of August 8, 2008, according to the Energy Policy Act of 2005, units must also include an interrupted or intermittent ignition device (IID) and have either power venting or an automatic flue damper.

Table C403.3.2(5) Minimum efficiency requirements: gas and oil-fired boilers.

Table C403.3.2(5) - Delete Table C403.3.2(5) in its entirety and add a new Table C403.3.2(5) to read as follows:

TABLE C403.3.2(5)
MINIMUM EFFICIENCY REQUIREMENTS: GAS- AND OIL-FIRED BOILERS

EQUIPMENT TYPE[a]	SUBCATEGORY OR RATING CONDITION	SIZE CATEGORY (INPUT)	MINIMUM EFFICIENCY[b,c]	TEST PROCEDURE
Boilers, hot water	Gas-fired	< 300,000 Btu/h[f,g]	82% AFUE	10 CFR Part 430
		□ 300,000 Btu/h and □ 2,500,000 Btu/h[d]	80% E_t	10 CFR Part 431
		> 2,500,000 Btu/h[a]	82% E_c	
	Oil-fired[e]	< 300,000 Btu/h[g]	84% AFUE	10 CFR Part 430
		□ 300,000 Btu/h and □□ 2,500,000 Btu/h[d]	82% E_t	10 CFR Part 431
		> 2,500,000 Btu/h[a]	84% E_c	
Boilers, steam	Gas-fired	< 300,000 Btu/h[f]	80% AFUE	10 CFR Part 430

	Gas-fired- all, except natural draft	□ 300,000 Btu/h and □ 2,500,000 Btu/h[d]	79% E_t	10 CFR Part 431
		> 2,500,000 Btu/h[a]	79% E_t	
	Gas-fired-natural draft	□ 300,000 Btu/h and □ 2,500,000 Btu/h[d]	77% E_t 79% E_t (as of 3/2/2020)	
		> 2,500,000 Btu/h[a]	77% E_t 79% E_t (as of 3/2/2020)	
	Oil-fired[e]	< 300,000 Btu/h	82% AFUE	10 CFR Part 430
		□ 300,000 Btu/h an □ 2,500,000 Btu/h[d]	81% E_t	10 CFR Part 431
		> 2,500,000 Btu/h[a]	81% E_t	

For SI: 1 British thermal unit per hour = 0.2931 W.

a. These requirements apply to boilers with rated input of 8,000,000 Btu/h or less that are not packaged boilers and to all packaged boilers. Minimum efficiency requirements for boilers cover all capacities of packaged boilers.
b. Ec = combustion efficiency (100% less flue losses). See reference document for detailed information.
c. Et = thermal efficiency. See reference document for detailed information.
d. Maximum capacity—minimum and maximum ratings as provided for and allowed by the unit's controls.
e. Includes oil-fired (residual).
f. Boilers shall not be equipped with a constant burning pilot light.
g. A boiler not equipped with a tankless domestic water-heating coil shall be equipped with an automatic means for adjusting the temperature of the water such that an incremental change in inferred heat load produces a corresponding incremental change in the temperature of the water supplied.

Table C403.3.2(6) Minimum efficiency requirements: condensing units, electrically operated.

Table C403.3.2(6) - Delete Table C403.3.2(6) in its entirety.

Table C403.3.2(7) Water chilling packages – efficiency requirements.

Table C403.3.2(7) - Delete Table C403.3.2(7) in its entirety and add a new Table C403.3.2(6) to read as follows:

TABLE C403.3.2(6)

WATER CHILLING PACKAGES – EFFICIENCY REQUIREMENTS[a, b, d]

EQUIPMENT TYPE	SIZE CATEGORY	UNITS	Path A	Path B	TEST PROCEDURE[c]
Air-cooled chillers	< 150 Tons	EER (Btu/W)	□ 10.100 FL	□ 9.700 FL	AHRI 550/590

			□ 13.700 IPLV	□ 15.800 IPLV	
	□ 150 Tons		□ 10.100 FL	□ 9.700 FL	
			□ 14.000 IPLV	□ 16.100 IPLV	
Air cooled without condenser, electrically operated	All capacities	EER (Btu/W)	Air-cooled chillers without condenser shall be rated with matching condensers and complying with air-cooled chiller efficiency requirements.		
Water cooled, electrically operated positive displacement	< 75 Tons	kW/ton	□ 0.750 FL	□ 0.780 FL	
			□ 0.600 IPLV	□ 0.500 IPLV	
	□ 75 tons and < 150 tons		□ 0.720 FL	□ 0.750 FL	
			□ 0.560 IPLV	□ 0.490 IPLV	
	□ 150 tons and < 300 tons		□ 0.660 FL	□ 0.680 FL	
			□ 0.540 IPLV	□ 0.440 IPLV	
	□ 300 tons and < 600 tons		□ 0.610 FL	□ 0.625 FL	
			□ 0.520 IPLV	□ 0.410 IPLV	
	□ 600 tons		□ 0.560 FL	□ 0.585 FL	
			□ 0.500 IPLV	□ 0.380 IPLV	
Water cooled, electrically	< 150 Tons	kW/ton	□ 0.610 FL	□ 0.695 FL	

operated centrifugal			□ 0.550 IPLV	□ 0.440 IPLV	
	□ 150 tons and < 300 tons		□ 0.610 FL	□ 0.635 FL	
			□ 0.550 IPLV	□ 0.400 IPLV	
	□ 300 tons and < 400 tons		□ 0.560 FL	□ 0.595 FL	
			□ 0.520 IPLV	□ 0.390 IPLV	
	□ 400 tons and < 600 tons		□ 0.560 FL	□ 0.585 FL	
			□ 0.500 IPLV	□ 0.380 IPLV	
	□ 600 Tons		□ 0.560 FL	□ 0.585 FL	
			□ 0.500 IPLV	□ 0.380 IPLV	
Air cooled, absorption, single effect	All capacities	COP	□ 0.600 FL	NA[c]	AHRI 560
Water cooled absorption, single effect	All capacities	COP	□ 0.700 FL	NA[c]	
Absorption, double effect, indirect fired	All capacities	COP	□ □1.000 FL	NA[c]	
			□ 1.050 IPLV		
Absorption double effect direct fired	All capacities	COP	□ 1.000 FL	NA[c]	
			□ □1.050 IPLV		

a. The requirements for centrifugal chillers shall be adjusted for nonstandard rating conditions in accordance with Section C403.3.2.1 and are only applicable for the range of conditions listed in Section C403.3.2.1. The requirements for air-cooled, water-cooled positive displacement and absorption chillers are at standard rating conditions defined in the reference test procedure.

b. Both the full-load and IPLV requirements shall be met or exceeded to comply with this standard. Where there is a Path B, compliance can be with either Path A or Path B for any application.

c. NA means the requirements are not applicable for Path B and only Path A can be used for compliance.
d. FL represents the full-load performance requirements and IPLV the part-load performance requirements.

Table C403.3.2(8) Minimum efficiency requirements: heat rejection equipment[a, b, d].

Table C403.3.2(8) - Delete Table C403.3.2(8) in its entirety and add a new Table C403.3.2(7) to read as follows:

TABLE C403.3.2(7)
MINIMUM EFFICIENCY REQUIREMENTS: HEAT REJECTION EQUIPMENT

EQUIPMENT TYPE	TOTAL SYSTEM HEAT REJECTION CAPACITY AT RATED CONDITIONS	SUBCATEGORY OR RATING CONDITION[i]	PERFORMANCE REQUIRED[a, b, c, d, g, h]	TEST PROCEDURE[e, f]

Propeller or axial fan open-circuit cooling towers	All	95°F entering water 85°F leaving water 75°F entering wb	□ 40.2 gpm/hp	CTI ATC-105 and CTI STD-201 RS
Centrifugal fan open-circuit cooling towers	All	95°F entering water 85°F leaving water 75°F entering wb	□ 20.0 gpm/hp	CTI ATC-105 and CTI STD-201 RS
Propeller or axial fan closed-circuit cooling towers	All	102°F entering water 90°F leaving water 75°F entering wb	□ 16.1 gpm/hp	CTI ATC-105S and CTI STD-201 RS
Centrifugal fan closed-circuit cooling towers	All	102°F entering water 90°F leaving water 75°F entering wb	□□7.0 gpm/hp	CTI ATC-105S and CTI STD-201 RS
Propeller or axial fan evaporative condensers	All	Ammonia Test Fluid 140°F entering gas temperature 96.3°F condensing temperature 75°F entering wb	□ 134,000 Btu/h □ hp	CTI ATC-106
Centrifugal fan evaporative condensers	All	Ammonia Test Fluid 140°F entering gas temperature 96.3°F condensing temperature 75°F entering wb	□110,000 Btu/h □ hp	CTI ATC-106
Propeller or axial fan evaporative condensers	All	R-507A Test Fluid 165°F entering gas temperature 105°F condensing temperature 75°F entering wb	□ 157,000 Btu/h □ hp	CTI ATC-106
Centrifugal fan evaporative condensers	All	R-507A Test Fluid 165°F entering gas temperature 105°F condensing temperature 75°F entering wb	□ 135,000 Btu/h □ hp	CTI ATC-106

Air-cooled condensers	All	125°F Condensing Temperature 190°F Entering Gas Temperature 15°F subcooling 95°F entering db	□ 176,000 Btu/h □ hp	AHRI 460

For SI: °C = [(°F) - 32]/1.8, L/s • kW = (gpm/hp)/(11.83), COP = (Btu/h • hp)/(2550.7),
db = dry bulb temperature, °F, wb = wet bulb temperature, °F.

a. The efficiencies and test procedures for both open- and closed-circuit cooling towers are not applicable to hybrid cooling towers that contain a combination of wet and dry heat exchange sections.
b. For purposes of this table, open circuit cooling tower performance is defined as the water flow rating of the tower at the thermal rating condition, divided by the fan nameplate-rated motor power.
c. For purposes of this table, closed-circuit cooling tower performance is defined as the process water flow rating of the tower at the thermal rating condition, divided by the sum of the fan motor nameplate power and the integral spray pump motor nameplate power.
d. For purposes of this table, air-cooled condenser performance is defined as the heat rejected from the refrigerant divided by the fan motor nameplate power.
e. Chapter C6 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure. The certification requirements do not apply to field-erected cooling towers.
f. Where a certification program exists for a covered product and it includes provisions for verification and challenge of equipment efficiency ratings, then the product shall be listed in the certification program; or, where a certification program exists for a covered product, and it includes provisions for verification and challenge of equipment efficiency ratings, but the product is not listed in the existing certification program, the ratings shall be verified by an independent laboratory test report.
g. Cooling towers shall comply with the minimum efficiency listed in the table for that specific type of tower with the capacity effect of any project-specific accessories and/or options included in the capacity of the cooling tower.
h. For purposes of this table, evaporative condenser performance is defined as the heat rejected at the specified rating condition in the table divided by the sum of the fan motor nameplate power and the integral spray pump nameplate power.
i. Requirements for evaporative condensers are listed with ammonia (R-717) and R-507A as test fluids in the table. Evaporative condensers intended for use with halocarbon refrigerants other than R-507A shall meet the minimum efficiency requirements listed in this table with R-507A as the test fluid.

Table C403.3.2(9) Minimum efficiency air conditioners and condensing units serving computer rooms.

Table C403.3.2(9) - Renumber Table C403.3.2(9) as Table C403.3.2(8).

Table C403.3.2(10) Heat transfer equipment.

Table C403.3.2(10) – Renumber Table C403.3.2(10) as C403.3.2(9) and revise footnote a of such table to read as follows:

a. Chapter C6 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

Table C403.3.2(10) Minimum efficiency requirements: electrically operated variable refrigerant flow air conditioners.

Table C403.3.2(10) - Add a new Table C403.2.3(10) to read as follows:

TABLE C403.3.2(10)
Minimum Efficiency Requirements:
ELECTRICALLY OPERATED VARIABLE-REFRIGERANT-FLOW AIR CONDITIONERS

EQUIPMENT TYPE	SIZE CATEGORY	HEATING SECTION TYPE	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY	TEST PROCEDURE
VRF air conditioners, air cooled	< 65,000 Btu/h	All	VRF multisplit system	13.0 SEER	AHRI 1230
	≥ 65,000 Btu/h and < 135,000 Btu/h	Electric resistance (or none)	VRF multisplit system	11.2 SEER 15.5 IEER	
	≥ 135,000 Btu/h and < 240,000 Btu/h	Electric resistance (or none)	VRF multisplit system	11.0 EER 14.9 IEER	
	≥ 240,000 Btu/h	Electric resistance (or none)	VRF multisplit system	10.0 EER 13.9 IEER	

Table C403.3.2(11) Minimum efficiency requirements: electrically operated variable-refrigerant-flow air-to-air and applied heat pumps.

Table C403.3.2(11) - Add a new Table C403.3.2(11) to read as follows:

TABLE C403.3.2(11)
MINIMUM EFFICIENCY REQUIREMENTS:

ELECTRICALLY OPERATED VARIABLE-REFRIGERANT-FLOW AIR-TO-AIR AND APPLIED HEAT PUMPS

EQUIPMENT TYPE	SIZE CATEGORY	HEATING SECTION TYPE	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY	TEST PROCEDURE
VRF air cooled (cooling mode)	< 65,000 Btu/h	All	VRF multisplit system	13.0 SEER	AHRI 1230
	≥ 65,000 Btu/h and < 135,000 Btu/h	Electric resistance (or none)	VRF multisplit system	11.0 EER 14.6 IEER	
	≥ 65,000 Btu/h and < 135,000 Btu/h	Electric resistance (or none)	VRF multisplit system with heat recovery	10.8 EER 14.4 IEER	
	≥ 135,000 Btu/h and < 240,000 Btu/h	Electric resistance (or none)	VRF multisplit system	10.6 EER 13.9 IEER	
	≥ 135,000 Btu/h and < 240,000 Btu/h	Electric resistance (or none)	VRF multisplit system with heat recovery	10.4 EER 13.7 IEER	
	≥ 240,000 Btu/h	Electric resistance (or none)	VRF multisplit system	9.5 EER 12.7 IEER	
	≥ 240,000 Btu/h	Electric resistance (or none)	VRF multisplit system with heat recovery	9.3 EER 12.5 IEER	
	< 65,000 Btu/h	All	VRF multisplit systems 86°F entering water	12.0 EER 16 IEER	
	< 65,000 Btu/h	All	VRF multisplit systems with heat	11.8 EER	

VRF water source (cooling mode)			recovery 86°F entering water	15.8 IEER	AHRI 1230
	≥ 65,000 Btu/h and < 135,000	All	VRF multisplit systems 86°F entering water	12.0 EER 16.0 IEER	
	≥ 65,000 Btu/h and < 135,000	All	VRF multisplit systems with heat recovery 86°F entering water	11.8 EER 15.8 IEER	
	≥ 135,000 Btu/h and < 240,000 Btu/h	All	VRF multisplit systems 86°F entering water	10.0 EER 14.0 IEER	
	≥ 135,000 Btu/h and < 240,000 Btu/h	All	VRF multisplit systems with heat recovery 86°F entering water	9.8 EER 13.8 IEER	
	≥ 240,000 Btu/h	All	VRF multisplit systems 86°F entering water	10.0 EER 12.0 IEER	
	≥ 240,000 Btu/h	All	VRF multisplit systems with heat recovery 86°F entering water	9.8 EER 11.8 IEER	
VRF ground source (cooling mode)	< 135,000 Btu/h	All	VRF multisplit system 59°F entering water	16.2 EER	AHRI 1230
	< 135,000 Btu/h	All	VRF multisplit system with heat recovery 59°F entering water	16.0 EER	
	≥ 135,000 Btu/h	All	VRF multisplit system 59°F entering water	13.8 EER	
	≥ 135,000 Btu/h	All	VRF multisplit system with heat recovery 59°F entering water	13.6 EER	
	< 135,000 Btu/h	All	VRF multisplit system	13.4 EER	

VRF ground source (cooling mode)			77°F entering water		AHRI 1230
	< 135,000 Btu/h	All	VRF multisplit system with heat recovery 77°F entering water	13.2 EER	
	≥ 135,000 Btu/h	All	VRF multisplit system 77°F entering water	11.0 EER	
	≥ 135,000 Btu/h	All	VRF multisplit system with heat recovery 77°F entering water	10.8 EER	
VRF air cooled (heating mode)	< 65,000 Btu/h (cooling capacity)	–	VRF multisplit system	7.7 HSPF	AHRI 1230
	≥ 65,000 Btu/h and < 135,000 Btu/h (cooling capacity)	–	VRF multisplit system 47°F db/43°F wb outdoor air	3.3 COP_H	
			17°F db/15°F wb outdoor air	2.25 COP_H	
	≥ 135,000 Btu/h (cooling capacity)	–	VRF multisplit system 47°F db/43°F wb outdoor air	3.2 COP_H	
			17°F db/15°F wb outdoor air	2.05 COP_H	
	< 65,000 Btu/h (cooling capacity)	–	VRF multisplit system 68°F entering water	4.3 COP_H	
	≥ 65,000 Btu/h and < 135,000 Btu/h (cooling capacity)	–	VRF multisplit system 68°F entering water	4.3 COP_H	

VRF water source (heating mode)	≥ 135,000 Btu/h and < 240,000 Btu/h (cooling capacity)	=	VRF multisplit system 68°F entering water	4.0 COP_H	AHRI 1230
	≥ 240,000 Btu/h (cooling capacity)	=	VRF multisplit system 68°F entering water	3.9 COP_H	
VRF groundwater source (heating mode)	< 135,000 Btu/h (cooling capacity)	=	VRF multisplit system 50°F entering water	3.6 COP_H	AHRI 1230
	≥ 135,000 Btu/h (cooling capacity)	=	VRF multisplit system 50°F entering water	3.3 COP_H	
VRF ground source (heating mode)	< 135,000 Btu/h (cooling capacity)	=	VRF multisplit system 32°F entering water	3.1 COP_H	AHRI 1230
VRF ground source (heating mode)	≥ 135,000 Btu/h (cooling capacity)	=	VRF multisplit system 32°F entering water	2.8 COP_H	AHRI 1230

Table C403.3.2(12) Vapor compression based indoor pool dehumidifiers - minimum efficiency requirements.

Table C403.3.2(12) - Add a new Table C403.3.2(12) to read as follows:

TABLE C403.3.2(12)

VAPOR COMPRESSION BASED INDOOR POOL DEHUMIDIFIERS – MINIMUM EFFICIENCY REQUIREMENTS

EQUIPMENT TYPE	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY	TEST PROCEDURE
Single package indoor[a] (with or without economizer)	Rating Conditions: A, B, or C	3.5 MRE	AHRI 910
Single package indoor water-cooled (with or without economizer)		3.5 MRE	
Single package indoor air-cooled (with or without economizer)		3.5 MRE	
Split system indoor air-cooled (with or without economizer)		3.5 MRE	

a. Units without air-cooled condenser.

Table C403.3.2(13) Electrically operated dx-doas units, single-package and remote condenser, without energy recovery - minimum efficiency requirements.

Table C403.3.2(13) - Add a new Table C403.3.2(13) to read as follows:

TABLE C403.3.2(13)

ELECTRICALLY OPERATED DX-DOAS UNITS, SINGLE-PACKAGE AND REMOTE CONDENSER, WITHOUT ENERGY RECOVERY – MINIMUM EFFICIENCY REQUIREMENTS

EQUIPMENT TYPE	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY	TEST PROCEDURE
Air cooled (dehumidification mode)		4.0 ISMRE	AHRI 920
Air source heat pumps (dehumidification		4.0 ISMRE	AHRI 920

mode)			
Water cooled (dehumidification mode)	Cooling tower condenser water	4.9 ISMRE	AHRI 920
	Chilled Water	6.0 ISMRE	
Air source heat pump (heating mode)		2.7 ISCOP	AHRI 920
Water source heat pump (dehumidification mode)	Ground source, closed loop	4.8 ISMRE	AHRI 920
	Ground-water source	5.0 ISMRE	
	Water source	4.0 ISMRE	
Water source heat pump (heating mode)	Ground source, closed loop	2.0 ISCOP	AHRI 920
	Ground-water source	3.2 ISCOP	
	Water source	3.5 ISCOP	

Table C403.3.2(14) Electrically Operated DX-DOAS Units, Single-Package and Remote Condenser, with Energy Recovery – Minimum Efficiency Requirements

Table C403.3.2(14) - Add a new Table C403.3.2(14) to read as follows:

TABLE C403.3.2(14)

ELECTRICALLY OPERATED DX-DOAS UNITS, SINGLE-PACKAGE AND REMOTE CONDENSER, WITH ENERGY RECOVERY – MINIMUM EFFICIENCY REQUIREMENTS

EQUIPMENT TYPE	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY	TEST PROCEDURE
Air cooled (dehumidification mode)		5.2 ISMRE	AHRI 920
Air source heat pumps (dehumidification mode)		5.2 ISMRE	AHRI 920
Water cooled (dehumidification mode)	Cooling tower condenser water	5.3 ISMRE	AHRI 920
	Chilled Water	6.6 ISMRE	
Air source heat pump (heating mode)		3.3 ISCOP	AHRI 920
Water source heat pump (dehumidification mode)	Ground source, closed loop	5.2 ISMRE	AHRI 920
	Ground-water source	5.8 ISMRE	
	Water source	4.8 ISMRE	
Water source heat	Ground source, closed	3.8 ISCOP	AHRI 920

pump (heating mode)	loop		
	Ground-water source	4.0 ISCOP	
	Water source	4.8 ISCOP	

Section C403.3.2.1 Water-cooled centrifugal chilling packages (Mandatory).

Section C403.3.2.1 - Revise Equation 4-7 to read as follows:

$$PLV_{adj} = IPLV/K_{adj} \qquad \textbf{(Equation 4-7)}$$

where:

K_{adj} = $A \times B$

FL = Full-load kW/ton value as specified in Table C403.3.2(6).

FL_{adj} = Maximum full-load kW/ton rating, adjusted for nonstandard conditions.

IPLV = Value as specified in Table C403.3.2(6).

PLV_{adj} = Maximum NPLV rating, adjusted for nonstandard conditions.

A = $0.00000014592 \times (LIFT)^4 - 0.0000346496 \times (LIFT)^3 + 0.00314196 \times (LIFT)^2 - 0.147199 \times (LIFT) + 3.9302$

B = $0.0015 \times L_{vg}E_{vap} + 0.934$

LIFT = $L_{vg}Cond - L_{vg}E_{vap}$

$L_{vg}Cond$ = Full-load condenser leaving fluid temperature (°F).

$L_{vg}E_{vap}$ = Full-load evaporator leaving temperature (°F).

Section C403.3.2.2 Positive displacement (air- and water-cooled) chilling packages (Mandatory).

Section C403.3.2.2 - Revise Section C403.3.2.2 to read as follows:

C403.3.2.2 Positive displacement (air- and water-cooled) chilling packages (Mandatory). Equipment with a leaving fluid temperature higher than 32°F (0°C) and water-cooled positive displacement chilling packages with a condenser leaving fluid temperature below 115°F (46°C) shall meet the requirements of Table C403.3.2(6) when tested or certified with water at standard rating conditions, in accordance with the referenced test procedure.

Section C403.3.5 Buildings with high efficiency space heating gas boiler systems.

Section C403.3.5 – Add a new Section C403.3.5 read as follows:

C403.3.5 Buildings with high efficiency space heating gas boiler systems. New buildings where space heating is served by one or more gas hot water boilers with a minimum thermal efficiency (Et) of 90 percent when rated in accordance with the test procedures in Table C403.3.2(5) shall comply with this Section, unless otherwise approved by the authority having jurisdiction. The hot water distribution system shall be designed so that the coils and other heat exchangers are selected such that at outdoor design conditions, the hot water return temperature entering the boilers is 120°F (49°C) or less when the boiler is firing.

Table C403.4.4 Variable speed drive (VSD) requirements for demand controlled pumps.

Table C403.4.4 – Revise the text in the last row of Table C403.4.4 to read as follows:

CHILLED WATER AND HEAT REJECTION LOOP PUMPS IN THESE CLIMATE ZONES	HEATING WATER PUMPS IN THESE CLIMATE ZONES	VSD REQUIRED FOR MOTORS WITH RATED OUTPUT OF:
—	4A	□□10 hp

Section C403.5 Economizers (Prescriptive).

Section C403.5 – Revise Items 2 and 3 of Section C403.5 to read as follows:

2. Individual fan systems with cooling capacity greater than or equal to 54,000 Btu/h (15.8 kW) serving other than Group R occupancies.

   The total supply capacity of all fan cooling units serving other than Group R occupancies not provided with economizers shall not exceed 20 percent of the total supply capacity of all fan cooling units serving other than Group R occupancies or 300,000 Btu/h (88 kW), whichever is greater.

3. Individual fan systems with cooling capacity greater than or equal to 270,000 Btu/h (79.1 kW) serving Group R occupancies.

   The total supply capacity of all fan cooling units serving Group R occupancies not provided with economizers shall not exceed 20 percent of the total supply capacity of all fan cooling units serving Group R occupancies or 1,500,000 Btu/h (440 kW), whichever is greater.

Section C403.5.1 Integrated economizer control.

Section C403.5.1 – Revise Item 2 of Section C403.5.1 to read as follows:

2. Direct expansion (DX) units that control 75,000 Btu/h (22 kW) or greater of rated capacity of the mechanical cooling directly based on occupied space temperature shall have not fewer than two stages of mechanical cooling capacity.

Section C403.5.5 Economizer fault detection and diagnostics (Mandatory).

Section C403.5.5 – Revise the first paragraph of Section C403.5.5 to read as follows:

Air-cooled unitary direct-expansion units listed in Tables C403.3.2(1) through C403.3.2(3) and variable refrigerant flow (VRF) units listed in Tables C403.3.2(10) and C403.3.2(11) that are equipped with an economizer in accordance with Sections C403.5 through C403.5.4 shall include a fault detection and diagnostics system complying with the following:

Section C403.6.1 Variable air volume and multiple-zone systems.

Section C403.6.1 – Revise Item 3 of Section C403.6.1 to read as follows:

3. The outdoor airflow rate required to meet the minimum ventilation requirements of Chapter 4 of the New York City Mechanical Code.

Sections C403.6.6 Multiple-zone VAV system ventilation optimization control.

Section C403.6.6 - Revise the first paragraph of Section C403.6.6 to read as follows:

Multiple-zone VAV systems with direct digital control of individual zone boxes reporting to a central control panel shall have automatic controls configured to reduce outdoor air intake flow below design rates in response to changes in system ventilation efficiency (E_v) as defined by the New York City Mechanical Code.

Section C403.7.1 Demand control ventilation (Mandatory).

Section C403.7.1 - Revise the first paragraph of Section C403.7.1 to read as follows:

Demand control ventilation (DCV) shall be provided for spaces larger than 500 square feet (46.5 m^2) and with an average occupant load of 25 people or greater per 1,000 square feet (93 m^2) of floor area, as established in Table 403.3 of the New York City Mechanical Code, and served by systems with one or more of the following:

Section C403.7.2 Enclosed parking garage ventilation controls (Mandatory).

Section C403.7.2 – Revise the first paragraph in Section C403.7.2 to read as follows:

Enclosed parking garages used for storing or handling automobiles operating under their own power shall employ contamination-sensing devices and automatic controls configured to stage fans or modulate fan average airflow rates to 50 percent or less of design capacity, or intermittently operate fans less than 20 percent of the occupied time or as required to maintain acceptable contaminant levels in accordance with New York City Mechanical Code provisions. Failure of contamination-sensing devices shall cause the exhaust fans to operate continuously at design airflow.

Section C403.7.2 – Revise Exception 1 of Section C403.7.2 to read as follows:

1. Garages with a total exhaust capacity less than 5,000 cfm (2 360 L/s) with ventilation systems that do not utilize heating or mechanical cooling.

Section C403.7.4 Energy recovery ventilation systems (Mandatory).

Section C403.7.4 – Revise Exception 1 of Section C403.7.4 to read as follows:

1. Where energy recovery systems are prohibited by the New York City Mechanical Code.

Section C403.7.4 - Revise Exception 8 of Section C403.7.4 to read as follows:

8. Where the sum of the airflow rates exhausted and relieved within 30 feet of each other is less than 75 percent of the design ventilation outdoor air flow rate, excluding exhaust air that is any of the following:

   a. used for another energy recovery system,

   b. not allowed by ASHRAE Standard 170 for use in energy recovery systems with leakage potential,

   c. prohibited by the New York City Mechanical Code, or

   d. of Class 4 as defined in ASHRAE 62.1.

Section C403.7.7 Shutoff dampers (Mandatory).

Section C403.7.7 – Add a new Exception to the first paragraph of Section C403.7.7 to read as follows:

Exception: Shutoff dampers are not required in ventilation or exhaust systems that are required by the New York City Mechanical Code to have fans that operate continuously, 24 hours per day, 7 days per week.

Section C403.7.7 - Revise the second paragraph of Section C403.7.7 to read as follows:

Outdoor air intake and exhaust dampers shall be installed with automatic controls configured to close when the systems or spaces served are not in use or during unoccupied period warm-up and setback operation, unless the systems served require outdoor or exhaust air in accordance with the New York City Mechanical Code or the dampers are opened to provide intentional economizer cooling.

Section C403.7.7 - Revise the Exception to Section 403.7.7, which appears after the third paragraph of such section, to read as follows:

Exception: Nonmotorized gravity dampers shall be an alternative to motorized dampers for exhaust and relief openings in any of the following conditions:

1. In buildings less than three stories in height above grade plane.
2. In buildings of any height located in Climate Zones 1, 2 or 3.
3. Where the design exhaust capacity is not greater than 300 cfm (142 L/s).

Section C403.8.5.1 Fan airflow control.

Section C403.8.5.1 - Revise Exception 2 of Section C403.8.5.1 to read as follows:

2. Where the volume of outdoor air required to comply with the ventilation requirements of the New York City Mechanical Code at low speed exceeds the air that would be delivered at the speed defined in Section C403.8.5, the minimum speed shall be selected to provide the required ventilation air.

Section C403.9 Heat rejection equipment.

Section C403.9 - Revise the Exception to Section C403.9 to read as follows:

Exception: Heat rejection devices where energy usage is included in the equipment efficiency ratings listed in Tables C403.3.2(1) and C403.3.2(7).

Section C403.9.1 Fan speed control.

Section C403.9.1 - Revise the last sentence of the first paragraph of Section C403.9.1 to read as follows:

Fan motor power input shall be not more than 30 percent of design wattage at 50 percent of the design airflow.

Table C403.10.1(1) Minimum efficiency requirements: commercial refrigeration.

Table C403.10.1(1) – Revise the title of Table C403.10.1(1) to read as follows:

Table C403.10.1(1) Commercial Refrigerators And Freezers – Minimum Efficiency Requirements

Table C403.10.1(2) Minimum efficiency requirements: commercial refrigerators and freezers.

Delete Table C403.10.1(2) in its entirety and add a new Table C403.10.1(2) to read as follows:

TABLE C403.10.1(2)COMMERCIAL REFRIGERATION – MINIMUM EFFICIENCY REQUIREMENTS

EQUIPMENT TYPE				ENERGY USE LIMITS (kWh/day)[a, b]	TEST PROCEDURE
Equipment Class[c]	Family Code	Operating Mode	Rating Temperature		
VOP.RC.M	Vertical open	Remote condensing	Medium	0.82 × TDA + 4.07	AHRI 1200
SVO.RC.M	Semivertical open	Remote condensing	Medium	0.83 × TDA + 3.18	
HZO.RC.M	Horizontal open	Remote condensing	Medium	0.35 × TDA + 2.88	
VOP.RC.L	Vertical open	Remote condensing	Low	2.27 × TDA + 6.85	
HZO.RC.L	Horizontal open	Remote condensing	Low	0.57 × TDA + 6.88	
VCT.RC.M	Vertical transparent door	Remote condensing	Medium	0.22 × TDA + 1.95	
VCT.RC.L	Vertical transparent door	Remote condensing	Low	0.56 × TDA + 2.61	
SOC.RC.M	Service over counter	Remote condensing	Medium	0.51 × TDA + 0.11	
VOP.SC.M	Vertical open	Self-contained	Medium	1.74 × TDA + 4.71	
SVO.SC.M	Semivertical open	Self-contained	Medium	1.73 × TDA + 4.59	
HZO.SC.M	Horizontal open	Self-contained	Medium	0.77 × TDA + 5.55	
HZO.SC.L	Horizontal open	Self-contained	Low	1.92 × TDA + 7.08	
VCT.SC.I	Vertical transparent door	Self-contained	Ice cream	0.67 × TDA + 3.29	
VCS.SC.I	Vertical solid door	Self-contained	Ice cream	0.38 × V + 0.88	

HCT.SC.I	Horizontal transparent door	Self-contained	Ice cream	0.56 □ TDA + 0.43	
SVO.RC.L	Semivertical open	Remote condensing	Low	2.27 □ TDA + 6.85	
VOP.RC.I	Vertical open	Remote condensing	Ice cream	2.89 □ TDA + 8.7	
SVO.RC.I	Semivertical open	Remote condensing	Ice cream	2.89 □ TDA + 8.7	
HZO.RC.I	Horizontal open	Remote condensing	Ice cream	0.72 □ TDA + 8.74	
VCT.RC.I	Vertical transparent door	Remote condensing	Ice cream	0.66 □ TDA + 3.05	
HCT.RC.M	Horizontal transparent door	Remote condensing	Medium	0.16 □ TDA + 0.13	

EQUIPMENT TYPE				**ENERGY USE LIMITS (kWh/day)** [a, b]	**TEST PROCEDURE**
Equipment Class[c]	**Family Code**	**Operating Mode**	**Rating Temperature**		
HCT.RC.L	Horizontal transparent door	Remote condensing	Low	0.34 □ □TDA + 0.26	AHRI 1200
HCT.RC.I	Horizontal transparent door	Remote condensing	Ice cream	0.4 □ TDA + 0.31	
VCS.RC.M	Vertical solid door	Remote condensing	Medium	0.11□ □ V + 0.26	
VCS.RC.L	Vertical solid door	Remote condensing	Low	0.23□ □ V + 0.54	
VCS.RC.I	Vertical solid door	Remote condensing	Ice cream	0.27 □ V + 0.63	
HCS.RC.M	Horizontal solid door	Remote condensing	Medium	0.11 □ V + 0.26	
HCS.RC.L	Horizontal solid door	Remote condensing	Low	0.23□ □ V + 0.54	
HCS.RC.I	Horizontal solid door	Remote condensing	Ice cream	0.27□ □ V + 0.63	

HCS.RC.I	Horizontal solid door	Remote condensing	Ice cream	0.27 □ V + 0.63	
SOC.RC.L	Service over counter	Remote condensing	Low	1.08 □ TDA + 0.22	
SOC.RC.I	Service over counter	Remote condensing	Ice cream	1.26□ □ TDA + 0.26	
VOP.SC.L	Vertical open	Self-contained	Low	4.37 □ TDA + 11.82	
VOP.SC.I	Vertical open	Self-contained	Ice cream	5.55 □ TDA + 15.02	
SVO.SC.L	Semivertical open	Self-contained	Low	4.34 □ TDA + 11.51	
SVO.SC.I	Semivertical open	Self-contained	Ice cream	5.52 □ TDA + 14.63	
HZO.SC.I	Horizontal open	Self-contained	Ice cream	2.44 □ TDA + 9.0	
SOC.SC.I	Service over counter	Self-contained	Ice cream	1.76 □ TDA + 0.36	
HCS.SC.I	Horizontal solid door	Self-contained	Ice cream	0.38 □ V + 0.88	

a. V = Volume of the case in feet, as measured in accordance with Appendix C of AHRI 1200.
b. TDA = Total display area of the case in square feet, as measured in accordance with Appendix D of AHRI 1200.
c. Equipment class designations consist of a combination [in sequential order separated by periods (AAA).(BB).(C)] of:

(AAA) An equipment family code where:

VOP = vertical open

SVO = semivertical open

HZO = horizontal open

VCT = vertical transparent doors

VCS = vertical solid doors

HCT = horizontal transparent doors

HCS = horizontal solid doors

SOC = service over counter

(BB) An operating mode code:
RC = remote condensing
SC = self-contained

(C) A rating temperature code:
M = medium temperature (38°F)
L = low temperature (0°F)
I = ice-cream temperature (15°F)

For example, "VOP.RC.M" refers to the "vertical-open, remote-condensing, medium-temperature" equipment class.

Section C403.11.1 Duct and plenum insulation and sealing (Mandatory).

Section C403.11.1 - Revise the last sentence of Section C403.11.1 to read as follows:

Joints and seams shall comply with the New York City Mechanical Code.

Section C403.11.2 Duct construction (Mandatory).

Section C403.11.2 – Revise Section C403.11.2 to read as follows:

C403.11.2 Duct construction (Mandatory). Ductwork shall be constructed and erected in accordance with the New York City Mechanical Code.

Section C403.11.2.1 Low-pressure duct systems (Mandatory).

Section C403.11.2.1- Revise the first paragraph of Section C403.11.2.1 to read as follows:

Longitudinal and transverse joints, seams and connections of supply and return ducts operating at a static pressure less than or equal to 2 inches water gauge (w.g.) (498 Pa) shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems or tapes installed in accordance with the manufacturer's instructions. Pressure classifications specific to the duct system shall be clearly indicated on the construction documents in accordance with the New York City Mechanical Code.

Section C403.11.2.2 Medium-pressure duct systems (Mandatory).

Section C403.11.2.2 - Revise the last sentence of Section C403.11.2.2 to read as follows:

Pressure classifications specific to the duct system shall be clearly indicated on the construction documents in accordance with the New York City Mechanical Code.

Section C403.11.3 Piping insulation (Mandatory).

Section C403.11.3 – Delete Exception 4 of Section C403.11.3 in its entirety, and renumber Exceptions 5 and 6 of such Section as Exceptions 4 and 5, respectively, of such Section.

SECTION C405

ELECTRICAL POWER AND LIGHTING SYSTEMS

Section C405.1 General (Mandatory).

Section C405.1 - Add a new sentence to the end of the second paragraph of Section C405.1 to read as follows:

Lighting controls shall be commissioned and completed in accordance with the requirements of Section C408.3.

Section C405.1.1 Exit Signs.

Section C405.1.1 - Add a new Section C405.1.1 to read as follows:

C405.1.1 Exit signs. Internally illuminated exit signs shall not exceed 5 W per face.

Section C405.2 Lighting controls (Mandatory).

Section C405.2 – Revise Exception 2 of Section C405.2 to read as follows:

2. Interior exit stairways, interior exit ramps and exit passageways, as defined by the New York City Building Code.

Section C405.2.1 Occupant sensor controls.

Section C405.2.1 - Add new Items 12, 13 and 14 to Section C405.2.1 to read as follows:

12. Janitorial closets.

13. Corridors/transition areas.

14. Dining areas.

Section C405.2.1.1 Occupant sensor control function.

Section C405.2.1.1 - Delete Section C405.2.1.1 in its entirety and add a new Section C405.2.1.1 to read as follows:

C405.2.1.1 Occupant sensor control function. Occupant sensor controls in warehouses shall comply with Section C405.2.1.2. Occupant sensor controls in open plan office areas, cafeteria dining areas, and fast food dining areas shall comply with Section C405.2.1.3. Occupant sensor controls for all other spaces specified in Section C405.2.1 shall comply with the following:

1. They shall automatically turn off lights within 15 minutes after all occupants have left the space.
2. They shall be manual-on or controlled to automatically turn on the lighting to not more than 50-percent power.

Exceptions:

1. Full automatic-on controls shall be permitted to control lighting in public corridors, stairways, restrooms, primary building entrance areas and lobbies, and areas where manual-on operation would endanger the safety or security of the room or building occupants.
2. Manual-on controls shall be required for classrooms (not including shop classrooms, laboratory classrooms, and preschool classrooms), conference/meeting rooms, employee lunch and break rooms, and offices smaller than 200 square feet (18.5 m^2) in area. Such sensors and controls shall not have an override switch that converts from manual-on to

automatic-on functionality, and may have a grace period of up to 30 seconds to turn on the lighting automatically after the sensor has turned off the lighting if occupancy is detected.

3. They shall incorporate a manual control to allow occupants to turn off lights.

Exception: Remote location of this local control device or devices shall be permitted for reasons of safety or security when each remote control device has an indicator pilot light as part of or next to the control device and the light is clearly labeled to identify the controlled lighting.

Section C405.2.1.3 Occupant sensor control function in open plan office areas.

Section C405.2.1.3 - Revise Section C405.2.1.3 to read as follows:

C405.2.1.3 Occupant sensor control function in open plan office areas, cafeteria dining areas, and fast food dining areas. Occupant sensor controls in open plan office spaces, cafeteria dining areas, and fast food dining areas less than 300 square feet (28 m^2) in area shall comply with Section C405.2.1.1. Occupant sensor controls in all other open plan office spaces, cafeteria dining spaces, and fast food dining spaces shall comply with all of the following:

1. The controls shall be configured so that general lighting can be controlled separately in control zones with floor areas not greater than 600 square feet (55 m^2) within the open plan office space or dining space.
2. The controls shall automatically turn off general lighting in all control zones within 15 minutes after all occupants have left the open plan office space or dining space.
3. The controls shall be configured so that general lighting power in each control zone is reduced by not less than 80 percent of the full zone general lighting power in a reasonably uniform illumination pattern within 15 minutes of all occupants leaving that control zone. Control functions that switch control zone lights completely off when the zone is vacant meet this requirement.
4. The controls shall be configured such that any daylight responsive control will activate open plan office space general lighting or control zone general lighting only when occupancy for the same area is detected.

Section C405.2.1.4 Occupant sensor control function for egress illumination.

Section C405.2.1.4 - Add a new Section C405.2.1.4 to read as follows:

C405.2.1.4 Occupant sensor control function for egress illumination. In new buildings, luminaires serving the exit access and providing means of egress illumination required by Section 1008.1 of the New York City Building Code, including luminaires that function as both normal and emergency means of egress illumination shall be controlled by a combination of listed emergency relay and occupancy sensors, or signal from another building control system, that automatically reduces the lighting power by 50 percent when unoccupied for a period longer than 15 minutes.

Exceptions:

1. Means of egress illumination serving the exit access that does not exceed 0.02 watts per square foot of building area is exempt from this requirement.
2. Emergency lighting designated to meet Section 1008.3 of the New York City Building Code.

Section C405.2.3 Daylight-responsive controls.

Section C405.2.3 - Revise Items 1 and 2 of Section C405.2.3 to read as follows:

1. Spaces with a total of more than 100 watts of general lighting within sidelit zones complying with Section C405.2.3.2. General lighting does not include lighting that is required to have specific application control in accordance with Section C405.2.4.
2. Spaces with a total of more than 100 watts of general lighting within toplit zones complying with Section C405.2.3.3.

Section C405.2.3.1 Daylight-responsive control function.

Section C405.2.3.1 - Revise the Exception to Section C405.2.3.1 to read as follows:

Exception: Up to 100 watts of lighting in each space is permitted to be controlled together with lighting in a daylight zone facing a different cardinal orientation.

Section C405.2.3.2 Sidelit zone.

Section C405.2.3.2 - Revise Item 3 of Section C405.2.3.2 to read as follows:

3. The distance from the fenestration to any building or geological formation that would block access to daylight is no greater than the height from the bottom of the fenestration to the top of the building or geologic formation.

