Bill No. 12235-22

No. 11-22-OR

AN ORDINANCE

An Ordinance of the Council of the County of Allegheny ratifying amendments to the Allegheny County Health Department's Rules and Regulations, Article XV, "Plumbing and Building Drainage".

Whereas, Allegheny County, pursuant to the Pennsylvania Local Health Administration Law, 16 P.S. §§ 12001 – 12028, created the Allegheny County Health Department, and the Allegheny County Board of Health; and

Whereas, Section 12011 of the Local Health Administration Law provides for the Board of Health to adopt regulations and submit such regulations to Allegheny County for approval or rejection; and

Whereas, on September 1, 2021, during its regularly scheduled public meeting, the Allegheny County Board of Health adopted by unanimous vote the attached amendments to the Allegheny County Health Department Rules and Regulations, Article XV, "Plumbing and Building Drainage", and

Whereas, it is the desire of Council to ratify the Allegheny County Health Department regulation amendments as approved by the Board of Health.

The Council of the County of Allegheny hereby resolves as follows:

SECTION 1. ***Incorporation of Preamble.***

The provisions set forth in the preamble to this Ordinance are incorporated by reference in their entirety herein.

SECTION 2. ***Ratification of Regulations.***

Acting pursuant to the Pennsylvania Local Health Administration Law and the Allegheny County Home Rule Charter, County Council hereby ratifies the amendments to the Allegheny County Health Department Rules and Regulations, Article XV, "Plumbing and Building Drainage", attached hereto as Exhibit "A".

SECTION 3. ***Severability.***

If any provision of this Ordinance shall be determined to be unlawful, invalid, void or unenforceable, then that provision shall be considered severable from the remaining provisions of this Ordinance which shall be in full force and effect.

SECTION 4. ***Repealer.***

Any Resolution or Ordinance or part thereof conflicting with the provisions of this Ordinance is hereby repealed so far as the same affects this Ordinance.

Enacted in Council, this 12th *day of* April, *2022.*

Council Agenda No. 12235-22.

Patrick J. Catena
President of Council

Attest:
Jared Barker
Chief Clerk of Council

Chief Executive Office April 15, *2022*

Approved:
Rich Fitzgerald
Chief Executive

Attest:
Jennifer M. Liptak
Chief of Staff

Proposed Revisions to Allegheny County Health Department Rules and Regulations, Article XV. Plumbing and Building Drainage

LEGISLATIVE SUMMARY

Pursuant to the authority granted to it under the Pennsylvania Local Health Administration Law, Sections 12010(f) and 12011(c), on September 1, 2021, the Allegheny County Board of Health voted unanimously to approve changes to its Rules and Regulations, Article XV, "Plumbing and Building Drainage". A summary of the changes to Article XV are as follows:

> **ARTICLE XV ("PLUMBING AND BUILDING DRAINAGE")**: Changes to this regulation are proposed to address record retention; to clarify the types of work requiring a plumbing permit; to address delinquent plumbing license renewals; to change the appeal period to 30 days; to add and revise definitions; to establish who must be present for a plumbing inspection; to clarify the necessary number of urinals; to clarify the number of necessary fixtures at various facilities; to set the minimum size of drains; to change the permissible lead content of pipes, fittings, solder and flux; to ban partial repairs of lead service lines; to require rodding of iron joints; to formalize approval of new plumbing materials and devices; to clarify the authority for requiring connection to a public sewer; to prevent public health hazards from disconnected private common sewer laterals; to require a building controlling trap; to account for building drains located below the building sewer; to require a variance approval for macerating toilets; to require a variance approval for grease interceptors located in food preparation areas; to account for the amount of local rainfall; and to establish regulations for non-potable water systems.

When drafting these changes, over the course of more than a year, the Health Department conducted numerous internal code review meetings with plumbing staff, legal staff, and management. The changes were also vetted before the Allegheny County Plumbing Advisory Board and that body voted unanimously to recommend that these changes be approved. Furthermore, the Board's vote was preceded by a 30-day public comment period that opened on May 20, 2021 via publication in the Pittsburgh Post-Gazette and closed on June 23, 2021. Additionally, a public hearing concerning the revisions was conducted on June 22, 2021.

MEMORANDUM

OFFICE OF THE COUNTY MANAGER

TO: Jared E. Barker
Allegheny County Council

FROM: William D. McKain CPA
County Manager

DATE: March 3, 2022

RE: Proposed Ordinance

Attached is an Ordinance of the Council of the County of Allegheny ratifying amendments to the Allegheny County Health Department's Rules and Regulations, Article XV, "Plumbing and Building Drainage".

The Allegheny County Law Department has reviewed this legislation prior to submitting it to Council.

I am requesting that this item be placed on the agenda at the next Regular Meeting of Council.

EXHIBIT "A"

PROPOSED REVISION

Allegheny County Health Department Rules and Regulations
Article XV, Plumbing and Building Drainage

ALLEGHENY COUNTY HEALTH DEPARTMENT
RULES & REGULATIONS
ARTICLE XV – PLUMBING AND BUILDING DRAINAGE

Deletions are shown with strikethroughs.
Additions are shown in larger font, bolded, and underlined.

CHAPTER 1
ADMINISTRATION

SECTION 101
GENERAL

101.1 Title. These regulations shall be known as the Plumbing **and Building Drainage** Code ofthe Allegheny County Health Department, hereinafter referred to as "Article XV".

101.1.1 Effective date. This Article, after approval, shall become effective ~~no sooner than~~ ten (10) days after being advertised in a newspaper of general circulation in Allegheny County. **Upon the effective date,** all ~~other provisions~~ **previous versions** ofArticle XV ~~shall be~~ **are repealed** ~~superseded~~ **and** replaced.

******

102.8 Referenced codes and standards. The codes and standards referenced in this code shall be those that are listed in Chapter ~~13~~ **14** and such codes and standards shall be considered as partof the requirements 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 be the minimum requirements.

******

SECTION 104
DUTIES AND POWERS OF THE CODE OFFICIAL

******

104.4 Inspections. The Chief Plumbing Inspector and/or his designee shall make all required inspections or shall accept reports of inspections by approved agencies or individuals. All inspection reports shall be in writing; **may be stored and issued electronically**; and **shall** be endorsed by an officer of such approved agency or by an approved individual. The Chief Plumbing Inspector and/or his designee is authorized to engage such expert opinion as is deemednecessary to resolve unusual technical issues that arise, subject to the approval of the Director.

******

104.8 Department records. The code official shall keep official records of applications received, permits and certificates issued, fees collected, reports of inspections, and notices and orders issued. Such records shall be retained ~~in the official records as long as the building or structure to which such records relate remains in existence~~ **for at least 5 years** unless otherwiseprovided for by other regulations, **Pennsylvania law, or federal law**.

******

SECTION 105
APPROVAL

AC-105.1 ~~Modifications~~ Variances. Whenever there are practical difficulties involved in carrying out the provisions of this code, the Director and/or his designee shall have the authority to approve modifications on a case by case basis, provided that the Director and/or his designee shall first find that special circumstances make the strict letter of this code impractical. ~~Such modifications shall be in conformity with the intent and purpose of this code, such that they do not negatively impact human or environmental health or fire safety.~~ **Any interested party may request a variance from the provisions of this Code. All requests must be in writing, state the reasons for the request, and provide evidence that the variance will pose no real or potential hazard to the health, safety or welfare of the public or any individuals.** The detailsof an action granting a ~~modification~~ **variance** to this code shall be recorded and maintained in the files of the Plumbing Program.

******

SECTION 106
PERMITS

******

AC-106.1 When permits are required. A permit is required to construct, enlarge, alter, repair, move, demolish or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace **all or** any **part of the** plumbing system, **including site work,** the installation of which is regulated by this Article, or to cause any such work to be done.Such permit may be obtained by application to the Plumbing Program.