Figure C405.2.3.2 Sidelit zone

Figure C405.2.3.2 – Delete Figure C405.2.3.2 in its entirety and add a new Figure C405.2.3.2 to read as follows:

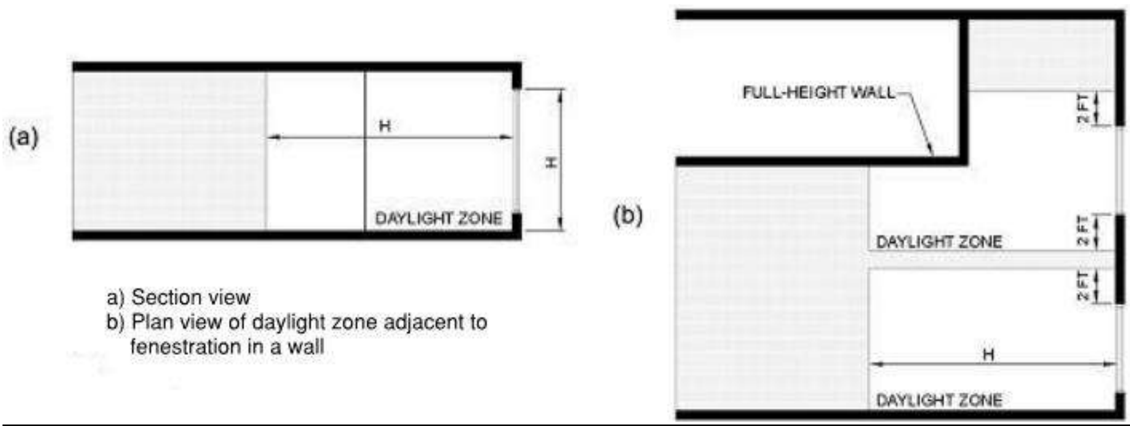


FIGURE C405.2.3.2

SIDELIT ZONE

Figure C405.2.3.3(3) Daylight zone under a sloped rooftop monitor

Figure C405.2.3.3(3) – Delete Figure C405.2.3.3(3) in its entirety and add a new Figure C405.2.3.3(3) to read as follows:

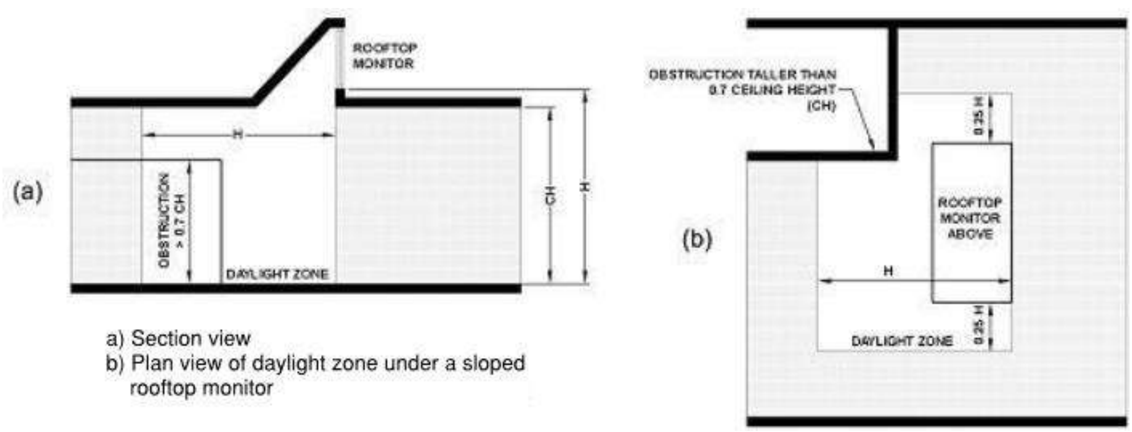


FIGURE C405.2.3.3(3)
DAYLIGHT ZONE UNDER A SLOPED ROOFTOP MONITOR

Section C405.2.6 Exterior lighting controls.

Section C405.2.6 – Revise the first sentence of Section C405.2.6 to read as follows:

Exterior lighting systems shall be provided with controls that comply with Sections C405.2.6.1 through C405.2.6.5.

Section C405.2.6.3 Lighting setback.

Section C405.2.6.3 - Delete Section C405.2.6.3 in its entirety and add a new Section C405.2.6.3 to read as follows:

C405.2.6.3 Lighting setback. Lighting that is not controlled in accordance with Section C405.2.6.2 shall be controlled so that the total wattage of such lighting is automatically reduced by not less than 50 percent by selectively switching off or dimming luminaires at one of the following times:

1. From not later than midnight to not earlier than 6 a.m.
2. From not later than one hour after business closing to not earlier than one hour before business opening.
3. During any time where activity has not been detected for 15 minutes or more.

Section C405.2.6.5 Outdoor parking area lighting control.

Section C405.2.6.5 – Add a new Section C405.2.6.5 to read as follows:

C405.2.6.5 Outdoor parking area lighting control. Luminaires serving outdoor parking areas and having a rated input wattage of greater than 78 W and a mounting height of 24 ft (7.3 m) or less above the ground shall be controlled to automatically reduce the power of each luminaire by a minimum of 50 percent when no activity has been detected in the area illuminated by the controlled luminaires for a time of no longer than 15 minutes. No more than 1500 W of lighting power shall be controlled together.

Section C405.3.1 Total connected interior lighting power.

Section C405.3.1- Revise the sentence after Equation 4-10 and its key, and before the enumerated list, in Section C405.3.1 to read as follows:

Exception: The connected power associated with the following lighting equipment and applications is not included in calculating total connected lighting power.

Section C405.3.2 Interior lighting power allowance.

Section C405.3.2- Add a new sentence to the end of the first paragraph to read as follows:

Buildings with unfinished spaces shall use the Space-by-Space Method.

Table C405.3.2(1) Interior Lighting Power Allowances: Building Area Method

Table C405.3.2(1) – Delete Table C405.3.2(1) in its entirety and add a new Table C405.3.2(1) to read as follows:

TABLE C405.3.2(1)
INTERIOR LIGHTING POWER ALLOWANCES:
BUILDING AREA METHOD

BUILDING AREA TYPE	LPD (watts/sq.ft)
Automotive facility	0.64
Convention center	0.70
Courthouse	0.74
Dining: bar lounge/leisure	0.69
Dining: cafeteria/fast food	0.66
Dining: family	0.61
Dormitory[a, b]	0.52
Exercise center	0.65
Fire station[a]	0.50
Gymnasium	0.67
Health care clinic	0.68
Hospital[a]	0.86
Hotel/Motel[a, b]	0.70
Library	0.78
Manufacturing facility	0.60
Motion picture theater	0.62
Multifamily[c]	0.49
Museum	0.68
Office	0.69
Parking garage	0.12
Penitentiary	0.67
Performing arts theater	0.85
Police station	0.68
Post office	0.62
Religious building	0.72

Retail	0.91
School/university	0.67
Sports arena	0.76
Town hall	0.72
Transportation	0.51
Warehouse	0.41
Workshop	0.83

a. Where sleeping units are excluded from lighting power calculations by application of Section R404.1, neither the area of the sleeping units nor the wattage of lighting in the sleeping units is counted.
b. Where dwelling units are excluded from lighting power calculations by application of Section R404.1, neither the area of the dwelling units nor the wattage of lighting in the dwelling units is counted.
c. Dwelling units are excluded. Neither the area of the dwelling units nor the wattage of lighting in the dwelling units is counted.

Table C405.3.2(2) Interior Lighting Power Allowances: Space-by-space Method

Table C405.3.2(2) – Delete Table C405.3.2(2) in its entirety and add a new Table C405.3.2(2) to read as follows:

**TABLE C405.3.2(2)
INTERIOR LIGHTING POWER ALLOWANCES:
SPACE-BY-SPACE METHOD**

COMMON SPACE TYPES[a]	LPD (watts/sq.ft)
Atrium	
Less than 40 feet in height	0.03 per foot in total height
Greater than 40 feet in height	0.40 + 0.02 per foot in total height
Audience seating area	
In an auditorium	0.63
In a convention center	0.65
In a gymnasium	0.43
In a motion picture theater	0.64
In a penitentiary	0.28

In a performing arts theater	2.03
In a religious building	1.53
In a sports arena	0.42
Otherwise	0.40
Banking activity area	0.79
Breakroom (See Lounge/breakroom)	
Classroom/lecture hall/training room	
In a penitentiary	1.06
Otherwise	0.74
Computer room	1.16
Conference/meeting/multipurpose room	0.93
Confinement cells	0.52
Copy/print room	0.50
Corridor	
In a facility for the visually impaired (and not used primarily by the staff)[b]	0.81
In a hospital	0.81
In a manufacturing facility	0.28
Otherwise	0.58
Courtroom	1.06
Dining area	
In bar/lounge or leisure dining	0.62
In cafeteria or fast food dining	0.53
In a facility for the visually impaired (and not used primarily by the staff)[b]	1.48
In family dining	0.54
In a penitentiary	0.72
Otherwise	0.53
Electrical/mechanical room	0.39
Emergency vehicle garage	0.41

Food preparation area	0.92
Guestroom[c, d]	0.75
Laboratory	
In or as a classroom	1.04
Otherwise	1.45
Laundry/washing area	0.43
Loading dock, interior	0.51
Lobby	
For an elevator	0.52
In a facility for the visually impaired (and not used primarily by the staff)[b]	2.03
In a hotel	0.68
In a motion picture theater	0.38
In a performing arts theater	0.82
Otherwise	0.90
Locker room	0.45
Lounge/breakroom	
In a healthcare facility	0.53
Otherwise	0.44
Office	
Enclosed	0.85
Open plan	0.78
Parking area, interior[i]	0.11
Pharmacy area	1.23
Restroom	
In a facility for the visually impaired (and not used primarily by the staff[b]	0.81
Otherwise	0.75
Sales area	1.06
Seating area, general	0.38

Stairway (see Space containing stairway)	
Stairwell	0.50
Storage room	0.43
Vehicular maintenance area	0.53
Workshop	1.09
BUILDING TYPE SPECIFIC SPACE TYPES[a]	**LPD (watts/sq.ft)**
Automotive (see Vehicular maintenance area above)	
Convention Center—exhibit space	0.69
Dormitory—living quarters[c, d]	0.46
Facility for the visually impaired[b]	
In a chapel (and not used primarily by the staff)	0.89
In a recreation room (and not used primarily by the staff)	1.53
Fire Station—sleeping quarters[c]	0.19
Gymnasium/fitness center	
In an exercise area	0.50
In a playing area	0.75
Healthcare facility	
In an exam/treatment room	1.16
In an imaging room	0.98
In a medical supply room	0.54
In a nursery	0.94
In a nurse's station	0.75
In an operating room	1.87
In a patient room[c]	0.45
In a physical therapy room	0.84
In a recovery room	0.89
Library	
In a reading area	0.77

In the stacks	1.20
Manufacturing facility	
In a detailed manufacturing area	0.86
In an equipment room	0.61
In an extra-high-bay area (greater than 50' floor-to-ceiling height)	0.73
In a high-bay area (25-50’ floor-to-ceiling height)	0.58
In a low-bay area (less than 25’ floor-to-ceiling height)	0.61
Museum	
In a general exhibition area	0.61
In a restoration room	0.77
Performing arts theater—dressing room	0.35
Post office—sorting area	0.66
Religious buildings	
In a fellowship hall	0.54
In a worship/pulpit/choir area	0.98
Retail facilities	
In a dressing/fitting room	0.49
In a mall concourse	0.79
Sports arena—playing area	
For a Class I facility[e, j]	2.26
For a Class II facility[f, j]	1.45
For a Class III facility[g, j]	1.08
For a Class IV facility[h, j]	0.72
Transportation facility	
In a baggage/carousel area	0.40
In an airport concourse	0.31
At a terminal ticket counter	0.48
Warehouse—storage area	

For medium to bulky, palletized items	0.27
For smaller, hand-carried items	0.65

a. In cases where both a common space type and a building area specific space type are listed, the building area specific space type shall apply.

b. A ‘Facility for the Visually Impaired’ is a facility that is licensed or will be licensed by local or state authorities for senior long-term care, adult daycare, senior support or people with special visual needs.

c. Where sleeping units are excluded from lighting power calculations by application of Section R404.1, neither the area of the sleeping units nor the wattage of lighting in the sleeping units is counted.

d. Where dwelling units are excluded from lighting power calculations by application of Section R404.1, neither the area of the dwelling units nor the wattage of lighting in the dwelling units is counted.

e. Class I facilities consist of professional facilities; and semiprofessional, collegiate, or club facilities with seating for 5,000 or more spectators.

f. Class II facilities consist of collegiate and semiprofessional facilities with seating for fewer than 5,000 spectators; club facilities with seating for between 2,000 and 5,000 spectators; and amateur league and high-school facilities with seating for more than 2,000 spectators.

g. Class III facilities consist of club, amateur league and high-school facilities with seating for 2,000 or fewer spectators.

h. Class IV facilities consist of elementary school and recreational facilities; and amateur league and high-school facilities without provision for spectators.

i. The wattage of lighting in daylight transition zones and ramps without parking is excluded.

j. Pool surfaces are excluded. Neither the surface area of the swimming or spa pool nor the wattage of the lighting serving them shall be counted.

Section C405.3.2.2 Space-by-Space Method.

Section C405.3.2.2- Add a new sentence after the first sentence and before the last sentence of Section C405.3.2.2 to read as follows:

> Where a building has unfinished spaces, the lighting power allowance for the unfinished spaces shall be the total connected lighting power for those spaces, or 0.2 watts per square foot, whichever is less.

Table C405.4.2(2) Lighting Power Allowances for Building Exteriors

Table C405.4.2(2) – Delete Table C405.4.2(2) in its entirety and add a new Table C405.4.2(2) to read as follows:

TABLE C405.4.2(2)
LIGHTING POWER ALLOWANCES FOR BUILDING EXTERIORS

	LIGHTING ZONES			
	Zone 1	**Zone 2**	**Zone 3**	**Zone 4**
Base Site Allowance	350 W	400 W	500 W	900 W
Uncovered Parking Areas				
Parking areas and drives	0.03W/ft^2	0.04 W/ft^2	0.05W/ft^2	0.05W/ft^2
Building Grounds				
Walkways and ramps less than 10 feet wide	0.5 W/linear foot	0.5 W/linear foot	0.6 W/linear foot	0.7 W/linear foot
Walkways and ramps 10 feet wide or greater, plaza areas, special feature areas	0.10 W/ft^2	0.10 W/ft^2	0.11 W/ft^2	0.14 W/ft^2
Dining areas	0.65 W/ft^2	0.65 W/ft^2	0.75 W/ft^2	0.95 W/ft^2
Stairways	0.6 W/ft^2	0.7 W/ft^2	0.7 W/ft^2	0.7 W/ft^2
Pedestrian tunnels	0.12 W/ft^2	0.12 W/ft^2	0.14 W/ft^2	0.21 W/ft^2
Landscaping	0.03 W/ft^2	0.04 W/ft^2	0.04 W/ft^2	0.04 W/ft^2
Building Entrances and Exits				
Pedestrian and vehicular entrances and exits	12.6W/linear foot of opening	12.6W/linear foot of opening	20W/linear foot of opening	20W/linear foot of opening
Entry canopies	0.20 W/ft^2	0.25 W/ft^2	0.4 W/ft^2	0.4 W/ft^2
Loading docks	0.35 W/ft^2	0.35 W/ft^2	0.35 W/ft^2	0.35 W/ft^2
Sales Canopies				
Free-standing and attached	0.40 W/ft^2	0.40 W/ft^2	0.6 W/ft^2	0.7 W/ft^2
Outdoor Sales				
Open areas (including vehicle sales lots)	0.20 W/ft^2	0.20 W/ft^2	0.35 W/ft^2	0.50 W/ft^2
Street frontage for vehicle sales lots in addition to “open area” allowance	No allowance	7 W/linear foot	7 W/linear foot	21 W/linear foot

For SI: 1 foot = 304.8 mm, 1 watt per square foot = W/0.0929 m^2.

W = watts.

Table C405.4.2(3) Individual Lighting Power Allowances for Building Exteriors

Table C405.4.2(3) - Revise the first footnote to Table C405.4.2(3) to read as follows:

For SI: 1 foot = 304.8 mm, 1 watt per square foot = W/0.0929 m^2.

Section C405.5 Dwelling electrical meter (Mandatory).

Section C405.5- Delete Section C405.5 in its entirety and add new Sections C405.5, C405.5.1 and C405.5.2, to read as follows:

C405.5 Electrical meter (Mandatory). Electrical service within buildings shall comply with the following:

C405.5.1 Dwelling electrical meter. Each dwelling unit located in a Group R-2 building shall have a separate electrical meter.

C405.5.2 Electrical meters for tenant spaces in covered buildings. The terms meter, submeter, covered building, tenant space and covered tenant space shall have the same meanings as defined in Section 28-311.2 of the Administrative Code. Each covered tenant space in a new building shall be equipped with a separate meter or sub-meter to measure the electrical consumption of such space when let or sublet. Where the covered tenant space is a floor with multiple tenancies, each tenancy with an area less than that as defined in Section 28-311.2 of the Administrative Code shall (i) be equipped with a separate meter or sub-meter, (ii) share a meter or sub-meter with other tenant spaces on the floor, or (iii) share a meter or sub-meter covering the entire floor. As new covered tenant spaces are created, they shall be equipped with meters or sub-meters as provided in this section.

Exception: Covered tenant space for which the electrical consumption within such space is measured by a meter dedicated exclusively to that space.

Section C405.8.1 Elevator cabs.

Section C405.8.1- Revise the heading of Section C405.8.1 to read as follows:

C405.8.1 Elevator equipment and cabs.

Section C405.8.1.1 Power conversion system.

Section C405.8.1.1 - Add new Sections C405.8.1.1, C405.8.1.1.1, C405.8.1.1.2 and C405.8.1.1.3, to read as follows:

C405.8.1.1 Power conversion system. New traction elevators with a rise of 75 feet (23 m) or more in new buildings shall have a power conversion system that complies with Sections 405.8.1.1.1 through 405.8.1.1.3.

C405.8.1.1.1 Motor. Induction motors with a Class IE2 efficiency rating, as defined by IEC EN 60034-30, or alternative technologies, such as permanent magnet synchronous motors that have equal or better efficiency, shall be used.

C405.8.1.1.2 Transmission. Transmissions shall not reduce the efficiency of the combined motor/transmission below that shown for the Class IE2 motor for elevators with capacities below 4,000 pounds (1814 kg). Gearless machines shall be assumed to have a 100 percent transmission efficiency.

C405.8.1.1.3 Drive. Potential energy released during motion shall be recovered with a regenerative drive that supplies electrical energy to the building electrical system.

C405.10 Commercial Kitchen Equipment.

Section C405.10 - Add a new Section C405.10 to read as follows:

C405.10 Commercial Kitchen Equipment. Commercial kitchen equipment shall comply with the minimum efficiency requirements of Tables C405.10(1) through table C405.10(5).

TABLE C405.10(1)
MINIMUM EFFICIENCY REQUIREMENTS: COMMERCIAL FRYERS

	HEAVY-LOAD COOKING ENERGY EFFICIENCY	IDLE ENERGY RATE	TEST PROCEDURE
Standard Open Deep-Fat Gas Fryers	≥ 50%	≤ 9,000 Btu/hr	ASTM Standard F1361-17
Standard Open Deep-Fat Electric Fryers	≥ 83%	≤ 800 watts	
Large Vat Open Deep-Fat Gas Fryers	≥ 50%	≤ 12,000 Btu/hr	ASTM Standard F2144-17
Large Vat Open Deep-Fat Electric Fryers	≥ 80%	≤ 1,100 watts	

TABLE C405.10(2)
MINIMUM EFFICIENCY REQUIREMENTS: COMMERCIAL HOT FOOD HOLDING CABINETS

PRODUCT INTERIOR VOLUME (CUBIC FEET)	**MAXIMUM IDLE ENERGY CONSUMPTION RATE (WATTS)**	**TEST PROCEDURE**
0 < V < 13	≤ 21.5 V	ASTM Standard F2140-11
13 ≤ V < 28	≤ 2.0 V + 254.0	
28 ≤ V	≤ 3.8 V + 203.5	

TABLE C405.10(3)
MINIMUM EFFICIENCY REQUIREMENTS: COMMERCIAL STEAM COOKERS

FUEL TYPE	**PAN CAPACITY**	**COOKING ENERGY EFFICIENCY[a]**	**IDLE RATE**	**TEST PROCEDURE**
Electric Steam	3-pan	50%	400 watts	ASTM Standard F1484-18
	4-pan	50%	530 watts	
	5-pan	50%	670 watts	
	6-pan and larger	50%	800 watts	
Gas Steam	3-pan	38%	6,250 Btu/h	
	4-pan	38%	8,350 Btu/h	
	5-pan	38%	10,400 Btu/h	
	6-pan and larger	38%	12,500 Btu/h	

a. Cooking Energy Efficiency is based on heavy load (potato) cooking capacity.

TABLE C405.10(4)
MINIMUM EFFICIENCY REQUIREMENTS: COMMERCIAL DISHWASHERS

MACHINE TYPE	**HIGH TEMP EFFICIENCY REQUIREMENTS**		**LOW TEMP EFFICIENCY REQUIREMENTS**		**TEST PROCEDURE**
	Idle Energy Rate[a]	**Water Consumption[b]**	**Idle Energy Rate[a]**	**Water Consumption[b]**	
Under Counter	≤ 0.50 kW	≤ 0.86 GPR	≤ 0.50 kW	≤ 1.19 GPR	

Stationary Single Tank Door	≤ 0.70 kW	≤ 0.89 GPR	≤ 0.60 kW	≤ 1.18 GPR	ASTM F1696-18
Pot, Pan , and Utensil	≤ 1.20 kW	≤ 0.58 GPR	≤ 1.00 kW	≤ 0.58 GPR	ASTM F1920-15
Single Tank Conveyor	≤ 1.50 kW	≤ 0.70 GPR	≤ 1.50 kW	≤ 0.79 GPR	
Multiple Tank Conveyor	≤ 2.25 kW	≤ 0.54 GPR	≤ 2.00 kW	≤ 0.54 GPR	
Single Tank Flight Type	Reported	GPH ≤ 2.975x + 55.00	Reported	GPH ≤ 2.975x + 55.00	
Multiple Tank Flight Type	Reported	GPH ≤ 4.96x + 17.00	Reported	GPH ≤ 4.96x + 17.00	

a. Idle results shall be measured with the door closed and represent the total idle energy consumed by the machine including all tank heater(s) and controls. Booster heater (internal or external) energy consumption should not be part of this measurement unless it cannot be separately monitored per US EPA Energy Star Commercial Dishwasher Specification Version 2.0.

b. GPR = gallons per rack; GPSF = gallons per square foot of rack; GPH = gallons per hour; x = sf of conveyer belt (i.e., W*L)/ min (maximum conveyor speed)

TABLE C405.10(5)
MINIMUM EFFICIENCY REQUIREMENTS: COMMERCIAL OVENS

FUEL TYPE	**CLASSIFICATION**	**IDLE RATE**	**COOKING-ENERGY EFFICIENCY, %**	**TEST PROCEDURE**
Convection Ovens				
Gas	Full-Size	≤ 12,000 Btu/h	≥ 46	ASTM F1496 - 13
Electric	Half-Size	≤ 1.0 Btu/h	≥ 71	
	Full-Size	≤ 1.60 Btu/h		
Combination Ovens				
Gas	Steam Mode	≤ 200P[a]+6,511 Btu/h	≥ 41	ASTM F2861 - 17
	Convection Mode	≤ 150P[a]+5,425 Btu/h	≥ 56	
Electric	Steam Mode	≤ 0.133P[a]+0.6400 kW	≥ 55	

	Convection Mode	≤ 0.080P[a]+0.4989 kW	≥ 76	
Rack Ovens				
Gas	Single	≤ 25,000 Btu/h	≥ 48	ASTM F2093 - 18
	Double	≤ 30,000 Btu/h	≥ 52	

a. P = Pan Capacity: The number of steam table pans the combination oven is able to accommodate as per the ASTM F1495 – 05 standard specification.

C405.11 Whole building energy monitoring.

Section C405.11 - Add a new Section C405.11 to read as follows:

C405.11 Whole building energy monitoring. Measurement devices shall be installed in new buildings to individually monitor energy use of each of the following types of energy supplied by a utility, energy provider, or plant that is not within the building:

1. Natural gas
2. Fuel oil
3. Propane
4. Steam
5. Chilled Water
6. Hot Water

Exceptions:

1. Buildings less than 25,000 square feet (2,325 m^2).

2. Group R buildings with less than 10,000 square feet (930 m^2)of common area.

3. Fuel use for on-site emergency equipment.

C405.12 Whole building electrical monitoring.

Section C405.12 - Add a new section C405.12 to read as follows:

C405.12 Whole building electrical monitoring. Each new building shall have a measurement device capable of recording electrical energy use every 60 minutes and the capability to report that use on an hourly, daily, monthly and annual basis. The measurement device shall be capable of retaining the recorded data for 36 months.

Exceptions:

1. Buildings less than 25,000 square feet (2,325 m^2).

2. Group R buildings with less than 10,000 square feet (930 m^2) of common area.

3. Fuel use for on-site emergency equipment.

SECTION C406

ADDITIONAL EFFICIENCY PACKAGE OPTIONS

Section C406 Additional Efficiency Package Options.

Section C406 – Delete Section C406 in its entirety and add a new Section C406 to read as follows:

SECTION C406

ADDITIONAL EFFICIENCY PACKAGE OPTIONS

C406.1 Requirements. Buildings shall comply with one or more of the following:

1. More efficient HVAC equipment in accordance with Section C406.2.
2. Reduced lighting power in accordance with Section C406.3.
3. Enhanced digital lighting controls in accordance with Section C406.4.
4. Provision of a dedicated outdoor air system with energy recovery ventilation for certain HVAC equipment in accordance with Section C406.5.
5. High-efficiency service water heating in accordance with Section C406.6.
6. Enhanced envelope performance in accordance with Section C406.7.
7. Reduced air infiltration in accordance with Section C406.8.

C406.1.1 Tenant spaces. Tenant spaces shall comply with Section C406.2, C406.3, C406.4, C406.5 or C406.6.

Exception: Previously occupied tenant spaces that comply with this code in accordance with Section C501.

C406.2 More efficient HVAC equipment performance. Equipment shall exceed the minimum efficiency requirements listed in Tables C403.3.2(1) through C403.3.2(14) by 10 percent, in addition to the requirements of Section C403. Where multiple performance requirements are provided, the equipment shall exceed all requirements by 10 percent. Equipment not listed in Tables C403.3.2(1) through C403.3.2(14) shall be limited to 10 percent of the total building system capacity.

C406.3 Reduced lighting power. The total connected interior lighting power calculated in accordance with Section C405.3.1 shall be less than 90 percent of the total lighting power allowance calculated in accordance with Section C405.3.2.

C406.4 Enhanced digital lighting controls. Interior lighting in the building shall have the following enhanced lighting controls that shall be located, scheduled and operated in accordance with Sections C405.2.1 through C405.2.3 .

1. Luminaires shall be configured for continuous dimming.

2. Luminaires shall be addressed individually. Where individual addressability is not available for the luminaire class type, a controlled group of not more than four luminaries shall be allowed.

3. Not more than eight luminaires shall be controlled together in a daylight zone.

4. Fixtures shall be controlled through a digital control system that includes the following function:

    4.1. Control reconfiguration based on digital addressability.

4.2. Load shedding.

4.3. Individual user control of overhead general illumination in open offices.

4.4. Occupancy sensors shall be capable of being reconfigured through the digital control system.

5. Construction documents shall include submittal of a Sequence of Operations, including a specification outlining each of the functions in Item 4.

6. Functional testing of lighting controls shall comply with Section C408.

C406.5 Dedicated outdoor air system. Buildings containing equipment or systems regulated by Section C403.3.4, C403.4.3, C403.4.4, C403.4.5, C403.6, C403.8.4, C403.8.5, C403.8.5.1, C403.9.1, C403.9.2, C403.9.3 or C403.9.4 shall be equipped with an independent ventilation system designed to provide not less than the minimum 100-percent outdoor air to each individual occupied space, as specified by the New York City Mechanical Code. The ventilation system shall be equipped with an energy recovery system meeting the requirements of Section C403.7.4, without exception (Note: Section C406.5 cannot be selected where ERV is prohibited by the New York City Mechanical Code or otherwise prohibited). The HVAC system shall include supply-air temperature controls that automatically reset the supply-air temperature in response to representative building loads, or to outdoor air temperatures. The controls shall reset the supply-air temperature not less than 25 percent of the difference between the design supply-air temperature and the design room-air temperature.

C406.6 Reduced energy use in service water heating. Buildings shall be of the following types to use this compliance method:

1. Group R-1: Boarding houses, hotels or motels.
2. Group I-2: Hospitals, psychiatric hospitals and nursing homes.
3. Group A-2: Restaurants and banquet halls or buildings containing food preparation areas.
4. Group F: Laundries.
5. Group R-2.
6. Group A-3: Health clubs and spas.

C406.6.1 Load fraction. The building service water-heating system shall have one or more of the following that are sized to provide not less than 60 percent of the building's annual hot water requirements, or sized to provide 100 percent of the building's annual hot water requirements if the building shall otherwise comply with Section C403.9.5:

1. Waste heat recovery from service hot water, heat-recovery chillers, building equipment, or process equipment.
2. On-site renewable energy water-heating systems.

C406.7 Enhanced envelope performance. The thermal performance of the envelope as designed shall demonstrate a minimum 15 percent improvement compared to the requirements of Section C402.1.5.

C406.8 Reduced air infiltration. Air infiltration shall be verified by whole-building pressurization testing conducted in accordance with ASTM E779 or ASTM E1827 by an independent third party. The measured air-leakage rate of the building envelope shall not exceed 0.25 cfm/ft^2 (2.0 L/s × m^2) under a pressure differential of 0.3 inches water column (75 Pa), with the calculated surface area being the sum of the above- and below-grade building envelope. A report that includes the tested surface area, floor area, air by volume, stories above grade, and leakage rates shall be submitted to the building owner.

Exception: For buildings having over 250,000 square feet (23 225.8 m^2) of conditioned floor area, air leakage testing need not be conducted on the whole building where testing is conducted on representative above-grade sections of the building. Tested areas shall total not less than 25 percent of the conditioned floor area and shall be tested in accordance with this section.

SECTION C407

TOTAL BUILDING PERFORMANCE

Section C407 Total Building Performance.

Section C407 **-** Delete Section C407 in its entirety and add a new Section C407 to read as follows:

SECTION C407

TOTAL BUILDING PERFORMANCE

C407.1 Scope. This section establishes criteria for compliance using total building performance. Buildings following the total building performance path must comply with ASHRAE 90.1-2016 (as amended), as set forth in Appendix CA of this code, demonstrating compliance under Section 11 or Appendix G of such standard.

SECTION C408

MAINTENANCE INFORMATION

AND SYSTEM COMMISSIONING

Section C408.2 Mechanical systems commissioning and completion requirements.

Section C408.2 **-** Delete Section C408.2 in its entirely and add a new Section C408.2 to read as follows:

C408.2 Mechanical, renewable energy, and service water heating systems commissioning and completion requirements. Prior to passing the final mechanical and plumbing inspections, the approved agency shall provide evidence of mechanical systems commissioning and completion in accordance with the provisions of this section.

Construction document notes shall clearly indicate provisions for commissioning and completion requirements in accordance with this section and are permitted to refer to specifications for further requirements. Copies of all documentation shall be given to the owner or owner's authorized agent and made available to the building official upon request in accordance with Sections C408.2.4 and C408.2.5.

Mechanical systems, renewable energy, and service water heating systems shall include but are not limited to, at a minimum, the following heating, ventilating, air conditioning, service water heating, indoor air quality and refrigeration systems (mechanical and/or passive) and associated controls:

1. Heating, cooling, air handling and distribution, ventilation, and exhaust systems, and their related air quality monitoring systems.
2. Air, water, and other energy recovery systems.

3. Manual or automatic controls, whether local or remote, on energy using systems including but not limited to temperature controls, setback sequences, and occupancy based control, including energy management functions of the building management system.

4. Plumbing, including insulation of piping and associated valves, domestic and process water pumping, and mixing systems.

5. Mechanical heating systems and service water heating systems.

6. Refrigeration systems.

7. Renewable energy and energy storage systems.

8. Other systems, equipment and components that are used for heating, cooling or ventilation and that affect energy use.

Exceptions: The following systems are exempt:

1. Mechanical systems and service water heating systems in new buildings, additions, or alterations where the total mechanical equipment capacity being installed or the total mechanical equipment connected load serving the alteration space is less than 480,000 Btu/h (140.7 kW) cooling capacity and 600,000 Btu/h (175.8 kW) combined service water-heating and space-heating capacity.

2. Renewable energy systems being installed with a generating capacity of less than 25kW.

Section C408.2.1 Commissioning plan.

Section C408.2.1 – Revise the opening clause of Section C408.2.1 to read as follows:

A commissioning plan shall be developed by an approved agency and shall include the following items:

Section C408.2.1 - Revise Item 2 of Section C408.2.1 to read as follows:

2. A listing of the specific equipment, appliances or systems to be tested, their full sequences of operation, and a description of the tests to be performed, including prerequisite activities and reference to specific checklists or worksheets which are necessary or required by the department.

Section C408.2.2 Systems adjusting and balancing.

Section C408.2.2 - Revise the first sentence of Section C408.2.2 to read as follows:

HVAC systems shall be balanced in accordance with ASHRAE 111, “Testing, Adjusting, and Balancing of Building HVAC Systems” or other accepted engineering standards as approved by the department.

Section C408.2.2.1 Air systems balancing.

Section C408.2.2.1 - Revise the first sentence of Section C408.2.2.1 to read as follows:

Each supply air outlet and zone terminal device shall be equipped with means for air balancing in accordance with the requirements of Chapter 6 of the New York City Mechanical Code.

Section C408.2.2.1 – Delete the Exception to Section C408.2.2.1 in its entirety.

Section C408.2.3.1 Equipment.

Section C408.2.3.1 - Revise the Exception to Section C408.2.3.1 to read as follows:

Exception: Unitary or packaged HVAC equipment listed in Tables C403.3.2(1) through C403.3.2(3) that do not require supply air economizers shall only be required to demonstrate functioning under full-load and part-load conditions.

Section C408.2.4 Preliminary commissioning report.

Section C408.2.4 – Revise the first sentence of Section C408.2.4 to read as follows:

A preliminary report of commissioning test procedures and results shall be completed and certified by the approved agency and provided to the building owner or owner's authorized agent.

Figure C408.2.4 Commissioning Compliance Checklist.

Figure C408.2.4 – Revise Figure C408.2.4 to read as follows:

Job Number(s): ______________________Job Name: _____________________________

Job Address: ____

Commissioning Authority (Approved Agency):____

Commissioning Plan (Section C408.2.1)

☐Commissioning Plan was used during construction and includes all items required by Section C408.2.1

☐Systems Adjusting and Balancing has been completed.

☐HVAC Equipment Functional Testing has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on: _______________________

☐ HVAC Controls Functional Testing has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on: _______________________

☐ Economizer Functional Testing has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on: _______________________

☐ Lighting Controls Functional Testing has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on: _______________________

☐ Service Water Heating System Functional Testing has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on: _______________________

☐ Manual, record documents and training have been completed or scheduled.

☐ Preliminary Commissioning Report submitted to owner and includes all items required by Section C408.2.4.

I hereby certify that the commissioning authority (approved agency) has provided me with evidence of mechanical, service water heating and lighting systems commissioning in accordance with the 2020 NYCECC.

Signature of Building Owner or Owner's Representative ____________________Date_____________

FIGURE C408.2.4

COMMISSIONING COMPLIANCE CHECKLIST

Section C408.2.4.1 Acceptance of report.

Section C408.2.4.1 – Revise Section C408.2.4.1 to read as follows:

C408.2.4.1 Acceptance of report. Buildings, or portions thereof, shall not be considered as acceptable for a final inspection pursuant to Chapter 1 of this code until the building official has received a letter of transmittal from the building owner acknowledging that the building owner or owner's authorized agent has received the Preliminary Commissioning Report.

Section C408.2.5 Documentation requirements.

Section C408.2.5 - Revise Sections C408.2.5, C408.2.5.1 and C408.2.5.2, and add new Section C408.2.5.3 and C408.2.5.4, to read as follows:

C408.2.5 Documentation requirements. The construction documents shall specify that the documents described in Sections C408.2.5.1 through C408.2.5.3 be provided to the building owner or owner's authorized agent within 90 days of the date of receipt of the certificate of occupancy or letter of completion. The construction documents shall also specify that the Final commissioning report be provided to the building owner or owner's authorized agent in accordance with the requirements of section C408.2.5.4.

C408.2.5.1 Drawings. Construction documents shall include the location and performance data on each piece of equipment.

C408.2.5.2 Manuals. An operating and maintenance manual shall be provided and include all of the following:

1. Submittal data stating equipment size and selected options for each piece of equipment requiring maintenance.
2. Manufacturer's operation manuals and maintenance manuals for each piece of equipment requiring maintenance, except equipment not furnished as part of the project. Required routine maintenance actions shall be clearly identified.
3. Name and address of at least one service agency.
4. HVAC and service hot water controls system maintenance and calibration information, including wiring diagrams, schematics and control sequence descriptions. Desired or field-determined set points shall be permanently recorded on control drawings at control devices or, for digital control systems, in system programming instructions.
5. Submittal data indicating all selected options for each piece of lighting equipment and lighting controls.
6. Operation and maintenance manuals for each piece of lighting equipment. Required routine maintenance actions, cleaning and recommended relamping shall be clearly identified.
7. A schedule for inspecting and recalibrating all lighting controls.
8. A narrative of how each system is intended to operate, including recommended set points.

C408.2.5.3 System balancing report. A written report describing the activities and measurements completed in accordance with Section C408.2.2.

C408.2.5.4 Final commissioning report. Within 30 months for new buildings 500,000 gross square feet (46 452 m^2) or greater, excluding R-2 occupancies, or within 18 months for R-2 occupancies and all other buildings, of the issuance of the certificate of occupancy or letter of completion, an approved agency shall prepare a report of test procedures and results, including test procedures and results performed after occupancy, identified as the "Final Commissioning Report", provide such report to the building owner, and submit a certification to the department with applicable fees in accordance with department rules. The owner of a building 500,000 gross square feet (46 452 m^2) or greater may apply for an extension of time to the building official based on good cause, in accordance with department rules. Such report shall include the following:

1. Results of functional performance tests.
2. Disposition of deficiencies found during testing, including details of corrective measures used or proposed.
3. Functional performance test procedures used during the commissioning process including measurable criteria for test acceptance, provided herein for repeatability.

Exception: Deferred tests that cannot be performed at the time of report preparation due to climatic conditions.

Section C408.3.1 Functional testing.

Section C408.3.1 - Revise the first sentence of Section C408.3.1 to read as follows:

Prior to passing final inspection, the approved agency shall provide evidence that the lighting control systems have been tested to ensure that control hardware and software are calibrated, adjusted, programmed and in proper working condition in accordance with the construction documents and manufacturer's instructions.

Section C408.4 Air barrier commissioning.

Section C408 - Add new Sections C408.4, C408.4.1, C408.4.2 and C408.4.3 to read as follows:

C408.4 Air barrier commissioning. For new buildings or additions that are 10,000 gross square feet (929 m^2) and greater, prior to passing final inspection, the approved agency shall provide evidence of air barrier commissioning and substantial completion in accordance with the provisions of sections C408.4.1 through C408.4.3.

C408.4.1 Documentation. Construction documents shall include documentation of the continuous air barrier components included in the design and a field inspection checklist that includes all requirements necessary for maintaining air barrier continuity and durability in accordance with Section C402.5.1.

C408.4.2 Field Inspections. Reports from field inspections during project construction showing compliance with continuous air barrier requirements including proper material handling and storage, use of approved materials and material substitutes, proper material and surface preparation, and air barrier continuity shall be provided to the owner and, upon request, to the building official. Air barrier continuity shall be determined by testing or inspecting each type of unique air barrier joint or seam in the building envelope for continuity and defects.

C408.4.3 Report. A final commissioning report indicating compliance with the continuous air barrier requirements shall be provided to the building owner and, upon request, to the building official**.**

CHAPTER C5

EXISTING BUILDINGS

Section C501

GENERAL

Section C501.4 Compliance.

Section C501.4 – Delete Section C501.4 in its entirety and add a new Section C501.4 to read as follows**:**

C501.4 Compliance. Alterations, repairs, additions and changes of occupancy to, or relocation of, existing buildings and structures shall comply with (i) all applicable provisions of this code, (ii) the provisions for alterations, repairs, additions and changes of occupancy or relocation, respectively, in the New York City Construction Codes, (iii) the New York City Fire Code, and (iv) the New York City Electrical Code.

Section C502

ADDITIONS

Section C502.1 General.

Section C502.1- Revise the second paragraph of Section C502.1 to read as follows:

Additions complying with ASHRAE 90.1-2016 (as amended), as set forth in Appendix CA of this code, need not comply with Sections C402, C403, C404 and C405.

Section C502.2.3.1 Commissioning.

Section C502.2.3.1 – Add a new Section C502.2.3.1 to read as follows:

C502.2.3.1 Commissioning. New heating, cooling and duct system components that are part of the addition and the controls that serve them shall comply with Section C408.

Exception: Mechanical systems where either the total equipment being installed or the total mechanical equipment connected load serving the addition is less than 480,000 Btu/h (140.7 kW) cooling capacity and 600,000 Btu/h (175.8 kW) combined service water heating and space heating capacity.

Section C502.2.4.1 Commissioning.

Section C502.2.4.1 – Add a new Section C502.2.4.1 to read as follows:

C502.2.4.1 Commissioning. New service water heating system components that are part of the addition and the controls that serve them shall comply with Section C408.

Exception: Service water heating systems where either the total equipment being installed or the total equipment connected load serving the addition is less than 600,000 Btu/h (175.8 kW) combined service water heating and space heating capacity.

Section C503

ALTERATIONS

Section C503.1 General.

Section C503.1- Revise first sentence of the second paragraph of Section C503.1 to read as follows:

Alterations complying with ASHRAE 90.1-2016 (as amended), as set forth in Appendix CA of this code, need not comply with Sections C402, C403, C404 and C405.

Section C503.1- Revise Exception 8 of Section C503.1 to read as follows:

8. Alterations that replace less than ten percent of the luminaires in a space, provided that such alterations do not increase the installed interior lighting power.

Section C503.3.2 Vertical fenestration.

Section C503.3.2- Revise Section C503.3.2, to read as follows:

C503.3.2 Vertical fenestration. The addition of vertical fenestration that results in a total building fenestration area less than or equal to that specified in Section C402.4.1 shall comply with Section C402.1.5, C402.4.3 or C407. The addition of vertical fenestration that results in a total building fenestration area greater than Section C402.4.1 shall comply with Section C402.4.1.1 for the space adjacent to the new fenestration only. Alterations that result in a total building vertical fenestration area exceeding that specified in Section C402.4.1.1 shall comply with Section C402.1.5 or C407.

C503.3.4 Application to replacement fenestration products.

Section C503.3.4 - Add a new Section C503.3.4 to read as follows:

C503.3.4 Application to replacement fenestration products. Where some portion or all of an existing fenestration unit is replaced with a new fenestration product, including sash and glazing, the replacement fenestration unit shall meet the applicable requirements for U-factor and SHGC in Table C402.4.

Exception: An area-weighted average of the U-factor of replacement fenestration products being installed in the building for each fenestration product category listed in Table C402.4 shall be permitted to satisfy the U-factor requirements for each fenestration product category listed in Table C402.4. Individual fenestration products from different product categories listed in Table C402.4 shall not be combined in calculating the area-weighted average U-factor.

Section C503.4 .2 Commissioning.