106.1.1 Engaging in the business of plumbing. No person, other than a currently licensed master plumber, shall engage in the business of plumbing or expose the sign of plumbing or any advertisement pertaining thereto, except wholesale or retail plumbing fixture suppliers. Any firm or corporation desiring to engage in the business of plumbing shall have at least one member who possesses a valid master plumber's license, who shall register with the Department his or her name, along with the name(s) of all officers of the firm or corporation upon whose behalf he is registering.

106.1.2 Exempt Work. The following work shall be exempt from the requirement for a permit:

1. Repairs that involve the working parts of a faucet or valve, the clearance of stoppages, or the replacement of defective faucets or valves **(excludinghot water mixing valves in tub, shower, and/or combination tub and shower valves)**, may be made without a permit. However, a permit shall be obtained when any part of the plumbing system becomes defective andrequires replacement or alteration.

******

AC-106.4 By whom application is made. Application/plans for permits shall be made by the owner-occupant or master plumber installing all or part of any plumbing system. The applicant shall meet all qualifications established by statute, or by rules and regulations promulgated by this Code. The full name of and address of the applicant shall be stated in the application.

Exceptions:

1. **Existing single-family dwellings**: Any permit required by this Article to allow any work regulated by this Article may be issued to a bona fide owner who presently occupies an existing single-family dwelling~~, who intends to occupy the existing single-family dwelling and any of its accessory buildings,~~ exclusively for

private purposes, on the condition that the said owner personally purchase all material and perform all labor in connection therewith. Such privilege does not convey the right to violate any of the provisions of this Article, nor is it to be construed as exempting any such property owner from obtaining a permit, nor covering or concealing work in any manner until after it has been inspected by the Administrative Authority's inspectors, nor from payment of required fees.

2. **Site Work:** When a commercial or industrial site is being developed, registered professional engineers, registered architects, or registered master plumbers may file plans, obtain permits, and install and/or supervise the installation of sewers and water supply systems regulated by this Article from the point of public connection or proper disposal to a point five (5) feet from the building (commonlyidentified as "site work"). Where a new residential site is being developed and public sewers are not immediately available, registered professional engineers, registered architects or registered master plumbers may file plans, obtain permits, and install and/or supervise the installation of common private sewersand common water supply systems up to the point of individual sewer or individual water service pipe connections to the common line. In addition, the requirements of Section AC-701.3 and AC-701.3.1 shall also be required.

******

106.5 Retention of construction documents. One set of construction documents shall be retained by the code official until final approval of the work covered therein. One set of approved construction documents shall be returned to the applicant, and said set shall be kept on the site of the building or work at all times during which the work authorized thereby is in progress.

AC-106.5.7 Permission to proceed. Plans filed shall not constitute permission to proceed. A permit must be obtained prior to commencing any plumbing work.

Exception: When an emergency repair is immediately necessary to protect public health and safety, the repairs may be conducted without first applyingfor and receiving a plumbing permit. In this circumstance, a permit application must be submitted within three (3) business days after the repair is made and the repairs must remain visible for inspection until the plumbingprogram has inspected and approved the work. Fees for plumbing permit

applications for emergency repairs shall not be subject to the additional 100% fee required by Section 106.6.1.

******

AC-106.7.8 Master plumber qualifications. No master plumber's license shall be granted **to** a journeyman plumber until he has had at least two (2) years **of** experience as a licensed journeyman plumber and has successfully passed the required examinations.

******

AC-106.7.12 License renewal. A licensed master or journeyman plumber desiring to continue in the business of plumbing, shall annually, within thirty (30) days of his birth date apply to the Department for a renewal of his license and pay the annual license renewal fee as specified in the current fee schedule. **Plumbing licenses shall include a photograph of the licensed plumber and such license photographs shall be updated every five (5) years.** No examination shall berequired for the renewal of a master or journeyman license, provided proper application and payment is made in the time period specified above. **Any plumber licensed by Allegheny County whose license has lapsed due to unpaid annual renewal fees for more than thirty (30) calendar days must pay, in addition to all delinquent annual renewal fees, a fifty percent (50%) late penalty prior to plumbing license reinstatement. Any plumber licensedby Allegheny County whose license has lapsed due to unpaid annual license renewal fees for two (2) or more years must pay all unpaid fees and a fifty percent (50%) late fee and pass a Department-approved examination prior to reinstatement.**

******

SECTION 108
VIOLATIONS

******

108.4 Violation penalties. Any person who shall violate a provision of this code or shall fail to comply with any of the requirements thereof shall be guilty of the offenses listed below. For the purposes of this section, violations on separate dates shall be considered separate offenses. Each violation of a separate subsection or section of this Article shall constitute a separate offense.