Section C503.4.2 – Add a new Section C503.4.2 to read as follows:

C503.4.2 Commissioning. New heating, cooling and duct systems components that are part of the alteration and the controls that serve them shall comply with Section C408.

Exception: Mechanical systems where the total equipment being installed or the total mechanical equipment connected load serving the alteration is less than 480,000 Btu/h (140.7 kW) cooling capacity and 600,000 Btu/h (175.8 kW) combined service water heating and space heating capacity.

Section C503.5.1 Commissioning.

Section C503.5.1 – Add a new Section C503.5.1 to read as follows:

C503.5.1 Commissioning. New service water heating system components that are part of the alteration and the controls that serve them shall comply with Section C408.

Exception: Service water heating systems where the total equipment being installed or the total equipment connected load serving the alteration is less than 600,000 Btu/h (175.8 kW) combined service water heating and space heating capacity.

CHAPTER C6

REFERENCED STANDARDS

Chapter C6 – Delete Chapter C6 in its entirety and add a new chapter C6 to read as follows:

CHAPTER C6

REFERENCED STANDARDS

This chapter lists the standards that are referenced in various sections of the commercial provisions of this code. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title, and the section or sections of this document that reference the standard. The application of the referenced standards shall be as specified in Section ECC 105. Refer to the rules of the department for any subsequent additions, modifications or deletions that may have been made to the referenced standards set forth herein in accordance with Section 28-103.19 of the Administrative Code.

AAMA	American Architectural Manufacturers Association 1827 Walden Office Square Suite 550 Schaumburg, IL 60173-4268

AAMA/WDMA/CSA 101/I.S.2/A C440—17: North American Fenestration Standard/Specifications for Windows, Doors and Unit Skylights

Table C402.5.2

ACCA | Air Conditioning Contractors of America
2800 Shirlington Road #300
Arlington, VA 22206

ANSI /ASHRAE/ACCA Standard 183—2007 (RA2014): Peak Cooling and Heating Load Calculations in Buildings, Except Low-rise Residential Buildings

C403.1.1

AHAM | Association of Home Appliance Manufacturers
1111 19th Street NW, Suite 402
Washington, DC 20036

AHAM HRF-1—2016: Energy, Performance and Capacity of Household Refrigerators, Refrigerator-Freezers and Freezers

Table C403.10.1(1)

AHRI | Air-Conditioning, Heating, & Refrigeration Institute
2111 Wilson Blvd, Suite 500
Arlington, VA 22201

ISO/AHRI/ASHRAE 13256-1 (1998 RA2014): Water-to-Air and Brine-to-Air Heat Pumps—Testing and Rating for Performance

Table C403.3.2(2)

ISO/AHRI/ASHRAE 13256-2 (1998 RA2014): Water-to-Water and Brine-to-Water Heat Pumps — Testing and Rating for Performance

Table C403.3.2(2)

210/240—2016: Performance Rating of Unitary Air-conditioning and Air-source Heat Pump Equipment

Table C403.3.2(1), Table C403.3.2(2)

310/380—2014 (CSA-C744-04): Standard for Packaged Terminal Air Conditioners and Heat Pumps

Table C403.3.2(3)

340/360—2015: Performance Rating of Commercial and Industrial Unitary Air-conditioning and Heat Pump Equipment

Table C403.3.2(1), Table C403.3.2(2)

365(I-P)—2009: Commercial and Industrial Unitary Air-conditioning Condensing Units

Table C403.3.2(1)

390 (I-P)—2015: Performance Rating of Single Package Vertical Air-conditioners and Heat Pumps

Table C403.3.2(3)

400 (I-P)—2015: Performance Rating of Liquid to Liquid Heat Exchangers

Table C403.3.2(9)

440—2008: Performance Rating of Room Fan Coils—with Addendum 1

C403.11.3

460—2005: Performance Rating of Remote Mechanical-draft Air-cooled Refrigerant Condensers

Table C403.3.2(7)

550/590 (I-P)—2015: Performance Rating of Water-chilling and Heat Pump Water-heating Packages Using the Vapor Compression Cycle

C403.3.2.1, Table C403.3.2(6)

560—00: Absorption Water Chilling and Water Heating Packages

Table C403.3.2(6)

840—15: Performance Rating of Unit Ventilators

C403.11.3

910-2014: Performance Rating of Indoor Pool Dehumidifiers

Table C403.3.2(12)

920-2015: Performance Rating of DX-Dedicated Outdoor Air System Units

C202, Table C403.3.2(13), Table C403.3.2(14)

1160 (I-P) —2014: Performance Rating of Heat Pump Pool Heaters

Table C404.2

1200 (I-P)—2013: Performance Rating of Commercial Refrigerated Display Merchandisers and Storage Cabinets

C403.10, Table C403.10.1(1), Table C403.10.1(2)

ANSI/AHRI 1230—10 with Addendum 1: Performance Rating of Variable Refrigerant Flow (VRF) Multi-Split Air-Conditioning and Heat Pump Equipment

Table C403.3.2(10), Table C403.3.2(11)

AMCA

Air Movement and Control Association International
30 West University Drive
Arlington Heights, IL 60004-1806

205—12: Energy Efficiency Classification for Fans

C403.8.3

500D—12: Laboratory Methods for Testing Dampers for Rating

C403.7.7

ANSI

American National Standards Institute
25 West 43rd Street, 4th Floor
New York, NY 10036

ANSI /ASHRAE/ACCA Standard 183—2007 (RA2014): Peak Cooling and Heating Load Calculations in Buildings, Except Low-rise Residential Buildings

C403.1.1

ANSI/AHRI 1230—10 with Addendum 1: Performance Rating of Variable Refrigerant Flow (VRF) Multi-Split Air-Conditioning and Heat Pump Equipment

Table C403.3.2(10), Table C403.3.2(11)

ANSI/ASHRAE/IESNA 90.1-2016: Energy Standard for Buildings Except Low-rise Residential Buildings

CH1 (Intro Statement), 101.1.1, C202

ANSI / ASHRAE / IES 90.1-2016 (AS AMENDED) with revisions as set forth in Appendix CA of this code

101.1.1, 101.5.1.1, 105.1, C202, C401.2, Table C402.1.3, Table C402.1.4, C402.6.1, Table C403.3.2(1), Table C403.3.2(2), C407.1, C501.7, C502.1, C503.1, C504.1

ANSI/CRRC-S100—2016: Standard Test Methods for Determining Radiative Properties of Materials

Table C402.3, C402.3.1

ANSI/DASMA 105—2016: Test Method for Thermal Transmittance and Air Infiltration of Garage Doors and Rolling Doors

C303.1.3, Table C402.5.2

Z21.10.3/CSA 4.3—11: Gas Water Heaters, Volume III—Storage Water Heaters with Input Ratings Above 75,000 Btu per Hour, Circulating Tank and Instantaneous

Table C404.2

Z21.47/CSA 2.3—12: Gas-fired Central Furnaces

Table C403.3.2(4)

Z83.8/CSA 2.6—09: Gas Unit Heaters, Gas Packaged Heaters, Gas Utility Heaters and Gas-fired Duct Furnaces

Table C403.3.2(4)

APSP

The Association of Pool & Spa Professionals
2111 Eisenhower Avenue, Suite 580
Alexandria, VA 22314

14—2014: American National Standard for Portable Electric Spa Energy Efficiency

C404.10

ASHRAE ASHRAE
1791 Tullie Circle
NE
Atlanta, GA 30329

ANSI/ASHRAE/IESNA 90.1—2016: Standard for Buildings Except Low-rise Residential Buildings

CH1 (Intro Statement), 101.1.1, C202

ANSI / ASHRAE /IES 90.1-2016 (AS AMENDED) with revisions as set forth in Appendix CA of this code

101.1.1, 101.5.1.1, 105.1, C202, C401.2, Table C402.1.3, Table C402.1.4, C402.6.1, Table C403.3.2(1), Table C403.3.2(2), C407.1, C501.7, C502.1, C503.1, C504.1

ASHRAE 111 -2008: Testing, Adjusting, and Balancing of Building HVAC Systems

C408.2.2

ASHRAE 127-2007: Method of Testing for Rating Computer

Table C403.3.2(8)

ASHRAE Standard 170—2013

C403.7.4

ANSI/ASHRAE/ACCA Standard 183—2007 (RA2014): Peak Cooling and Heating Load Calculations in Buildings, Except Low-rise Residential Buildings

C403.1.1

ASHRAE—2016: ASHRAE HVAC Systems and Equipment Handbook

C403.1.1

ISO/AHRI/ASHRAE 13256-1 (1998 RA2014): Water-to-Air and Brine-to-Air Heat Pumps—Testing and Rating for Performance

Table C403.3.2(2)

ISO/AHRI/ASHRAE 13256-2 (1998 RA2014): Water-to-Water and Brine-to-Water Heat Pumps—Testing and Rating for Performance

Table C403.3.2(2)

ASHRAE 62.1—2013

C403.7.4

146—2011: Testing and Rating Pool Heaters

Table C404.2

ASME

American Society of
Mechanical Engineers
Two Park Avenue
New York, NY 10016-5990

ASME A17.1—2016/CSA B44—16: Safety Code for Elevators and Escalators

C405.8.2

ASTM

ASTM International
100 Barr Harbor Drive,
P.O. Box C700
West Conshohocken,
PA 19428-2959

C1363—11: Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus

C303.1.4.1, Table C402.1.4, Table C402.1.4.2, C402.2.7

C1371—15: Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers

Table C402.3

C1549—09(2014): Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer

Table C402.3

D1003—13: Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics

C402.4.2.2

E283—04(2012): Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen

C402.5.1.2.2, Table C402.5.2, C402.5.8

E408—13: Test Methods for Total Normal Emittance of Surfaces Using Inspection-meter Techniques

Table C402.3

E779—10: Standard Test Method for Determining Air Leakage Rate by Fan Pressurization

C402.5, C402.5.1.3, C406.8

E903—12: Standard Test Method Solar Absorptance, Reflectance and Transmittance of Materials Using Integrating Spheres (Withdrawn 2005)

Table C402.3

E1677—11: Specification for Air Barrier (AB) Material or Systems for Low-rise Framed Building Walls

C402.5.1.2.2

E1827—11: Standard Test Methods for Determining Airtightness of Building Using an Orifice Blower Door

C406.8

E1918—06(2015): Standard Test Method for Measuring Solar Reflectance of Horizontal or Low-sloped Surfaces in the Field

Table C402.3

E1980—11: Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-sloped Opaque Surfaces

Table C402.3

E2178—13: Standard Test Method for Air Permanence of Building Materials

C402.5.1.2.1

E2357—11: Standard Test Method for Determining Air Leakage of Air Barriers Assemblies

C402.5.1.2.2

F1361—17: Standard Test Method for Performance of Open Deep Fat Fryers

Table C405.10(1)

F1484—18: Standard Test Methods for Performance of Steam Cookers

Table C405.10(3)

F1495 —05: Standard Specification for Combination Oven Electric or Gas Fired

Table C405.10(5)

F1496—13: Standard Test Method for Performance of Convection Ovens

Table C405.10(5)

F1696—18: Standard Test Method for Energy Performance of Stationary-Rack, Door-Type Commercial Dishwashing Machines

Table C405.10(4)

F1920—15: Standard Test Method for Performance of Rack Conveyor Commercial Dishwashing Machines

Table C405.10(4)

F2093—18: Standard Test Method for Performance of Rack

Table C405.10(5)

F2140—11: Standard Test Method for Performance of Hot Food Holding Cabinets

Table C405.10(2)

F2144—17: Standard Test Method for Performance of Large Open Vat Fryers

Table C405.10(1)

F2861—17: Standard Test Method for Enhanced Performance of Combination Oven in Various Modes

Table C405.10(5)

BC HYDRO

BC Hydro Power Smart

333 Dunsmuir Street

Vancouver, BC

V6B 5R

Building Envelope Thermal Bridging Guide Version 1.2 - 18

Table C402.6

CRRC

Cool Roof Rating Council
449 15th Street, Suite 400
Oakland, CA 94612

ANSI/CRRC-S100—2016: Standard Test Methods for Determining Radiative Properties of Materials

Table C402.3, C402.3.1

CSA

CSA Group
8501 East Pleasant
Valley Road
Cleveland, OH 44131-
5516

AAMA/WDMA/CSA 101/I.S.2/A440—17: North American Fenestration Standard/Specification for Windows, Doors and Unit Skylights

Table C402.5.2

ASME A17.1—2016/CSA B44—16: Safety Code for Elevators and Escalators

C405.8.2

CSA B55.1—2015: Test Method for Measuring Efficiency and Pressure Loss of Drain Water Heat Recovery Units

C404.8

CSA B55.2—2015: Drain Water Heat Recovery Units

C404.8

Z21.10.3/CSA 4.3—11: Gas Water Heaters, Volume III—Storage Water Heaters with Input Ratings Above 75,000 Btu per Hour, Circulating Tank and Instantaneous

Table C404.2

Z21.47/CSA 2.3—12: Gas-fired Central Furnaces

Table C403.3.2(4)

Z83.8/CSA 2.6—09: Gas Unit Heaters, Gas Packaged Heaters, Gas Utility Heaters and Gas-fired Duct Furnaces

Table C403.3.2(4)

CTI

Cooling Technology
Institute
P. O. Box 681807
Houston, TX 77268

ATC 105 (00): Acceptance Test Code for Water Cooling Tower

Table C403.3.2(7)

ATC 105S—11: Acceptance Test Code for Closed Circuit Cooling Towers

Table C403.3.2(7)

ATC 106—11: Acceptance Test for Mechanical Draft Evaporative Vapor Condensers

Table C403.3.2(7)

STD 201—11: Standard for Certification of Water Cooling Towers Thermal Performances

Table C403.3.2(7)

CTI STD 201 RS(15): Performance Rating of Evaporative Heat Rejection Equipment

Table C403.3.2(7)

DASMA	Door & Access Systems Manufacturers Association, International 1300 Sumner Avenue Cleveland, OH 44115-2851

105—2016: Test Method for Thermal Transmittance and Air Infiltration of Garage Doors and Rolling Doors

C303.1.3, Table C402.5.2

DOE

U.S. Department of Energy
c/o Superintendent of Documents
1000 Independence Avenue SW
Washington, DC 20585

10 CFR, Part 430—2015: Energy Conservation Program for Consumer Products: Test Procedures and Certification and Enforcement Requirement for Plumbing Products; and Certification and Enforcement Requirements for Residential Appliances; Final Rule

Table C403.3.2(1), Table C403.3.2(2), Table C403.3.2(4), Table C403.3.2(5), Table C404.2

10 CFR, Part 430, Subpart B, Appendix F—(2015): Uniform Test Method for Measuring the Energy Consumption of Room Air Conditioners

Table C403.3.2(3)

10 CFR, Part 430, Subpart B, Appendix N—(2015): Uniform Test Method for Measuring the Energy Consumption of Furnaces and Boilers

C202

10 CFR, Part 431—2015: Energy Efficiency Program for Certain Commercial and Industrial Equipment: Test Procedures and Efficiency Standards; Final Rules

Table C403.3.2(5), C405.6, Table C405.6, C405.7

10 CFR 431 Subpart B App B: Uniform Test Method for Measuring Nominal Full Load Efficiency of Electric Motors

C403.8.4, Table C405.7(1), Table C405.7(2), Table C405.7(3), C405.7(4)

ICC

International Code Council, Inc.
500 New Jersey Avenue NW
6th Floor
Washington, DC 20001

IECC—18: International Energy Conservation Code

CH1 (Intro Statement), 101.1.1

IEC

International Electrotechnical Commission

IEC Regional Centre for North America
446 Main Street 16th Floor
Worcester, MA 01608 U.S.A.

IEC EN 60034-30-1- 2014: Efficiency classes of line operated AC motors

C405.8.1.1.1

IEEE

Institute of Electrical and Electronic Engineers
3 Park Avenue, 17th Floor
New York, NY 10016

IEEE 515.1—2012: IEE Standard for the Testing, Design, Installation, and Maintenance of Electrical Resistance Trace Heating for Commercial Applications

C404.6.2

IES

Illuminating Engineering Society
120 Wall Street, 17th Floor
New York, NY 10005-4001

ANSI/ASHRAE/IESNA 90.1—2016: Energy Standard for Buildings, Except Low-rise Residential Buildings

CH1 (Intro Statement), 101.1.1, C202

ANSI / ASHRAE /IES 90.1-2016 (AS AMENDED) with revisions as set forth in Appendix CA of this code

101.1.1, 101.5.1.1, 105.1, C202, C401.2, Table C402.1.3, Table C402.1.4, C402.6.1, Table C403.3.2(1), Table C403.3.2(2), C407.1, C501.7, C502.1, C503.1, C504.1

ISO

International Organization for Standardization
Chemin de Blandonnet
8, CP 401, 1214 Vernier
Geneva, Switzerland

ISO/AHRI/ASHRAE 13256-1(1998 RA2014): Water-to-Air and Brine-to-Air Heat Pumps -Testing and Rating for Performance

Table C403.3.2(2)

ISO/AHRI/ASHRAE 13256-2(1998 RA2014): Water-to-Water and Brine-to-Water Heat Pumps - Testing and Rating for Performance

Table C403.3.2(2)

NEMA National Electrical Manufacturers Association 1300 North 17th Street, Suite 900 Rosslyn, VA 22209

MG1—2014: Motors and Generators

C202

NFRC National Fenestration Rating Council, Inc. 6305 Ivy Lane, Suite 140 Greenbelt, MD 20770

100—2017: Procedure for Determining Fenestration Products U-factors

C303.1.3, Table C402.1.4.2, C402.2.1.1, Table C402.4

200—2017: Procedure for Determining Fenestration Product Solar Heat Gain Coefficients and Visible Transmittance at Normal Incidence

C303.1.3, Table C402.4, C402.4.1.1

400—2017: Procedure for Determining Fenestration Product Air Leakage

Table C402.5.2

NYC New York City Department of Buildings

280 Broadway

New York, NY 10007

1968 Building Code

101.2.1

NYCAC—14: New York City Administrative Code

CH1 (Intro Statement), 101.1, 101.2.1, 101.5.2.2, 101.5.2.3, 102.1, 103.1, 103.2.1, 103.3, 103.4, 104.1, 104.1.1, 104.3, 105.1, C202, C405.5.2

NYCBC—14: New York City Building Code

101.2.1, 101.2.2, 103.2.1, C202, C303.1.1, C402.5.3, C402.5.4, C405.2, C405.2.1.4

NYCCC—14: New York City Construction Codes

101.2.1, 102.1, 103.1, 104.2.3, C201.3, C201.4, C303.2, C402.2.8, C501.4

NYCEC—11: New York City Electrical Code

101.2.1, C201.3, C201.4, C501.4

NYCFC-14: New York City Fire Code

101.2.1, C201.3, C201.4, C501.4

NYCMC-14: New York City Mechanical Code

101.2.1, C402.5.3, C403.2.2, C403.6.1, C403.6.6, C403.7.1, C403.7.2, C403.7.4, C403.7.7, C403.8.5.1, C403.11.1, C403.11.2, C403.11.2.1, C403.11.2.2, C406.5, C408.2.2.1

NYS

New York Department of State

One Commerce Plaza, 99 Washington Ave

Albany, NY 12231-000

BCNYS—20: Building Code of New York State

C202

ECCCNYS—20: Energy Conservation Construction Code of New York State

CH1 (Intro Statement), 101.1.1, 101.2.3, 101.3

SMACNA Sheet Metal and Air Conditioning Contractors' National Association, Inc.
4021 Lafayette Center Drive
Chantilly, VA 20151-1219

SMACNA—2012: HVAC Air Duct Leakage Test Manual Second Edition

C403.11.2.3

UL UL LLC
333 Pfingsten Road
Northbrook, IL 60062-2096

127—11: Standard for Factory-Built Fireplaces

C402.2.8

710—12: Exhaust Hoods for Commercial Cooking Equipment—with Revisions through November 2013

C403.7.5

727—06: Oil-fired Central Furnaces—with Revisions through October 2013

Table C403.3.2(4)

731—95: Oil-fired Unit Heaters—with Revisions through October 2013

Table C403.3.2(4)

1784—01: Air Leakage Tests of Door Assemblies—with Revisions through February 2015

C402.5.4

US-FTC	United States-Federal Trade Commission 600 Pennsylvania Avenue NW Washington, DC 20580

CFR Title 16 (2015): R-value Rule

C303.1.4

WDMA	Window and Door Manufacturers Association 2025 M Street NW, Suite 800 Washington, DC 20036-3309

AAMA/WDMA/CSA 101/I.S.2/A440—17: North American Fenestration Standard/Specification for Windows, Doors and Unit Skylights

Table C402.5.2

APPENDIX CA

SOLAR-READY ZONE – cOMMERCIAL

Appendix CA Solar-Ready Zone – Commercial.

Appendix CA – Delete Appendix CA in its entirety.

CHAPTER R2

DEFINITIONS

SECTION R201

GENERAL

Section R201.1 Scope.

Section R201.1 - Revise Section R201.1 to read as follows:

> **R201.1 Scope.** Unless stated otherwise, the following words and terms in chapters R2, R3, R4, R5 and R6 of this code shall have the meanings indicated in this chapter.

Section R201.3 Terms defined in other codes.

Section R201.3 - Revise Section R201.3 to read as follows:

> **R201.3 Terms defined in other codes.** Terms that are not defined in this code but are defined in the New York City Construction Codes, New York City Fire Code, or the New York City Electrical Code shall have the meanings ascribed to them in those codes.

Section R201.4 Terms not defined.

Section R201.4 - Revise Section R201.4 to read as follows:

> **R201.4 Terms not defined.** Terms not defined in this chapter or in the New York City Construction Codes, New York City Fire Code, or the New York City Electrical Code shall have ordinarily accepted meanings such as the context implies.

SECTION R202

GENERAL DEFINITIONS

Section R202 - Revise the definition of "Air-impermeable insulation" after the definition of "Air barrier," to read as follows:

> **AIR-IMPERMEABLE INSULATION.** An insulation having an air permeance equal to or less than 0.02 L/s-m^2 at 75 Pa pressure differential tested according to ASTM E 2178 or E 283.

Section R202 - Revise the definitions of "Approval or approved," and "Approved agency" after the definition of "Alteration," to read as follows:

> **APPROVAL OR APPROVED.** See Section 28-101.5 of the Administrative Code.
>
> **APPROVED AGENCY.** See Section 28-101.5 of the Administrative Code.

Section R202 - Revise the definition of "ASHRAE 90.1-2016 (as amended)" after the definition of "ASHRAE 90.1-2016," to read as follows:

> **ASHRAE 90.1-2016 (AS AMENDED).** ASHRAE 90.1-2016, as amended by 19 NYCRR Part 1240 with revisions as set forth in Appendix CA of this code.

Section R202 – Add a new definition of "Basement" after the definition of "Automatic," to read as follows:

BASEMENT. A story that is not a story above grade plane. See the definition of "Story above grade plane."

Section R202 – Revise the definition of "Building," after the definition of "Basement wall," to read as follows:

BUILDING. Any structure used or intended for supporting or sheltering any use or occupancy or for affording shelter to persons, animals or property, including any (i) mechanical systems, service water heating systems, and electric power and lighting systems located in such structure, and (ii) any mechanical systems, service water heating systems, and electric power and lighting systems located on the building site and supporting the building. The term "building" shall include, but not be limited to, factory manufactured homes, as defined in subdivision 8 of section 372 of the Executive Law, and mobile homes, as defined in subdivision 13 of section 372 of the Executive Law.

Section R202 – Delete the definition of "Building site."

Section R202– Revise the definition of "Building official," after the definition of "Building code of New York State" to read as follows:

BUILDING OFFICIAL. The Commissioner of Buildings of the City of New York or his or her duly authorized representative. See Section 28-101.5 of the Administrative Code.

Section R202 – Add the definition of "Building site," after the definition of "Building official," to read as follows.

BUILDING SITE. A contiguous area of land that is under the ownership or control of one entity.

Section R202 – Revise the definition of "Conditioned space," after the definition of "Conditioned Floor Area," to read as follows:

CONDITIONED SPACE. An area, room or space that is enclosed within the building thermal envelope and that is directly or indirectly heated or cooled. Spaces are indirectly heated or cooled where they communicate through openings with conditioned spaces, where they are separated from conditioned spaces by uninsulated walls, floors or ceilings, or where they contain uninsulated ducts, piping or other sources of heating or cooling.

Section R202 - Revise the definition of "Energy code", after the definition of "Energy analysis," to read as follows:

ENERGY CODE. The New York City Energy Conservation Code.

Section R202 - Delete the definition of "Fire Code of New York State" after the definition of "Fenestration product, site-built."

Section R202 – Add a new definition of "Grade Plane" after the definition of "Fenestration product, site-built," to read as follows:

GRADE PLANE. A reference plane representing the average of finished ground level adjoining the building at exterior walls. Where the finished ground level slopes away from the exterior walls, the reference plane shall be established by the lowest points within the area between the building and the lot line or, where the lot line is more than 6 feet (1829 mm) from the building, between the building and a point 6 feet (1829 mm) from the building.

Section R202 - Delete the definition of "High-efficacy lamps" after the definition of "Heated slabs."

Section R202 - Revise the definition of "Labeled" after the definition of "Insulating sheathing," to read as follows:

LABELED. See Section 28-101.5 of the Administrative Code.

Section R202 - Add a new definition of "Lead energy professional" after the definition of "Labeled," to read as follows:

LEAD ENERGY PROFESSIONAL. The registered design professional who signs and seals the energy analysis for an entire project. Such individual may be the same registered design professional who signs and seals the design drawings for the same project.

Section R202 - Revise the definition of "Listed" after the definition of "Lead energy professional," to read as follows:

LISTED. See Section 28-101.5 of the Administrative Code.

Section R202 - Delete the definition of "Mechanical Code of New York State" after the definition of "Manual."

Section R202 - Delete the definition of "Plumbing Code of New York State" after the definition of "Opaque door."

Section R202 - Add new definitions of "Professional certification" and "Project" after the definition of "Opaque door," to read as follows:

PROFESSIONAL CERTIFICATION. See Section 28-101.5 of the Administrative Code.

PROJECT. A design and construction undertaking comprised of work related to one or more buildings and the site improvements. A project is represented by one or more plan/work applications, including construction documents compiled in accordance with Section 107 of the New York City Building Code, that relate either to the construction of a new building or buildings or to the demolition or alteration of an existing building or buildings. Applications for a project may have different registered design professionals and different job numbers, and may result in the issuance of one or more permits.

Section R202 - Delete the definition of "Residential Code of New York State" after the definition of "Residential building."

Section R202 – Add the new definitions of "Story" and "Story above grade plane" after the definition of "Standard reference design," to read as follows:

STORY. The portion of a building included between the upper surface of a floor and the upper surface of the floor or roof next above. See the definitions of "Basement" and "Grade plane". A story is measured as the vertical distance from top to top of two successive tiers of beams or finished floor surfaces and, for the topmost story, from the top of the floor finish to the top of the ceiling joists or, where there is not a ceiling, to the top of the roof rafters.

STORY ABOVE GRADE PLANE. Any story having its finished floor surface entirely above grade plane, or in which the finished surface of the floor next above is:

1. More than 6 feet (1829 mm) above grade plane; or

2. More than 12 feet (3658 mm) above the finished ground level at any point.

Section R202 - Add a new definition of "Thermal bridge" after the definition of "Sunroom," to read as follows:

THERMAL BRIDGE: Thermal bridges are elements that interrupt areas of uniform thermal resistance in the building envelope.

Clear field thermal bridge: an area-based thermal transmittance associated with elements of a building envelope assembly which repeat at regular intervals. Examples of clear field thermal bridges include metal or wood studs, brick ties, and cladding attachments such as z-girts.

Linear thermal bridge: a length-based thermal transmittance associated with horizontal, vertical, or diagonal elements within the building envelope and with length measured along the exterior surface of the building envelope. Examples of linear thermal bridges include balconies or floor assemblies which penetrate walls in the building envelope, fenestration perimeter interfaces, parapets, and shelf angles. Linear thermal transmittance is heat flow divided by length and by the temperature difference between the interior and exterior sides of the assembly, represented by a Ψ-value (Psi-Value) in units Btu/hr-ft-°F (W/mK).

Point thermal bridge: an element-based thermal transmittance associated with a discrete element that penetrates the building envelope. Examples of point thermal bridges include a beam penetrating a wall, a column penetrating a roof or floor, and an anchor or connection used to attach an element to the building and not otherwise addressed as a clear field thermal bridge or linear thermal bridge. Point thermal transmittance is heat flow divided by the temperature difference between the interior and exterior sides of the assembly, represented by a X-value (Chi-Value) in units Btu/hr-°F (W/K).

Section R202 - Delete the definition of "Uniform code" after the definition of "U-factor (thermal transmittance)."

CHAPTER R3

GENERAL REQUIREMENTS

SECTION R301

Section R301 - Delete Section R301 in its entirety and add a new Section R301 to read as follows:

SECTION R301

CLIMATE ZONES

R301.1 General. For projects in the City of New York, Climate Zone 4A shall be used in determining the applicable requirements from Chapter R4.

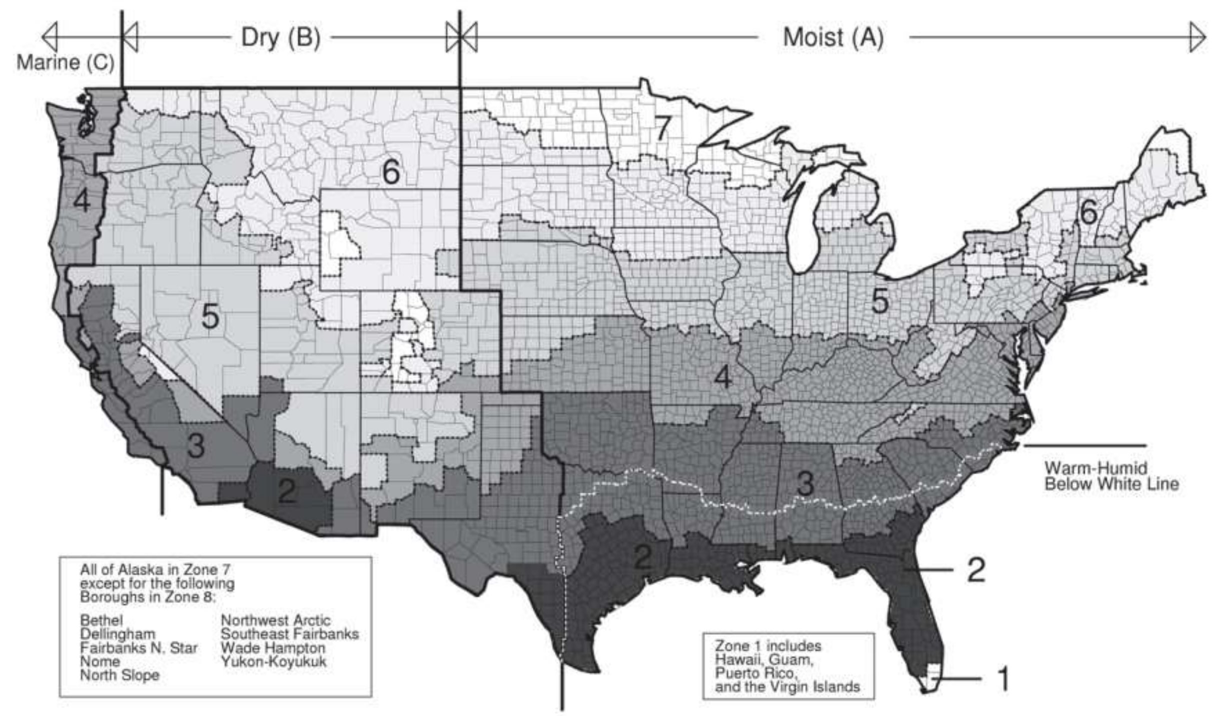


FIGURE R301.1

CLIMATE ZONES

SECTION R303

MATERIALS, SYSTEMS AND EQUIPMENT

Section R303.1.1 Building thermal envelope insulation.

Section R303.1.1 – Revise the Exception to Section R303.1.1 to read as follows:

Exception: For roof insulation installed above the deck, the R-value shall be labeled as required by the material standards specified in Table 1508.2 of the New York City Building Code.

Section R303.2 Installation.

Section R303.2 – Revise Section R303.2 to read as follows:

R303.2 Installation. Materials, systems and equipment shall be installed in accordance with (i) the manufacturer's installation instructions and (ii) the applicable provisions of the New York City Construction Codes.

CHAPTER R4

RESIDENTIAL ENERGY EFFICIENCY

SECTION R401

GENERAL

Section R401.2 Compliance.

Section R401.2 - Delete Section R401.2 in its entirety and add a new Section R401.2 to read as follows:

R401.2 Compliance. Projects shall comply with one of the following:

1. The provisions of Sections R401 through R404.
2. For Group R-2 and Group R-3 buildings, the provisions of Section R405 and the provisions of Sections R401 through R404 labeled "Mandatory." The building energy cost shall be equal to or less than 80 percent of the standard reference design building.
3. The provisions of Section R406.

Section R401.2.1 Reserved.

Section R401.2.1- Delete Section R401.2.1 in its entirety.

Section R402.1.1 Vapor retarder.

Section R402.1.1 - Revise Section R402.1.1 to read as follows:

R402.1.1 Vapor retarder. Wall assemblies in the building thermal envelope shall comply with the vapor retarder requirements of Section 1405.3 of the New York City Building Code, as applicable.

Section R402.1.2 Insulation and fenestration criteria.

Section R402.1.2 – Revise Section R402.1.2 to read as follows:

R402.1.2 Insulation and fenestration criteria. The building thermal envelope shall meet the requirements of Table R402.1.2, based on the climate zone specified in Chapter R3.

Table R402.1.2 Insulation and Fenestration Requirements by Component[a]

Revise Table R402.1.2 to read as follows:

TABLE R402.1.2
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR[b]	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGC[b, e]	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE[i]	FLOOR R-VALUE	BASEMENT[c] WALL R-VALUE	SLAB[d] R-VALUE & DEPTH	CRAWL SPACE[c] WALL R-VALUE
4	0.27	0.50	0.40	49	20+5 or 13+10[h]	15/20	30[g]	15/19	10, 4 ft	15/19
5	0.30	0.55	NR	49	20 or 13+5[h]	13/17	30[g]	15/19	10, 2 ft	15/19
6	0.30	0.55	NR	49	20+5[h] or 13+10[h]	15/20	30[g]	15/19	10, 4 ft	15/19

NR = Not Required.

For SI: 1 foot = 304.8 mm.

a. R-values are minimums. U-factors and SHGC are maximums. Where insulation is installed in a cavity that is less than the label or design thickness of the insulation, the installed R-value of the insulation shall be not less than the R-value specified in the table. For steel-framed assemblies, see Section R402.2.6.

b. The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration.

c. "10/13" means R-10 continuous insulation on the interior or exterior of the home or R-13 cavity insulation on the interior of the basement wall.

"15/19" means R-15 continuous insulation on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. Alternatively, compliance with "15/19" shall be R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the home.

d. R-10 insulation shall be provided under the full slab area of a heated slab in addition to the required slab edge insulation R-value for slabs as indicated in the table. The slab edge insulation for heated slabs shall not be required to extend below the slab.

e. Not used.

f. Not used.

g. Alternatively, in alterations of existing buildings, insulation sufficient to fill the framing cavity and providing not less than an R-value of R-19.

h. The first value is cavity insulation, the second value is continuous insulation. Therefore, as an example, "13+10" means R-13 cavity insulation plus R-10 continuous insulation.

i. Mass walls shall be in accordance with Section R402.2.5. The second R-value applies where more than half of the insulation is on the interior of the mass wall.

Table R402.1.4 Equivalent U-Factors[a]

Revise Table R402.1.4 to read as follows:

TABLE R402.1.4

EQUIVALENT U-FACTORS[a]

CLIMATE ZONE	FENESTRATION U-FACTOR	SKYLIGHT U-FACTOR	CEILING U-FACTOR	FRAME WALL U-FACTOR	MASS WALL U-FACTOR[b]	FLOOR U-FACTOR	BASEMENT WALL U-FACTOR	CRAWL SPACE WALL U-FACTOR
4	0.27	0.50	0.026	0.045	0.056	0.033	0.050	0.042
5	0.30	0.55	0.026	0.060	0.082	0.033	0.050	0.055
6	0.30	0.55	0.026	0.045	0.060	0.033	0.050	0.055

a. Nonfenestration U-factors shall be obtained from measurement, calculation or an approved source. For steel-framed assemblies, see Section R402.2.6.

b. Mass walls shall be in accordance with Section R402.2.5. Where more than half the insulation is on the interior, the mass wall U-factor shall not exceed 0.056.

Section R402.2.2 Ceilings without attic spaces.

Section R402.2.2 – Revise the first sentence in Section R402.2.2 to read as follows:

Where Section R402.1.2 requires insulation R-values greater than R-38 in the ceiling and the design of the roof/ceiling assembly does not allow sufficient space for the required insulation, the minimum required insulation R-value for such roof/ceiling assemblies shall be R-38.

Section R402.2.4 Access hatches and doors.

Section R402.2.4 – Revise the Exception to Section R402.2.4 to read as follows:

Exception: Vertical doors providing access from conditioned spaces to unconditioned spaces that comply with the fenestration requirements of Table R402.1.2 based on the applicable climate zone specified in Chapter R3.

Section R402.2.11 Crawl Space Walls.

Section R402.2.11 - Revise the third sentence of Section R402.2.11 to read as follows:

Exposed earth in unvented crawl space foundations shall be covered with a continuous Class I vapor retarder in accordance with the New York City Building Code.

Section R402.4 Air Leakage (Mandatory).

Section R402.4 – Revise Section R402.4 to read as follows:

R402.4 Air leakage (Mandatory). The building thermal envelope shall be constructed to limit air leakage in accordance with the requirements of Sections R402.4.1 through R402.4.6.

Table R402.4.1.1 Air Barrier Insulation Installation[a]

Table R402.4.1.1- Revise Table R402.4.1.1 to read as follows:

TABLE R402.4.1.1

AIR BARRIER AND INSULATION INSTALLATION[a]

COMPONENT	AIR BARRIER CRITERIA	INSULATION INSTALLATION CRITERIA
General requirements	A continuous air barrier shall be installed in the building envelope. The exterior thermal envelope shall contain a continuous air barrier. Breaks or joints in the air barrier shall be sealed.	Air-permeable insulation shall not be used as a sealing material. Insulation installed in a cavity must uniformly fill each cavity side-to-side and top-to-bottom, without substantial gaps or voids around obstructions, and shall be split or fitted tightly around wiring and other penetrations in the cavity. Not more than 2% of the total insulated area shall be compressed below the thickness required to attain the labeled R-value or contain gaps or voids in the insulation.
Ceiling/attic	The air barrier in any dropped ceiling or soffit shall be aligned with the insulation and any gaps in the air barrier shall be sealed. Access openings, drop down stairs or knee wall doors to unconditioned attic spaces shall be sealed.	The insulation in any dropped ceiling/soffit shall be aligned with the air barrier.
Walls	The junction of the foundation and sill plate shall be sealed. The junction of the top plate and the top of exterior walls shall be sealed. Knee walls shall be sealed.	Cavities within corners and headers of frame walls shall be insulated by completely filling the cavity with a material having a thermal resistance, R-value, of not less than R-3 per inch. Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier.

Windows, skylights and doors	The space between framing and skylights, and the jambs of windows and doors, shall be sealed.	—
Rim joists	Rim joists shall include the air barrier.	Rim joists shall be insulated by completely filling the cavity with a material having a thermal resistance, R-value, of not less than R-3 per inch.
Floors, including cantilevered floors and floors above garages	The air barrier shall be installed at any exposed edge of insulation.	Floor framing cavity insulation shall be installed to maintain permanent contact with the underside of subfloor decking. Alternatively, floor framing cavity insulation shall be in contact with the top side of sheathing, or continuous insulation installed on the underside of floor framing; and shall extend from the bottom to the top of all perimeter floor framing members.
Crawl space walls	Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped.	Crawl space insulation, where provided instead of floor insulation, shall be permanently attached to the walls.
Shafts, penetrations	Duct shafts, utility penetrations, and flue shafts opening to exterior or unconditioned space shall be sealed.	—
Narrow cavities	—	Batts to be installed in narrow cavities shall be cut to fit or narrow cavities shall be filled with insulation that on installation readily conforms to the available cavity space.
Garage separation	Air sealing shall be provided between the garage and conditioned spaces.	—
Recessed lighting	Recessed light fixtures penetrating the building thermal envelope shall be sealed to the air barrier.	Recessed light fixtures penetrating the building thermal envelope shall be air tight and IC rated.
Plumbing and wiring	—	In exterior walls, batt insulation shall be cut neatly to fit around wiring and plumbing or insulation, that on installation readily conforms to available space, and shall extend behind piping and wiring.
Shower/tub on exterior wall	The air barrier installed at exterior walls adjacent to showers and tubs shall separate the wall from the shower or tub.	Exterior walls adjacent to showers and tubs shall be insulated.
Electrical/phone box on exterior walls	The air barrier shall be installed behind electrical and communication boxes.	—

	Alternatively, air-sealed boxes shall be installed.	
HVAC register boots	HVAC supply and return register boots that penetrate building thermal envelope shall be sealed to the subfloor, wall covering or ceiling penetrated by the boot.	—
Concealed sprinklers	Where required to be sealed, concealed fire sprinklers shall only be sealed in a manner that is recommended by the manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings.	—

a. Inspection of log walls shall be in accordance with the provisions of ICC 400.

Section R402.4.1.2 Testing.

Section R402.4.1.2 – Revise the first Item 4 following the first paragraph of Section R402.4.1.2 to read as follows:

4. Exterior or interior terminations for continuous ventilation systems and heat recovery ventilators shall be closed and sealed.

Section R402.4.1.3 Optional testing procedure for buildings with two or more dwelling units within the building thermal envelope.

Section R402.4.1.3 - Revise the first Item 4 following the third paragraph of Section R402.4.1.3 to read as follows:

4. Exterior or interior terminations for continuous ventilation systems and heat recovery ventilators shall be closed and sealed.

Section R402.4.1.3.1 Buildings with more than seven dwelling units.

Section R402.4.1.3.1 - Revise the first sentence of Section R402.4.1.3.1 to read as follows:

When the optional testing procedure authorized by Section R402.4.1.3 is used for a building with more than seven dwelling units, testing each testing unit shall not be required, and testing of sample testing units selected in accordance with the provisions set forth below in this Section shall be permitted, when approved by the building official.

Section R402.4.2 Fireplaces.

Section R402.4.2 - Revise Section R402.4.2 to read as follows:

R402.4.2 Fireplaces. New wood-burning fireplaces shall have tight-fitting flue dampers or doors, and outdoor combustion air as required by the fireplace construction provisions of the New York City Construction Codes, as applicable. Where using tight-fitting doors on factory-built fireplaces listed and labeled in accordance with UL 127, the doors shall be tested and listed for the fireplace.

Section R402.4.4 Rooms containing fuel-burning appliances.

Section R402.4.4 - Revise Exception 2 of Section R402.4.4 to read as follows:

2. Fireplaces and stoves complying with Section R402.4.2 and Chapter 9 of the New York City Mechanical Code.

Section R402.4.6 Tenant separation walls (Mandatory).

Section R402.4.6 - Revise Section R402.4.6 to read as follows:

R402.4.6 Tenant separation walls (Mandatory). Fire separations between dwelling units in two-family dwellings and multiple single-family dwellings (townhouses) shall be insulated to no less than R-10 and the walls shall be air sealed in accordance with Section R402.4 of this chapter.