AC-108.4.1 Summary Offenses. Pursuant to Section 12027(a) of the Pennsylvania Local Health Administration Law, 16 P.S. § 12027(a), any person who violates any of the provisions of this Article or any rule or regulation of the

Allegheny County Health Department, or who interferes with the Director or any other agent of the Department in the discharge of his official duties, shall, for the first offense, upon conviction thereof in a summary proceeding before any District Magistrate in Allegheny County, be sentenced topay the costs of prosecution and a fine of not less than thirty dollars ($30) nor more than three hundred dollars ($300) and, in default thereof, shall be subject to imprisonment for not less than ten (10) days and not more than thirty (30) days.

AC-108.4.2 Misdemeanors. **Pursuant to Section 12027(b) of the Pennsylvania Local Health Administration Law, 16 P.S. § 12027(b), a**ny person who violates any of the provisions of this Article or any rule or regulation of the Allegheny County Health Department, or who interferes with the Director or his or her representative in the discharge of his or her official duties, convicted of a second or subsequent offense, shall be guilty ofa misdemeanor and shall, upon conviction thereof, be sentenced to pay a fine of not less than five hundred dollars ($500) nor more than one thousand dollars ($1000) or to undergoimprisonment not exceeding one (1) year, or both.

******

SECTION 109
MEANS OF APPEAL

AC-109.1 Application for appeal. Any person aggrieved by any action taken by the Director and/or his or her designee may request a hearing within ~~ten~~ **thirty** (~~10~~**30**) days in accordance with the Allegheny County Health Department Rules and Regulations, Article XI, "Hearings and Appeals."

******

CHAPTER 2
DEFINITIONS

******

ALTERNATE ON-SITE NONPOTABLE WATER. Non-potable water from other thanpublic utilities, on-site surface sources and subsurface natural freshwater sources. Examples of such water are gray water, on-site reclaimed water, col-lected rainwater,captured condensate and rejected water from reverse osmosis systems.

******

BACKFLOW PREVENTER. ~~A device or means to prevent backflow.~~ **A backflow**

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

******

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 the drain-age system. The fixture allows the user to obtain a drink directly from a stream of flowing water without the use of any accessories.

******

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

******

AC-LEAD-FREE PIPE AND FITTINGS. ~~Containing not more than 8.0 percent lead.~~ **The definition of lead-free pipe and fittings found in the Pennsylvania Plumbing System Lead Ban and Notification Act at 35 P.S. § 723.3 is hereby incorporated by reference and any future revisions to that definition are also incorporated by reference on the day that they go into effect.**

LEAD-FREE SOLDER AND FLUX. ~~Containing not more than 0.2 percent lead.~~ **The definition of lead-free solder and flux found in the Pennsylvania Plumbing System Lead Ban and Notification Act at 35 P.S. § 723.3 is hereby incorporated by reference and any future revisions to that definition are also incorporated by reference on the day that they go into effect.**

******

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.

******

METER. A measuring device used to collect data and indicate water usage.

******

ON-SITE NON-POTABLE WATER REUSE SYSTEM. A water system for the collection, treatment, storage, distribution and reuse of non-potable water generated on site, including but not limited to a gray water system. This definition does not include a rainwater harvesting system.

******

AC-PERMIT HOLDER. The person to whom the Department has issued a plumbing permit.