Section R402.5 Maximum fenestration U-factor and SHGC (Mandatory).

Section R402.5 – Delete Section R402.5 in its entirety and add a new Section R402.5 to read as follows:

R402.5 Maximum fenestration U-factor and SHGC (Mandatory). The area-weighted average maximum fenestration U-factor permitted using tradeoffs from Section R402.1.5 or R405 shall be 0.40 for vertical fenestration, and 0.75 for skylights.

Section R402.6 Thermal bridges (Mandatory).

Section R402.6 – Add new Sections R402.6, R402.6.1, R402.6.2 and R402.6.3, and new Table R402.6, to read as follows:

R402.6 Thermal bridges (Mandatory). Applications for construction document approval shall include documentation of thermal bridges.

R402.6.1 Clear field thermal bridges. Where otherwise not included in pre-calculated assembly U-factors, C-factors, or F-factors outlined in Appendix A of ASHRAE 90.1-2016 (as amended), as set forth in Appendix CA of this code, clear field thermal bridges in a wall, roof, or floor assembly shall be noted as such in the drawings.

R402.6.2 Point thermal bridges. Point thermal bridges greater than or equal in area to 8 in^2 (5161 mm^2) and not associated with HVAC or electrical systems shall be noted as thermal bridges in the drawings.

R402.6.3 Linear thermal bridges. Construction documents shall include the following documentation in tabular format for linear thermal bridges listed in Table R402.6:

1. Linear thermal bridge type.
2. Aggregate length of each type of linear thermal bridge.
3. Relevant detail in the construction documents showing a cross-section through the thermal bridge.
4. Ψ-value for each thermal bridge from Table R402.6.

Exception: Where linear thermal bridges have been tested or modeled using methods approved by the department, alternate values may be used as long as supporting documentation is provided.

TABLE R402.6

AVERAGE THERMAL TRANSMITTANCE FOR UN-MITIGATED LINEAR THERMAL BRIDGES

Type of Thermal Bridge	**Ψ-value[a] [Btu / hr ft ˚F]**	**Ψ-value[a] W/mK**
Steel Frame, Steel Stud, Poured-in-place Concrete, Concrete Block, Curtain-wall		
Balcony	0.50	0.871
Floor[b]	0.44	0.755
Slab to Ground	n/a	n/a
Fenestration Perimeter Transition[c]	0.32	0.550
Parapet	0.42	0.735
Eaves	n/a	n/a
Shelf Angle	0.41	0.713
Wood Frame Construction		
Balcony	n/a	n/a
Floor[b]	0.336	0.582
Slab to Ground	n/a	n/a
Fenestration Perimeter Transition[c]	0.15	0.26
Parapet	0.032	0.056
Eaves	n/a	n/a
Shelf Angle	0.186	0.322

a. Psi-values are derived from the ASHRAE Research Project 1365 and BC Hydro Building Envelope Thermal Bridging Guide V. 1.2 - Sept. 2018, and are based on poor performing details.

b. This value is for an intermediate floor. Ground to Slab thermal bridging is applicable for all buildings.

c. Fenestration Perimeter Transition is the thermal bridge between any fenestration frame and the typical wall, roof or floor assembly it abuts or is mounted within. For each unique window or door installation type, provide a minimum of one typical-installation detail showing either the head, jamb or sill detail of the window or door frame and the abutting wall, roof or floor construction, including all structural and insulation layers, blocking, flashing, and cladding.

Section R403.3 Ducts.

Section R403.3 - Revise Section R403.3 to read as follows:

> **R403.3 Ducts.** Ducts and air handlers shall be installed in accordance with Sections R403.3.1 through R403.3.8. The duct system in new buildings and additions shall be located in a conditioned space in accordance with Section R403.3.7.

Section R403.3.1 Insulation (Prescriptive).

Section R403.3.1 - Revise the first sentence of Section R403.3.1 to read as follows:

> In alterations, supply and return ducts in attics shall be insulated to an R-value of not less than R-8 for ducts 3 inches (76 mm) in diameter and larger and not less than R-6 for ducts smaller than 3 inches (76 mm) in diameter.

Section R403.3.2 Sealing (Mandatory).

Section R403.3.2 - Revise the first paragraph of Section R403.3.2 to read as follows:

> Ducts, air handlers and filter boxes shall be sealed. Joints and seams shall comply with the New York City Mechanical Code.

Section R403.3.3 Duct testing (Mandatory).

Section R403.3.3 - Revise Exception 1 of Section R403.3.3 to read as follows:

1. A duct air-leakage test shall not be required where the ducts and air handlers are located entirely within a conditioned space in accordance with Section R403.3.7.

Section R403.3.8 Duct system sizing (Mandatory).

Section R403.3.8 – Add a new Section R403.3.8 to read as follows:

> **R403.3.8 Duct system sizing (Mandatory).** Ducts shall be sized in accordance with ACCA Manual D based on calculations made in accordance with Section R403.7 and Section R403.8.

Section R403.4 Mechanical system piping insulation (Mandatory).

Section R403.4 – Revise Section R403.4 to read as follows:

> **R403.4 Mechanical system piping insulation (Mandatory).** Piping serving as part of a heating or cooling system and capable of carrying fluids greater than 105°F (41°C) or less than 60°F (15°C) shall be thermally insulated in accordance with Table R403.4. The thickness and conductivity of the insulation must result in an R-value of no less than R-3.

Section R403.4 – Add a new Table R403.4 to read as follows:

TABLE R403.4
MINIMUM PIPE INSULATION THICKNESS (in inches)[a, c]

FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (inches)				
	Conductivity Btu • in./(h • ft^2 • °F)[b]	Mean Rating Temperature, °F	< 1	1 to < 1 ½	1 ½ to < 4	4 to < 8	< 8
> 350	0.32 – 0.34	250	4.5	5.0	5.0	5.0	5.0
251 – 350	0.29 – 0.32	200	3.0	4.0	4.5	4.5	4.5
201 – 250	0.27 – 0.30	150	2.5	2.5	2.5	3.0	3.0
141 – 200	0.25 – 0.29	125	1.5	1.5	2.0	2.0	2.0
105 – 140	0.21 – 0.28	100	1.0	1.0	1.5	1.5	1.5
40 – 60	0.21 – 0.27	75	0.5	0.5	1.0	1.0	1.0
< 40	0.20 – 0.26	50	0.5	1.0	1.0	1.0	1.5

For SI: 1 inch = 25.4 mm, °C = [(°F) - 32]/1.8.

a. For piping smaller than 1 ½ inches and located in partitions within conditioned spaces, reduction of these thicknesses by 1 inch shall be permitted (before thickness adjustment required in footnote b) but not to a thickness less than 1 inch.

b. For insulation outside the stated conductivity range, the minimum thickness (T) shall be determined as follows:

$$T = r\,[(1 + t/r)^{K/k} - 1]$$

where:

T = minimum insulation thickness,

r = actual outside radius of pipe,

t = insulation thickness listed in the table for applicable fluid temperature and pipe size,

K = conductivity of alternate material at mean rating temperature indicated for the applicable fluid temperature (Btu • in/h • ft^2 • °F), and

k = the upper value of the conductivity range listed in the table for the applicable fluid temperature.

c. For direct-buried heating and hot water system piping, reduction of these thicknesses by 1 1/2 inches (38 mm) shall be permitted (before thickness adjustment required in footnote b) but not to thicknesses less than 1 inch.

Section R403.5 Service hot water systems.

Section R403.5 – Revise Section R403.5 to read as follows:

R403.5 Service hot water systems. Energy conservation measures for service hot water systems shall be in accordance with Sections R403.5.1 through R403.5.5.

Section R403.5.4 Drain water heat recovery units.

Section R403.5.4 – Revise Section R403.5.4 to read as follows:

R403.5.4 Drain water heat recovery units. Drain water heat recovery units shall have a minimum efficiency of 40 percent if installed for equal flow or a minimum efficiency of 52 percent if installed for unequal flow. Vertical drain water heat recovery units shall comply with CSA B55.2 and shall be tested and labeled in accordance with CSA B55.1 or IAMPO 346. Sloped drain water heat recovery units shall comply with IAPMO PS 92 and be tested and labeled in accordance with IAPMO 346. Potable water-side pressure loss of drain water heat recovery units shall be less than 3 psi (20.7 kPa) for individual units connected to one or two showers. Potable water-side pressure loss of drain water heat recovery units shall be less than 2 psi (13.8 kPa) for individual units connected to three or more showers.

Section R403.5.5 Supply of heated water.

Section R403.5.5 – Add a new Section R403.5.5 to read as follows:

R403.5.5 Supply of heated water. In new buildings, heated water supply piping shall be in accordance with one of the following:

1. **Maximum allowable pipe length method.** The maximum allowable pipe length from the nearest source of heated water to the termination of the fixture supply pipe shall be in accordance with the maximum pipe length in Table R403.5.5. Where the length contains more than one size of pipe, the largest size shall be used for determining the maximum allowable length of the piping in Table R403.5.5.

2. **Maximum allowable pipe volume method.** The water volume in the piping shall be calculated in accordance with Table R403.5.5. The maximum volume of hot or tempered water in the piping to public lavatory faucets shall be 2 ounces. For fixtures other than public lavatory faucets, the maximum volume shall be 64 ounces for hot or tempered water from a water heater or boiler; and 24 ounces for hot or tempered water from a circulation loop pipe or an electrically heat-traced pipe.

3. **Drain water heat recovery units**. New buildings shall include a drain water heat recovery unit that captures heat from at least one shower per dwelling unit, and such drain water heat recovery unit must have a minimum efficiency of 40 percent if installed for equal flow or a minimum efficiency of 52 percent if installed for unequal flow.

4. **Recirculation Systems.** Projects shall include a recirculation system with no more than 0.5 gallon (1.9 liter) storage. The storage limit shall be measured from the point where the branch feeding the fixture branches off the recirculation loop to the fixture. Recirculation systems must be based on an occupant-controlled switch or an occupancy sensor, installed in each bathroom which is located beyond

a 0.5 gallon stored-volume range from the water heater.

Table R403.5.5 – Add a new Table R403.5.5 to read as follows:

TABLE R403.5.5
PIPE VOLUME AND MAXIMUM PIPING LENGTHS[b]

Nominal Pipe or Tube Size (inch)	**VOLUME (Liquid Ounces Per Foot Length)**	**Maximum Pipe or Tube Length**		
		System without a circulation loop or heat-traced line (feet)	**System with a circulation loop or heat-traced line (feet)**	**Lavatory faucets – public (metering and nonmetering (feet)**
1/4[a]	0.33	50	16	6
5/16[a]	0.5	50	16	4
3/8[a]	0.75	50	16	3
1/2	1.5	43	16	2
5/8	2	32	12	1
3/4	3	21	8	0.5
7/8	4	16	6	0.5
1	5	13	5	0.5
1 1/4	8	8	3	0.5
1 1/2	11	6	2	0.5
2 or larger	18	4	1	0.5

a. The flow rate for 1/4-inch size pipe or tube is limited to 0.5 gallons per minute; for 5/16-inch size, it is limited to 1 gpm; for 3/8-inch size, it is limited to 1.5 gpm.

b. The volume shall be the sum of the internal volumes of pipe, fittings, valves, meters and manifolds between the source of hot water and the termination of the fixture supply pipe. The volume contained within fixture shutoff valves, flexible water supply connectors to a fixture fitting, or within a fixture fitting shall not be included in the water volume determination. Where hot or tempered water is supplied by a circulation loop pipe or a heat-traced pipe, the volume shall include the portion of the fitting on the branch pipe that supplies water to the fixture.

Section R403.6 Mechanical ventilation (Mandatory).

Section R403.6 - Revise the first sentence of Section R403.6 to read as follows:

The building shall be provided with ventilation that complies with the requirements of the New York City Mechanical Code, as applicable, or with other approved means of ventilation.

Section R403.6.2 Balanced ventilation and HRV/ERV systems (Mandatory).

Section R403.6.2 - Add new Sections R403.6.2, R403.6.2.1, R403.6.2.2, R403.6.2.3, and new Tables R403.6.2(1) and R403.6.2(2), to read as follows:

R403.6.2 Balanced ventilation and HRV/ERV systems (Mandatory). In new buildings, every dwelling unit shall be served by a heat recovery ventilator (HRV) or energy recovery ventilator (ERV) installed per manufacturer's instructions. The HRV/ERV must be listed and sized adequately for the specific application, which will include the building's conditioned area, and number of occupants.

Exception: A balanced ventilation system designed and installed according to the requirements of Sections R403.6.2.1 through R403.6.2.3, using the return side of the building's heating and/or cooling system air handler to supply outdoor air, shall be permitted to comply with this section. When the outdoor air supply is ducted to the heating and/or cooling system air handler, the mixed air temperature shall not be less than that permitted by the heating equipment manufacturer's installation instructions. Heating and/or cooling system air handlers used to distribute outdoor air shall be field-verified to not exceed an efficacy of 45 W/CFM if using furnaces for heating and 58 W/CFM if using other forms of heating. In the balanced system design, an equivalent exhaust air flow rate shall be provided simultaneously by one or more exhaust fans, located remotely from the source of supply air. The balanced system's exhaust and supply fans shall be interlocked for operation, sized to provide equivalent air flow at a rate greater than or equal to that determined by Table R403.6.2(1) and shall have their fan capacities adjusted for intermittent run time per Table R403.6.2(2). Continuous operation of the balanced ventilation system shall not be permitted.

R403.6.2.1 Whole-house mechanical ventilation (balanced ventilation option) system design. The whole-house ventilation system shall consist of one or more supply or exhaust fans, or a combination of such, and associated ducts and controls. Local exhaust or supply fans are permitted to serve as such as system. Outdoor air ducts connected to the return side of an air handler shall be considered as providing supply ventilation.

R403.6.2.2 System controls. The whole-house ventilation system shall be provided with controls that enable manual override.

R403.6.2.3 Mechanical ventilation rate. The whole-house mechanical ventilation system is permitted to operate intermittently where the system has controls that enable operation for not less than 25 percent of each 4 hour segment and the ventilation rate prescribed in Table R403.6.2(1) is multiplied by the factor determined in accordance with Table R403.6.2(2).

TABLE R403.6.2(1)

CONTINUOUS WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM AIRFLOW RATE REQUIREMENTS

DWELLING UNIT FLOOR AREA (square feet)	NUMBER OF BEDROOMS				
	0 – 1	2 – 3	4 – 5	6 – 7	> 7
	Airflow in CFM				
< 1,500	30	45	60	75	90
1,501 – 3,000	45	60	75	90	105
3,001 – 4,500	60	75	90	105	120
4,501 – 6,000	75	90	105	120	135
6,001 – 7,500	90	105	120	135	150
> 7,500	105	120	135	150	165

For SI: 1 square foot = 0.0929 m^2, 1 cubic foot per minute = 0.0004719 m^3/s.

TABLE R403.6.2(2)

INTERMITTENT WHOLE-HOUSE MECHANICAL VENTILATION RATE FACTORS[a,b]

RUN-TIME PERCENTAGE IN EACH 4-HOUR SEGMENT	25%	33%	50%	66%	75%	100%
Factor[a]	4	3	2	1.5	1.3	1.0

a. For ventilation system run time values between those given, the factors are permitted to be determined by interpolation.

b. Extrapolation beyond the table is prohibited.

Section R403.6.3 Verification.

Section R403.6.3 - Add a new Section R403.6.3 to read as follows:

R403.6.3 Verification. Installed performance of the mechanical ventilation system shall be tested and verified by an approved agency and measured using a flow hood, flow grid, or other airflow measuring device in accordance with Air Conditioning Contractors of America (ACCA) HVAC Quality Installation Verification Protocols – ANSI/ACCA 9QIvp-2016.

Section R403.8 Systems serving multiple dwelling units (Mandatory).

Section R403.8 - Revise Section R403.8 to read as follows:

R403.8 Systems serving multiple dwelling units (Mandatory). Systems serving multiple dwelling units shall comply with Sections C403 and C404 in lieu of Section R403.

Section R403.9 Snow melt and ice system controls (Mandatory).

Section R403.9 - Revise Section R403.9 to read as follows:

R403.9 Snow melt and ice system controls (Mandatory). Snow- and ice-melting systems, supplied through energy service to the building, shall include automatic controls capable of and configured to shut off the system when the pavement temperature is greater than 50°F (10°C) and precipitation is not falling, and an automatic or manual control that will allow shutoff when the outdoor temperature is greater than 40°F (4.8°C).

Section R403.12 Residential pools and permanent residential spas.

Section R403.12 - Revise Section R403.12 to read as follows:

R403.12 Residential pools and permanent residential spas. Residential swimming pools and permanent residential spas that are accessory to one- and two-family dwellings and townhouses three stories or less in height above grade plane and that are available only to the household and its guests shall be in accordance with APSP-15a.

SECTION R404

ELECTRICAL POWER AND LIGHTING SYSTEMS

Section R404.1 Lighting equipment (Mandatory).

Section R404.1 - Revise Section R404.1 to read as follows:

R404.1 Lighting equipment (Mandatory). Not less than 90 percent of the permanently installed lighting fixtures shall use lamps with an efficacy of at least 65 lumens per watt, or have a total luminaire efficacy of at least 45 lumens per watt.

Section R404.2 Electrical energy consumption (Mandatory).

Section R404.2 - Add a new Section R404.2 to read as follows:

R404.2 Electrical energy consumption (Mandatory). In all buildings having individual dwelling units, provisions shall be made to determine the electrical energy consumed by each unit by separately metering individual dwelling units.

Section R404.3 Electrical vehicle service equipment capable (Mandatory).

Section R404.3 - Add a new Section R404.3 to read as follows:

R404.3 Electrical vehicle service equipment capable (Mandatory). One or two-family dwellings and townhouses with parking area provided on the building site shall provide a 208/240V 40-amp outlet for each dwelling unit or panel capacity and conduit for the future installation of such an outlet. Outlet or conduit termination shall be adjacent to the parking area. For residential occupancies where there is a common parking area, provide either:

1. Panel capacity and conduit for the future installation of 208/240V 40-amp outlets for 5 percent of the total parking spaces, but not less than one outlet, or

2. 208/240V 40-amp outlets for 5 percent of the total parking spaces, but not less than one outlet.

SECTION R405

SIMULATED PERFORMANCE ALTERNATIVE (PERFORMANCE)

Section R405.3 Performance-based compliance.

Section R405.3 – Revise the Exception to Section R405.3 to read as follows:

Exception: The energy use based on source energy expressed in Btu or Btu per square foot of conditioned floor area shall be permitted to be substituted for the energy cost. The source energy multiplier for electricity shall be 2.55. The source energy multiplier for fuels other than electricity shall be 1.05.

TABLE R405.5.2(1) Specifications for the Standard Reference and Proposed Designs

Table R405.5.2(1) - Revise the row titled "Heating Systems[d, e]" of Table R405.5.2(1) to read as follows:

Heating systems[d, e]	For other than electric heating without a heat pump: as proposed. Where the proposed design utilizes electric heating without a heat pump, the standard reference design shall be an air source heat pump meeting the requirements of Section C403 of this Code. Capacity: sized in accordance with Section R403.7.	As proposed

Table R405.5.2(1) - Revise footnote h to Table R405.5.2(1) to read as follows:

h. For residences with conditioned basements, R-2 residences, and for townhouses, the following formula shall be used to determine glazing area:

$$AF = As \times FA \times F$$

where:

AF = Total glazing area.

As = Standard reference design total glazing area.

FA = (Above-grade thermal boundary gross wall area)/(above-grade boundary wall area + 0.5 × below-grade boundary wall area).

F = (above-grade thermal boundary wall area)/(above-grade thermal boundary wall area + common wall area) or 0.56, whichever is greater, and where:

Thermal boundary wall is any wall that separates conditioned space from unconditioned space or ambient conditions.

Above-grade thermal boundary wall is any thermal boundary wall component not in contact with soil.

Below-grade boundary wall is any thermal boundary wall in soil contact.

Common wall area is the area of walls shared with an adjoining dwelling unit. L and CFA are in the same units.

SECTION R406

ENERGY RATING INDEX

COMPLIANCE ALTERNATIVE

Section R406.2 Mandatory requirements.

Section R406.2 Mandatory requirements – Delete Section R406.2 in its entirety and add a new Section R406.2 to read as follows:

R406.2 Mandatory requirements. Compliance with this section requires that the provisions identified in Sections R401 through R404 indicated as "Mandatory" and Section R403.5.3 be met. The building thermal envelope shall be greater than or equal to levels of efficiency and Solar Heat Gain Coefficients in Table 402.1.1 or 402.1.3 of the 2011 New York City Energy Conservation Code.

Section R406.3 Energy Rating Index.

Section R406.3 Energy Rating Index – Revise the first sentence of Section R406.3 to read as follows:

The Energy Rating Index (ERI) shall be determined in accordance with RESNET/ICC 301, and the ERI Reference Design Ventilation rate shall be in accordance with Equation 4-1.

Table R406.4 Maximum Energy Rating Index

Table R406.4 – Revise the Table R406.4 to read as follows:

TABLE R406.4
MAXIMUM ENERGY RATING INDEX

CLIMATE ZONE	ENERGY RATING INDEX[a]
4	50
5	61
6	61

a. Where on-site renewable energy is included for compliance using the ERI analysis of Section R406.4, the building shall meet the mandatory requirements of Section R406.2, and the building thermal envelope shall be greater than or equal to the levels of efficiency and SHGC in Table R402.1.2 or Table R402.1.4 of the 2016 New York City Energy Conservation Code.

CHAPTER R5

EXISTING BUILDINGS

SECTION R501

GENERAL

Section R501.4 Compliance.

Section R501.4 - Delete Section R501.4 in its entirety and add a new Section R501.4 to read as follows:

> **R501.4 Compliance.** Alterations, repairs, additions and changes of occupancy to, or relocation of, existing buildings and structures shall comply with (i) all applicable provisions of this code, (ii) the provisions for alterations, repairs, additions and changes of occupancy or relocation, respectively, in the New York City Construction Codes, (iii) the New York City Fire Code, and (iv) the New York City Electrical Code.

SECTION R502

ADDITIONS

Section R502.1.1.1 Building envelope.

Section R502.1.1.1 – Revise the first sentence of Section R502.1.1.1 to read as follows:

> New building envelope assemblies that are part of the addition shall comply with Sections R402.1, R402.2, R402.3.1 through R402.3.5, and R402.4.

SECTION R503

ALTERATIONS

Section R503.1.1 Building envelope.

Section R503.1.1 – Delete Exception 7 of Section R503.1.1.

Section R503.1.4 Lighting

Section R503.1.4 – Revise the Exception to Section R503.1.4 to read as follows:

> **Exception:** Alterations that replace less than 20 percent of the luminaires in a space, provided that such alterations do not increase the installed interior lighting power.

CHAPTER R6

REFERENCED STANDARDS

Chapter R6 – Delete Chapter R6 in its entirety and add a new chapter R6 to read as follows:

CHAPTER R6

REFERENCED STANDARDS

This chapter lists the standards that are referenced in various sections of the commercial provisions of this code. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title, and the section or sections of this document that reference the standard. The application of the referenced standards shall be as specified in Section ECC 105. Refer to the rules of the department for any subsequent additions, modifications or deletions that may have been made to the referenced standards set forth herein in accordance with Section 28-103.19 of the Administrative Code.

AAMA

American Architectural Manufacturers Association
1827 Walden Office Square
Suite 550
Schaumburg, IL 60173-4268

AAMA/WDMA/CSA 101/I.S.2/A C440—17: North American Fenestration Standard/Specifications for Windows, Doors and Unit Skylights

R402.4.3

ACCA

Air Conditioning Contractors of America
2800 Shirlington Road, Suite 300
Arlington, VA 22206

ANSI/ACCA 9QIvp-2016: HVAC Quality Installation Verification Protocols

R403.6.3

Manual D-16: Residential Duct Systems

R403.3.8

Manual J—11: Residential Load Calculation Eighth Edition

R403.7

Manual S—13: Residential Equipment Selection

R403.7

AHRI Air-Conditioning, Heating, & Refrigeration Institute

2111 Wilson Blvd, Suite 500

Arlington, VA 22201

440—2008: Performance Rating of Room Fan Coils—with Addendum 1

R403.4

840—15: Performance Rating of Unit Ventilators

R403.4

ANSI American National Standards Institute
25 West 43rd Street, 4th Floor
New York, NY 10036

ANSI/ACCA 9QIvp-2016: HVAC Quality Installation Verification Protocols

R403.6.3

ANSI/ASHRAE/IESNA 90.1-2016: Energy Standard for Buildings Except Low-rise Residential Buildings

CH1 (Intro Statement), 101.1.1, R202

ANSI/ASHRAE/IES 90.1-2016 (AS AMENDED) with revisions as set forth in Appendix CA of this code

101.1.1, 101.5.1.1, 105.1, R202, R402.6.1

ANSI/APSP/ICC 14—2014: American National Standard for Portable Electric Spa Energy Efficiency

R403.11

ANSI/APSP/ICC 15a—2011: American National Standard for Residential Swimming Pool and Spa Energy Efficiency—includes Addenda A Approved January 9, 2013

R403.12

ANSI/DASMA 105—2016: Test Method for Thermal Transmittance and Air Infiltration of Garage Doors and Rolling Doors

R303.1.3

ANSI Z 65—1996: Method for Measuring Floor Area in Office Buildings

R402.4.1.2, R402.4.1.3

APSP The Association of Pool & Spa Professionals
2111 Eisenhower Avenue, Suite 500
Alexandria, VA 22314

ANSI/APSP/ICC 14—2014: American National Standard for Portable Electric Spa Energy Efficiency

R403.11

ANSI/APSP/ICC 15a—2011: American National Standard for Residential Swimming Pool and Spa Energy Efficiency—includes Addenda A Approved January 9, 2013

R403.12

ASHRAE ASHRAE
1791 Tullie Circle NE
Atlanta, GA 30329

ANSI/ASHRAE/IESNA 90.1-2016: Energy Standard for Buildings Except Low-rise Residential Buildings

CH1 (Intro Statement), 101.1.1, R202

ANSI/ASHRAE/IES 90.1-2016 (AS AMENDED) with revisions as set forth in Appendix CA of this code

101.1.1, 101.5.1.1, 105.1, R202, R402.6.1

ASHRAE—2017: ASHRAE Handbook of Fundamentals

R402.1.5

ASHRAE—2001: 2001 ASHRAE Handbook of Fundamentals

Table R405.5.2(1)

ASHRAE 193—2010(RA 2014): Method of Test for Determining the Airtightness of HVAC Equipment

R403.3.2.1

ASHRAE Research Project 1365- 2011: Thermal Performance of Building Envelope Details for Mid- and High-Rise Buildings

Table R402.6

ASTM

ASTM International
100 Barr Harbor Drive,
P.O. Box
C700
West Conshohocken,
PA
19428-2959

C1363—11: Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus

R303.1.4.1

E283—04(2012): Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen

R202, R402.4.5

E779—10: Standard Test Method for Determining Air Leakage Rate by Fan Pressurization

R402.4.1.2, R402.4.1.3

E1827—11: Standard Test Methods for Determining Airtightness of Building Using an Orifice Blower Door

R402.4.1.2

E2178-13: Standard Test Method for Air Permeance of Building Method

R202

BC HYDRO

BC Hydro Power Smart

333 Dunsmuir Street

Vancouver, BC

V6B 5R3

Building Envelope Thermal Bridging Guide Version 1.2 - 18

Table R402.6

CSA

CSA Group
8501 East Pleasant
Valley Road
Cleveland, OH 44131-
5516

AAMA/WDMA/CSA 101/I.S.2/A440—17: North American Fenestration Standard/Specification for Windows, Doors and Unit Skylights

R402.4.3

CSA B55.1—2015: Test Method for Measuring Efficiency and Pressure Loss of Drain Water Heat Recovery Units

R403.5.4

CSA B55.2—2015: Drain Water Heat Recovery Units

R403.5.4

DASMA

Door & Access Systems
Manufacturers
Association
1300 Sumner Avenue
Cleveland, OH 44115-
2851

105—2016: Test Method for Thermal Transmittance and Air Infiltration of Garage Doors and Rolling Doors

R303.1.3

DOE	U.S. Department of Energy c/o Superintendent of Documents U.S. Government Printing Office Washington, DC 20402-9325

(Current Edition): State Energy Price and Expenditure Report

R405.3

HVI	Home Ventilating Institute 1000 North Rand Road, Suite 214 Wauconda, IL 60084

916—09: Airflow Test Procedure

Table R403.6.1

IAPMO	International Association of Plumbing and Mechanical Officials 4755 E. Philadelphia St. Ontario, CA 91761

IAPMO IGC 346: 2017 Test Method for Measuring the Performance of Drain Water Heat Recovery Units

R403.5.4

IAPMO PS 92-2013: Heat Exchangers and Indirect Water Heaters

R403.5.4

ICC International Code Council, Inc.
500 New Jersey Avenue NW
6th Floor
Washington, DC 20001

ANSI/APSP/ICC 14—2014: American National Standard for Portable Electric Spa Energy Efficiency

R403.11

ANSI/APSP/ICC 15a—2011: American National Standard for Residential Swimming Pool and Spa Energy Efficiency—includes Addenda A Approved January 9, 2013

R403.12

ICC 400—17: Standard on the Design and Construction of Log Structures

R402.1, Table R402.4.1.1

IECC—18: International Energy Conservation Code®

CH1 (Intro Statement), 101.1.1

IECC—06: 2006 International Energy Conservation Code®

R202

ANSI/RESNET/ICC 301—2014: Standard for the Calculation and Labeling of the Energy Performance of Low-rise Residential Buildings using an Energy Rating Index First Published March 7, 2014—Republished January 2016, including Addenda D, E, G and K

R406.3, R406.6.1, R406.6.5

ANSI/RESNET/ICC 380—2016: Standard for Testing Airtightness for Building Enclosures, Airtightness of Heating and Cooling Air Distribution Systems and Airflow of Mechanical Ventilation Systems—Republished January 2016, including Addendum A

R402.4.1.2

IEEE

Institute of Electrical and Electronic Engineers, Inc.
3 Park Avenue, 17th Floor
New York, NY 10016-5997

515.1—2012: IEEE Standard for the Testing, Design, Installation and Maintenance of Electrical Resistance Trace Heating for Commercial Applications

R403.5.1.2

IES

Illuminating Engineering Society

120 Wall Street, 17th Floor

New York, NY 10005-4001

ANSI/ASHRAE/IESNA 90.1-2016: Energy Standard for Buildings Except Low-rise Residential Buildings

CH1 (Intro Statement), 101.1.1, R202

ANSI / ASHRAE / IES 90.1-2016 (AS AMENDED) with revisions as set forth in Appendix CA of this code

101.1.1, 101.5.1.1, 105.1, R202, R402.6.1

NFRC

National Fenestration Rating Council, Inc.
6305 Ivy Lane, Suite 140
Greenbelt, MD 20770

100—2017: Procedure for Determining Fenestration Products U-factors

R303.1.3

200—2017: Procedure for Determining Fenestration Product Solar Heat Gain Coefficients and Visible Transmittance at Normal Incidence

R303.1.3

400—2017: Procedure for Determining Fenestration Product Air Leakage

R402.4.3

NYC

New York City Department of Buildings

280 Broadway

New York, NY 10007

1968 Building Code

101.2.1

NYCAC—14: New York City Administrative Code

CH1 (Intro Statement), 101.1, 101.2.1, 101.5.2.2, 101.5.2.3, 102.1, 103.1, 103.2.1, 103.3, 103.4, 104.1, 104.1.1, 104.3, 105.1, R202

NYCBC—14: New York City Building Code

101.2.1, 101.2.2, 103.2.1, R202, R303.1.1, R303.2, R402.1.1, R402.2.11

NYCCC—14: New York City Construction Codes

101.2.1, 102.1, 103.1, 104.2.3, R201.3, R201.4, R402.4.2, R501.4

NYCECC—16: New York City Energy Conservation Code

Table R406.4

NYCECC—11: New York City Energy Conservation Code

R406.2

NYCEC—11: New York City Electrical Code

101.2.1, R201.3, R201.4, R501.4

NYCFC-14: New York City Fire Code

101.2.1, R201.3, R201.4, R501.4

NYCMC-14: New York City Mechanical Code

101.2.1, R402.4.4, R403.3.2, R403.6

NYS

New York Department of State

One Commerce Plaza, 99 Washington Ave

Albany, NY 12231-000

BCNYS—20: Building Code of New York State

R202

ECCCNYS—20: Energy Conservation Construction Code of New York State

CH1 (Intro Statement), 101.1.1, 101.2.3, 101.3

RESNET

Residential Energy Services Network, Inc.
P.O. Box 4561
Oceanside, CA 92052-4561

ANSI/RESNET/ICC 301—2014: Standard for the Calculation and Labeling of the Energy Performance of Low-rise Residential Buildings using an Energy Rating Index First Published March 7, 2014—Republished January 2016, including Addenda D, E, G and K

R406.3, R406.6.1, R406.6.5

ANSI/RESNET/ICC 380—2016: Standard for Testing Airtightness for Building Enclosures, Airtightness of Heating and Cooling Air Distribution Systems, and Airflow of Mechanical Ventilation Systems—Republished January 2016, including Addendum A

R402.4.1.2

UL

UL LLC
333 Pfingsten Road
Northbrook, IL 60062

127—11: Standard for Factory Built Fireplaces—with Revisions through May 2015

R402.4.2

515—11: Electrical Resistance Heat Tracing for Commercial and Industrial Applications Including Revisions through July 2015

R403.5.1.2

US-FTC

United States-Federal Trade Commission
600 Pennsylvania Avenue NW
Washington, DC 20580

CFR Title 16 (2015): R-value Rule

R303.1.4

WDMA

Window and Door Manufacturers Association
2025 M Street NW, Suite 800
Washington, DC 20036-3309

AAMA/WDMA/CSA 101/I.S.2/A440—17: North American Fenestration Standard/Specification for Windows, Doors and Unit Skylights

R402.4.3

APPENDIX RA

SOLAR-READY PROVISIONS – DETACHED ONE- AND TWO-FAMILY DWELLINGS AND TOWNHOUSES

Appendix RA Solar-Ready Provisions – Detached One- and Two-Family Dwellings and Townhouses.

Appendix RA – Delete Appendix RA in its entirety.

§ 28-1001.2.3 New York city amendments to the 2016 edition of Energy Standard for Buildings Except Low-Rise Residential Buildings ("ASHRAE 90.1-2016"), as amended by 19 NYCRR section 1240.3. Add a new Appendix CA to be inserted after chapter C6 to read as follows:

APPENDIX CA

MODIFIED ENERGY STANDARD FOR BUILDINGS EXCEPT FOR LOW-RISE RESIDENTIAL BUILDINGS

SECTION CA101

SCOPE

CA101.1 Scope. This Appendix provides the modifications to the nationally recognized standard ASHRAE 90.1-2016, as amended by 19 NYCRR section 1240.3, governing commercial energy efficiency. Where a referenced publication has been modified for the City of New York by the New York City Construction Codes including the New York City Energy Conservation Code, every reference to such publication shall be deemed to include all such modifications.

SECTION CA102

ENERGY STANDARD FOR COMMERCIAL BUILDINGS

CA102.1 General. Refer to the rules of the department for any subsequent additions, modifications or deletions that may have been made to this standard in accordance with Section 28-103.19 of the Administrative Code.

Section 3 - Definitions, Abbreviations, and Acronyms

Section 3.2 – Revise the definition "authority having jurisdiction" after the definition of "attic and other roofs," to read as follow:

authority having jurisdiction: the commissioner or the commissioner's designee.

Section 3.2 – Add a definition "baseline building source energy" after the definition of "baseline building performance," to read as follow:

baseline building source energy: the annual source energy use in units of Btu for a building design intended for use as a baseline for rating above-standard design or when using the performance rating method as an alternative path for minimum standard compliance in accordance with Section 4.2.1.1.

Section 3.2 – Revise the footnote 1, supporting the definition of "building envelope trade-off schedules and loads," to read as follows:

[1]Schedules and internal loads by building area type are located at http://sspc901.ashraepcs.org/documents.php

Section 3.2 – Revise the definition "building official" after the definition of "building material," to read as follows:

building official: The Commissioner of Buildings of the City of New York or his or her duly authorized representative. See Section 28-101.5 of the Administrative Code.

Section 3.2 – Revise the definition of "labeled" to read as follows:

labeled: See Section 28-101.5 of the Administrative Code.

Section 3.2 – Revise the definition of "on-site renewable energy" after the definition of "occupant sensor" to read as follows:

on-site renewable energy: energy derived from solar radiation, wind, waves, tides, landfill gas, biogas, biomass or the internal heat of the earth. The energy system providing on-site renewable energy shall be located on the project site.

Section 3.2 – Add a definition of "proposed building source energy" after the definition of "proposed building performance," to read as follows:

proposed building source energy: the annual source energy use in units of Btu for a proposed design.

Section 3.2 – Revise the definition of "simulation program" after the definition of "sidelighting effective aperature," to read as follows:

simulation program: a computer program, including the simulation engine and the corresponding user interface that is capable of simulating the energy performance of building systems.

Section 3.2 – Add a definition of "site energy" after the definition of "simulation program," to read as follows:

site energy: the amount of fuel that is consumed on-site to operate a building.

Section 3.2 – Add a definition of "source energy" after the definition of "solar heat gain coefficient (SHGC)," to read as follows:

source energy: the total amount of primary fuel that is required to operate a building incorporating transmission, delivery, and production losses. Source Energy is calculated by multiplying site energy of each fuel type by the conversion factors in Table 4.2.1.2.

Section 3.2 – Add a definition of "spandrel panel" after the definition of "space-conditioning category," to read as follows:

spandrel panel: an opaque assembly within a fenestration framing system in a wall that is part of the building thermal envelope. Such panels are considered to be a portion of the opaque thermal envelope assembly.

Section 3.2 – Add a definition of "thermal bridge" after the definition of "thermal block," to read as follows:

thermal bridge: thermal bridges are elements that interrupt areas of uniform thermal resistance in the building envelope.

clear field thermal bridge: an area-based thermal transmittance associated with elements of a building envelope assembly which repeat at regular intervals. Examples of clear field thermal bridges include metal or wood stud, brick ties and cladding attachments such as z-girts.

linear thermal bridge: a length-based thermal transmittance associated with horizontal, vertical, or diagonal elements within the building envelope and with length measured along the exterior surface of the building envelope. Examples of linear thermal bridges include balconies or floor assemblies which penetrate walls in the building envelope, fenestration perimeter interfaces, parapets, and shelf angles. Linear thermal transmittance is heat flow divided by length and by the temperature difference between the interior and exterior sides of the assembly, represented by a Ψ-value (Psi-Value) in units Btu/hr-ft-°F.

point thermal bridge: an element-based thermal transmittance associated with a discrete element that penetrates the building envelope. Examples of point thermal bridges include a beam penetrating a wall, a column penetrating a roof or floor, and an anchor or connection used to attach an element to the building and not otherwise addressed as a clear field thermal bridge or linear thermal bridge. Point thermal transmittance is heat flow divided by the temperature difference between the interior and exterior sides of the assembly, represented by a X-value (Chi-Value) in units Btu/hr-°F.

Section 4 - Administration and Enforcement

Section 4.2.1.1 New Buildings

Delete Section 4.2.1.1 in its entirety, and replace with a new section 4.2.1.1 to read as follows:

4.2.1.1 New Buildings

New buildings shall comply with either the provisions of

a. Section 5, “Building Envelope”; Section 6, “Heating, Ventilating, and Air Conditioning”; Section 7, “Service Water Heating”; Section 8, “Power”; Section 9, “Lighting”; Section 10, “Other Equipment”; and Appendix I “Required Additional Efficiency Packages”, or

b. Section 11, “Energy Cost Budget Method,” or

c. Appendix G, “Performance Rating Method,” using one of the following:

1. **Performance Cost Index Method**

When using Appendix G, the Performance Cost Index (PCI) shall be less than or equal to the Performance Cost Index Target (PCIt) when calculated in accordance with the following:

$$PCI_t = [BBUEC + (BPF_{cost} \times BBREC)]/BBP$$

where

PCI = Performance Cost Index calculated in accordance with Section G1.2.

BBUEC = Baseline Building Unregulated Energy Cost, the portion of the annual energy cost of a baseline building design that is due to unregulated energy use.

BBREC = Baseline Building Regulated Energy Cost, the portion of the annual energy cost of a baseline building design that is due to regulated energy use.

$BPF_{cos\ t}$ = Building Performance Factor from Table 4.2.1.1. For building area types not listed in Table 4.2.1.1 use "All others." Where a building has multiple building area types, the required BPF_{cost} shall be equal to the area-weighted average of the building area types.

BBP = Baseline Building Performance.

Regulated energy cost shall be calculated by multiplying the total energy cost by the ratio of regulated energy use to total energy use for each fuel type. Unregulated energy cost shall be calculated by subtracting regulated energy cost from total energy cost.

2. **Performance Source Energy Index Method**

When using Appendix G, the Performance Source Energy Index (PSEI) shall be less than or equal to the Performance Source Energy Index Target ($PSEI_t$) when calculated in accordance with the following:

$PSEI_t = [BBUSE + (BPF_{source} \times BBRSE)]/BBSE$

where

PSEI = Performance Source Energy Index calculated in accordance with Section G1.2.

BBUSE = Baseline building unregulated source energy use in units of Btu, the portion of the annual site energy of a baseline building design that is due to unregulated energy use multiplied by the site to source conversion ratios in Table 4.2.1.2 for each fuel type.

BBRSE = Baseline building regulated source energy use in units of Btu, the portion of the annual site energy of a baseline building design that is due to regulated energy use multiplied by the site to source conversion ratios in Table 4.2.1.2 for each fuel type.

BPF_{source} = Building Performance Factor from Table 4.2.1.3. For building area types not listed in Table 4.2.1.3 use "All others." Where a building has multiple building area types, the required BPF_{source} shall be equal to the area-weighted average of the building area types.

BBSE = Baseline Building source energy.

Table 4.2.1.1 – Building Performance Factor (Cost)

Delete Table 4.2.1.1 in its entirety, and replace with a new Table 4.2.1.1 to read as follows:

Table 4.2.1.1 Building Performance Factor (Cost) (BPF_{cost})

Building Area Type	**Climate Zone**		
	4A	**5A**	**6A**
Multifamily	0.67	0.67	0.64
Healthcare/ hospital	0.54	0.54	0.51
Hotel/motel	0.62	0.56	0.56
Office	0.54	0.54	0.55
Restaurant	0.56	0.55	0.55
Retail	0.45	0.42	0.44

School	0.45	0.46	0.46
Warehouse	0.42	0.42	0.46
All others	0.53	0.52	0.52

Table 4.2.1.2 – Site to Source Energy Conversion Ratios

Add a new Table 4.2.1.2 to read as follows:

Table 4.2.1.2 Site to Source Energy Conversion Ratios

Energy Type	**New York Ratio**
Electricity (Grid Purchase)	2.55
Electricity (On-site Renewable Energy Installation)	1.00
Natural Gas	1.05
Fuel Oil	1.01
Propane & Liquid Propane	1.01
Steam	1.20
Hot Water	1.20
Chilled Water, Coal, Wood, Other	1.00

Table 4.2.1.3 – Building Performance Factor (Source)

Add a new Table 4.2.1.3 to read as follows:

Table 4.2.1.3 Building Performance Factor (Source) (BPF_{source})

Building Area Type	**Climate Zone**		
	4A	**5A**	**6A**
Multifamily	0.68	0.68	0.65
Healthcare/ hospital	0.56	0.56	0.54
Hotel/motel	0.62	0.56	0.54
Office	0.55	0.55	0.56
Restaurant	0.63	0.64	0.63
Retail	0.45	0.42	0.43
School	0.45	0.45	0.45
Warehouse	0.44	0.46	0.49
All others	0.55	0.54	0.54

Section 4.2.1.3 Alterations of Existing Buildings

Section 4.2.1.3 – Delete Section 4.2.1.3 in its entirety and replace with a new Section 4.2.1.3 to read as follows:

4.2.1.3 Alterations of Existing Buildings

Alterations of existing buildings shall comply with the provisions of Sections 5, 6, 7, 8, 9, and 10, or Section 11 or Normative Appendix G, provided, however, that nothing in this standard shall require compliance with any provision of this standard if such compliance will result in the increase of energy consumption of the building.

Exception to 4.2.1.3

Historic buildings need not comply with these requirements.

Section 5 - Building Envelope

5.1.3 Envelope Alterations

Section 5.1.3 - Delete Exception 8.

Section 5.2.3 – Additional Requirements to Comply with Section 11 and Appendix G

Add a new Section 5.2.3 to read as follows:

5.2.3 Additional Requirements to Comply with Section 11 and Appendix G

For projects following the Energy Cost Budget Method (Section 11), or the Performance Rating Method (Appendix G), which are 25,000 square feet and greater, the building envelope shall comply with either:

a. Section 5.5, “Prescriptive Building Envelope Option”, or

b. An envelope performance factor shall be calculated in accordance with Appendix C of this standard, and buildings shall comply with one of the following:

1. For multifamily, hotel/motel and dormitory building area types, the margin by which the proposed envelope performance factor exceeds the base envelope performance factor shall not be greater than 15%. For compliance with this requirement, the base envelope performance factor shall be calculated using metal framing operable windows. In buildings with window area accounting for 40% or more of the gross wall area, the SHGC of the vertical fenestration on east and west oriented façade may be reduced by the following multiplier to account for the permanent site shading from existing buildings or infrastructure.

   $M_{West} = 0.18 + 0.33/WWR$

   $M_{East} = 0.35 + 0.26/WWR$

   Where:

   M_{West} = SHGC multiplier for the West façade

   M_{East} = SHGC multiplier for the East façade

   WWR = the ratio of the proposed vertical fenestration area to the gross wall area in consistent units.

   The multiplier may be applied to the rated SHGC of the vertical fenestration which has at least 50% of the area located directly opposite of the shading surfaces and no higher from the street level than the difference between the shading surface height and the shading surface distance from the façade. Orientation must be determined following Section 5.5.4.5, Fenestration Orientation.

2. For all other building area types, the margin by which the proposed envelope performance factor exceeds the base envelope performance factor shall be not greater than 7%. For compliance with this requirement, the base envelope performance factor shall be calculated using metal framing fixed windows.

3. For mixed-use buildings the margin shall be calculated as the gross wall area-weighted average of 1 and 2 above.

Section 5.4.3.1.3 – Testing, Acceptable Materials, and Assemblies

Delete Section 5.4.3.1.3 in its entirety and replace with a new Section 5.4.3.1.3 to read as follows:

5.4.3.1.3 Testing, Acceptable Materials, and Assemblies

The building shall comply with whole-building pressurization testing in accordance with Section 5.4.3.1.3(a) or with the continuous air barrier requirements in Section 5.4.3.1.3(b) or 5.4.3.1.3(c).

Exceptions to 5.4.3.1.3:

1. New buildings and additions 10,000 square feet and greater, but less than 50,000 square feet, and less than or equal to 75 feet in height, must show compliance through testing in accordance with Section 5.4.3.1.3(a) and department rules.

2. New buildings and additions 10,000 square feet and greater, but less than 50,000 square feet, and greater than 75 feet in height, shall test or inspect each type of unique air barrier joint or seam in the building envelope for continuity and defects, as per an Air Barrier Continuity Plan

developed by a registered design professional. Alternatively, such buildings and additions may show compliance through testing in accordance with Section 5.4.3.1.3(a) and department rules.

3. New buildings and additions 50,000 square feet and greater shall test or inspect each type of unique air barrier joint or seam in the building envelope for continuity and defects, as per an Air Barrier Continuity Plan developed by a registered design professional. Alternatively, such buildings and additions may show compliance through testing in accordance with Section 5.4.3.1.3(a) and department rules.

a. Whole-building pressurization testing shall be conducted in accordance with ASTM E779, ASTM E1827, or other approved standards, by an independent third party. The measured air leakage rate of the building envelope shall not exceed 0.40 cfm/ft^2 under a pressure differential of 0.3 in. of water, with this air leakage rate normalized by the sum of the above and below-grade building envelope areas of the conditioned and semiheated space. R-2 buildings may alternatively show compliance through testing in accordance with Section R402.4.1.3 of the New York City Energy Conservation Code.

Exception to 5.4.3.1.3(a)

1. For buildings having over 50,000 ft^2 of gross conditioned floor area, air leakage testing shall be permitted to be conducted on less than the whole building, provided the following portions of the building are tested and their measured air leakage is area-weighted by the surface areas of the building envelope:

a. The entire floor area of all stories that have any spaces directly under a roof.

b. The entire floor area of all stories that have a building entrance or loading dock.

c. Representative above-grade wall sections of the building totaling at least 25% of the wall area enclosing the remaining conditioned space; floor area tested per (a) and (b) shall not be included in the 25%.

b. Materials that have an air permeance not exceeding 0.004 cfm/ft^2 under a pressure differential of 0.3 in. of water (1.57 psf) when tested in accordance with ASTM E2178. The following materials meet these requirements:

1. Plywood—minimum 3/8 in.
2. Oriented strand board—minimum 3/8 in.
3. Extruded polystyrene insulation board—minimum 1/2 in.
4. Foil-faced urethane insulation board—minimum 1/2 in.
5. Exterior gypsum sheathing or interior gypsum board—minimum 1/2 in.
6. Cement board—minimum 1/2 in.
7. Built-up roofing membrane
8. Modified bituminous roof membrane
9. Single-ply roof membrane
10. A Portland cement/sand parge, stucco, or gypsum plaster—minimum 1/2 in. thick
11. Cast-in-place and precast concrete
12. Sheet metal

13. Closed-cell 2 lb/ft^3 nominal density spray polyurethane foam—minimum 1 in.

c. Assemblies of materials and components (sealants, tapes, etc.) that have an average air leakage not to exceed 0.04 cfm/ft^2 under a pressure differential of 0.3 in. of water (1.57 psf) when tested in accordance with ASTM E2357, ASTM E1677, ASTM E1680, or ASTM E283. The following assemblies meet these requirements:

1. Concrete masonry walls that are

(a) fully grouted, or

(b) painted to fill the pores.

Section 5.4.3.4 Vestibules

Section 5.4.3.4 – Revise Exception 7 to read as follows:

7. Doors that open directly from a space that is less than 3,000 ft^2 in area and is separate from the building entrance, in buildings less than 75 feet in height, and doors that open directly from a space that is less than 1,000 square feet in area, in buildings 75 feet and greater in height.

Section 5.4.3.4 – Delete Exception 9 in its entirety.

Section 5.4.4 Thermal Bridges

Section 5.4.4 – Add a new Section 5.4.4 and a new Table 5.4.4 to read as follows:

5.4.4 Thermal bridges

Applications for construction document approval shall include the following documentation of thermal bridges:

5.4.4.1 Clear field thermal bridges

Where otherwise not included in pre-calculated assembly U-factors, C-factors, or F-factors outlined in Appendix A of this standard, clear field thermal bridges in a wall, roof, or floor assembly shall be noted as such in the drawings.

5.4.4.2 Point thermal bridges

Point thermal bridges greater than or equal in area to 12 in^2 and not associated with HVAC or electrical systems shall be noted as thermal bridges in the drawings.

5.4.4.3 Linear thermal bridges

Construction documents shall include the following documentation in tabular format for linear thermal bridges listed in Table 5.4.4:

1. Linear thermal bridge type.
2. Aggregate length of each type of linear thermal bridge.
3. Relevant detail in the construction documents showing a cross-section through the thermal bridge.
4. Ψ-value for each thermal bridge from Table 5.4.4.

Exception to 5.4.4.3

Where linear thermal bridges have been tested or modeled using methods approved by the department, alternate values may be used.

Table 5.4.4

Average Thermal Transmittance for Unmitigated Linear Thermal Bridges

Type of Thermal Bridge	**Ψ-value[a]** **[Btu / hr ft F]**
Balcony	0.50
Floor Slab	0.44
Fenestration Perimeter Transition[b]	0.32
Parapet	0.42
Shelf Angle	0.41

a. Psi-values are derived from the BC Hydro Building Envelope Thermal Bridging Guide V. 1.2 - Sept. 2018, and are based on poor performing details.

b. Fenestration Perimeter Transition is the thermal bridge between any fenestration frame and the typical wall, roof or floor assembly it abuts or is mounted within.

Section 5.5.1

Section 5.5.1 - Revise Section 5.5.1 to read as follows:

5.5.1

For a conditioned space, the exterior building envelope shall comply with either the nonresidential or residential requirements in Tables 5.5-4 through 5.5-6 for the appropriate climate.

Delete Tables 5.5-0 through 5.5-3, Table 5.5-7, and Table 5.5-8 in their entirety.

Delete Table 5.5-4 and replace with a new Table 5.5-4 to read as follows:

Table 5.5-4 Building Envelope Requirements for Climate Zone 4 (A,B,C)*

Opaque Elements	Nonresidential Assembly Maximum	Nonresidential Insulation Min. R-Value	Residential Assembly Maximum	Residential Insulation Min. R-Value	Semiheated Assembly Maximum	Semiheated Insulation Min. R-Value
Roofs						
Insulation entirely above deck	U-0.030	R-33 c.i.	U-0.030	R-33 c.i.	U-0.093	R-10 c.i.
Metal building[a]	U-0.035	R-19 + R-11 Ls or R-25 + R-8 Ls	U-0.035	R-19 + R-11 Ls or R-25 + R-8 Ls	U-0.082	R-19
Attic and other	U-0.020	R-53	U-0.020	R-53	U-0.034	R-30
Walls, above Grade						
Mass	U-0.099	R-11.2 c.i.	U-0.086	R-13.25 c.i.	U-0.580	NR
Metal building	U-0.048	R-13 + R-13 c.i.	U-0.048	R-13 + R-19.5 c.i.	U-0.162	R-13
Steel-framed	U-0.061	R-13 + R-8.5 c.i.	U-0.061	R-13 + R-8.5 c.i	U-0.124	R-13
Wood-framed and other	U-0.061	R-13 + R-4.5 c.i. or R-19 + R-1.5 c.i.	U-0.061	R-13 + R-4.5 c.i. or R-19 + R-1.5 c.i.	U-0.089	R-13
Wall, below Grade						
Below-grade wall	C-0.119	R-7.5 c.i.	C-0.092	R-10 c.i.	C-1.140	NR
Floors						
Mass	U-0.057	R-14.6 c.i.	U-0.051	R-16.7 c.i.	U-0.107	R-6.3 c.i.
Steel joist	U-0.033	R-38	U-0.033	R-38	U-0.052	R-19
Wood-framed and other	U-0.033	R-30	U-0.033	R-30	U-0.051	R-19
Slab-on-Grade Floors						
Unheated	F-0.520	R-15 for 24 in.	F-0.520	R-15 for 24 in.	F-0.730	NR

Heated	F-0.63	R-20 for 48 in. + R-5 full slab		F-0.63	R-20 for 48 in. + R-5 full slab		F-0.900	R-10 for 24 in.	
Opaque Doors									
Swinging	U-0.370			U-0.370			U-0.370		
Nonswinging	U-0.310			U-0.310			U-0.360		
Fenestration	**Assembly Max. U**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**
Vertical Fenestration, 0% to 40% of Wall	-	(for all frame types)		-	(for all frame types)		-	(for all frame types)	
Nonmetal framing, all	0.28	0.36	1.10	0.28	0.36	1.10	0.51	NR	NR
Metal framing, fixed, below 95 ft[b]	0.30			0.30			0.73		
Metal framing, fixed, above 95 ft[b]	0.36			0.36			0.73		
Metal framing, operable, below 95 ft[b]	0.40			0.40			0.81		
Metal framing, operable, above 95ft[b]	0.42			0.42			0.81		
Curtainwall fixed	0.36			0.36			0.73		
Metal framing, Entrance doors	0.68			0.68			0.77		
Skylight, 0% to 3% of Roof									
All types	0.48	0.38	NR	0.48	0.38	NR	1.15	NR	NR

*The following definitions apply: c.i. = continuous insulation (see Section 3.2), FC = filled cavity (see Section A2.3.2.5), Ls = liner system (see Section A2.3.2.4), NR = no (insulation) requirement.

a. When using the R-value compliance method for metal building roofs, a thermal spacer block is required (see Section A2.3.2).

b. Where any portion of the fenestration frame is installed at or above 95 feet above grade, the unit may meet the requirements for above 95 feet.

Section 5.5.3 Opaque Areas

Section 5.5.3 – Add two new Exceptions 3 and 4 to to the Exceptions to Section 5.5.3 to read as follows:

3. When the total area of penetrations from through-the-wall equipment or equipment listed in Table 6.8.1-4 exceeds 1% of the opaque above-grade wall area, the mechanical equipment penetration area shall be calculated as a separate wall assembly with a default U-factor of 0.5, and compliance shall be shown with method b. Where mechanical equipment has been tested in accordance with testing standards, approved by the authority having jurisdiction, the mechanical equipment penetration area may be calculated as a separate wall assembly with the U-factor as determined by such test.

4. For opaque assemblies in curtain wall framing or other fenestration framing systems, compliance shall be shown using the effective u-factor values of Table 5.5.3.

Add a new Table 5.5.3 Effective U-factors for Spandrel Panels and Glass Curtain Walls to read as follows:

Table 5.5.3 Effective U-factors for Spandrel Panels and Glass Curtain Walls[a]

Frame Type	**Spandrel Panel**	**Rated R-value of Insulation between Framing Members**						
		R-4	**R-7**	**R-10**	**R-15**	**R-20**	**R-25**	**R-30**
Aluminum without Thermal Break[b]	Single glass pane, stone, or metal panel	0.242	0.222	0.212	0.203	0.198	0.195	0.193
	Double glass with no low-e coatings	0.233	0.218	0.209	0.202	0.197	0.194	0.192
	Triple or low-e glass	0.226	0.214	0.207	0.200	0.196	0.194	0.192
Aluminum with Thermal Break[c]	Single glass pane, stone, or metal panel	0.211	0.186	0.173	0.162	0.155	0.151	0.149
	Double glass with no low-e coatings	0.200	0.180	0.170	0.160	0.154	0.151	0.148
	Triple or low-e glass	0.191	0.176	0.167	0.159	0.153	0.150	0.148

Structural Glazing[d]	Single glass pane, stone, or metal panel	0.195	0.163	0.147	0.132	0.123	0.118	0.114
	Double glass with no low-e coatings	0.180	0.156	0.142	0.129	0.122	0.117	0.114
	Triple or low-e glass	0.169	0.150	0.138	0.127	0.121	0.116	0.113
No framing or Insulation is continuous[e]	Single glass pane, stone, or metal panel	0.148	0.102	0.078	0.056	0.044	0.036	0.031
	Double glass with no low-e coatings	0.136	0.097	0.075	0.054	0.043	0.035	0.030
	Triple or low-e glass	0.129	0.093	0.073	0.053	0.042	0.035	0.030

a. Opaque assembly U-factors based on designs tested in accordance with ASTM C 1363 or NFRC 100 shall be permitted. Interpolation outside of the table shall not be permitted. Spandrel panel assemblies in the table do not include metal backpans.

b. Aluminum frame without a thermal break shall be used for systems where the mullion provides a thermal bridge through the insulation.

c. Aluminum frame with a thermal break shall be used for systems where a urethane or other non-metallic element separates the metal exposed to the exterior from the metal that is exposed to the interior condition.

d. Structural glazing frame type shall be used for systems that have no exposed mullion on the interior.

e. No framing or continuous insulation shall be used for systems where there is no framing or the insulation is continuous and uninterrupted between framing.

Section 5.5.3.7 Continuous Insulation

Section 5.5.3.7 – Add a new section 5.5.3.7 to read as follows:

5.5.3.7 Continuous Insulation

In new construction, balconies and parapets that interrupt the building thermal envelope shall comply with one of the following:

1. Shall be insulated with continuous insulation having a minimum thermal resistance equivalent to the continuous insulation component required in the adjacent wall assembly as listed in Table 5.5-4. Where more than one wall assembly is interrupted by an adjacent balcony, the higher thermal resistance shall be followed.

2. Shall incorporate a minimum R-3 thermal break where the structural element penetrates the building thermal envelope.

Section 5.6 Building Envelope Trade-Off Option

Section 5.6.1.1 - Add a new sentence at the end of Section 5.6.1.1 to read as follows:

When the total area of penetrations from through-the-wall mechanical equipment or equipment listed in Table 6.8.1-4 exceeds 1% of the opaque above-grade wall area, the mechanical equipment penetration area shall be calculated as a separate wall assembly with a default U-factor of 0.5.

Section 5.6.1.1 – Add a new exception to Section 5.6.1.1 to read as follows:

Exception to 5.6.1.1

Where mechanical equipment has been tested in accordance with testing standards approved by the authority having jurisdiction, the mechanical equipment penetration area may be calculated as a separate wall assembly with the U-factor as determined by such test.

5.7.5 Submittal Documentation of Air Barrier Commissioning

Section 5.7.5 – Add a new Section 5.7.5 to read as follows:

5.7.5 Submittal Documentation of Air Barrier Commissioning

For new buildings or additions that are 10,000 square feet and greater, prior to passing final inspection, the approved agency shall provide evidence of air barrier commissioning and substantial completion in accordance with the provisions of sections 5.7.5.1 through 5.7.5.3 .

5.7.5.1 Documentation

Construction documents shall include documentation of the continuous air barrier components included in the design and a field inspection checklist that includes all requirements necessary for maintaining air barrier continuity and durability in accordance with Section 5.4.3.1.

5.7.5.2 Field Inspections

Reports from field inspections during project construction showing compliance with continuous air barrier requirements including proper material handling and storage, use of approved materials and material substitutes, proper material and surface preparation, and air barrier continuity shall be provided to the owner and, upon request, to the building official . Air barrier continuity shall be determined by testing or inspecting each type of unique air barrier joint or seam in the building envelope for continuity and defects.

5.7.5.3 Report

A final commissioning report indicating compliance with the continuous air barrier requirements shall be provided to the building owner and, upon request, to the building official.

Section 6 – Heating, Ventilating, and Air Conditioning

Section 6.1.1.3.2

Section 6.1.1.3.2 – Revise Section 6.1.1.3.2. to read as follows:

6.1.1.3.2

New cooling systems installed to serve previously uncooled spaces and new heating systems installed to serve previously unheated spaces shall comply with this section as described in Section 6.2.

Section 6.3.2 Criteria

Section 6.3.2 – Revise item e of Section 6.3.2 to read as follows:

e. Heating (if any) shall be provided by a unitary packaged or split-system heat pump that meets the applicable efficiency requirements shown in Table 6.8.1-2 (heat pumps) or Table 6.8.1-4 (packaged terminal and room air conditioners and heat pumps), a fuel-fired furnace that meets the applicable efficiency requirements shown in Table 6.8.1-5 (furnaces, duct furnaces, and unit heaters), an electric resistance heater, or a baseboard system connected to a boiler that meets the applicable efficiency requirements shown in Table 6.8.1-6 (boilers) and Section 6.4.1.6 (Buildings With High Efficiency Space Heating Gas Boiler Systems).

Section 6.4.1.6 Buildings With High Efficiency Space Heating Gas Boiler Systems

Section 6.4.1.6 – Add a new Section 6.4.1.6 to read as follows:

6.4.1.6 Buildings With High Efficiency Space Heating Gas Boiler Systems

New buildings where space heating is served by one or more gas hot water boilers with a minimum thermal efficiency (Et) of 90% when rated in accordance with the test procedures in Table 6.8.1-6 shall comply with this Section, unless otherwise approved by the authority having jurisdiction. The hot water distribution system shall be designed so that the coils and other heat exchangers are selected such that at outdoor design conditions, the hot water return temperature entering the boilers is 120°F, or less when the boiler is firing.

Section 6.4.3.4.2 Shutoff Damper Controls

Section 6.4.3.4.2 – Add a new Exception 5 to Section 6.4.3.4.2 to read as follows:

5. Shutoff dampers are not required in ventilation or exhaust systems that are required by the New York City Mechanical Code to operate continuously, 24 hours per day, 7 days per week.

Section 6.4.3.4.5 Enclosed Parking Garage Ventilation

Section 6.4.3.4.5 – Revise Exception 1 to Section 6.4.3.4.5 to read as follows:

1. Garages with a total exhaust capacity less than 5,000 cfm with ventilation systems that do not utilize mechanical cooling or mechanical heating.

Section 6.4.4.1.3 Piping Insulation

Section 6.4.4.1.3 – Delete Exception 3 to Section 6.4.4.1.3, and renumber Exceptions 4 and 5 to Section 6.4.4.1.3 as Exceptions 3 and 4 of such Section, respectively.

Section 6.5.3.6 Fractional Horsepower Fan Motors

Section 6.5.3.6 - Revise Exception 3 to Section 6.5.3.6 to read as follows:

3. Motors covered by Table 10.8-3 or Table 10.8-4.

Section 6.5.6.1 Exhaust Air Energy Recovery

Section 6.5.6.1 - Revise Exception 6 to Section 6.5.6.1 to read as follows:

6. Where the sum of the airflow rates exhausted and relieved within 30 feet of each other is less than 75% of the design ventilation outdoor air flow rate, excluding exhaust air that is any of the following:

   a. used for another energy recovery system,

   b. not allowed by ASHRAE Standard 170 for use in energy recovery systems with leakage potential,

   c. prohibited by the New York City Mechanical Code, or

   d. of Class 4 as defined in ASHRAE 62.1.

Section 6.7.2.3 System Balancing

Section 6.7.2.3 - Delete Section 6.7.2.3 in its entirety and replace with a new Section 6.7.2.3 to read as follows:

6.7.2.3 Mechanical, renewable energy, and service water heating systems commissioning and completion requirements

Prior to passing the final mechanical and plumbing inspections, the approved agency shall provide evidence of mechanical systems commissioning and completion in accordance with the provisions of this section.

Construction document notes shall clearly indicate provisions for commissioning and completion requirements in accordance with this section and are permitted to refer to specifications for further requirements. Copies of all documentation shall be given to the owner or owner's authorized agent and made available to the building official upon request in accordance with Sections 6.7.2.3.4 and 6.7.2.3.5.

Mechanical systems, renewable energy, and service water heating systems shall include but are not limited to, at a minimum, the following heating, ventilating, air conditioning, service water heating, indoor air quality and refrigeration systems (mechanical and/or passive) and associated controls:

a. Heating, cooling, air handling and distribution, ventilation, and exhaust systems, and their related air quality monitoring systems.

b. Air, water, and other energy recovery systems.

c. Manual or automatic controls, whether local or remote, on energy using systems including but not limited to temperature controls, setback sequences, and occupancy based control, including energy management functions of the building management system.

d. Plumbing, including insulation of piping and associated valves, domestic and process water pumping, and mixing systems.

e. Mechanical heating systems and service water heating systems.

f. Refrigeration systems.

g. Renewable energy and energy storage systems.

h. Other systems, equipment and components that are used for heating, cooling or ventilation and that affect energy use.

Exceptions to 6.7.2.3

1. Mechanical systems and service water heating systems in new buildings, additions, or alterations where either the total mechanical equipment capacity being installed or the total mechanical equipment connected load serving the alteration space is less than 480,000 Btu/h (140.7 kW) cooling capacity and 600,000 Btu/h (175.8 kW) combined service water-heating and space-heating capacity.

2. Renewable energy systems being installed with a generating capacity of less than 25kW.

6.7.2.3.1 Commissioning Plan

A commissioning plan shall be developed by an approved agency and shall include the following items:

a. A narrative description of the activities that will be accomplished during each phase of commissioning, including the personnel intended to accomplish each of the activities.

b. A listing of the specific equipment, appliances or systems to be tested, their full sequences of operation, and a description of the tests to be performed, including prerequisite activities and reference to specific checklists or worksheets which are necessary or required by the department.

c. Functions to be tested including, but not limited to, calibrations and economizer controls.

d. Conditions under which the test will be performed. Testing shall affirm winter and summer design conditions and full outside air conditions.

e. Measurable criteria for performance.

6.7.2.3.2 Systems Adjusting and Balancing

HVAC systems shall be balanced in accordance with ASHRAE 111, "Testing, Adjusting, and Balancing of Building HVAC Systems" or other accepted engineering standards as approved by the department. Air and water flow rates shall be measured and adjusted to deliver final flow rates within the tolerances provided in the product specifications. Test and balance activities shall include air system and hydronic system balancing.

6.7.2.3.2.1 Air Systems Balancing

Each supply air outlet and zone terminal device shall be equipped with means for air balancing in accordance with the requirements of Chapter 6 of the New York City Mechanical Code. Discharge dampers used for air-system balancing are prohibited on constant-volume fans and variable-volume fans with motors 10 hp and larger. Air systems shall be balanced in a manner to first minimize throttling losses then, for fans with system power of greater than 1 hp, fan speed shall be adjusted to meet design flow conditions.

6.7.2.3.2.2 Hydronic Systems Balancing

Individual hydronic heating and cooling coils shall be equipped with means for balancing and measuring flow. Hydronic systems shall be proportionately balanced in a manner to first minimize throttling losses, then the pump impeller shall be trimmed or pump speed shall be adjusted to meet design flow conditions. Each hydronic system shall have either the capability to measure pressure across the pump, or test ports at each side of each pump.

Exceptions to 6.7.2.3.2.2

The following equipment is not required to be equipped with a means for balancing or measuring flow:

a. Pumps with pump motors of 5 hp or less.

b. Where throttling results in no greater than 5 percent of the nameplate horsepower draw above that required if the impeller were trimmed.

6.7.2.3.3 Functional Performance Testing

Functional performance testing specified in Sections 6.7.2.3.3.1 through 6.7.2.3.3.3 shall be conducted.

6.7.2.3.3.1 Equipment

Equipment functional performance testing shall demonstrate the installation and operation of components, systems, and system-to-system interfacing relationships in accordance with approved plans and specifications such that operation, function, and maintenance serviceability for each of the commissioned systems is confirmed. Testing shall include all modes and sequence of operation, including under full-load, part-load and the following emergency conditions:

a. All modes as described in the sequence of operation.

b. Redundant or automatic back-up mode.

c. Performance of alarms.

d. Mode of operation upon a loss of power and restoration of power.

Exception to 6.7.2.3.3.1

Unitary or packaged HVAC equipment listed in Tables 6.8.1-1, 6.8.1-2, or 6.8.1-4 that do not require supply air economizers shall only be required to demonstrate functioning under full-load and part-load conditions.

6.7.2.3.3.2 Controls

HVAC and service water-heating control systems shall be tested to document that control devices, components, equipment and systems are calibrated and adjusted and operate in accordance with approved plans and specifications. Sequences of operation shall be functionally tested to document they operate in accordance with approved plans and specifications.

6.7.2.3.3.3 Economizers

Air economizers shall undergo a functional test to determine that they operate in accordance with manufacturer's specifications.

6.7.2.3.4 Preliminary Commissioning Report

A preliminary report of commissioning test procedures and results shall be completed and certified by the approved agency and provided to the building owner or owner's authorized agent. The report shall be organized with mechanical and service hot water findings in separate sections to allow independent review. The report shall be identified as "Preliminary Commissioning Report" and shall include the completed Commissioning Compliance Checklist, and shall identify:

a. Itemization of deficiencies found during testing required by this section that have not been corrected at the time of report preparation.

b. Deferred tests that cannot be performed at the time of report preparation because of climatic conditions.

c. Climatic conditions required for performance of the deferred tests.

d. Results of functional performance tests.

e. Functional performance test procedures used during the commissioning process, including measurable criteria for test acceptance.

6.7.2.3.4.1 Acceptance of Report

Buildings, or portions thereof, shall not be considered acceptable for a final inspection pursuant to Article 116 of Chapter 1 of Title 28 of the Administrative Code until the building official has received a letter of transmittal from the building owner acknowledging that the building owner or owner's authorized agent has received the Preliminary Commissioning Report.

6.7.2.3.4.2 Copy of Report

The building official shall be permitted to require that a copy of the Preliminary Commissioning Report be made available for review by the building official.

6.7.2.3.5 Documentation Requirements

The construction documents shall specify that the documents described in sections 6.7.2.3.5.1 through 6.7.2.3.5.3 be provided to the building owner or owner's authorized agent within 90 days of the date of receipt of the certificate of occupancy. The construction documents shall also specify that the Final Commissioning Report be provided to the building owner or owner's authorized agent in accordance with the requirements of section 6.7.2.3.5.4.

6.7.2.3.5.1 Drawings

Construction documents shall include the location and performance data on each piece of equipment.

6.7.2.3.5.2 Manuals

An operating and maintenance manual shall be provided and include all of the following:

a. Submittal data stating equipment size and selected options for each piece of equipment requiring maintenance.

b. Manufacturer's operation manuals and maintenance manuals for each piece of equipment requiring maintenance, except equipment not furnished as part of the project. Required routine maintenance actions shall be clearly identified.

c. Name and address of at least one service agency.

d. HVAC and service hot water controls system maintenance and calibration information, including wiring diagrams, schematics and control sequence descriptions. Desired or field-determined set points shall be permanently recorded on control drawings at control devices or, for digital control systems, in system programming instructions.

6.7.2.3.5.3 System Balancing Report

A written report describing the activities and measurements completed in accordance with Section 6.7.2.3.2.

6.7.2.3.5.4 Final Commissioning Report

Within 30 months for new buildings 500,000 gross square feet or greater, excluding R-2 occupancies, or within 18 months for R-2 occupancies and all other buildings, of the issuance of the certificate of occupancy or letter of completion, an approved agency shall prepare a report of test procedures and results, including test procedures and results performed after occupancy, identified as the "Final Commissioning Report", provide such report to the building owner, and submit a certification to the department with applicable fees in accordance with department rules. The owner of a building 500,000 gross square feet or greater may apply for an extension of time to the building official based on good cause, in accordance with department rules. Such report shall include the following:

a. Results of functional performance tests.

b. Disposition of deficiencies found during testing, including details of corrective measures used or proposed.

c. Functional performance test procedures used during the commissioning process including measurable criteria for test acceptance, provided herein for repeatability.

Exception to 6.7.2.3.5.4

Deferred tests that cannot be performed at the time of report preparation due to climatic conditions.

Section 6.7.2.4 System Commissioning

Section 6.7.2.4 - Delete Section 6.7.2.4 in its entirety.

Table 6.8.1-4 Electrically Operated Packaged Terminal Air Conditioners, Packaged Terminal Heat Pumps, Single-Package Vertical Air Conditioners, Single-Package Vertical Heat Pumps, Room Air Conditioners, and Room Air-Conditioner Heat Pumps—Minimum Efficiency Requirements

Revise Table 6.8.1-4 to read as follows:

Table 6.8.1-4
Electrically Operated Packaged Terminal Air Conditioners, Packaged Terminal Heat Pumps, Single-Package Vertical Air Conditioners, Single-Package Vertical Heat Pumps, Room Air Conditioners, and Room Air-Conditioner Heat Pumps—Minimum Efficiency Requirements

Equipment Type	**Size Category (Input)**	**Subcategory or Rating Condition**	**Minimum Efficiency**	**Test Procedure**[a]
PTAC (cooling mode) standard size	All capacities	95°F db outdoor air	14.0 – (0.300 × Cap/1000)[c] EER	AHRI 310/380
PTAC (cooling mode) nonstandard size[b]	All capacities	95°F db outdoor air	10.9 – (0.213 × Cap/1000)[c] EER	
PTHP (cooling mode) standard size	All capacities	95°F db outdoor air	14.0 – (0.300 × Cap/1000)[c] EER	
PTHP (cooling mode) nonstandard size[b]	All capacities	95°F db outdoor air	10.8 – (0.213 × Cap/1000)[c] EER	
PTHP (heating mode) standard size	All capacities	————	3.7 – (0.052 × Cap/1000)[c] COP_H	
PTHP (heating mode) nonstandard size[b]	All capacities	————	2.9 – (0.026 × Cap/1000)[c] COP_H	
SPVAC (cooling mode)	< 65,000 Btu/h	95°F db/75°F wb outdoor air	11.0 EER	AHRI 390
	≥ 65,000 Btu/h and < 135,000 Btu/h		10.0 EER	

Equipment Type	**Size Category (Input)**	**Subcategory or Rating Condition**	**Minimum Efficiency**	**Test Procedure[a]**
	≥ 135,000 Btu/h and < 240,000 Btu/h		10.0 EER	
SPVHP (cooling mode)	< 65,000 Btu/h	95°F db/75°F wb outdoor air	11.0 EER	AHRI 390
SPVHP (cooling mode)	≥ 65,000 Btu/h and < 135,000 Btu/h	95°F db/75°F wb outdoor air	10.0 EER	AHRI 390
SPVHP (cooling mode)	≥ 135,000 Btu/h and < 240,000 Btu/h	95°F db/75°F wb outdoor air	10.0 EER	AHRI 390
SPVHP (heating mode)	< 65,000 Btu/h	47°F db/43°F wb outdoor air	3.3 COP_H	AHRI 390
SPVHP (heating mode)	≥ 65,000 Btu/h and < 135,000 Btu/h	47°F db/43°F wb outdoor air	3.0 COP_H	AHRI 390
SPVHP (heating mode)	≥ 135,000 Btu/h and < 240,000 Btu/h	47°F db/43°F wb outdoor air	3.0 COP_H	AHRI 390
SPVAC (cooling mode), nonweatherized space constrained	≤ 30,000 Btu/h	95°F db/75°F wb outdoor air	9.2 EER	AHRI 390
SPVAC (cooling mode), nonweatherized space constrained	> 30,000 Btu/h and ≤36,000 Btu/h	95°F db/75°F wb outdoor air	9.0 EER	AHRI 390

Equipment Type	Size Category (Input)	Subcategory or Rating Condition	Minimum Efficiency	Test Procedure[a]
SPVHP (cooling mode) , nonweatherized space constrained	≤ 30,000 Btu/h	95°F db/75°F wb outdoor air	9.2 EER	AHRI 390
	> 30,000 Btu/h and ≤ 36,000 Btu/h		9.0 EER	
SPVHP (heating mode) , nonweatherized space constrained	≤ 30,000 Btu/h	47°F db/43°F wb outdoor air	3.0 COP_H	AHRI 390
	> 30,000 Btu/h and ≤ 36,000 Btu/h		3.0 COP_H	
Room air conditioners, without reverse cycle with louvered sides	< 6,000 Btu/h		11.0 CEER	10 CFR Part 430, Subpart B, Appendix F
	≥ 6,000 Btu/h and < 8,000 Btu/h		11.0 CEER	
	≥ 8,000 Btu/h and < 14,000 Btu/h		10.9 CEER	
	≥ 14,000 Btu/h and < 20,000 Btu/h		10.7 CEER	
	≥ 20,000 Btu/h and < 28,000 Btu/h		9.4 CEER	
	≥ 28,000 Btu/h		9.0 CEER	

Equipment Type	**Size Category (Input)**	**Subcategory or Rating Condition**	**Minimum Efficiency**	**Test Procedure[a]**
Room air conditioners, without reverse cycle without louvered sides	< 6,000 Btu/h		10.0 CEER	10 CFR Part 430, Subpart B, Appendix F
	≥ 6,000 Btu/h and < 8,000 Btu/h		10.0 CEER	
	≥ 8,000 Btu/h and < 11,000 Btu/h		9.6 CEER	
	≥ 11,000 Btu/h and < 14,000 Btu/h		9.5 CEER	
	≥ 14,000 Btu/h and < 20,000 Btu/h		9.3 CEER	
	≥ 20,000 Btu/h		9.4 CEER	
Room air conditioners, with reverse cycle, with louvered sides	< 20,000 Btu/h		9.8 CEER	
	≥ 20,000 Btu/h		9.3 CEER	10 CFR Part 430, Subpart B, Appendix F
Room air conditioners, with reverse cycle, without louvered sides	< 14,000 Btu/h		9.3 CEER	
	≥ 14,000 Btu/h		8.7 CEER	10 CFR Part 430, Subpart B, Appendix F

Equipment Type	**Size Category (Input)**	**Subcategory or Rating Condition**	**Minimum Efficiency**	**Test Procedure[a]**
Room air conditioner, casement only	All capacities		9.5 CEER	10 CFR Part 430, Subpart B, Appendix F
Room air conditioner, casement slider	All capacities		10.4 CEER	

a. Section 12 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

b. Nonstandard size units must be factory labeled as follows: “MANUFACTURED FOR NONSTANDARD SIZE APPLICATIONS ONLY; NOT TO BE INSTALLED IN NEW STANDARD PROJECTS.” Nonstandard size efficiencies apply only to units being installed in existing sleeves having an external wall opening of less than 16 in. high or less than 42 in. wide and having a cross-sectional area less than 670 in^2.

c. “Cap” means the rated cooling capacity of the product in Btu/h. If the unit’s capacity is less than 7000 Btu/h, use 7000 Btu/h in the calculation. If the unit’s capacity is greater than 15,000 Btu/h, use 15,000 Btu/h in the calculation.

Table 6.8.1-5 Warm-Air Furnaces and Combination Warm-Air Furnaces/Air-Conditioning Units, Warm-Air Duct Furnaces, and Unit Heaters – Minimum Efficiency Requirements

Revise Table 6.8.1-5 to read as follows:

Table 6.8.1-5 Warm-Air Furnaces and Combination Warm-Air Furnaces/Air-Conditioning Units, Warm-Air Duct Furnaces, and Unit Heaters – Minimum Efficiency Requirements

Equipment Type	**Size Category (Input)**	**Subcategory or Rating Condition**	**Minimum Efficiency**	**Test Procedure[a]**
Warm-air furnace, gas fired	<225,000 Btu/h	Maximum capacity[c]	80% AFUE or 80% E_t [b,d]	DOE 10 CFR Part 430 or Section 2.39, Thermal Efficiency, ANSI Z21.47
	≥225,000 Btu/h		80% E_t[d]	Section 2.39, Thermal Efficiency, ANSI Z21.47

Warm-air furnace, oil fired	<225,000 Btu/h	Maximum capacity[c]	83% AFUE or 80% E_t[b,d]	DOE 10 CFR Part 430 or Section 42, Combustion, UL 727
	≥225,000 Btu/h		81% E_t[d]	Section 42, Combustion, UL 727
Warm-air duct furnaces, gas fired	All capacities	Maximum capacity[c]	80% E_c[e]	Section 2.10, Efficiency, ANSI Z83.8
Warm-air unit heaters, gas fired	All capacities	Maximum capacity[c]	80% E_c[e,f]	Section 2.10, Efficiency, ANSI Z83.8
Warm-air unit heaters, oil fired	All capacities	Maximum capacity[c]	80% E_c[e,f]	Section 40, Combustion, UL 731

a. Section 12 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

b. Combination units not covered by the U.S. Department of Energy Code of Federal Regulations 10 CFR 430 (three-phase power or cooling capacity greater than or equal to 65,000 Btu/h) may comply with either rating.

c. Compliance of multiple firing rate units shall be at the maximum firing rate.

d. E_t = thermal efficiency. Units must also include an interrupted or intermittent ignition device (IID), have jacket losses not exceeding 0.75% of the input rating, and have either power venting or a flue damper. A vent damper is an acceptable alternative to a flue damper for those furnaces where combustion air is drawn from the conditioned space.

e. E_c = combustion efficiency (100% less flue losses). See test procedure for detailed discussion.

f. As of August 8, 2008, according to the Energy Policy Act of 2005, units must also include an interrupted or intermittent ignition device (IID) and have either power venting or an automatic flue damper.

Table 6.8.1-9 Electrically Operated Variable-Refrigerant-Flow Air Conditioners - Minimum Efficiency Requirements

Revise Table 6.8.1-9 to read as follows:

Table 6.8.1-9
Electrically Operated Variable-Refrigerant-Flow Air Conditioners - Minimum Efficiency Requirements

Equipment Type	**Size Category**	**Heating Section Type**	**Subcategory or Rating Condition**	**Minimum Efficiency**	**Test Procedure**
	< 65,000 Btu/h	All	VRF multisplit system	13.0 SEER	AHRI 1230

VRF air conditioners, air cooled	≥ 65,000 Btu/h and < 135,000 Btu/h	Electric resistance (or none)	VRF multisplit system	11.2 EER 15.5 IEER	
	≥ 135,000 Btu/h and < 240,000 Btu/h	Electric resistance (or none)	VRF multisplit system	11.0 EER 14.9 IEER	
	≥ 240,000 Btu/h	Electric resistance (or none)	VRF multisplit system	10.0 EER 13.9 IEER	

Table 6.8.1-10 Electrically Operated Variable-Refrigerant-Flow and Applied Heat Pumps—Minimum Efficiency Requirements

Revise Table 6.8.1-10 to read as follows:

Table 6.8.1-10
Electrically Operated Variable-Refrigerant-Flow and Applied Heat Pumps—Minimum Efficiency Requirements

Equipment Type	**Size Category**	**Heating Section Type**	**Subcategory or Rating Condition**	**Minimum Efficiency**	**Test Procedure**
VRF air cooled (cooling mode)	< 65,000 Btu/h	All	VRF multisplit system	13.0 SEER	AHRI 1230
	≥ 65,000 Btu/h and < 135,000 Btu/h	Electric resistance (or none)		11.0 EER 14.6 IEER	

Equipment Type	Size Category	Heating Section Type	Subcategory or Rating Condition	Minimum Efficiency	Test Procedure
			VRF multisplit system with heat recovery	10.8 EER 14.4 IEER	
	≥ 135,000 Btu/h and < 240,000 Btu/h		VRF multisplit system	10.6 EER 13.9 IEER	
			VRF multisplit system with heat recovery	10.4 EER 13.7 IEER	
	≥ 240,000 Btu/h		VRF multisplit system	9.5 EER 12.7 IEER	
			VRF multisplit system with heat recovery	9.3 EER 12.5 IEER	
VRF water source (cooling mode)	< 65,000 Btu/h	All	VRF multisplit systems 86°F entering water	12.0 EER 16.0 IEER	AHRI 1230
			VRF multisplit systems with heat recovery 86°F entering water	11.8 EER 15.8 IEER	
	≥ 65,000 Btu/h and < 135,000		VRF multisplit systems 86°F entering water	12.0 EER 16.0 IEER	
			VRF multisplit systems with heat recovery 86°F entering water	11.8 EER 15.8 IEER	
	≥ 135,000 Btu/h and < 240,000 Btu/h		VRF multisplit systems 86°F entering water	10.0 EER 14.0 IEER	
			VRF multisplit systems with heat recovery 86°F entering water	9.8 EER 13.8 IEER	
	≥ 240,000 Btu/h		VRF multisplit systems 86°F entering water	10.0 EER 12.0 IEER	
			VRF multisplit systems with heat recovery 86°F entering water	9.8 EER 11.8 IEER	
VRF groundwater source (cooling mode)	< 135,000 Btu/h	All	VRF multisplit system 59°F entering water	16.2 EER	AHRI 1230
			VRF multisplit system with heat recovery 59°F entering water	16.0 EER	
	≥ 135,000 Btu/h		VRF multisplit system 59°F entering water	13.8 EER	
	≥ 135,000 Btu/h		VRF multisplit system with heat recovery 59°F entering water	13.6 EER	
	< 135,000 Btu/h	All	VRF multisplit system 77°F entering water	13.4 EER	AHRI 1230

Equipment Type	Size Category	Heating Section Type	Subcategory or Rating Condition	Minimum Efficiency	Test Procedure
VRF groundwater source (cooling mode)			VRF multisplit system with heat recovery 77°F entering water	13.2 EER	
	≥ 135,000 Btu/h		VRF multisplit system 77°F entering water	11.0 EER	
			VRF multisplit system with heat recovery 77°F entering water	10.8 EER	
VRF air cooled (heating mode)	< 65,000 Btu/h (cooling capacity)		VRF multisplit system	7.7 HSPF	AHRI 1230
	≥ 65,000 Btu/h and < 135,000 Btu/h (cooling capacity)		VRF multisplit system 47°F db/43°F wb outdoor air	3.3 COP$_H$	
			17°F db/15°F wb outdoor air	2.25 COP$_H$	
	≥ 135,000 Btu/h (cooling capacity)		VRF multisplit system 47°F db/43°F wb outdoor air	3.2 COP$_H$	
			17°F db/15°F wb outdoor air	2.05 COP$_H$	
VRF water source (heating mode)	< 65,000 Btu/h (cooling capacity)		VRF multisplit system 68°F entering water	4.3 COP$_H$	AHRI 1230
	≥ 65 Btu/h and < 135,000 Btu/h (cooling capacity)		VRF multisplit system 68°F entering water	4.3 COP$_H$	
	≥ 135,000 Btu/h and < 240,000 Btu/h (cooling capacity)		VRF multisplit system 68°F entering water	4.0 COP$_H$	
	≥ 240,000 Btu/h (cooling capacity)		VRF multisplit system 68°F entering water	3.9 COP$_H$	
VRF groundwater source (heating mode)	< 135,000 Btu/h (cooling capacity)	–	VRF multisplit system 50°F entering water	3.6 COP$_H$	AHRI 1230
	≥ 135,000 Btu/h (cooling capacity)	–	VRF multisplit system 50°F entering water	3.3 COP$_H$	
VRF ground source (heating mode)	< 135,000 Btu/h (cooling capacity)	–	VRF multisplit system 32°F entering water	3.1 COP$_H$	AHRI 1230
	≥ 135,000 Btu/h (cooling capacity)	–	VRF multisplit system 32°F entering water	2.8 COP$_H$	

Section 7 – Service Water Heating

Section 7.2.1 Compliance

Section 7.2.1 – Revise Section 7.2.1 to read as follows:

7.2.1 Compliance

Compliance shall be achieved by meeting the requirements of Section 7.1, “General”; Section 7.4, “Mandatory Provisions”; Section 7.5, “Prescriptive Path”; Section 7.7, “Submittals”; Section 6.7.2.3, “Mechanical, renewable energy, and service water heating systems commissioning and completion requirements”; and Section 7.8, “Product Information.”