******

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.~~ **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 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.~~ **A system that includes the water distribution pipes; plumbing fixtures and traps; water-treating or water-using equipment; soil, waste and vent pipes, building drains and storm drains; in addition to their respective connections, devices and appurtenances within a structure or premises; and the waterservice, building sewer, building storm sewer and septic on lot system serving such structure or premise.**

******

PRIVATE SEWER. A private sewer is a sewer **main or lateral** privately-owned and not directly controlled **or maintained** by **a municipality or** public **sewer** authority.

******

RAIN WATER. Water from natural precipitation.

******

RECLAIMED WATER. Non-potable water that has been derived from the treatment ofwaste water by a facility or system licensed or permitted to produce water meeting the jurisdiction's water requirements for its intended uses. Also known as "recycled water".

******

AC-SITE WORK. Any sanitary sewer piping serving a building or water service piping serving a building that begins five feet from the outside foundation wall and extends to thepublic point of connection.

******

STORM WATER. Natural precipitation, including snowmelt, that has contacted a surfaceat or below grade.

******

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

******

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

WATER COOLER. A drinking fountain that incorporates a means of reducing thetemperature of the water supplied to it from the potable water distribution system.

WATER DISPENSER. A plumbing fixture that is manually controlled by the user for thepurpose of dispensing potable drinking water into a receptacle such as a cup, glass or bottle. Such fixture is connected to the potable water distribution system of the premises. This definition also includes a free-standing apparatus for the same purpose that is not connected to the potable water distribution system and that is supplied with potable waterfrom a container, bottle or reservoir.

******

CHAPTER 3
GENERAL REGULATIONS

******

SECTION 312
TESTS AND INSPECTIONS

AC-312.1 Required tests. The permit holder shall make the applicable tests prescribed in Sections 312.2 through 312.9 to determine compliance with the provisions of this code. The permit holder shall give reasonable advance notice to the code official 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 permit holder and the permit holder 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 code official shall require the removal of any cleanouts if necessary to ascertain whether the pressure has reached all parts of the system. **The permit holder, or their authorized agent who is an apprentice, journeyman, or master plumber employed by the permit holder firm or company, must be present during all testsand inspections required by this Section.**

******

SECTION 304
RODENT PROOFING

******

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 by the installation of approved metal collars that are securely fastened to the adjoining structure. **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.**

******

SECTION 305
PROTECTION OF PIPES AND PLUMBING SYSTEM COMPONENTS

******

AC-305.7 Waterproofing of openings. Joints at the roof and around vent pipes shall be made watertight by the use of ~~lead,~~ copper, aluminum, or other approved flashing material. Exterior wall openings shall be made watertight. Floor drains installed above the basement floor with useable space below shall be waterproofed with approved flashing material. The flashing material shall be securely fastened to the waste outlet at the seepage entrance making a watertight joint between the flashing material and the floor drain. Flashing material shall extend a minimum of 18 inches from the center of the floor drain.

******

SECTION 307
STRUCTURAL SAFETY

******

307.5.1 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 planeis a line that extends downward, at an angle of 45 degrees (0.79 rad) from horizontal, from the outside bottom edge of the footing or wall.

******

SECTION 308
PIPE SUPPORTS

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

******

Footnotes to Table 308.5 Hanger Spacing.

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

******

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~~. **Where hot water piping is bundled with cold or hot water piping, each hot water pipe shall be insulated.**

******

SECTION 314
CONDENSATE DISPOSAL

******

[M] 314.2.5 Cleanouts. Condensate drain lines shall be configured to permit the clearing ofblockages and performance of maintenance without requiring the drain line to be cut.

******

SECTION 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 approvedmanner 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 International Building Code.

******

CHAPTER 4
FIXTURE, FAUCETS, AND FIXTURE FITTINGS

******

SECTION 402
FIXTURE MATERIAL

******

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.