Section 8 – Power

Section 8.4.5 Measurement of electrical consumption of tenant spaces in covered buildings

Section 8.4.5 - Add a new Section 8.4.5 to read as follows:

8.4.5 Measurement of electrical consumption of tenant spaces in covered buildings

The terms meter, submeter, covered building, tenant space and covered tenant space shall have the same meanings as defined in Section 28-311.2 of the Administrative Code. Each covered tenant space in a new building shall be equipped with a separate meter or sub-meter to measure the electrical consumption of such space when let or sublet. Where the covered tenant space is a floor with multiple tenancies, each tenancy with an area less than that as defined in Section 28-311.2 of the Administrative Code of the city of New York shall (i) be equipped with a separate meter or sub-meter, (ii) share a meter or sub-meter with other tenant spaces on the floor, or (iii) share a meter or sub-meter covering the entire floor. As new covered tenant spaces are created, they shall be equipped with meters or sub-meters as provided in this section.

Exception to 8.4.5

Covered tenant space for which the electrical consumption within such space is measured by a meter dedicated exclusively to that space.

Section 8.4.6 Dwelling unit metering

Section 8.4.6 - Add a new Section 8.4.6 to read as follows:

8.4.6 Dwelling unit metering

Each dwelling unit located in a Group R-2 building shall have a separate electrical meter.

Section 9 – Lighting

Section 9.1.2 Lighting Alterations

Section 9.1.2 - Revise the first sentence of Section 9.1.2 to read as follows:

For the alteration of any lighting system in an interior space, that space shall comply with the lighting power density (LPD) allowances of Section 9.2.2.3 and the control requirements Items a, b, c, d, g, h, and i of Section 9.4.1.1, as applicable to that space.

Section 9.1.2- Revise the heading of the Exceptions to Section 9.1.2 to read as follows:

Exceptions to 9.1.2

Section 9.1.2 - Revise the first Exception to Section 9.1.2 to read as follows:

1. Alterations that involve 10% or less of the connected lighting load in a space or area need not comply with these requirements, provided that such alterations do not increase the installed lighting power.

Section 9.2.2.3 Interior Lighting Power

Section 9.2.2.3 - Add a new sentence at the end of Section 9.2.2.3 before the Exception to read as follows:

Buildings with unfinished spaces shall use the Space-by-Space Method.

Section 9.4.1.1 Interior Lighting Controls

Section 9.4.1.1 **-** Revise the first paragraph of Item e of Section 9.4.1.1 to read as follows:

e. Automatic daylight responsive controls for sidelighting: In any space where the combined input power of all general lighting completely or partially within the primary sidelighted areas is 100 W or greater, the general lighting in the primary sidelighted areas shall be controlled by photocontrols.

Section 9.4.1.1 **-** Revise the first sentence of the second paragraph of Item e of Section 9.4.1.1 to read as follows:

In any space where the combined input power of all general lighting completely or partially within the primary sidelighted area and secondary sidelighted area is 200 W or greater, the general lighting in the primary sidelighted area and secondary sidelighted area shall be controlled by photocontrols.

Section 9.4.1.1 **-** Revise the first sentence of Item f Section 9.4.1.1 to read as follows:

f. Automatic daylight responsive controls for toplighting: In any space where the combined input power for all general lighting completely or partially within daylight area under skylights and daylight area under roof monitors is 100 W or greater, general lighting in the daylight area shall be controlled by photocontrols.

Section 9.4.1.1 – Delete Items g and h of Section 9.4.1.1 in their entirety and replace with new Items g and h of such Section to read as follows:

g. Automatic partial OFF (full OFF complies): The general lighting power in the space shall be automatically reduced by at least 50% within 15 minutes of all occupants leaving the space.

Exception to 9.4.1.1(g)

This requirement does not have to be complied with in spaces that meet all four of the following requirements:

1. The space has an installed LPD of no more than 0.80 W/ft^2.

2. The space is lighted by HID lamp.

3. The general lighting power in the space is automatically reduced by at least 30% within 15 minutes of all occupants leaving the space.

4. Lighting load does not exceed 0.02 W/ft^2 multiplied by the gross lighted area of the building.

h. Automatic full OFF: All lighting, including lighting connected to emergency circuits, shall be automatically shut off within 15 minutes of all occupants leaving the space. A control device meeting this requirement shall control no more than 5000 ft^2, provided that for open plan office spaces or dining spaces a control device meeting this requirement shall control not greater than 600 ft^2.

Exception to 9.4.1.1(h)

The following lighting is not required to be automatically shut off:

1. General lighting and task lighting in shop, laboratory, and preschool classrooms.
2. General lighting and task lighting in spaces where automatic shutoff would endanger the safety or security of room or building occupants.
3. Lighting required for 24/7 operation.
4. Lighting load does not exceed 0.02 W/ft^2 multiplied by the gross lighted area of the building.

Section 9.4.1.2 Parking Garage Lighting Control

Section 9.4.1.2 – Revise the first sentence of Item b of Section 9.4.1.2 to read as follows:

b. Lighting power of each luminaire shall be automatically reduced by a minimum of 30% when there is no activity detected within a lighting zone for 15 minutes.

Section 9.4.1.3 Special Applications

Section 9.4.1.3 – Revise Sub-Item 1 of Item b of Section 9.4.1.3 to read as follows:

1. All lighting and all switched receptacles in guestrooms and suites in hotels, motels, boarding houses, or similar buildings shall be automatically controlled such that the power to the lighting and switched receptacles in each enclosed space will be turned off within 15 minutes after all occupants leave that space.

   Exception to 9.4.1.3(b)(1)

   Enclosed spaces where the lighting and switched receptacles are controlled by captive key systems and bathrooms are exempt.

Table 9.4.2-2 Individual Lighting Power Allowances for Building Exteriors

Table 9.4.2-2 – Delete Table 9.4.2-2 in its entirety and replace with a new Table 9.4.2.-2 as follows:

Table 9.4.2-2 Individual Lighting Power Allowances for Building Exteriors					
	Zone 0	**Zone 1**	**Zone 2**	**Zone 3**	**Zone 4**
Base Site Allowance (Base allowance may be used in tradable or nontradable surfaces.)					
	No allowance	350 W	400 W	500 W	900 W
Tradable Surfaces (LPD allowances for uncovered parking areas, building grounds, building entrances, exits and loading docks, canopies and overhangs, and outdoor sales areas may be traded.)					
Uncovered Parking Areas					
Parking areas and drives	No allowance	0.03 W/ft^2	0.04 W/ft^2	0.05 W/ft^2	0.05 W/ft^2
Building Grounds					
Walkways/ramps less than 10 ft wide	No allowance	0.5 W/linear foot	0.5 W/linear foot	0.6 W/linear foot	0.7 W/linear foot

Walkways/ramps 10 ft wide or greater Plaza areas Special feature areas	No allowance	0.10 W/ft^2	0.10 W/ft^2	0.11 W/ft^2	0.14 W/ft^2
Dining areas	No allowance	0.65 W/ft^2	0.65 W/ft^2	0.75 W/ft^2	0.95 W/ft^2
Stairways	No allowance	0.6 W/ft^2	0.7 W/ft^2	0.7 W/ft^2	0.7 W/ft^2
Pedestrian tunnels	No allowance	0.12 W/ft^2	0.12 W/ft^2	0.14 W/ft^2	0.21 W/ft^2
Landscaping	No allowance	0.03 W/ft^2	0.04 W/ft^2	0.04 W/ft^2	0.04 W/ft^2
Building Entrances, Exits, and Loading Docks					
Pedestrian and vehicular entrances and exits	No allowance	12.6 W/lin ft of opening	12.6 W/lin ft of opening	20 W/lin ft of opening	20 W/lin ft of opening
Entry canopies	No allowance	0.20 W/ft^2	0.25 W/ft^2	0.4 W/ft^2	0.4 W/ft^2
Loading docks	No allowance	0.35 W/ft^2	0.35 W/ft^2	0.35 W/ft^2	0.35 W/ft^2
Sales Canopies					
Free standing and attached	No allowance	0.4 W/ft^2	0.4 W/ft^2	0.6 W/ft^2	0.7 W/ft^2
Outdoor Sales					
Open areas (including vehicle sales lots)	No allowance	0.2 W/ft^2	0.2 W/ft^2	0.35 W/ft^2	0.5 W/ft^2
Street frontage for vehicle sales lots in addition to "open area" allowance	No allowance	No allowance	7 W/linear foot	7 W/linear foot	21 W/linear foot
Nontradable Surfaces (LPD allowances for the following applications can be used only for the specific application and cannot be traded between surfaces or with other exterior lighting. The following allowances are in addition to any allowance otherwise permitted in the "Tradable Surfaces" section of this table.)					
Building façades (The allowance for each illuminated façade orientation	No allowance	No allowance	0.1 W/ft^2 of façade area or 2.5 W/linear foot of façade length	0.15 W/ft^2 of façade area or 3.75 W/linear	0.2 W/ft^2 of façade area or 5.0 W/linear foot of façade length

shall be calculated by multiplying the allowable value by the entire façade area or façade length for that orientation.)				foot of façade length	
Automated teller machines and night depositories	No allowance	135 W per location plus 45 W per additional ATM per location	135 W per location plus 45 W per additional ATM per location	135 W per location plus 45 W per additional ATM per location	135 W per location plus 45 W per additional ATM per location
Uncovered entrances and gatehouse inspection stations at guarded facilities	No allowance	0.5 W/ft^2	0.5 W/ft^2	0.5 W/ft^2	0.5 W/ft^2
Uncovered loading areas for law enforcement, fire, ambulance, and other emergency service vehicles	No allowance	0.35 W/ft^2	0.35 W/ft^2	0.35 W/ft^2	0.35 W/ft^2
Drive-through windows/doors	No allowance	200 W per drive-through	200 W per drive-through	200 W per drive-through	200 W per drive-through
Parking near 24-hour retail entrances	No allowance	400 W per main entry	400 W per main entry	400 W per main entry	400 W per main entry
Roadway/parking entry, trail head, and toilet facility, or other locations approved by the authority having jurisdiction.	A single luminaire of 25 W or less	No additional allowance	No additional allowance	No additional allowance	No additional allowance

Section 9.4.4 Dwelling units

Section 9.4.4 – Delete Section 9.4.4 in its entirety and replace with a new Section 9.4.4 to read as follows:

9.4.4 Dwelling Units

Not less than 90% of the permanently installed lighting fixtures shall use lamps with an efficacy of at least 65 lm/W or have a total luminaire efficacy of at least 45 lm/W.

Section 9.4.5 Exit signs

Section 9.4.5 – Add a new Section 9.4.5 to read as follows:

9.4.5 Exit signs

Internally illuminated exit signs shall not exceed 5 W per face.

Table 9.5.1 Lighting Power Density Allowances Using the Building Area Method

Table 9.5.1 – Delete Table 9.5.1 in its entirety and replace with a new Table 9.5.1 to read as follows:

Table 9.5.1 Lighting Power Density Allowances Using the Building Area Method

Building Area Type[a]	**LPD, W/ft^2**
Automotive facility	0.64
Convention center	0.70
Courthouse	0.74
Dining: Bar lounge/leisure	0.69
Dining: Cafeteria/fast food	0.66
Dining: Family	0.61
Dormitory[b]	0.52
Exercise center	0.65
Fire station	0.50
Gymnasium	0.67
Health-care clinic	0.68
Hospital	0.86
Hotel/motel[b]	0.70

Library	0.78
Manufacturing facility	0.60
Motion picture theater	0.62
Multifamily[b]	0.49
Museum	0.68
Office	0.69
Parking garage	0.12
Penitentiary	0.67
Performing arts theater	0.85
Police station	0.68
Post office	0.62
Religious facility	0.72
Retail	0.91
School/university	0.67
Sports arena	0.76
Town hall	0.72
Transportation	0.51
Warehouse	0.41
Workshop	0.83

a. In cases where both a general building area type and a specific building area type are listed, the specific building area type shall apply.
b. Neither the area of the dwelling units nor the wattage of lighting in the dwelling units is counted.

Section 9.6.1 Space-by-Space Method of Calculating Interior Lighting Power Allowance

Section 9.6.1 – Add a new sentence at the end of Item c of Section 9.6.1 to read as follows:

> Where a building has unfinished spaces, the lighting power allowance for the unfinished spaces shall be the total connected lighting power for those spaces, or 0.2 watts per square foot, whichever is less.

Table 9.6.1 Lighting Power Density Allowances Using the Space-by-Space Method and Minimum Control Requirements Using Either Method

Delete Table 9.6.1 in its entirety and add replace with a new Table 9.6.1 to read as follows:

Table 9.6.1 Lighting Power Density Allowances Using the Space-by-Space Method and Minimum Control Requirements Using Either Method

Informative Note: This table is divided into two sections; this first section covers space types that can be commonly found in multiple building types. The second part of this table covers space types that are typically found in a single building type.			**The control functions below shall be implemented in accordance with the descriptions found in the referenced paragraphs within Section 9.4.1.1. For each space type: (1) All REQs shall be implemented. (2) At least one ADD1 (when present) shall be implemented. (3) At least one ADD2 (when present) shall be implemented.**								
			Local Control (See Section 9.4.1.1[a])	**Restricted to Manual ON (See Section 9.4.1.1[b])**	**Restricted to Partial Automatic ON (See Section 9.4.1.1[c])**	**Bilevel Lighting Control (See Section 9.4.1.1[d])**	**Automatic Daylight Responsive Controls for Sidelighting (See Section 9.4.1.1[e][6])**	**Automatic Daylight Responsive Controls for Toplighting (See Section 9.4.1.1[f][6])**	**Automatic Partial OFF (See Section 9.4.1.1[g] [Full Off complies])**	**Automatic Full OFF (See Section 9.4.1.1[h])**	**Scheduled Shutoff (See Section 9.4.1.1[i])**
Common Space Types[1]	**LPD Allowances, W/ft[2]**	**RCR Threshold**	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**
Atrium											
< 20 ft in height	0.03/ft total height	NA	REQ	ADD1	ADD1		REQ	REQ		ADD2	ADD2
≥ 20 ft and ≤ 40 ft in height	0.03/ft total height	NA	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
> 40 ft in height	0.40 + 0.02/ft total height	NA	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Audience Seating Area											
Auditorium	0.63	6	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Convention center	0.65	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Gymnasium	0.43	6	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Motion picture theater	0.64	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Penitentiary	0.28	4	REQ	ADD1	ADD1		REQ	REQ		ADD2	ADD2
Performing arts theater	2.03	8	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Religious facility	1.53	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Sports arena	0.42	4	REQ	ADD1	ADD1		REQ	REQ		ADD2	ADD2

Informative Note: This table is divided into two sections; this first section covers space types that can be commonly found in multiple building types. The second part of this table covers space types that are typically found in a single building type.			**The control functions below shall be implemented in accordance with the descriptions found in the referenced paragraphs within Section 9.4.1.1. For each space type: (1) All REQs shall be implemented. (2) At least one ADD1 (when present) shall be implemented. (3) At least one ADD2 (when present) shall be implemented.**								
			Local Control (See Section 9.4.1.1[a])	**Restricted to Manual ON (See Section 9.4.1.1[b])**	**Restricted to Partial Automatic ON (See Section 9.4.1.1[c])**	**Bilevel Lighting Control (See Section 9.4.1.1[d])**	**Automatic Daylight Responsive Controls for Sidelighting (See Section 9.4.1.1[e][6])**	**Automatic Daylight Responsive Controls for Toplighting (See Section 9.4.1.1[f][6])**	**Automatic Partial OFF (See Section 9.4.1.1[g] [Full Off complies])**	**Automatic Full OFF (See Section 9.4.1.1[h])**	**Scheduled Shutoff (See Section 9.4.1.1[i])**
Common Space Types[1]	**LPD Allowances, W/ft²**	**RCR Threshold**	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**
All other audience seating areas	0.40	4	REQ	ADD1	ADD1		REQ	REQ		ADD2	ADD2
Banking Activity Area	0.79	6	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Breakroom (See Lounge/Breakroom)											
Classroom/Lecture hall/Training Room[9,10]											
Penitentiary	1.06	4	REQ	ADD1	ADD1	REQ	REQ	REQ		REQ	
All other classrooms/lecture halls/training rooms	0.74	4	REQ	REQ		REQ	REQ	REQ		REQ	
Conference/Meeting. Multipurpose Room[9,10]	0.93	6	REQ	REQ		REQ	REQ	REQ		REQ	
Confinement Cells	0.52	6	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Copy/Print Room	0.50	6	REQ	ADD1	ADD1	REQ	REQ	REQ		REQ	
Corridor[2]											
Facility for the visually impaired (and not used primarily by the staff)[3]	0.81	width < 8 ft	REQ				REQ	REQ	REQ	ADD2	ADD2
Hospital	0.81	width < 8 ft	REQ				REQ	REQ	ADD2	ADD2	ADD2
Manufacturing facility	0.28	width < 8 ft	REQ				REQ	REQ		ADD2	ADD2
All other corridors	0.58	width < 8 ft	REQ				REQ	REQ	REQ	ADD2	ADD2
Courtroom	1.06	6	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2

Informative Note: This table is divided into two sections; this first section covers space types that can be commonly found in multiple building types. The second part of this table covers space types that are typically found in a single building type.			The control functions below shall be implemented in accordance with the descriptions found in the referenced paragraphs within Section 9.4.1.1. For each space type: (1) All REQs shall be implemented. (2) At least one ADD1 (when present) shall be implemented. (3) At least one ADD2 (when present) shall be implemented.								
			Local Control (See Section 9.4.1.1[a])	**Restricted to Manual ON (See Section 9.4.1.1[b])**	**Restricted to Partial Automatic ON (See Section 9.4.1.1[c])**	**Bilevel Lighting Control (See Section 9.4.1.1[d])**	**Automatic Daylight Responsive Controls for Sidelighting (See Section 9.4.1.1[e][6])**	**Automatic Daylight Responsive Controls for Toplighting (See Section 9.4.1.1[f][6])**	**Automatic Partial OFF (See Section 9.4.1.1[g] [Full Off complies])**	**Automatic Full OFF (See Section 9.4.1.1[h])**	**Scheduled Shutoff (See Section 9.4.1.1[i])**
Common Space Types[1]	**LPD Allowances, W/ft^2**	**RCR Threshold**	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**
Computer Room	1.16	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Dining Area											
Penitentiary	0.72	6	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Facility for the visually impaired (and not used primarily by staff)[3]	1.48	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Bar lounge or leisure dining	0.62	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Cafeteria or fast food dining < 300 ft^2 [(11)]	0.53	4	REQ	ADD1	ADD1	REQ	REQ	REQ		REQ	
Cafeteria or fast food dining ≥ 300 ft^2 [(11)]	0.53	4	REQ	ADD1	ADD1	REQ	REQ	REQ		REQ	
Family dining	0.54	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
All other dining areas	0.53	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Electrical/Mechanical Room[7]	0.39	6	REQ				REQ	REQ			
Emergency Vehicle Garage	0.41	4	REQ	ADD1	ADD1		REQ	REQ		ADD2	ADD2
Food Preparation Area	0.92	6	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Guest Room	0.75	6	See Section 9.4.1.3(b).								
Laboratory											
In or as a classroom	1.04	6	REQ	ADD1	ADD1	REQ	REQ	REQ	REQ	ADD2	ADD2
All other laboratories	1.45	6	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2

Informative Note: This table is divided into two sections; this first section covers space types that can be commonly found in multiple building types. The second part of this table covers space types that are typically found in a single building type.			The control functions below shall be implemented in accordance with the descriptions found in the referenced paragraphs within Section 9.4.1.1. For each space type: (1) All REQs shall be implemented. (2) At least one ADD1 (when present) shall be implemented. (3) At least one ADD2 (when present) shall be implemented.								
			Local Control (See Section 9.4.1.1[a])	Restricted to Manual ON (See Section 9.4.1.1[b])	Restricted to Partial Automatic ON (See Section 9.4.1.1[c])	Bilevel Lighting Control (See Section 9.4.1.1[d])	Automatic Daylight Responsive Controls for Sidelighting (See Section 9.4.1.1[e][6])	Automatic Daylight Responsive Controls for Toplighting (See Section 9.4.1.1[f][6])	Automatic Partial OFF (See Section 9.4.1.1[g] [Full Off complies])	Automatic Full OFF (See Section 9.4.1.1[h])	Scheduled Shutoff (See Section 9.4.1.1[i])
Common Space Types[1]	LPD Allowances, W/ft^2	RCR Threshold	a	b	c	d	e	f	g	h	i
Laundry/Washing Area	0.43	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Loading Dock, Interior	0.51	6	REQ	ADD1	ADD1		REQ	REQ		ADD2	ADD2
Lobby											
Facility for the visually impaired (and not used primarily by staff)[3]	2.03	4	REQ				REQ	REQ	REQ	ADD2	ADD2
Elevator	0.52	6	REQ				REQ	REQ		ADD2	ADD2
Hotel	0.68	4	REQ				REQ	REQ		ADD2	ADD2
Motion picture theater	0.38	4	REQ				REQ	REQ		ADD2	ADD2
Performing arts theater	0.82	6	REQ				REQ	REQ	REQ	ADD2	ADD2
All other lobbies	0.90	4	REQ				REQ	REQ	REQ	ADD2	ADD2
Locker Room	0.45	6	REQ	ADD1	ADD1	REQ	REQ	REQ		REQ	
Lounge/Breakroom[9,10]											
Healthcare facility	0.53	6	REQ	REQ		REQ	REQ	REQ		REQ	
All other lounges/break rooms	0.44	4	REQ	REQ		REQ	REQ	REQ		REQ	
Office											
Enclosed and ≤ 250 ft^2 (9,10)	0.85	8	REQ	REQ		REQ	REQ	REQ		REQ	
Enclosed and > 250 ft^2	0.85	8	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Open plan< 300 ft^2 (11, 12)	0.78	4	REQ	ADD1	ADD1	REQ	REQ	REQ		REQ	
Open plan ≥ 300 ft^2 (11, 12	0.78	4	REQ	ADD1	ADD1	REQ	REQ	REQ		REQ	
Parking Area, Interior	0.11	4	See Section 9.4.1.2								

Informative Note: This table is divided into two sections; this first section covers space types that can be commonly found in multiple building types. The second part of this table covers space types that are typically found in a single building type.			**The control functions below shall be implemented in accordance with the descriptions found in the referenced paragraphs within Section 9.4.1.1. For each space type: (1) All REQs shall be implemented. (2) At least one ADD1 (when present) shall be implemented. (3) At least one ADD2 (when present) shall be implemented.**								
			Local Control (See Section 9.4.1.1[a])	**Restricted to Manual ON (See Section 9.4.1.1[b])**	**Restricted to Partial Automatic ON (See Section 9.4.1.1[c])**	**Bilevel Lighting Control (See Section 9.4.1.1[d])**	**Automatic Daylight Responsive Controls for Sidelighting (See Section 9.4.1.1[e][6])**	**Automatic Daylight Responsive Controls for Toplighting (See Section 9.4.1.1[f][6])**	**Automatic Partial OFF (See Section 9.4.1.1[g] [Full Off complies])**	**Automatic Full OFF (See Section 9.4.1.1[h])**	**Scheduled Shutoff (See Section 9.4.1.1[i])**
Common Space Types[1]	**LPD Allowances, W/ft^2**	**RCR Threshold**	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**
Pharmacy Area	1.23	6	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Restroom											
Facility for the visually impaired (and not used primarily by the staff)[3]	0.81	8	REQ	ADD1	ADD1		REQ	REQ		REQ	
All other restrooms	0.75	8	REQ	ADD1	ADD1		REQ	REQ		REQ	
Sales Area[4]	1.06	6	REQ	ADD1	ADD1	REQ		REQ		ADD2	ADD2
Seating Area, General	0.38	4	REQ	ADD1	ADD1		REQ	REQ		ADD2	ADD2
Stairway	The space containing the stairway shall determine the LPD and control requirements for the stairway.										
Stairwell	0.50	10				REQ	REQ	REQ	REQ	ADD2	ADD2
Storage Room											
< 50 ft^2	0.43	6	REQ							ADD2	ADD2
≥ 50 ft^2 and ≤1000 ft^2	0.43	6	REQ	ADD1	ADD1		REQ	REQ		REQ	
All other storage rooms	0.43	6	REQ	ADD1	ADD1		REQ	REQ	REQ	ADD2	ADD2
Vehicular Maintenance Area	0.53	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Workshop	1.09	6	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2

TABLE 9.6.1 Lighting Power Density Allowances Using the Space-by-Space Method and Minimum Control Requirements Using Either Method (Continued)

Informative Note: This table is divided into two sections; this first section covers space types that can be commonly found in multiple building types. The second part of this table covers space types that are typically found in a single building type.

The control functions below shall be implemented in accordance with the descriptions found in the referenced paragraphs within Section 9.4.1.1. For each space type:
(1) All REQs shall be implemented.
(2) At least one ADD1 (when present) shall be implemented.
(3) At least one ADD2 (when present) shall be implemented.

			Local Control (See Section 9.4.1.1[a])	**Restricted to Manual ON (See Section 9.4.1.1[b])**	**Restricted to Partial Automatic ON (See Section 9.4.1.1[c])**	**Bilevel Lighting Control (See Section 9.4.1.1[d])**	**Automatic Daylight Responsive Controls for Sidelighting (See Section 9.4.1.1[e][6])**	**Automatic Daylight Responsive Controls for Toplighting (See Section 9.4.1.1[f][6])**	**Automatic Partial OFF (See Section 9.4.1.1[g] [Full Off complies])**	**Automatic Full OFF (See Section 9.4.1.1[h])**	**Scheduled Shutoff (See Section 9.4.1.1[i])**
Building Type Specific/Space Types[1]	**LPD W/ft²[2]**	**RCR Threshold**	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**
Facility for the Visually Impaired[3]											
Chapel (used primarily by residents)	0.89	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Recreation room/common living room (and not used primarily by staff)	1.53	6	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Automotive (See "Vehicular Maintenance Area")											
Convention Center-Exhibit Space	0.69	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Dormitory-Living Quarters	0.46	8	REQ								
Fire Station-Sleeping Quarters	0.19	6	REQ								
Gymnasium/Fitness Center											
Exercise area	0.50	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Playing area	0.75	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Healthcare Facility											

Exam/treatment room	1.16	8	REQ			REQ	REQ	REQ		ADD2	ADD2
Imaging room	0.98	6	REQ			REQ				ADD2	ADD2
Medical supply room	0.54	6	(See "Storage Room" under "Common Space Types" for control requirements)								
Nursery	0.94	6	REQ			REQ	REQ	REQ		ADD2	ADD2
Nurse's station	0.75	6	REQ			REQ	REQ	REQ		ADD2	ADD2
Operating room	1.87	6	REQ			REQ				ADD2	ADD2
Patient room	0.45	6	REQ			REQ	REQ	REQ		ADD2	ADD2
Physical therapy room	0.84	6	REQ			REQ	REQ	REQ		ADD2	ADD2
Recovery room	0.89	6	REQ			REQ	REQ	REQ		ADD2	ADD2
Library											
Reading area	0.77	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Stacks	1.20	4	REQ	ADD1	ADD1	REQ	REQ	REQ	REQ	ADD2	ADD2
Manufacturing Facility											
Detailed manufacturing area	0.86	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Equipment room	0.61	6	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Extra high bay area (> 50 ft floor-to-ceiling height)	0.73	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
High bay area (25 to 50 ft floor-to-ceiling height)	0.58	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Low bay area (< 25 ft floor-to-ceiling height)	0.61	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Museum											
General exhibition area	0.61	6	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Restoration room	0.77	6	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Performing Arts Theater-Dressing Room	0.35	6	REQ	ADD1	ADD1	REQ	REQ	REQ		REQ	
Post Office-Sorting Area	0.66	4	REQ	ADD1	ADD1	REQ	REQ	REQ	REQ	ADD2	ADD2

Religious Facility											
Fellowship hall	0.54	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Worship/pulpit/choir area	0.98	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Retail Facilities											
Dressing/fitting room	0.49	8	REQ	ADD1	ADD1	REQ		REQ		REQ	
Mall concourse	0.79	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Sports Arena-Playing Area[8]											
Class I facility	2.26	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Class II facility	1.45	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Class III facility	1.08	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Class IV facility	0.72	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Transportation Facility											
Baggage/carousel area	0.40	4	REQ	ADD1	ADD1		REQ	REQ		ADD2	ADD2
Airport concourse	0.31	4	REQ	ADD1	ADD1		REQ	REQ		ADD2	ADD2
Terminal ticket counter	0.48	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Warehouse-Storage Area											
Medium to bulky, palletized items	0.27	4	REQ	ADD1	ADD1	REQ	REQ	REQ	REQ	ADD2	ADD2
Smaller, hand-carried items[5]	0.65	6	REQ	ADD1	ADD1	REQ	REQ	REQ	REQ	ADD2	ADD2

1. In cases where both a common space type and a building area specific space type are listed, the building area specific space type shall apply.
2. In corridors, the extra lighting power density allowance is permitted when the width of the corridor is less than 8 ft and is not based on the RCR.
3. A "Facility for the Visually Impaired" is a facility that can be documented as being designed to comply with the light levels in ANSI/IES RP-28 and is licensed or will be licensed by local/state authorities for either senior long-term care, adult daycare, senior support and/or people with special visual needs.
4. For accent lighting, see Section 9.6.2(b).
5. Sometimes referred to as a "Picking Area."
6. Automatic daylight responsive controls are mandatory only if the requirements of the specified sections are present.

7. An additional 0.52 W/ft^2 shall be allowed, provided that the additional lighting is controlled separately from the base allowance of 0.43 W/ft^2. The additional 0.52 W/ft^2 allowance shall not be used for any other purpose.

8. Class of play as defined by IES RP-6.

9. Occupant sensor shall not have an override switch that converts from manual-on to automatic-on functionality.

10. The occupant sensor may have a grace period of up to 30 seconds to turn on the lighting automatically after the sensor has turned off the lighting if occupancy is detected.

11. The controls shall be configured so that general lighting power in each control zone is reduced by not less than 80 percent of the full zone general lighting power in a reasonably uniform illumination pattern within 15 minutes of all occupants leaving that control zone. Control functions that switch control zone lights completely off when the zone is vacant meet this requirement.

12. The controls shall be configured such that any daylight responsive control will activate open plan office space general lighting or control zone general lighting only when occupancy for the same area is detected.

Section 9.7.3 System Commissioning

Section 9.7.3 - Add a new Section 9.7.3 to read as follows:

9.7.3 System Commissioning

Lighting systems shall be tested to ensure that automatic control elements are calibrated, adjusted, and in proper working condition in accordance with this section.

9.7.3.1 Functional Testing of Lighting Controls

Prior to passing final inspection, the approved agency shall provide evidence that the lighting control systems have been tested to ensure that control hardware and software are calibrated, adjusted, programmed and in proper working condition in accordance with the construction documents and manufacturer's instructions. Functional testing shall be in accordance with Sections 9.7.3.1.1 through 9.7.3.1.3 for the applicable control type.

9.7.3.1.1 Occupant Sensor Controls

Where occupant sensor controls are provided, the following procedures shall be performed:

a. Certify that the occupant sensor has been located and aimed in accordance with manufacturer recommendations.

b. For projects with seven or fewer occupant sensors, each sensor shall be tested.

c. For projects with more than seven occupant sensors, testing shall be done for each unique combination of sensor type and space geometry. Where multiples of each unique combination of sensor type and space geometry are provided, not less than 10 percent and in no case fewer than one, of each combination shall be tested unless the building official or design professional requires a higher percentage to be tested. Where 30 percent or more of the tested controls fail, all remaining identical combinations shall be tested.

For occupant sensor controls to be tested, verify the following:

1. Where occupant sensor controls include status indicators, verify correct operation.
2. The controlled lights turn off or down to the permitted level within the required time.
3. For auto-on occupant sensor controls, the lights turn on to the permitted level when an occupant enters the space.
4. For manual-on occupant sensor controls, the lights turn on only when manually activated.
5. The lights are not incorrectly turned on by movement in adjacent areas or by HVAC operation.

9.7.3.1.2 Time-switch Controls

Where time-switch controls are provided, the following procedures shall be performed:

a. Confirm that the time-switch control is programmed with accurate weekday, weekend and holiday schedules.

b. Provide documentation to the owner of time-switch controls programming including weekday, weekend, holiday schedules, and set-up and preference program settings.

c. Verify the correct time and date in the time switch.

d. Verify that any battery back-up is installed and energized.

e. Verify that the override time limit is set to not more than 2 hours.

f. Simulate occupied condition. Verify and document the following:

1. All lights can be turned on and off by their respective area control switch.

2. The switch only operates lighting in the enclosed space in which the switch is located.

g. Simulate unoccupied condition. Verify and document the following:

1. Nonexempt lighting turns off.

2. Manual override switch allows only the lights in the enclosed space where the override switch is located to turn on or remain on until the next scheduled shutoff occurs.

h. Additional testing as specified by the registered design professional.

9.7.3.1.3 Daylight Responsive Controls

Where daylight responsive controls are provided, the following shall be verified:

a. Control devices have been properly located, field calibrated and set for accurate setpoints and threshold light levels.

b. Daylight controlled lighting loads adjust to light level setpoints in response to available daylight.

c. The calibration adjustment equipment is located for ready access only by authorized personnel.

9.7.3.2 Documentation Requirements

The construction documents shall specify that the documents described in this section be provided to the building owner or owner's authorized agent within 90 days of the date of receipt of the certificate of occupancy.

9.7.3.2.1 Drawings

Construction documents shall include the location and catalogue number of each piece of equipment.

9.7.3.2.2 Manuals

An operating and maintenance manual shall be provided and include the following:

a. Name and address of not less than one service agency for installed equipment.

b. A narrative of how each system is intended to operate, including recommended setpoints.

c. Submittal data indicating all selected options for each piece of lighting equipment and lighting controls.

d. Operation and maintenance manuals for each piece of lighting equipment. Required routine maintenance actions, cleaning and recommended relamping shall be clearly identified.

e. A schedule for inspecting and recalibrating all lighting controls.

9.7.3.2.3 Report

A report of test results shall be provided and include the following:

a. Results of functional performance tests.

b. Disposition of deficiencies found during testing, including details of corrective measures used or proposed.

Section 10.4.3.5 Power Conversion System

Section 10.4.3.5 - Add a new Section 10.4.3.5 to read as follows:

10.4.3.5 Power Conversion System

New traction elevators with a rise of 75 feet or more in new buildings shall have a power conversion system that complies with Sections 10.4.3.5.1 through 10.4.3.5.3.

10.4.3.5.1 Motor

Induction motors with a Class IE2 efficiency ratings, as defined by IEC EN 60034-30, or alternative technologies, such as permanent magnet synchronous motors that have equal or better efficiency, shall be used.

10.4.3.5.2 Transmission

Transmissions shall not reduce the efficiency of the combined motor/transmission below that shown for the Class IE2 motor for elevators with capacities below 4,000 lbs. Gearless machines shall be assumed to have a 100 percent transmission efficiency.

10.4.3.5.3 Drive

Potential energy released during motion shall be recovered with a regenerative drive that supplies electrical energy to the building electrical system.

Section 10.4.4.1 Regeneration Drive

Section 10.4.4 - Add a new Section 10.4.4.1 to read as follows:

10.4.4.1 Regenerative Drive

An escalator designed either for one-way down operation only or for reversible operation shall have a variable frequency regenerative drive that supplies electrical energy to the building electrical system when the escalator is loaded with passengers whose combined weight exceeds 750 pounds.

Section 10.4.6 Commercial Kitchen Equipment

Section 10.4.6 - Add a new Section 10.4.6 to read as follows:

10.4.6 Commercial Kitchen Equipment

Commercial kitchen equipment shall comply with the minimum efficiency requirements of Tables 10.4.6-1 through Table 10.4.6-5.

Table 10.4.6-1 - Add a new Table 10.4.6-1 to read as follows:

Table 10.4.6-1
Minimum Efficiency Requirements: Commercial Fryers

	Heavy-Load Cooking Energy Efficiency	**Idle Energy Rate**	**Test Procedure**
Standard Open Deep-Fat Gas Fryers	≥ 50%	≤ 9,000 Btu/hr	ASTM Standard F1361-17
Large Vat Open Deep-Fat Gas Fryers	≥ 50%	≤ 12,000 Btu/hr	
Standard Open Deep-Fat Electric Fryers	≥ 83%	≤ 800 watts	ASTM Standard F2144-17
Large Vat Open Deep-Fat Electric Fryers	≥ 80%	≤ 1,100 watts	

Table 10.4.6-2 - Add a new Table 10.4.6-2 to read as follows:

Table 10.4.6-2
Minimum Efficiency Requirements: Commercial Hot Food Holding Cabinets

Product Interior Volume (Cubic Feet)	**Maximum Idle Energy Consumption Rate (Watts)**	**Test Procedure**
0 < V < 13	≤ 21.5 V	ASTM Standard F2140-11
13 ≤ V < 28	≤ 2.0 V + 254.0	
28 ≤ V	≤ 3.8 V + 203.5	

Table 10.4.6-3 - Add a new Table 10.4.6-3 to read as follows:

Table 10.4.6-3
Minimum Efficiency Requirements: Commercial Steam Cookers

Fuel Type	**Pan Capacity**	**Cooking Energy Efficiency[a]**	**Idle Rate**	**Test Procedure**
Electric Steam	3-pan	50%	400 watts	ASTM Standard F1484-18
	4-pan	50%	530 watts	
	5-pan	50%	670 watts	
	6-pan and larger	50%	800 watts	

Gas Steam	3-pan	38%	6,250 Btu/h	
	4-pan	38%	8,350 Btu/h	
	5-pan	38%	10,400 Btu/h	
	6-pan and larger	38%	12,500 Btu/h	

a. Cooking Energy Efficiency is based on heavy load (potato) cooking capacity

Table 10.4.6-4 - Add a new Table 10.4.6-4 to read as follows:

Table 10.4.6-4
Minimum Efficiency Requirements: Commercial Dishwashers

Machine Type	High Temperature Efficiency Requirements		Low Temperature Efficiency Requirements		Test Procedure
	Idle Energy Rate[a]	Water Consumption[b]	Idle Energy Rate[a]	Water Consumption[b]	
Under Counter	≤ 0.50 kW	≤ 0.86 GPR	≤ 0.50 kW	≤ 1.19 GPR	ASTM F1696-18
Stationary Single Tank Door	≤ 0.70 kW	≤ 0.89 GPR	≤ 0.60 kW	≤ 1.18 GPR	
Pot, Pan , and Utensil	≤ 1.20 kW	≤ 0.58 GPSF	≤ 1.00 kW	≤ 0.58 GPSF	
Single Tank Conveyor	≤ 1.50 kW	≤ 0.70 GPR	≤ 1.50 kW	≤ 0.79 GPR	ASTM F1920-15
Multiple Tank Conveyor	≤ 2.25 kW	≤ 0.54 GPR	≤ 2.00 kW	≤ 0.54 GPR	
Single Tank Flight Type	Reported	GPH ≤ 2.975x + 55.00	Reported	GPH ≤ 2.975x + 55.00	
Multiple Tank Flight Type	Reported	GPH ≤ 4.96x + 17.00	Reported	GPH ≤ 4.96x + 17.00	

a. Idle results shall be measured with the door closed and represent the total idle energy consumed by the machine including all tank heater(s) and controls. Booster heater (internal or external) energy consumption should not be part of this measurement unless it cannot be separately monitored per US EPA Energy Star Commercial Dishwasher Specification Version 2.0.

b. GPR = gallons per rack; GPSF = gallons per square foot of rack; GPH = gallons per hour; x = sf of conveyer belt (i.e., W*L/min (maximum conveyor speed).

Table 10.4.6-5 - Add a new Table 10.4.6-5 to read as follows:

Table 10.4.6-5
Minimum Efficiency Requirements: Commercial Ovens

Fuel Type	Classification	Idle Rate	Cooking-Energy Efficiency, %	Test Procedure
Convection Ovens				
Gas	Full-Size	≤ 12,000 Btu/h	≥ 46	ASTM F1496 - 13
Electric	Half-Size	≤ 1.0 Btu/h	≥ 71	
	Full-Size	≤ 1.60 Btu/h		
Combination Ovens				
Gas	Steam Mode	≤ 200P[a]+6,511 Btu/h	≥ 41	ASTM F2861 - 17
	Convection Mode	≤ 150P[a]+5,425 Btu/h	≥ 56	
Electric	Steam Mode	≤ 0.133P[a]+0.6400 kW	≥ 55	
	Convection Mode	≤ 0.080P[a]+0.4989 kW	≥ 76	
Rack Ovens				
Gas	Single	≤ 25,000 Btu/h	≥ 48	ASTM F2093 - 18
	Double	≤ 30,000 Btu/h	≥ 52	

a. P = Pan Capacity: The number of steam table pans the combination oven is able to accommodate as per the ASTM F1495 – 05 standard specification.

Section 11.2 Compliance

Section 11.2 – Revise Items a, b, and c of Section 11.2, and add a new Item d to such Section, to read as follows:

a. All requirements of Sections 5.4, 6.4, 7.4, 8.4, 9.4, 10.4, and Section 6.7 are met;

b. the design energy cost, as calculated in Section 11.5, does not exceed the energy cost budget as calculated by the simulation program described in Section 11.4;

c. the energy efficiency level of components specified in the building design meet or exceed the efficiency levels used to calculate the design energy cost; and

d. In new buildings 25,000 square feet and greater, the building envelope shall comply with either:

1. Section 5.5, "Prescriptive Building Envelope Option," or

2. An envelope performance factor shall be calculated in accordance with Appendix C of this standard, and buildings shall comply with one of the following:

i. For multifamily, hotel/motel and dormitory building area types, the margin by which the proposed envelope performance factor exceeds the base envelope performance factor shall not be greater than 15%. For compliance with this requirement, the base envelope performance factor shall be calculated using metal framing operable windows. In buildings with window area accounting for 40% or more of the gross wall area, the SHGC of the vertical fenestration on east and west oriented façade may be reduced by the following multiplier to account for the permanent site shading from existing buildings or infrastructure.

$M_{West} = 0.l8 + 0.33/WWR$

$M_{East} = 0.35 + 0.26/WWR$

Where:

M_{West} = SHGC multiplier for the West façade

M_{East} = SHGC multiplier for the East façade

WWR = the ratio of proposed vertical fenestration area to the gross wall area in consistent units

The multiplier may be applied to the rated SHGC of the vertical fenestration which has at least 50% of the area located directly opposite of the shading surfaces and no higher from the street level than the difference between the shading surface height and the shading surface distance from the façade. Orientation must be determined following Section 5.5.4.5, Fenestration Orientation.

ii. For all other building area types, the margin by which the proposed envelope performance factor exceeds the base envelope performance factor shall be not greater than 7%. For compliance with this requirement, the base envelope performance factor shall be calculated using metal framing fixed windows.

iii. For mixed-use buildings, the margin shall be calculated as the gross wall area-weighted average of items (i) and (ii) above.

Section 11.4.1 Simulation Program

Section 11.4.1 – Revise the paragraph before the Informative Note in Section 11.4.1 to read as follows:

The simulation program shall be a computer-based program for the analysis of energy consumption in buildings (a program such as, but not limited to, DOE-2 or BLAST). For components that cannot be modeled by the simulation program, the exceptional calculation methods requirements in Section 11.4.5 shall be used.

Section 11.4.1.1

Section 11.4.1.1 – Revise Item a of Section 11.4.1.1 to read as follows:

a. A minimum of 8760 hours per year.

Section 11.4.3.2 Annual Energy Costs

Section 11.4.3.2 – Add a new sentence at the end of Section 11.4.3.2 to read as follows:

Where the proposed design includes electricity generated from sources other than on-site renewable energy, the baseline design shall include the same generation system, excluding its site-recovered energy.

Section 11.4.5 Exceptional Calculation Methods

Section 11.4.5 – Revise the first sentence in Section 11.4.5 to read as follows:

When the simulation program does not model a design, material, or device, the authority having jurisdiction may approve an exceptional calculation method to be used to demonstrate compliance with Section 11.

Section 11.5.2 HVAC Systems

Section 11.5.2 – Revise Item c in Section 11.5.2 to read as follows:

c. **Supply Fan Energy in Certain Package Equipment**

Where efficiency ratings include supply fan energy, the efficiency rating shall be adjusted to remove the supply fan energy. For Budget System Types 3, 4, 6, 9, and 11, calculate the minimum $COP_{nfcooling}$ and $COP_{nfheating}$ using the equation for the applicable performance rating as indicated in Tables 6.8.1-1 through 6.8.1-4. Where multiple HVAC zones are combined into a single thermal block in accordance with Table 11.5.1, the efficiencies for the budget System Types 6, 8, and 10 taken from Tables 6.8.1-1 through 6.8.1-4, shall be based on 9,000 Btu/hr equipment capacity for residential spaces; otherwise, it shall be based on the capacity of the thermal block divided by the number of HVAC zones. Budget System Types 3, 6, 9 and 11 efficiencies taken from Table 6.8.1-1 through 6.8.1-4 shall be based on the cooling equipment capacity of a single floor when grouping identical floors in accordance with Table 11.5.1. Where a full- and part-load efficiency rating is provided in Tables 6.8.1-1 through 6.8.1-4, the full-load equation below shall be used:

$$COP_{nfcooling} = 7.84E\text{-}8 \times EER \times Q + 0.338 \times EER$$

$$COP_{nfcooling} = -0.0076 \times SEER^2 + 0.3796 \times SEER$$

$$COP_{nfheating} = 1.48E\text{-}7 \times COP_{47} \times Q + 1.062 \times COP_{47}$$

(applies to heat pump heating efficiency only)

$$COP_{nfheating} = -0.0296 \times HSPF^2 + 0.7134 \times HSPF$$

where $COP_{nfcooling}$ and $COP_{nfheating}$ are the packaged HVAC equipment cooling and heating energy efficiency, respectively, to be used in the budget building design, which excludes supply fan power, and

Q is the AHRI-rated cooling capacity in Btu/h. If Q is greater than 760,000 Btu/hr, use 760,000 Btu/h in the calculation.

EER, SEER, COP, and HSPF shall be at AHRI test conditions. Fan energy shall be modeled separately according to Section 11.5.2(h). Supply and return/relief system fans shall be modeled as operating at least whenever the spaces served are occupied, except as specifically noted in Table 11.5.2-1.

Section 11.5.2 – Add a new Exception to Item d of Section 11.5.2 to read as follows:

Exception to (d)

Where the minimum outdoor air intake flow in the proposed design is provided in excess of the amount allowed by Section 6.5.3.7, the baseline building design shall be modeled to reflect the minimum amount allowed by Section 6.5.3.7 and will be less than or equal to the proposed design.

Section 11.7 Documentation Requirements

Section 11.7 – Revise Section 11.7 to read as follows:

11.7 Documentation Requirements

Compliance shall be documented and submitted to the authority having jurisdiction. The information submitted shall include the following:

a. The energy cost budget for the budget building design and the design energy cost for the proposed design.

b. The simulation program used and the version of the simulation program.

c. An overview of the project that includes the number of stories (above and below grade), the typical floor size, the uses in the building (e.g., office, cafeteria, retail, parking, etc.), the gross area of each use, and whether each use is conditioned space.

d. A list of the energy-related features that are included in the design and on which compliance with the provisions of Section 11 is based. This list shall document all energy features that differ between the models used in the energy cost budget and the design energy cost calculations.

e. A list showing compliance for the proposed design with all of the requirements of Sections 5.4, 6.4, 7.4, 8.4, 9.4 and 10.4 (mandatory provisions).

f. Building elevations and floor plans.

g. A diagram showing the thermal blocks used in the computer simulation.

h. An explanation of any significant modeling assumptions.

i. Backup calculations and material to support data inputs.

j. The input and output reports from the simulation program, including a breakdown of energy usage by at least the following components: lights, internal equipment loads, service water-heating equipment, space-heating equipment, space cooling and heat-rejection equipment, fans, and other HVAC equipment (such as pumps). The output reports shall also show the amount of time any loads are not met by the HVAC system for both the proposed design and budget building design.

k. Purchased energy rates used in the simulations.

l. An explanation of any error messages noted in the simulation program output.

m. For any exceptional calculation methods employed, document the predicted energy savings by energy type, the energy cost savings, a narrative explaining the exceptional calculation method performed and documentation as required in Section 11.4.5.

n. The reduction in design energy cost associated with on-site renewable energy.

Table 11.5.1 Row 4 Column A

Table 11.5.1 Row 4 Column A - Revise the paragraph in Row 4 Column A of Table 11.5.1 to read as follows:

The schedule types listed in Section 11.4.1.1(b) shall be required input. Temperature control set points and schedules shall be in accordance with the rules of the department for the applicable space types, unless as determined by the designer and approved by the authority having jurisdiction. Required schedules shall be identical for the proposed design and budget building design.

Temperature and Humidity Schedules Temperature and humidity control set points and schedules as well as temperature control throttling range shall be the same for the proposed design and baseline design.

HVAC Fan Schedules Schedules for HVAC fans that provide outdoor air for ventilation shall run continuously whenever spaces are occupied and shall be cycled ON and OFF to meet heating and cooling loads during unoccupied hours.

Exceptions:

1. Where no heating and/or cooling system is to be installed, and a heating or cooling system is being simulated only to meet the requirements described in this table, heating and/or cooling system fans shall not be simulated as running continuously during occupied hours but shall be cycled ON and OFF to meet heating and cooling loads during all hours.

2. HVAC fans shall remain on during occupied and unoccupied hours in spaces that have health- and safety-mandated minimum ventilation requirements during unoccupied hours.

Table 11.5.1 Row 5 Column A

Table 11.5.1 Row 5 Column A – Revise the first paragraph before the Exceptions in Row 5 Column A of Table 11.5.1 to read as follows:

All components of the building envelope in the proposed design shall be modeled as shown on architectural drawings or as installed for existing building envelopes. Opaque portions of the curtain wall shall use the default U-factors in Table 5.5.3, unless an alternative method is approved by the department.

Table 11.5.1 Row 5 Column A - Revise Exception 1 in Row 5 Column A of Table 11.5.1 to read as follows:

1. Any building envelope assembly that covers less than 5% of the total area of that assembly type (e.g., exterior walls) need not be separately described, provided that its U-factor is similar to an assembly being modeled. If not separately described, the area of a building envelope assembly must be added to the area of the adjacent assembly of that same type. The U-factors of these assemblies shall be averaged with larger adjacent surfaces using an area-weighted average method. When the total area of penetrations from through-the-wall mechanical equipment or equipment listed in Table 6.8.1-4 exceeds 1% of the opaque above-grade wall area, the mechanical equipment penetration area shall be calculated as a separate wall assembly with a default U-factor of 0.5. Where mechanical equipment has been tested in accordance with testing standards approved by the authority having jurisdiction, the mechanical equipment penetration area may be calculated as a separate wall assembly with the U-factor as determined by such test.

Table 11.5.1 Row 6 Column A

Table 11.5.1 Row 6 Column A - Revise Item d in Row 6 Column A of Table 11.5.1 to read as follows:

d. Lighting system power shall include all lighting system components shown or provided for on plans (including lamps, ballasts, task fixtures, and furniture-mounted fixtures). For dwelling units, hotel/motel guest rooms, and dormitory-living quarters in which lighting systems include plug-in light fixtures that are not shown or provided for on design documents, assume identical lighting power for the proposed design and baseline building design in the simulations.

Table 11.5.1 Row 6 Column A - Revise Item f in Row 6 Column A of Table 11.5.1 to read as follows:

f. Automatic lighting controls included in the proposed design but not required by Section 9.4.1 may be modeled using the following methods for each luminaire control:

1. Daylighting controls shall be modeled directly in the building simulation or be modeled in the building simulation through schedule adjustments determined by a separate analysis approved by the authority having jurisdiction. Modeling and schedule adjustments shall separately account for primary sidelighted areas, secondary sidelighted areas, and toplighted areas.

2. For automatic controls other than daylighting, the proposed design lighting power may be reduced for each luminaire under control by dividing the rated lighting power of the luminaire by the factor $(1 + \Sigma CF)$, where ΣCF indicates the sum of all applicable control factors (CF) per Section 9.6.3 and Table 9.6.3.

Table 11.5.1 Row 11 Column B

Table 11.5.1 Row 11 Column B – Revise the paragraph before the Exceptions in Row 11 Column B of Table 11.5.1 to read as follows:

The service water-heating system type in the budget building design shall be identical to the proposed design. The service water-heating system performance of the budget building design shall meet the requirements of Sections 7.4 and 7.5.

Table 11.5.1 Row 11 Column B – Add a new paragraph following the Exceptions in Row 11 Column B of Table 11.5.1 to read as follows:

Service water loads and use shall be the same for both the proposed design and baseline building design and typical of the proposed building type.

Section 12 Normative References

12 Normative References – Delete Section 12 in its entirety and replace with a new Section 12 to read as follows:

12 Normative References

Reference	**Title**
Air Conditioning, Heating and Refrigeration Institute (AHRI) 2111 Wilson Blvd., Suite 500, Arlington, VA 22201	

Reference	Title
AHRI 210/240-2008 with Addendum 1 and 2	Unitary Air Conditioning and Air-Source Heat Pump Equipment
AHRI 310/380-2004	Packaged Terminal Air-Conditioners and Heat Pumps
AHRI 340/360-2015 (I-P)	Performance Rating of Commercial and Industrial Unitary Air-Conditioning and Heat Pump Equipment
AHRI 365-2009	Commercial and Industrial Unitary Air-Conditioning Condensing Units
AHRI 390-2003	Performance Rating of Single Packaged Vertical Air-Conditioners and Heat Pumps
ANSI/AHRI 400-2015	Performance Rating of Liquid-to-Liquid Heat Exchangers
AHRI 460-2005	Remote Mechanical Draft Air Cooled Refrigerant Condensers
AHRI 550/590-2015 (I-P) and AHRI 551/591-2015 (SI)	Performance Rating of Water-Chilling and Heat-Pump Water-Heating Packages Using the Vapor Compression Cycle
AHRI 560-2000	Absorption Water Chilling and Water Heating Packages
AHRI Standard 910-2014 (I-P)	Performance Rating of Indoor Pool Dehumidifiers
AHRI Standard 910-2014 (SI)	Performance Rating of Indoor Pool Dehumidifiers
AHRI Standard 920-2015 (I-P)	Performance Rating of DX-Dedicated Outdoor Air System Units
AHRI Standard 921-2015 (SI)	Performance Rating of DX-Dedicated Outdoor Air System Units
AHRI 1160-2009	Performance Rating of Heat Pump Pool Heaters
AHRI 1200-2013	Performance Rating of Commercial Refrigerated Display Merchandisers and Storage Cabinets
AHRI 1230-2010 with Addendum 1	Performance Rating of Variable Refrigerant Flow (VRF) Multi-split Air-Conditioning and Heat Pump Equipment
ANSI/AHRI Standard 1360-2016 (I-P)	Performance Rating of Computer and Data Processing Room Air Conditioners
ANSI/AHRI Standard 1361-2016 (SI)	Performance Rating of Computer and Data Processing Room Air Conditioners

Reference	**Title**
BTS 2000	Testing Standard Method to Determine Efficiency of Commercial Space Heating Boilers
Air Movement and Control Association International (AMCA) 30 West University Drive, Arlington Heights, IL 60004-1806	
AMCA 205-12	Energy Efficiency Classification for Fans
AMCA Standard 500-D-12	Laboratory Methods of Testing Dampers for Rating
American Architectural Manufacturers Association (AAMA) 1827 Walden Office Square, Suite 550, Schaumburg, IL 60173-4268 Canadian Standards Association (CSA) 5060 Spectrum Way, Mississauga, Ontario, Canada L4W 5N6 Window and Door Manufacturers Association (WDMA) 2025 M Street, NW, Washington, DC 20036	
AAMA/WDMA/CSA 101/I.S.2/A440-11	NAFS-North American Fenestration Standard/Specification for Windows, Doors, and Skylights
American National Standards Institute (ANSI), 11 West 42nd Street, New York, NY 10036	
ANSI Z21.10.3-2011	Gas Water Heater, Volume 3, Storage, with Input Ratings above 75,000 Btu/h, Circulating and Instantaneous Water Heaters
ANSI Z21.47-2012/CSA 2.3-2012	Gas-Fired Central Furnaces
ANSI Z83.8-2013/CSA 2.6-2013	Gas Unit Heaters and Duct Furnaces
American Society of Mechanical Engineers (ASME) Three Park Avenue, New York, NY 10016-5990	
ASME A17.1-2013/CSA B44-13	Safety Code for Elevators and Escalators
ASHRAE 1791 Tullie Circle, NE, Atlanta, GA 30329	
ANSI/ASHRAE Standard 55-2013	Thermal Environmental Conditions for Human Occupancy
ANSI/ASHRAE Standard 62.1-2013	Ventilation for Acceptable Indoor Air Quality
ANSI/ASHRAE/IESNA Standard 90.1-2007	Energy Standard for Buildings Except Low-Rise Residential Buildings

Reference	Title
ANSI/ASHRAE/IESNA Standard 90.1-2010	Energy Standard for Buildings Except Low-Rise Residential Buildings
ANSI/ASHRAE/IESNA Standard 90.1-2013	Energy Standard for Buildings Except Low-Rise Residential Buildings
ANSI/ASHRAE Standard 111-2008	Testing, Adjusting, and Balancing of Building HVAC Systems
ANSI/ASHRAE Standard 127-2012	Method of Testing for Rating Computer and Data Processing Room Unitary Air Conditioners
ANSI/ASHRAE Standard 140-2014	Standard Method of Test for the Evaluation of Building Energy Analysis Computer Programs
ANSI/ASHRAE Standard 154-2011	Ventilation for Commercial Cooking Operations
ANSI/ASHRAE Standard 169-2013	Climatic Data for Building Design Standards
ANSI/ASHRAE/ASHE Standard 170-2013	Ventilation of Health Care Facilities
ANSI/ASHRAE/ACCA Standard 183-2007 (RA 2014)	Peak Cooling and Heating Load Calculations in Buildings Except Low-Rise Residential Buildings
Association of Home Appliance Manufacturers (AHAM) 1111 19th Street NW, Suite 402, Washington, DC 20036	
ANSI/AHAM HRF-1-2008	Energy and Internal Volume of Refrigerating Appliances (including errata issued November 17, 2009)
ASTM International 100 Barr Harbor Dr., West Conshohocken, PA 19428-2959	
ASTM C90-14	Standard Specification for Loadbearing Concrete Masonry Units
ASTM C177-13	Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmittance Properties by Means of the Guarded-Hot-Plate Apparatus
ASTM C272/C272M-12	Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions
ASTM C518-10	Standard Test Method for Steady-State Thermal Transmittance Properties by Means of the Heat Flow Meter Apparatus
ASTM C835-06 (2013) el	Standard Test Method for Total Hemispherical Emittance of Surfaces up to 1400°C

Reference	Title
ASTM C1224-11	Standard Specification for Reflective Insulation for Building Applications
ASTM C1363-11	Standard Test Method for the Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus
ASTM D1003-13	Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics
ASTM E283-04 (2012)	Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
ASTM E779-10	Standard Test Method for Determining Air Leakage Rate by Fan Pressurization
ASTM E972-96 (2013)	Standard Test Method for Solar Photometric Transmittance of Sheet Materials Using Sunlight
ASTM E1677-2011	Standard Specification for an Air Retarder (AR) Material or System for Low-Rise Framed Building Walls
ASTM E1680-11	Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems
ASTM E1827-2011	Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door
ASTM E1980-11	Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low Sloped Opaque Surfaces
ASTM E2178-13	Standard Test Method for Air Permeance of Building Materials
ASTM E2357-11	Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
ASTM F1361-17	Standard Test Method for Performance of Open Deep Fat Fryers
ASTM F1484-18	Standard Test Methods for Performance of Steam Cookers
ASTM F1495-5	Standard Specification for Combination Oven Electric or Gas Fired
ASTM F1496-13	Standard Test Method for Performance of Convection Ovens

Reference	**Title**
ASTM F1696-18	Standard Test Method for Energy Performance of Stationary-Rack, Door-Type Commercial Dishwashing Machines
ASTM F1920-15	Standard Test Method for Performance of Rack Conveyor Commercial Dishwashing Machines
ASTM F2093-18	Standard Test Method for Performance of Rack Ovens
ASTM F2140-11	Standard Test Method for Performance of Hot Food Holding Cabinets
ASTM F2144-17	Standard Test Method for Performance of Large Open Vat Fryers
ASTM F2861-17	Standard Test Method for Enhanced Performance of Combination Oven in Various Modes
BC Hydro Power Smart 333 Dunsmuir Street Vancouver, BC V6B 5R	
BC Hydro Building Envelope Thermal Bridging Guide V. 1.2 - Sept. 2018	BC Hydro Building Envelope Thermal Bridging Guide V. 1.2 - Sept. 2018
Cool Roof Rating Council (CRRC) 1610 Harrison Street, Oakland, CA 94612	
ANSI/CRRC-1 Standard-2012	Cool Roof Rating Council—ANSI/CRRC-1 Standard
Cooling Technology Institute (CTI) 3845 Cypress Creek Parkway, Suite 420, Houston, TX 77068; P.O. Box 681807	
CTI ATC-105 (00)	Acceptance Test Code for Water Cooling Towers
CTI ATC-105S (11)	Acceptance Test Code for Closed-Circuit Cooling Towers
CTI ATC-106 (11)	Acceptance Test Code for Mechanical Draft Evaporative Vapor Condensers
CTI STD-201 RS (15)	Performance Rating of Evaporative Heat Rejection Equipment
Door and Access Systems Manufacturers Association (DASMA) 1300 Sumner Avenue, Cleveland, OH 44115-2851	
ANSI/DASMA 105-2012	Test Method for Thermal Transmittance and Air Infiltration of Garage Doors

Reference	**Title**
U.S. Environmental Protection Agency (EPA) 1200 Pennsylvania Avenue, N.W. Washington, DC 20460	
US EPA Energy Star Commercial Dishwasher Specification Version 2- 2012	US EPA Energy Star Commercial Dishwasher Specification Version 2
International Electrotechnical Commission (IEC) IEC Regional Centre for North America 446 Main Street 16th Floor Worcester, MA 01608 U.S.A.	
IEC EN 60034-30-1-2014	Efficiency classes of line operated AC motors
Illuminating Engineering Society (IES) 120 Wall street, Floor 17, New York, NY 10005-4001	
ANSI/IES RP-28-2007	Lighting and the Visual Environment for Senior Living
International Organization for Standardization (ISO) ISO Central Secretariat BIBC II Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland	
ISO 9050 (2003)	Glass in Building—Determination of Light Transmittance, Solar Direct Transmittance, Total Solar Energy Transmittance, Ultraviolet Transmittance and Related Glazing Factors
ANSI/AHRI/ASHRAE/ISO 13256-1:1998 (R2012)	Water-Source Heat Pumps—Testing and Rating for Performance—Part 1: Water-to-Air and Brine-to-Air Heat Pumps
ANSI/AHRI/ASHRAE/ISO 13256-2:1998 (R2012)	Water-Source Heat Pumps—Testing and Rating for Performance—Part 2: Water-to-Water and Brine-to-Water Heat Pumps
ISO 25745-2:2015	Energy Performance of Lifts, Escalators and Moving Walks—Part 2: Energy Calculation and Classification for Lifts (Elevators)
New York City Department of Buildings (NYC DOB) 280 Broadway New York, NY 10007	
NYCAC (2014)	Administrative Code of the city of New York
NYCBC (2014)	New York City Building Code

Reference	Title
NYCECC	New York City Energy Conservation Code
NYCMC (2014)	New York City Mechanical Code
National Electrical Manufacturers Association (NEMA) 1300 N. 17th Street, Suite 1847, Rosslyn, VA 22209	
ANSI/NEMA MG 1-2009	Motors and Generators
National Fenestration Rating Council (NFRC) 6305 Ivy Lane, Suite 140, Greenbelt, MD 20770-6323	
ANSI/NFRC 100-2014	Procedure for Determining Fenestration Product U-Factors
ANSI/NFRC 200-2014	Procedure for Determining Fenestration Product Solar Heat Gain Coefficients and Visible Transmittance at Normal Incidence
NFRC 300-2014	Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems
NFRC 301-2014	Test Method for Emittance of Specular Surfaces Using Spectrometric Measurements
ANSI/NFRC 400-2014	Procedure for Determining Fenestration Product Air Leakage
National Fire Protection Association (NFPA) 1 Battery March Park, P.O. Box 9101, Quincy, MA 02269-9101	
NFPA 70-2014	National Electric Code
NFPA 96-2014	Ventilation Control and Fire Protection of Commercial Cooking Operations
Telecommunications Industry Association (TIA) 2500 Wilson Boulevard, Arlington, VA 22201	
ANSI/TIA-942-REV A, March 2014	Telecommunication Infrastructure Standard for Data Centers
Underwriters Laboratories, Inc. (UL) 333 Pfingsten Rd., Northbrook, IL 60062	
UL 181A-2013	Closure Systems for Use with Rigid Air Ducts and Air Connectors
UL 181B-2013	Closure Systems for Use with Flexible Air Ducts and Air Connectors

Reference	Title
UL 727-06	UL Standard for Safety—Oil Fired Central Furnaces
UL 731-2012	UL Standard for Safety—Oil-Fired Unit Heaters
U.S. Department of Energy (DOE) 1000 Independence Avenue, SW, Washington, DC 20585	
10 CFR Part 430, App N	Uniform Test Method for Measuring the Energy Consumption of Furnaces
10 CFR Part 430, Subpart B, Appendix F- 2015	Uniform Test Method for Measuring the Energy Consumption of Room Air Conditioners
10 CFR 431 Subpart K, App A	Uniform Test Method for Measuring the Energy Consumption of Distribution Transformers
10 CFR Part 431, Subpart B, App B	Uniform Test Method for Measuring Nominal Full-Load Efficiency of Electric Motors
42 USC 6831, et seq., Public Law 102-486	Energy Policy Act of 1992, EPACT 2005, and EISA 2007
U.S. Security and Exchange Commission (SEC) 100 F Street, NE, Washington, DC 2-549	
The Interagency Paper on Sound Practices to Strengthen the Resilience of the US Financial System	The Interagency Paper on Sound Practices to Strengthen the Resilience of the US Financial System, April 7, 2003

Normative Appendix G

Section G1.2.1 Mandatory Provisions

Section G1.2.1 – Revise Item a of Section G1.2.1 to read as follows:

a. All requirements of Sections 5.4, 6.4, 7.4, 8.4, 9.4, 10.4, and Section 6.7 shall be met. These sections contain the mandatory provisions of the standard and are prerequisites for this rating method.

Section G1.2.1 – Add a new Item c to Section G1.2.1 to read as follows:

c. In new buildings 25,000 square feet and greater, the building envelope shall comply with either:

1. Section 5.5, "Prescriptive Building Envelope Option," or

2. An envelope performance factor shall be calculated in accordance with Appendix C of this standard, and buildings shall comply with one of the following:

   i. For multifamily, hotel/motel and dormitory building area types, the margin by which the proposed envelope performance factor exceeds the base envelope performance factor shall not be greater than 15%. For compliance with this requirement, the base envelope performance factor shall be calculated using metal framing operable windows. In buildings with window area accounting for 40% or more of the gross wall area, the SHGC of the vertical fenestration on east and west oriented façade may be reduced by the following multiplier to account for the permanent site shading from existing buildings or infrastructure.

$M_{West} = 0.l8 + 0.33/WWR$

$M_{East} = 0.35 + 0.26/WWR$

Where:

M_{West} = SHGC multiplier for the West façade

M_{East} = SHGC multiplier for the East façade

WWR = the ratio of proposed vertical fenestration area to the gross wall area in consistent units

The multiplier may be applied to the rated SHGC of the vertical fenestration which has at least 50% of the area located directly opposite of the shading surfaces and no higher from the street level than the difference between the shading surface height and the shading surface distance from the façade. Orientation must be determined following Section 5.5.4.5, Fenestration Orientation.

ii. For all other building area types, the margin by which the proposed envelope performance factor exceeds the base envelope performance factor shall be not greater than 7%. For compliance with this requirement, the base envelope performance factor shall be calculated using metal framing fixed windows.

iii. For mixed-use buildings, the margin shall be calculated as the gross wall area-weighted average of i) and ii) above.

Section G1.2.2 Performance Rating Calculation

Section G1.2.2 – Delete Section G1.2.2 in its entirety and replace with a new Section G1.2.2 to read as follows:

G1.2.2 Performance Rating Calculation

The performance of the proposed design is calculated by either the provisions of G1.2.2.1 Performance Cost Index or G1.2.2.2 Performance Source Energy Index.

Section G1.2.2.1 Performance Cost Index

Section G1.2.2.1 – Add a new Section G1.2.2.1 to read as follows:

G1.2.2.1 Performance Cost Index

The performance of the proposed design is calculated in accordance with provisions of this Appendix using the following formula:

Performance Cost Index = Proposed building performance/Baseline building performance

Both the proposed building performance and the baseline building performance shall include all end-use load components within and associated with the building when calculating the Performance Cost Index.

Section G1.2.2.2 Performance Source Energy Index

Section G1.2.2.2 – Add a new Section G1.2.2.2 to read as follows:

G1.2.2.2 Performance Source Energy Index

The performance of the proposed design is calculated in accordance with provisions of this Appendix using the following formula:

Performance Source Energy Index = Proposed building source energy/Baseline building source energy

Both the proposed building source energy and the baseline building source energy shall include all end-use load components within and associated with the building when calculating the Performance Source Energy Index.

Section G1.3 Documentation Requirements

Section G1.3 – Revise Item a of Section G1.3 to read as follows:

a. A brief description of the project, the key energy efficiency improvements compared with the requirements in Sections 5 through 10, the simulation program used, the version of the simulation program, and the results of the energy analysis. This summary shall contain the calculated values for the baseline building unregulated energy cost (BBUEC), baseline building regulated energy cost (BBREC), baseline building unregulated source energy (BBUSE), baseline building regulated source energy (BBRSE),building performance factor (BPF), baseline building performance, the proposed building performance, baseline building source energy, the proposed building source energy, Performance Cost Index (PCI), Performance Source Energy Index (PSEI), Performance Cost Index Target (PCIt), and Performance Source Energy Target (PSEt).

Section G1.3 – Revise Item f of Section G1.3 to read as follows:

f. A table with a summary by end use of the proposed building performance, proposed building source energy, baseline building performance, baseline building source energy with each end use separated into regulated and unregulated components.

Section G1.3 – Revise Item h of Section G1.3 to read as follows:

h. Building elevations and floor plans.

Section G2.4.1 On-Site Renewable Energy and Site-Recovered Energy

Section G2.4.1 – Revise Section G2.4.1 to read as follows:

G2.4.1 On-Site Renewable Energy and Site-Recovered Energy

Site-recovered energy shall not be considered purchased energy and shall be subtracted from the proposed design energy consumption prior to calculating the proposed building performance or proposed building source energy. On-site renewable energy generated by systems included on the building permit that is used by the building shall be subtracted from the proposed design energy consumption prior to calculating the proposed building performance or proposed building source energy. The reduction in proposed building performance or proposed building source energy associated with on-site renewable energy systems shall not exceed 5% of the calculated baseline building performance or baseline building source energy, respectively.

G2.4.2 Annual Energy Costs

Section G2.4.2 – Delete Section G2.4.2 in its entirety and replace with a new G2.4.2 to read as follows:

G2.4.2 Annual Energy Costs

The design energy cost and baseline energy cost shall be determined using rates for purchased energy (such as electricity, gas, oil, propane, steam, and chilled water) that are approved by the authority having jurisdiction. Where on-site renewable energy or site-recovered energy is used, the baseline building design shall be based on the energy source used as the backup energy source, or the baseline system energy source in that category if no backup energy source has been specified, except where the baseline energy source is prescribed in Tables G3.1.1-2 and G3.1.1-3. Where the proposed design includes electricity generated from sources other than on-site renewable energy, the baseline design shall include the same generation system, excluding its site-recovered energy.

G2.5 Exceptional Calculation Methods

Section G2.5 – Revise Item e of Section G2.5 to read as follows:

e. The Performance Cost Index or Performance Source Energy Index calculated with and without the exceptional calculation method.

Table G3.1 Row 1 Column A

Table G3.1 Row 1 Column A - Revise Item c in Row 1 Column A of Table G3.1 to read as follows:

c. When the performance rating method is applied to buildings in which energy-related features have not yet been designed (e.g., a lighting system), those yet-to-be-designed features shall be modeled in the proposed design to comply with but not exceed the requirements of this Standard as described in Table G3.1 parts 6, 10, 11 and 12. Where the space classification for a space is not known, the space shall be categorized as an office space.

Table G3.1 Row 1 Column B

Table G3.1 Row 1 Column B - Add a new paragraph after the second paragraph in Row 1 Column B of Table G3.1 to read as follows:

Where the baseline building systems and equipment are permitted to be different from the proposed design but are not prescribed in this Appendix, the baseline must be determined based on the following, in the order of priority:

a. Requirements in Sections 5-10.

b. Requirements of other efficiency or equipment codes or standards applicable to the designs of the building systems and equipment.

Table G3.1 Row 4 Column A

Table G3.1 Row 4 Column A - Revise the first paragraph in Row 4 Column A of Table G3.1 to read as follows:

Schedules capable of modeling hourly variations in occupancy, lighting power, miscellaneous equipment power, thermostat set points, and HVAC system operation shall be used. Schedules shall be in accordance with the rules of the department for the applicable space types, unless as determined by the designer and approved by the authority having jurisdiction.

Table G3.1 Row 4 Column B

Table G3.1 Row 4 Column B - Add a new Exception 3 in Row 4 Column B of Table G3.1 to read as follows:

3. Fan schedules may be allowed to differ when G3.1.1(c) applies.

Table G3.1 Row 5 Column A

Table G3.1 Row 5 Column A - Revise the paragraph before the Exceptions in Row 5 Column A of Table G3.1 to read as follows:

a. All components of the building envelope in the proposed design shall be modeled as shown on architectural drawings or as built for existing building envelopes. Opaque portions of the curtain wall shall use the default U-factors in Table 5.5.3, unless an alternative method is approved by the department.

Table G3.1 Row 5 Column A - Revise Exception 1 in Row 5 Column A of Table G3.1 to read as follows:

1. All uninsulated assemblies (e.g., projecting balconies, perimeter edges of intermediate floor slabs, concrete floor beams over parking garages, roof parapet) shall be separately modeled using either of the following techniques:

   a. Separate model of each of these assemblies within the energy simulation model.

   b. Separate calculation of the U-factor for each of these assemblies. The U-factors of these assemblies are then averaged with larger adjacent surfaces using an area- weighted average method. This average U-factor is modeled within the energy simulation model.

   Any other building envelope assembly that covers less than 5% of the total area of that assembly type (e.g., exterior walls) need not be separately described, provided that its U-factor is similar to an assembly being modeled. If not separately described, the area of a building envelope assembly shall be added to the area of an assembly of that same type with the same orientation and thermal properties.

   When the total area of penetrations from through-the-wall mechanical equipment or equipment listed in Table 6.8.1-4 exceeds 1% of the opaque above-grade wall area, the mechanical equipment penetration area shall be calculated as a separate wall assembly with a default U-factor of 0.5. Where mechanical equipment has been tested in accordance with testing standards approved by the authority having jurisdiction, the mechanical equipment penetration area may be calculated as a separate wall assembly with the U-factor as determined by such test.

Table G3.1 Row 6 Column A

Table G3.1 Row 6 Column A - Revise Row 6 Column A of Table G3.1 to read as follows:

Lighting power in the proposed design shall be determined as follows:

a. Where a complete lighting system exists, the actual lighting power for each thermal block shall be used in the model.

b. Where a lighting system has been designed and submitted with design documents, lighting power shall be determined in accordance with Sections 9.1.3 and 9.1.4.

c. Where lighting neither exists nor is submitted with design documents, lighting shall comply with but not exceed the requirements of Section 9. Where space types are known, lighting power shall be determined in accordance with the Space-by-Space Method. Where space types are not known, lighting power shall be determined in accordance with the Building Area Method.

d. Lighting system power shall include all lighting system components shown or provided for on the plans (including lamps and ballasts and task and furniture-mounted fixtures).

e. For dwelling units, hotel/motel guest rooms, and other spaces in which lighting systems are connected via receptacles and are not shown or provided for on building plans, lighting power used in the simulation shall be equal to the lighting power allowance in Table 9.6.1 for the appropriate space type or as designed, whichever is greater. For the dwelling units, lighting power used in the simulation shall be equal to 0.60 W/ft^2, (or as designed, whichever is greater).

   Exception: Lighting use can be reduced for the portion of the space illuminated by the specified fixtures provided that they maintain the same illuminance level as in the baseline. Such reduction shall be demonstrated by calculations.

f. Exterior lighting power and lighting power for parking garages shall be modeled.

g. For lighting controls, at a minimum, the proposed design shall contain the mandatory automatic lighting controls specified in Section 9.4.1 (e.g., automatic daylight responsive controls, occupancy sensors, programmable controls, etc.). These controls shall be modeled in accordance with (h) and (i).

h. Automatic daylighting responsive controls shall be modeled directly in the proposed design or through schedule adjustments determined by a separate daylighting analysis approved by the rating authority. Modeling and schedule adjustments shall separately account for primary sidelighted areas, secondary sidelighted areas, and toplighted areas.

i. Other automatic lighting controls included in the proposed design shall be modeled directly in the building simulation by reducing the lighting schedule each hour by the occupancy sensor reduction factors in Table G3.7 for the applicable space type. This reduction shall be taken only for lighting controlled by the occupancy sensors. Credit for other programmable lighting control in buildings less than 5000 ft^2 can be taken by reducing the lighting schedule each hour by 10%.

Table G3.1 Row 6 Column B

Table G3.1 Row 6 Column B - Revise Row 6 Column B of Table G3.1 to read as follows:

Interior lighting power in the baseline building design shall be determined using the values in Table G3.7. However, where lighting neither exists nor is submitted with design documents, and the proposed design lighting power is determined according to the Building Area Method, the baseline building design lighting power shall be determined in accordance with Table G3.8. Where retail display lighting is included in the proposed building design in accordance with Section 9.6.2b, the baseline building design retail display lighting additional power shall be equal to the limits established by Section 9.6.2b or same as proposed, whichever is less.

Lighting shall be modeled having the automatic shutoff controls in buildings greater than 5000 ft^2 and occupancy sensors in employee lunch and break rooms, conference/meeting rooms, and classrooms (not including shop classrooms, laboratory classrooms, and preschool through 12th-grade classrooms). These controls shall be reflected in the baseline building design lighting schedules. No additional automatic lighting controls, e.g., automatic controls for daylight utilization and occupancy sensors in space types not listed above, shall be modeled in the baseline building design.

Exterior lighting in areas that are designed to be illuminated and identified as “Tradable Surfaces” in Table G3.6 shall be modeled with the baseline lighting power shown in Table G3.6. Other exterior lighting shall be modeled the same in the baseline building design as in the proposed design.

Table G3.1 Row 7 Column A

Table G3.1 Row 7 Column A - Revise Item 1 in Row 7 Column A of Table G3.1 to read as follows:

1. The space use classification is the same throughout the thermal block or all of the zones have peak internal loads that differ by less than 10 BTU/hr*ft^2 from the average.

Table G3.1 Row 7 Column A - Add a new Exception 4 in Row 7 Column A of Table G3.1 to read as follows:

4. All of the zones have schedules that differ by 40 or less equivalent load hours per week.

Table G3.1 Row 11 Column A

Table G3.1 Row 11 Column A - Add a new Item f in Row 11 Column A of Table G3.1 to read as follows:

f. Piping losses shall not be modeled.

Table G3.1 Row 11 Column B

Table G3.1 Row 11 Column B - Delete Item d in Row 11 Column B of Table G3.1 in its entirety.

Table G3.1 Row 11 Column B – Renumber Items e, f and g in Row 11 Column B of Table G3.1 as Items d, e and f of such Row 11 Column B, respectively.

Table G3.1 Row 11 Column B - Renumber Item h in Row 11 Column B of Table G3.1 as Item g in such Row 11 Column B, and revise Exception 1 of such renumbered Item g to read as follows:

1. Service water-heating use can be demonstrated to be reduced by documented water conservation measures that reduce the physical volume of service water required. Examples include low-flow shower heads. Such reduction shall be demonstrated by calculations. The baseline flow rates shall be equal to the maximum allowed by the applicable code and the calculation methodology shall be approved by the authority having jurisdiction.

Table G3.1 Row 11 Column B - Renumber Item i in Row 11 Column B of Table G3.1 as Item h of such Row 11 Column B.

Table G3.1 Row 11 Column B - Add a new Item i in Row 11 Column B of Table G3.1 to read as follows:

i. Piping losses shall not be modeled.

Table G3.1.1-1 Baseline Building Vertical Fenestration Percentage of Gross Above-Grade Wall Area

Table G3.1.1-1 – Delete Footnote a below Table G3.1.1-1 in its entirety.

G3.1.1 Baseline HVAC System Type and Description

Section G3.1.1 – Revise Item b of Section G3.1.1 to read as follows:

b. Use additional system types for nonpredominant conditions (i.e., residential/nonresidential) if those conditions apply to more than 20,000 ft^2 of conditioned floor area.

Section G3.1.1 – Revise Item c of Section G3.1.1 to read as follows:

c. If the baseline HVAC system type is 5, 6, 7, 8, 9, 10, 11, 12, or 13 use separate single-zone systems conforming with the requirements of system 3 or system 4 for any HVAC zones that have occupancy or internal gains or schedules that differ significantly from the rest of the HVAC zones served by the system. Total Peak internal gains that differ by 10 $Btu/h \cdot ft^2$ or more from the average of other spaces served by the system, or schedules that differ by more than 40 equivalent full-load hours per week from other HVAC zones served by the system, are considered to differ significantly. Examples where this exception may be applicable include but are not limited to natatoriums and continually occupied security areas. This exception does not apply to computer rooms.

Section G3.1.2.1 Equipment Efficiencies

Section G3.1.2.1 – Revise Section G3.1.2.1 to read as follows:

G3.1.2.1 Equipment Efficiencies

All HVAC equipment in the baseline building design shall be modeled at the minimum efficiency levels, both part load and full load, in accordance with Tables G3.5.1 through G3.5.6. Where multiple HVAC zones or residential spaces are combined into a single thermal block in accordance with Table G3.1, the efficiencies (for baseline HVAC System Types 1, 2, 3, 4, 9 and 10) taken from Tables G3.5.1, G3.5.2, G3.5.3, G3.5.4, and G3.5.5 shall be based on the equipment capacity of the thermal block divided by the number of HVAC zones or residential spaces. HVAC System Types 5 or 6 efficiencies taken from Table G3.5.1 shall be based on the cooling equipment capacity of a single floor when grouping identical floors in accordance with

Section G3.1.1(a)(4). Fan energy shall be modeled separately according to Section G3.1.2.9. $COP_{nfcooling}$ and $COP_{nfheating}$ are the packaged HVAC equipment cooling and heating energy efficiency, respectively, to be used in the baseline building design, which excludes supply fan power.

Section G3.1.2.2 Equipment Capacities

Section G3.1.2.2 – Add a new sentence at the end of Section G3.1.2.2 to read as follows:

Plant capacities shall be based on coincident loads.

Table G3.1.2.9 Baseline Fan Brake Horsepower

Table G3.1.2.9 – Revise Table G3.1.2.9 to read as follows:

Table G3.1.2.9 Baseline Fan Brake Horsepower

Baseline Fan Motor Brake Horsepower		
Constant-Volume Systems 3,4, 12 and 13	**Variable-Volume Systems 5 to 8**	**Variable-Volume System 11**
$CFM_s \times 0.00094 + A$	$CFM_s \times 0.0013 + A$	$CFM_s \times 0.00062 + A$

Notes:

1. Where A is calculated according to Section 6.5.3.1.1 using the pressure-drop adjustment from the proposed design and the design flow rate of the baseline building system.
2. Do not include pressure-drop adjustments for evaporative coolers or heat recovery devices that are not required in the baseline building system by Section G3.1.2.10.

Section G3.1.3.2 Type and Number of Boilers (Systems 1, 5, and 7)

Section G3.1.3.2 – Revise the lead title of Section G3.1.3.2 to read as follows:

G3.1.3.2 Type and Number of Boilers (Systems 1, 5, 7, 11 and 12)

Section G3.1.3.3 Hot-Water Supply Temperature (Systems 1, 5, 7, and 12)

Section G3.1.3.3 – Revise the lead title of Section G3.1.3.3 to read as follows:

G3.1.3.3 Hot-Water Supply Temperature (Systems 1, 5, 7, 11 and 12)

Section G3.1.3.6 Piping Losses (Systems 1, 5, 7, 8, and 11)

Section G3.1.3.6 – Revise the lead title of Section G3.1.3.6 to read as follows:

G3.1.3.6 Piping Losses (Systems 1, 5, 7, 8, 11, 12, and 13)

Section G3.1.3.10 Chilled-Water Pumps (Systems 7, 8, and 11)

Section G3.1.3.10 – Revise the lead title of Section G3.1.3.10 to read as follows:

G3.1.3.10 Chilled-Water Pumps (Systems 7, 8, 11, 12, and 13)

Section G3.1.3.11 Heat Rejection (Systems 7, 8, 9, 12, and 13)

Section G3.1.3.11 – Revise the lead title of Section G3.1.3.11 to read as follows:

G3.1.3.11 Heat Rejection (Systems 7, 8, 11, 12, and 13)

Section G3.1.3.12 Supply Air Temperature Reset (Systems 5 through 8)

Section G3.1.3.12 – Revise the lead title of Section G3.1.3.12 to read as follows:

G3.1.3.12 Supply Air Temperature Reset (Systems 5 through 8 and 11)

Table G3.5.1 Performance Rating Method Air Conditioners

Table G3.5.1 – Revise Table G3.5.1 to read as follows:

Table G3.5.1 Performance Rating Method Air Conditioners

Equipment Type	**Size Category**	**Heating Section Type**	**Subcategory or Rating Condition**	**Minimum Efficiency**	**Test Procedure**
Air conditioners, air-cooled	<65,000 Btu/h	All	Single-package	3.0 $COP_{nfcooling}$	ARI 210/240
	≥65,000 Btu/h and <135,000 Btu/h		Split-system and single-package	3.5 $COP_{nfcooling}$	ARI 340/360
	≥135,000 Btu/h and <240,000 Btu/h			3.4 $COP_{nfcooling}$	
	≥240,000 Btu/h and <760,000 Btu/h			3.5 $COP_{nfcooling}$	
	≥760,000 Btu/h			3.6 $COP_{nfcooling}$	

Table G3.5.2 Performance Rating Method Electrically Operated Unitary and Applied Heat Pumps – Minimum Efficiency Requirements

Table G3.5.2 – Revise Table G3.5.2 to read as follows:

Table G3.5.2 Performance Rating Method Electrically Operated Unitary and Applied Heat Pumps—Minimum Efficiency Requirements

Equipment Type	**Size Category**	**Heating Section Type**	**Subcategory or Rating Condition**	**Minimum Efficiency**	**Test Procedure**
Air-cooled (cooling mode)	<65,000 Btu/h	All	Single package	3.0 $COP_{nfcooling}$	ARI 210/240
	≥65,000 Btu/h and <135,000 Btu/h		Split-system and single-package	3.4 $COP_{nfcooling}$	ARI 340/360
	≥135,000 Btu/h and <240,000 Btu/h			3.2 $COP_{nfcooling}$	
	≥240,000 Btu/h			3.1 $COP_{nfcooling}$	
Air-cooled (heating mode)	<65,000 Btu/h (cooling capacity)		Single-package	3.4 $COP_{nfheating}$	ARI 210/240
	≥65,000 Btu/h and <135,000 Btu/h (cooling capacity)		47°F db/43°F wb outdoor air	3.4 $COP_{nfheating}$	ARI 340/360
			17°F db/15°F wb outdoor air	2.3 $COP_{nfheating}$	
	≥135,000 Btu/h (cooling capacity)		47°F db/43°F wb outdoor air	3.4 $COP_{nfheating}$	
			17°F db/15°F wb outdoor air	2.1 $COP_{nfheating}$	

Table G3.5.4 Performance Rating Method Electrically Operated Packaged Terminal Air Conditioners, Packaged Terminal Heat Pumps

Table G3.5.4 – Revise Table G3.5.4 to read as follows:

Table G3.5.4 Performance Rating Method Electrically Operated Packaged Terminal Air Conditioners, Packaged Terminal Heat Pumps

Equipment Type	**Size Category**	**Subcategory or Rating Condition**	**Minimum Efficiency**	**Test Procedure**
PTAC (cooling mode)	All capacities	95°F db outdoor air	3.2 $COP_{nfcooling}$	ARI 310/380
PTHP (cooling mode)	All capacities	95°F db outdoor air	3.1 $COP_{nfcooling}$	ARI 310/380
PTHP (heating mode)	All capacities		3.1 $COP_{nfheating}$	ARI 310/380

Table G3.6 Lighting Power Densities for Building Exteriors

Table G3.6 – Delete Table G3.6 in its entirety and replace with a new Table G3.6 to read as follows:

<table>
<tr><td colspan="3">Table G3.6 Lighting Power Densities for Building Exteriors</td></tr>
<tr><td rowspan="11">Tradable Surfaces (Lighting power densities for uncovered parking areas, building grounds, building entrances and exits, canopies and overhangs and outdoor sales areas may be traded.)</td><td colspan="2">Uncovered Parking Areas</td></tr>
<tr><td>Parking lots and drives</td><td>0.15 W/ft²</td></tr>
<tr><td colspan="2">Building Grounds</td></tr>
<tr><td>Walkways less than 10 ft wide</td><td>1.0 W/linear foot</td></tr>
<tr><td>Walkways 10 ft wide or greater
Plaza areas
Special feature areas</td><td>0.2 W/ft²</td></tr>
<tr><td>Stairways</td><td>1.0 W/ft²</td></tr>
<tr><td colspan="2">Building Entrances and Exits</td></tr>
<tr><td>Main entries</td><td>30 W/linear foot of door width</td></tr>
<tr><td>Other doors</td><td>20 W/linear foot of door width</td></tr>
<tr><td colspan="2">Canopies and Overhangs</td></tr>
</table>

	Canopies (free standing and attached and overhangs)	1.25 W/ft²
	Outdoor Sales	
	Open areas (including vehicle sales lots)	0.5 W/ft²
	Street frontage for vehicle sales lots in addition to open-area allowance	20 W/linear foot

Table G3.7 Performance Rating Method Lighting Power Density Allowances and Occupancy Sensor Reductions Using the Space-by-Space Method

Table G3.7 – Add a new row in Table G3.7 after "Computer Room" to read as follows:

Common Space Types[a]	Lighting Power Density, W/ft²	Occupancy Sensor Reduction[b]
Dwelling Unit	1.07	None

Appendix I

Add a new Appendix I, following Appendix H, to read as follows:

This is a normative appendix and is part of this standard.

Normative Appendix I

Required Additional Efficiency Packages

I1 General

I1.1 Requirements

New buildings shall comply with at least one of the following sections:

1. More efficient HVAC equipment in accordance with Section I2.
2. Reduced lighting power density in accordance with Section I3.
3. Enhanced digital lighting controls in accordance with Section I4.
4. Dedicated outdoor air systems with energy recovery ventilation in accordance with Section I5.
5. High-efficiency service water heating in accordance with Section I6.
6. Enhanced envelope performance in accordance with Section I7.
7. Reduced air infiltration in accordance with Section I8.

I.1.2 Tenant Spaces

Tenant spaces shall comply with I2, I3, I4, I5 or I6. Alternatively, tenant spaces shall be in compliance with Section I7 or I8 where the entire building is in compliance.

Exception:

Previously occupied tenant spaces that comply with this code using Section 4.2.1.3.

I2 More Efficient HVAC Equipment

Equipment shall exceed the minimum efficiency requirements listed in Tables 6.8.1-1 through 6.8.1-7, and Tables 6.8.1-9 through Table 6.8.1-16 by 10%, in addition to the requirements of Section 6. Where multiple performance requirements are provided, the equipment shall exceed all requirements by 10%. Equipment not listed in Tables 6.8.1-1 through 6.8.1-7, and Tables 6.8.1-9 through Table 6.8.1-16 shall be limited to 10% of the total building system capacity.

I3 Reduced Lighting Power Density

The total interior lighting power (watts) of the building shall be determined by using 90% of the lighting power values specified in Table 9.5.1 times the floor area for the building types, or by using 90% of the interior lighting power allowance calculated by the Space-by-Space Method in Section 9.6.

I4 Enhanced Digital Lighting Controls

Interior lighting in the building shall have the following enhanced lighting controls that shall be located, scheduled and operated in accordance with Section 9.4.1.1(i).

1. Luminaires shall be configured for continuous dimming.
2. Luminaires shall be addressed individually. Where individual addressability is not available for the luminaire class type, a controlled group of not more than four luminaires shall be allowed.
3. Not more than eight luminaires shall be controlled together in a daylight area.
4. Fixtures shall be controlled through a digital control system that includes the following functions:
   - 4.1. Control reconfiguration based on digital addressability.
   - 4.2. Load shedding.
   - 4.3. Individual user control shall be capable of being reconfigured through the digital control system.
   - 4.4. Occupancy sensors shall be capable of being reconfigured through the digital control system.
5. Construction documents shall include submittal of a Sequence of Operations, including a specification outlining each of the functions in Item 4 of this section.
6. Functional testing of lighting controls shall comply with Section 9.4.3.

I5 Dedicated Outdoor Air System

Buildings containing equipment or systems regulated by Section 6.5.2.2, 6.5.3.2.1, 6.5.3.2.2, 6.5.3.2.3, 6.5.3.3, 6.5.3.4, 6.5.3.5, 6.5.3.6, 6.5.4.1, 6.5.4.2, 6.5.4.3, 6.5.4.4, 6.5.5.2, 6.5.5.3, or 6.5.5.4 shall be equipped with an independent ventilation system designed to provide not less than the minimum 100-percent outdoor air to each individual occupied space, as specified by the New York City Mechanical Code. The ventilation system shall be equipped with an energy recovery system meeting the requirements of Section 6.5.6.1 (Note: Option I5 may not be selected where energy recovery ventilation is prohibited by the New York City Mechanical Code or otherwise prohibited). The HVAC system shall include supply-air temperature controls that automatically reset the supply-air temperature in response to representative building loads, or to outdoor air temperatures. The controls shall reset the supply-air temperature not less than 25 percent of the difference between the design supply-air temperature and the design room-air temperature.

I6 REDUCED ENERGY USE IN SERVICE WATER HEATING

Buildings shall be of the following types to use this compliance method:

1. Group R-1: Boarding houses, hotels or motels.
2. Group I-2: Hospitals, psychiatric hospitals and nursing homes.
3. Group A-2: Restaurants and banquet halls or buildings containing food preparation areas.
4. Group F: Laundries.
5. Group R-2.
6. Group A-3: Health clubs and spas.

I6.1 LOAD FRACTION

The building service water-heating system shall have one or more of the following that are sized to provide not less than 60 percent of the building's annual hot water requirements, or sized to provide 100 percent of the building's annual hot water requirements if the building shall otherwise comply with Section 6.5.6.2:

1. Waste heat recovery from service hot water, heat-recovery chillers, building equipment, or process equipment.
2. On-site renewable energy water-heating systems.

I7 Enhanced Envelope Performance

The proposed envelope performance factor shall demonstrate a minimum 15 percent improvement compared to the base envelope performance factor in accordance with Section 5.6.

I8 Reduced Air Infiltration

Air infiltration shall be verified by whole-building pressurization testing conducted in accordance with ASTM E779 or ASTM E1827 by an independent third party. The measured air-leakage rate of the building envelope shall not exceed 0.25 cfm/ft^2 under a pressure differential of 0.3 inches water column (75 Pa), with the calculated surface area being the sum of the above- and below-grade building envelope. A report that includes the tested surface area, floor area, air by volume, stories above grade, and leakage rates shall be submitted to the building owner.

Exception:

For buildings having over 250,000 square feet of conditioned floor area, air leakage testing need not be conducted on the whole building where testing is conducted on representative above-grade sections of the building. Tested areas shall total not less than 25 percent of the conditioned floor area and shall be tested in accordance with this section.

§ 4. This local law takes effect on {enter the same effective day as the Energy Conservation Construction Code of New York State} and applies to applications for construction document approval filed on and after such effective date except that the commissioner of buildings may promulgate rules or take other actions for the implementation of such provisions prior to such effective date.

Referred to the Committee on Housing and Buildings.

Int. No. 1817

By Council Members Cumbo, Barron, Cornegy and Kallos.

A Local Law to amend the administrative code of the city of New York, in relation to affordable housing lottery processes

Be it enacted by the Council as follows:

Section 1. Title 26 of the administrative code of the city of New York is amended by adding a new chapter 26 to read as follows:

CHAPTER 26
AFFORDABLE HOUSING LOTTERIES

§ 26-2601 Definitions.
§ 26-2602 Affordable housing lotteries.
§ 26-2601 Definitions. For the purposes of this chapter, the following terms have the following meanings:

Affordable housing lottery. The term "affordable housing lottery" means any lottery for affordable housing units that is administered by or on behalf of the department.

Affordable housing unit. The term "affordable housing unit" means "affordable housing unit" as defined in section 26-2201.

Applicant. The term "applicant" means an applicant for an affordable housing unit.

Application. The term "application" means an application for occupancy of an affordable housing unit.

Appeal. The term "appeal" means an appeal of a marketing agent's determination not to select an applicant to occupy an affordable housing unit.

Department. The term "department" means the department of housing preservation and development.

Marketing agent. The term "marketing agent" means any individual or entity responsible for the advertising of and resident selection for affordable housing units.

§ 26-2602 Affordable housing lotteries. a. The department shall promulgate rules governing affordable housing lotteries consistent with, but not limited to, the provisions of this subdivision.

1. The department shall provide every applicant a written notification, online or by electronic mail, and by regular mail, stating whether such applicant was selected in an affordable housing lottery.

2. The department shall maintain a compliance hotline for the purpose of providing information and guidance to marketing agents.

3. Every marketing agent shall attend at least one in-person or online training regarding resident selection for affordable housing units. Such training shall be developed by the department.

4. Every applicant shall be permitted a reasonable amount of time, but not less than five business days after receiving notice from a marketing agent of any deficiencies identified in an application, to cure any such deficiencies before such marketing agent may reject the application. Marketing agents shall accept an applicant's revised application online or by electronic mail, and by regular mail.

5. Every applicant shall be permitted a reasonable amount of time, but not less than five business days, to respond to a marketing agent's request for information before such marketing agent may reject the application. Marketing agents shall accept an applicant's responses to requests for information online or by electronic mail, and by regular mail.

6. Marketing agents shall provide every applicant a written notification stating whether such applicant is selected to occupy an affordable housing unit. If any applicant is not selected to occupy an affordable housing *unit such written notification shall provide specific and detailed reasoning why an applicant cannot be approved, information explaining how the applicant may appeal and information about community-based service providers that may assist the applicant. All written notifications sent pursuant to this paragraph shall be delivered online or by electronic mail, and by regular mail. Marketing agents shall send the department or the New York city housing development corporation, as applicable, a copy of every written notification sent pursuant to this paragraph.*

7. Marketing agents shall not use the following information and criteria to determine if an applicant is selected to occupy an affordable housing unit:

(a) Home visits, photographs, videos, or other representations of an applicant's current living situation;

(b) Report cards or other school records relating to minor children residing with an applicant; or

(c) Such other information and criteria as the department may specify by rule.

8. Marketing agents shall not reject any applicant based solely on an applicant's credit score. Marketing agents may consider an applicant's credit score only as an indicator of such applicant's financial stability, consistent with rules promulgated by the department.

9. Marketing agents shall review and evaluate all sources of an applicant's income, including, but not limited to, wages, self-employment income, unemployment income and income from other sources consistent with rules promulgated by the department.

10. Any applicant not selected to occupy an affordable housing unit shall be permitted a reasonable amount of time, but not less than 30 business days, to appeal such determination. Marketing agents shall accept an applicant's appeal online or by electronic mail, and by regular mail. Marketing agents shall send the department or the New York city housing development corporation, as applicable, a copy of every appeal.

11. Marketing agents shall provide every applicant who submits an appeal a written notification stating whether such applicant is selected to occupy an affordable housing unit. If any applicant is not selected to occupy an affordable housing unit such written notification shall provide specific and detailed reasoning why an applicant cannot be approved, information explaining how to file a complaint with the department or the New York city housing development corporation, as applicable, and information about community-based service providers that may assist the applicant. All written notifications sent pursuant to this paragraph shall be delivered online or by electronic mail, and by regular mail. Marketing agents shall send the department or the New York city housing development corporation, as applicable, a copy of every written notification sent pursuant to this paragraph.

12. Any applicant whose appeal is rejected shall be permitted a reasonable amount of time, but not less than five business days, to file a complaint with the department or the New York city housing development corporation, as applicable. Such complaint shall include a written explanation of why the applicant believes the appeal was rejected in error and documentation to support the explanation. The department or the New York city housing development corporation, as applicable, shall accept such complaints online or by electronic mail, and by regular mail. During the pendency of its review of such complaint, provided no other affordable housing units are available, the department or the New York city housing development corporation, as applicable, may prohibit a marketing agent from selecting another applicant to occupy an affordable housing unit at issue in the complaint. The department or the New York city housing development corporation, as applicable, shall provide every applicant who submits a complaint a written notification stating whether such applicant is selected to occupy an affordable housing unit. All written notifications sent pursuant to this paragraph shall be delivered online or by electronic mail, and by regular mail.

§ 2. This local law takes effect 120 after it becomes law, except that the commissioner of housing preservation and development shall take such measures as are necessary for the implementation of this local law, including the promulgation of rules, before such date.

Referred to the Committee on Housing and Buildings.

Int. No. 1818

By Council Members Deutsch, Yeger, Cornegy, Diaz, Holden, Kallos, Reynoso, Eugene, Chin, Koo, Perkins, Adams, Levin, Ayala, Louis and Ulrich.

A Local Law to amend the administrative code of the city of New York, in relation to the installation of bollards at bus stops

Be it enacted by the Council as follows:

Section 1. Section 19-189.1 of the administrative code of the city of New York is amended by adding new subdivisions c and d to read as follows:

c. Except as otherwise provided in subdivision d of this section, the commissioner shall install bollards on sidewalks immediately adjacent to bus stops, other than intercity bus stops and sight-seeing bus stops, at a rate of no fewer than 100 bus stops annually until completion. Such bollards shall be placed and spaced in such a way as to reasonably prevent a motor vehicle from passing through them and onto the sidewalk.

d. The commissioner may decline to install any bollards that are otherwise required by this section if, in the commissioner's determination, such installation would endanger the safety of pedestrians or would be inconsistent with the department's guidelines regarding the installation of bollards. The commissioner shall notify the council and mayor in writing of the reasons for such a determination.

§ 2. This local law takes effect 90 days after it becomes law.

Referred to the Committee on Transportation.

Res. No. 1183

Resolution calling upon the Department of Homeland Security to grant Temporary Protected Status designation for the Bahamas in the aftermath of the devastation of Hurricane Dorian.

By Council Member Eugene and the Public Advocate (Mr. Williams).

Whereas, On September 1, 2019, Hurricane Dorian made landfall as a catastrophic Category 5 hurricane on the Abaco Islands in the Bahamas, when it moved to strike and stall over Grand Bahama Island as a Category 5 hurricane for over 40 hours, before changing course to track north alongside the Eastern coast of the United States on September 3, 2019; and

Whereas, Hurricane Dorian has been recorded as having the strongest hurricane wind speed to make landfall in the North Atlantic Ocean Basin since recordkeeping began in the late 1800's; and

Whereas, Hurricane Dorian tracked only 25 miles within a 24 hour period, making it the slowest-moving and therefore one of the most destructive Category 5 Atlantic hurricanes in recorded history; and

Whereas, The impact of Hurricane Dorian resulted in tremendous loss of life and property damage in the Bahamas and created for many what remain as life-threatening conditions; and

Whereas, The Trump Administration has asserted that it will not continue the decades-old practice of extending a form of humanitarian relief know as Temporary Protected Status (TPS), to foreigners in the United States whose home countries are deemed unsafe due to extraordinary circumstances such as war or, as in the case for Bahamians affected by Hurricane Dorian, natural disasters; and

Whereas, According to the Bahamian American Association, New York City is home to approximately 36,000 Bahamians with family members who may be affected by Hurricane Dorian; and

Whereas, The damage wrought upon the Bahamas by the storm will have an adverse impact upon the nation for months and years to come, including prolonged hardship for people, who if forced to return, would be subject to untold dangerous conditions because of the catastrophic challenges created in the wake of Hurricane Dorian; now, therefore, be it

Resolved, The Council of the City of New York calls upon the Department of Homeland Security to grant Temporary Protected Status designation for the Bahamas in the aftermath of the devastation of Hurricane Dorian.

Referred to the Committee on Immigration.

Int. No. 1819

By Council Members Holden and Kallos.

A Local Law to amend the administrative code of the city of New York, in relation to street markings indicating locations of fire hydrants

Be it enacted by the Council as follows:

Section 1. Subchapter 1 of chapter 1 of title 19 of the administrative code of the city of New York is amended by adding a new section 19-159.4 to read as follows:

§ 19-159.4 Fire hydrant markers. a. The department shall mark the location of each fire hydrant situated adjacent to a public street using a symbol painted in the middle of the street, directly across from the fire hydrant, and shall maintain such markings so that they remain clearly visible.

b. The absence of a marking required by this section shall not constitute a defense to a violation of any law prohibiting the obstruction a fire hydrant.

§ 2. This local law takes effect 1 year after it becomes law.

Referred to the Committee on Transportation.

Res. No. 1184

Resolution calling upon the New York State Legislature to introduce and pass, and the Governor to sign, legislation that would extend the State's property tax levy cap to New York City.

By Council Member Holden.

Whereas, The State Legislature passed, and the Governor signed, legislation in 2011 limiting real property tax levies by local governments and school boards by capping annual tax levy increases by the lesser of two percent or inflation; and

Whereas, Such property tax levy cap was extended by the State in 2015 and was made permanent in 2019; and

Whereas, Such property tax cap levy specifically excluded New York City and the counties contained therein; and

Whereas, Governor Cuomo has credited the property tax levy cap with having "succeeded in taming out-of-control property tax increases" and protecting property taxpayers from "the crushing burden of skyrocketing tax increases," saving property taxpayers approximately $24.4 billion between Fiscal Year 2012 and Fiscal Year 2019; and

Whereas, In New York City the property tax levy has expanded from $19.3 billion in Fiscal 2012 to $29.6 billion in Fiscal 2019, representing a 6.3 percent annual rate of growth;

Whereas, According to the New York City Comptroller's Affordability Index, many New Yorkers are burdened by sharp cost of living increases, leaving a declining share of income after taxes and basic expenses remaining for their other expenses; and

Whereas, New York City property tax levy increases burden not only property owners, but also renters, onto whom tax increases are often passed in the form of rent increases; now, therefore be it

Resolved, That the Council of the City of New York calls upon the New York State Legislature to introduce and pass, and the Governor to sign, legislation that would extend the State's property tax levy cap to New York City.

Referred to the Committee on Finance.

Res. No. 1185

Resolution calling on the New York State Legislature to pass and governor to sign, A.1797/S.6364, which would amend the New York State Penal Law to establish the offenses of reckless endangerment of an emergency service person in the first degree and second degree when individuals knowingly alter or convert a building that impedes egress and results in the injury or death of emergency service personnel.

By Council Member Holden.

Whereas, An illegal conversion is an alteration or modification of an existing building to create an additional housing unit without first obtaining approval from the New York State Department of State's Division of Building Standards and Codes; and

Whereas, Building codes exist to ensure that residents, and particularly first responders and emergency personnel, are protected from the dangers posed by fire and inferior construction methods; and

Whereas, New York City has seen a drastic increase in population over the past decade resulting in pervasive illegally converted buildings; and

Whereas, Each year, there are numerous fatal structural fires attributed to illegally converted buildings; and

Whereas, Far too often, these situations result in serious injury to, or the death of, not only residents but also firefighters or other emergency personnel; and

Whereas, New York State passed a law in 2017 that afforded protection to tenants from illegally converted buildings; and

Whereas, Similarly, New York State should pass a law to further protect emergency service personnel when responding to an emergency; and

Whereas, A.1797, introduced by New York State Assemblymember Kenneth Zebrowski and S.6364, introduced by New York State Senator David Carlucci, seek to amend the New York State Penal Law in relation to establishing the offenses of reckless endangerment of an emergency service personnel in the first degree as a Class E felony and reckless endangerment of an emergency service personnel in the second degree as a Class D felony; and

Whereas, A.1797/S.6364 seek to create the new crimes of reckless endangerment of a peace officer, police officer, firefighter or emergency medical services professional in the first and second degrees when such individual is injured or killed when responding to an emergency in an illegally converted building; and

Whereas, Emergency service personnel provide an invaluable service in keeping us safe and assisting us in emergencies, and when an unscrupulous individual directly places their health and safety at risk for the sake of their own profits they should be held accountable; now, therefore, be it

Resolved, That the Council of the City of New York calls on the New York State Legislature to pass and governor to sign, A.1797/S.6364, which would amend the New York State Penal Law to establish the offenses of reckless endangerment of an emergency service person in the first degree and second degree when individuals knowingly alter or convert a building that impedes egress and results in the injury or death of emergency service personnel.

Referred to the Committee on Public Safety.

Res. No. 1186

Resolution calling on the State legislature to increase the cap on commercial overnight fines for cities.

By Council Member Holden.

Whereas, As one of the most densely populated cities in the Country, New York City is in a constant struggle to balance the sometimes competing needs of residents and businesses; and

Whereas, This is especially true when allocating street spaces for parking; and

Whereas, One approach has been to set time and place restrictions on where commercial vehicles can idle or park; and

Whereas, Generally speaking, commercial vehicles are prohibited from parking on a street for more than three hours; and

Whereas, It is also illegal for commercial vehicles to park overnight on residential streets between 9pm and 5am; and

Whereas, The fines for violating these parking rules are determined by the City; and

Whereas, However, under the State Vehicle and Traffic Law, the maximum amount the City can set for such violations is capped; and

Whereas, This can mean that the fines do not act as an effective deterrent and may simply be absorbed as the cost of doing business; and

Whereas, In fact, last year there were more than 21,000 complaints made through 311 about illegal overnight parking of commercial vehicles, according to NYC OpenData; and

Whereas, Local police precincts will sometimes conduct sweeps where specialized tow trucks are brought in to remove large commercial trucks; and

Whereas, However, there are only six of these tow trucks to serve the whole City and finding space for the violating vehicles is difficult; and

Whereas, The State legislature is considering some measures to address the problem; and

Whereas, For example, S.3215, which was introduced in February of 2019, seeks to increase the fines for overnight parking on New York City residential streets of tractor-trailer combinations, tractors, truck trailers and semi-trailers on residential streets in the city of New York; and

Whereas, S. 3215 would increase the fine for an initial violation from $250 to $400 and a subsequent violation, within a six month period, would be charged at $800, up from $500; and

Whereas, S. 2761, which was introduced in January of 2019, also seeks to deter illegal parking; and

Whereas, Under this bill, a person responsible for a trailer or semitrailer that is left parked or unattended in an area like New York City, would be fined $1,000; and

Whereas, While these bills could help decrease the impact of illegal overnight parking, they only relate to illegal parking by certain types of trucks and do not address all types of commercial vehicles; and

Whereas, To address the chronic problem of overnight parking by commercial vehicles, more comprehensive state legislation needs to be introduced and passed; and

Whereas, Residents of New York City should not have to tolerate commercial vehicles appropriating all of the street parking in their residential neighborhoods; and

Whereas, The City should have the authority to increase the maximum fines for these types of violations so they serve as an effective deterrent; and

Whereas, At the moment, the capped fines are minimal enough to be factored in as a cost of doing business; now, therefore, be it

Resolved, That the State legislature increase the cap on commercial overnight fines for cities.

Referred to the Committee on Transportation.

Int. No. 1820

By Council Members Levin and Kallos.

A Local Law to amend the administrative code of the city of New York, in relation to enhancing civilian enforcement to mitigate construction dust emissions

Be it enacted by the Council as follows:

Section 1. Section 24-146 of the administrative code of the city of New York, as amended by local law number 38 for the year 2015, is amended by adding a new subdivision g to read as follows:

(g) On or before January 1, 2020, the department shall publish on its website information related to filing citizen complaints regarding violations of this section pursuant to section 24-182. Such information shall include but need not be limited to forms for filing complaints and guidance on procedures for filing such complaints including gathering supporting documentation. Such information shall also be provided on any website or mobile application used by the 311 customer service center for the intake of 311 requests from the public.

§ 2. This bill takes effect immediately.

Referred to the Committee on Environmental Protection.

Int. No. 1821

By Council Member Richards.

A Local Law in relation to requiring the New York city housing authority to report on outside legal expenditures

Be it enacted by the Council as follows:

Section 1. No later than April 1, 2020 and then in April and October of each year thereafter, the chair of the New York city housing authority shall submit to the mayor and the speaker of the council, and make publicly available online, a report, which shall include, at a minimum, the following:

1. The amount allocated and the amount expended by such authority on legal fees for counsel services not provided by in-house counsel for the period of time covering the months of July through December of the prior calendar year for the April report and for the months of January through June for the October report, in total and disaggregated (i) by individual legal matter, and (ii) by property;

2. The name of any outside law firm retained by such authority;

3. The scope of such services provided by such provider, including the underlying cause of action, the amount paid by such authority for such services, and the date or timeframe during which such services were rendered; and

4. The dates that any outside counsel service contracts were approved.

§ 2. This local law takes effect immediately.

Referred to the Committee on Public Housing.

Int. No. 1822

By Council Member Ulrich.

A Local Law in relation to directing the commissioner of investigation to investigate the misuse of city-issued parking permits

Be it enacted by the Council as follows:

Section 1. Definitions. For the purposes of this local law, the term "city-issued parking permit" means a document, card or sticker issued by a city agency that is displayed in or on a motor vehicle that indicates authorization to park in certain areas during certain times.

§ 2. The commissioner of investigation shall investigate, review, study, audit and make recommendations relating to the issuance, use and misuse of city-issued parking permits during the 2020 fiscal year, with the goal of ensuring that such parking permits are issued and used in accordance with law.

§ 3. The investigation shall include, but need not be limited to, a review of each agency's process for issuing permits, including an analysis of any standards of eligibility for a city-issued parking permit, the distribution of city-issued parking permits and any agency-specific policies or procedures in place to address misuse of city-issued parking permits

§ 4. The commissioner of investigation shall submit a report to the speaker of the council detailing the findings of the investigation and providing comprehensive recommendations for addressing the misuse of city-issued parking permits. The commissioner of investigation shall submit such report to the speaker of the council no later than September 28, 2020.

§ 5. This local law takes effect immediately.

Referred to the Committee on Oversight and Investigations.

Note: There were no Land Use items introduced at this Stated Meeting.

NEW YORK CITY COUNCIL

A N N O U N C E M E N T S

Wednesday, December 11, 2019

Committee on Environmental Protection — Costa Constantinides, Chairperson

Oversight - Challenges in Managing the Department of Environmental Protection Wastewater Infrastructure.

Council Chambers – City Hall………………………………………………………………....10:00 a.m.

Committee on Justice System jointly with the — Rory Lancman, Chairperson
Committee on Governmental Operations — Fernando Cabrera, Chairperson
Oversight - Day Fine Pilot
Preconsidered Int ___ - By The Speaker (Council Member Johnson) **- A Local Law** in relation to establishing a day-fines pilot program in the office of administrative trials and hearings.
Preconsidered Int ___ - By Council Member Ampry-Samuel **- A Local Law** to amend the New York city charter, in relation to mandating a citywide audit of collateral consequences for drug arrests and convictions.
Committee Room – City Hall……………………………………………………………….....10:00 a.m.

Committee on Small Business jointly with the — Mark Gjonaj, Chairperson
Committee on Immigration — Carlos Menchaca, Chairperson
Oversight - City Services and Supports for Immigrant Business Owners.
Committee Room – City Hall……………..…………...………………………..............................1:00 p.m.

Thursday, December 12, 2019

Committee on Aging jointly with the — Margaret Chin, Chairperson
Committee on Housing and Buildings — Robert Cornegy, Jr., Chairperson
Oversight - Senior Affordable Housing.
Int 6 - By Council Members Barron, Brannan, Koslowitz and Ayala **- A Local Law** to amend the administrative code of the city of New York, in relation to evictions of elderly tenants.
Int 225 - By Council Member Brannan **- A Local Law** to amend the administrative code of the city of New York, in relation to the installation of protective devices for seniors and persons with a disability who reside in multiple dwellings, and the provision of a tax abatement for certain related installations.
Council Chambers – City Hall………………………………………………………………....10:00 a.m.

Committee on Health jointly with the — Mark Levine, Chairperson
Committee on Hospitals — Carlina Rivera, Chairperson
Oversight - Rising Health Care Costs.
Committee Room – 250 Broadway, 14th Floor…………………………………………….…10:00 a.m.

Monday, December 16, 2019

Committee on Contracts jointly with the — Ben Kallos, Chairperson
Committee on General Welfare — Stephen Levin, Chairperson
Oversight - DHS Homeless Service Provider Contracts.
Council Chambers – City Hall………………………………………………………………....10:00 a.m.

Committee on Rules, Privileges & Elections Karen Koslowitz, Chairperson

M 196 - Communication from the Mayor **-** Submitting the name of Kenneth J. Knuckles to the Council for its advice and consent regarding his appointment to the City Planning Commission, pursuant to Sections 192 of the City Charter.

M 197 - Communication from the Mayor – Submitting the name of Thomas V. Nichols to the City Council for advice and consent concerning his appointment to the New York City Tax Commission, pursuant to Sections 31 and 153 of the New York City Charter.

M 198 - Communication from the Mayor – Submitting the name of Frances Henn to the City Council for advice and consent concerning her appointment to the New York City Tax Commission, pursuant to Sections 31 and 153 of the New York City Charter.

Committee on Rules, Privileges & Elections (Cont.)

Preconsidered M ___ - Chris Bastardi, a candidate for recommendation by the Council to the Youth Board, pursuant to § 734 of the New York City Charter.

Preconsidered M ___ - Melanie Kruvelis, a candidate for recommendation by the Council to the Youth Board, pursuant to § 734 of the New York City Charter.

Committee Room – City Hall…………………………………………………………..……11:00 a.m.

Committee on Consumer Affairs & Business Licensing Rafael L. Espinal, Chairperson

Int 1609 - By Council Members Torres and Brannan (by request of the Mayor) **- A Local Law** to amend the charter and administrative code of the city of New York, in relation to changing the name of the Department of Consumer Affairs to the Department of Consumer and Worker Protection, and to repeal sections 20-a and 2204 of the New York city charter, and to repeal subdivision b of section 20-9016 of chapter 1 of title 20-A of the administrative code of the city of New York in relation thereto.

Int 1622 - By Council Member Espinal (by request of the Mayor) **- A Local Law** to amend the administrative code of the city of New York, in relation to remedying fraudulent, deceptive and unconscionable business practices.

Committee Room – City Hall…………………………………………………………..………1:00 p.m.

Committee on Transportation Ydanis Rodriguez, Chairperson

Proposed Int 946-A - By Council Members Lander, Brannan, Reynoso, Powers, Menchaca, Lancman, Levine, Torres, Espinal, Levin, Kallos, Maisel, Cabrera, Rivera, Cohen, Constantinides, Rosenthal, Ayala, Gibson, Grodenchik, Van Bramer, Cumbo, Perkins, Chin, Ampry-Samuel, Salamanca, Richards, Adams, Dromm, the Public Advocate (Mr. Williams), Moya, Treyger, Koslowitz, Eugene, Barron, Rose and Rodriguez **- A Local Law** to amend the administrative code of the city of New York, in relation to prohibiting on-call scheduling for utility safety workers and providing advance notice of work schedules to utility safety workers.

Int 947 - By Council Members Lander, Yeger, Brannan, Reynoso, Menchaca, Lancman, Levine, Torres, Levin, Maisel, Cabrera, Rivera, Cohen, Rosenthal, Ayala, Gibson, Grodenchik, Van Bramer, Moya, Perkins, Kallos, Chin, Ampry-Samuel, Salamanca, Richards, Adams, Dromm, the Public Advocate (Mr. Williams), Powers, Treyger, Espinal, Koslowitz, Vallone, Eugene, Barron, Holden, Rose and Rodriguez **- A Local Law** to amend the administrative code of the city of New York, in relation to requiring certification of safety training for street permits.

Int 1724 - By Council Members Kallos, Treyger and Holden **- A Local Law** to amend the administrative code of the city of New York, in relation to creating a demonstration program to use photographic evidence to impose liability on vehicle owners for passing a stopped school bus and providing for the repeal of such provision upon the expiration thereof.

Int 1812 - By Council Members Rivera, Rodriguez and Kallos **- A Local Law** to amend the New York city charter and the administrative code of the city of New York, in relation to establishing an office of active transportation and an active transportation advisory board.

Int 1813 - By Council Members Rodriguez, Rivera and Kallos **- A Local Law** to amend the New York city charter, in relation to establishing an office of pedestrians.
Council Chambers – City Hall…………………………………………….………………....1:00 p.m.

Tuesday, December 17, 2019

Committee on Cultural Affairs, Libraries & International Intergroup Relations — James Van Bramer, Chairperson
Oversight - Percent for Art and Public Art in NYC.
Council Chambers - City Hall………………………………………………………………....10:00 a.m.

Committee on Civil Service and Labor jointly with the — I. Daneek Miller, Chairperson
Committee on Women and Gender Equity — Helen Rosenthal, Chairperson
Oversight - Status of Implementation of the City's Pay Equity Law.
Int 1785 - By Council Members Miller, Kallos and Yeger (by request of the Mayor) **-** A Local Law to amend the administrative code of the city of New York, in relation to health insurance coverage for the surviving family members of certain deceased employees of the city of New York.
Int 1786 - By Council Members Miller and Kallos (by request of the Mayor) **-** A Local Law to amend the administrative code of the city of New York, in relation to health insurance benefits for surviving family members of certain deceased employees of the department of sanitation.

Committee on Civil Service and Labor jointly with the
Committee on Women and Gender Equity (Cont.)
Int 1810 - By Council Members Miller and Louis (by request of the Mayor) **-** A Local Law to amend the administrative code of the city of New York, in relation to health insurance coverage for surviving family members of certain deceased employees of the department of transportation.
Committee Room – City Hall……………………………………………………….....….1:00 p.m.

Wednesday, December 18, 2019

★ ***Deferred***
~~Committee on Public Housing — Alicka Ampry-Samuel, Chairperson~~
~~**Oversight** - NYCHA's Winter Preparedness~~
~~Committee Room – City Hall………………………………………………………………......10:00 a.m.~~

Committee on Higher Education jointly with the — Inez Barron, Chairperson
Committee on Women and Gender Equity — Helen Rosenthal, Chairperson
Off-site Hearing - Oversight – CUNY Child Care Centers.
Location: The City College of New York
Shepard Hall Room 250, 2nd Floor
Shepard Hall Building
160 Convent Avenue (@ 139th street)
New York, N.Y 10031
Details attached………………………....……..…………………...…..1:00 p.m.

Committee on Mental Health, Disabilities & Addiction jointly with the Diana Ayala, Chairperson
Committee on Aging and the Margaret Chin, Chairperson
Committee on Transportation Ydanis Rodriguez, Chairperson
Oversight - Access-A-Ride.
Committee Room – City Hall…………………………………………………………….....….1:00 p.m.

Committee on Public Safety Donovan Richards, Jr., Chairperson
Int 487 - By Council Members Gibson, Rosenthal, Levine, Reynoso, Cumbo, Dromm, Kallos, the Public Advocate (Mr. Williams), Chin, Lander, Miller, Lancman, Rivera, Adams, Moya, Levin, Barron, Ayala, Cornegy, Powers, Louis, Brannan, Menchaca, Perkins, Rose, Ampry-Samuel, Espinal, Treyger, Torres, Van Bramer and Rodriguez **- A Local Law** to amend the administrative code of the city of New York, in relation to creating comprehensive reporting and oversight of NYPD surveillance technologies.
Council Chambers – City Hall……………………………………....……………………………1:00 p.m.

Thursday, December 19, 2019

Subcommittee on Landmarks, Public Siting & Maritime Uses Adrienne Adams, Chairperson
See Land Use Calendar
Committee Room – City Hall…………………………………………………………….....….10:30 a.m.

Committee on Land Use Rafael Salamanca, Jr., Chairperson
All items reported out of the Subcommittees
AND SUCH OTHER BUSINESS AS MAY BE NECESSARY
Committee Room – City Hall…………………………………………………………….....….10:45 a.m.

Stated Council Meeting………………………………………………………………Ceremonial Tributes – 1:00 p.m.
...Agenda – 1:30 p.m.

M E M O R A N D U M

Tuesday, October 19, 2019

TO: ALL COUNCIL MEMBERS

RE: OFF-SITE HEARING BY THE COMMITTEE ON HIGHER EDUCATION AND WOMEN AND GENDER EQUITY
OVERSIGHT – CUNY CHILD CARE CENTERS

The City College of New York
Shepard Hall Room 250, 2nd Floor
Shepard Hall Building
160 Convent Avenue (@ 139th street)
New York, N.Y 10031

The off-site hearing will be held on **Wednesday, December 18, 2019 beginning at 1:00 p.m.** A van will be leaving City Hall at **11:30 a.m.**

Hon. Inez Barron, Chairperson
Committee on Higher Education

Hon. Helen Rosenthal, Chairperson
Committee on Women and Gender Equity

Hon. Corey Johnson
Speaker of the Council

During the Communication from the Speaker segment of this Meeting, the Speaker (Council Member Johnson) acknowledged that December was AIDS Awareness Month when those who lost their lives to this devastating disease are honored. He noted that progress had been made in reducing the number of HIV-AIDS cases to historic lows and urged the Council to continue the fight to end this epidemic.

During the Communication from the Speaker segment, the Speaker (Council Member Johnson) acknowledged the prescence of former Council Member June Eisland who was seated by the front dais of the Chambers. He noted that she had served the body with distinction and honor during the tenure of the first Council Speaker Peter F. Vallone, Sr. The Speaker (Council Member Johnson) described former Speaker Vallone as a great role model and advisor to many members of the Council. He noted that the Council had thrown a surprise party earlier in the day for the former Speaker in celebration of his upcoming 85th birthday. He wished Speaker Vallone and his family the best during the holiday season.

Whereupon on motion of the Speaker (Council Member Johnson), the Majority Leader and Acting President Pro Tempore (Council Member Cumbo) adjourned these proceedings to meet again for the Stated Meeting on Thursday, December 19, 2019.

MICHAEL M. McSWEENEY, City Clerk
Clerk of the Council

Editor's Local Law Note: Int. Nos. 1541-B and 1750, both adopted by the Council at the October 30, 2019 Stated Meeting, were returned unsigned by the Mayor on December 3, 2019. These items had become law on November 30, 2019 due to the lack of Mayoral action within the Charter-prescribed thirty day time period. These bills were assigned subsequently as Local Laws Nos. 208 and 209 of 2019, respectively,

Int. Nos. 906-A, 909-B, 1321-C, 1559-A, and 1580-A, all adopted by the Council at the November 14, 2019 Stated Meeting, were signed into law by the Mayor on December 4, 2019 as, respectively, Local Law Nos. 210 to 214 of 2019.

The Charter Referendum revisions adopted by the voters at the general election held on Tuesday, November 5, 2019 were filed with New York State Secretary of State and designated as Local Law 215 of 2019.