******

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

******

TABLE AC-403.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES
(See Sections 403.1.1 and 403.2)

OCCUPANCY	DESCRIPTION	WATER CLOSETS		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAIN	OTHER	FOOTNOTES
		MALE	FEMALE	M	F				
A-1	Theaters and other buildings for the performing arts and motion pictures	2 per 100 (up to 400) over 400, add 1 per 125	1 per 25 (up to 100) over 100, add 1 per 65	1 per 200		—	1 per toilet room, but not less than 1 per 1000	1 service sink per floor	2, 3, 4, 5, 6, 10, 13, 15, 16, 17 *
A-2	Nightclubs, bars, taverns, dance halls, and buildings for similar purposes, restaurants, banquet halls, and food courts.	2 per 1-50 3 per 51-100 4 per 101-160 over 160, add 1 per 40	1 per 25 2 per 26-50 3 per 51-100 4 per 101-160 over 160, add 1 per 40	1 per 75		—	—	1 service sink per floor	2, 3, 4, 5, 6, 10, 13, 14, 15, 16, 17 *

A-3	Auditoriums without permanent seating, art galleries, exhibition halls, museums, lecture halls, libraries, arcades, and gymnasiums	1 per 125	1 per 65	1 per 200	—	1 per 500	1 service sink per floor	2, 3, 4, 5, 6, 10, 13, 15, 16, 17 *

OCCUPANCY	DESCRIPTION	WATER CLOSETS		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAIN	OTHER	FOOTNOTES
		MALE	FEMALE	M	F				
	Passenger terminals and transportation facilities	1 per 500	1 per 500	1 per 750		—	1 per 1000	1 service sink	17, **20** *
	Places of worship and religious services	1 per 150	1 per 75	1 per 200		—	1 per 1000	1 service sink	2, 3, 4, 5, 6, 10, 13, 14, 15, 16, **20** *
A-4	Coliseums, arenas, skating rinks, pools, and tennis courts for indoor sporting events and activities	1 per 75 for the first 1500 and 1 per 60 for the remainder exceeding 1520	1 per 40 for the first 1500 and 1 per 60 for the remainder exceeding 1520	1 per 200	1 per 150	—	1 per 1000	1 service sink	2, 3, 4, 5, 6, 10, 15, 16, 17, **20** *
A-5	Stadiums, amusement parks, bleachers and grandstands for outdoor sporting events and activities.	1 per 75 for the first 1500 and 1 per 120 for the remainder exceeding 1500	1 per 40 for the first 1520 and 1 per 60 for the remainder exceeding 1520	1 per 200	1 per 150	—	1 per 1000	1 service sink	2, 3, 4, 5, 6, 10, 15, 16, 17, **20** *
		1 per 1-15	1 per 1-15	1 per 1-25					

B	Buildings for the transaction of business, professional services, other services involving merchandise, office buildings, light industrial and similar uses	2 per 16-35 3 per 36-55 4 per 56-80 5 per 81-110 6 per 111-150	2 per 16-35 3 per 36-55 4 per 56-80 5 per 81-110 6 per 111-150	2 per 26-50 3 per 51-100 4 per 101-150 5 per 151-200	—	1 per 100	1 service sink per floor	9, 15 ,16, 17 *
OCCUPANCY	**DESCRIPTION**	**WATER CLOSETS**		**LAVATORIES**		**BATHTUBS/ SHOWERS**	**DRINKING FOUNTAIN**	**OTHER**	**FOOTNOTES**
		MALE	**FEMALE**	**M**	**F**				
		over 150, add 1 per 40	over 150, add 1 per 40	over 200, add 1 per 80					
E	Elementary (students)	1 per 40	1 per 30	1 per 50		Footnote 7	1 per 100	1 service sink per floor	2, 3, 4, 5, 6, 8, 9, 10, 11, 16, 17 *
	Elementary (secondary)	1 per 50	1 per 40	1 per 50			1 per 100		
	University, adult centers, etc.	1 per 50	1 per 40	1 per 50					
	Staff (all schools)	same as office buildings	same as office buildings	same as office buildings					
F-1 and F-2	Structures in which occupants are engaged in work fabricating, assembly or processing of products or materials	1 per 25 up to 100 over 100, add 1 per 100	1 per 25 up to 100 over 100, add 1 per 100	1 per 25 up to 100 over 100, add 1 per 50		—	1 per 100	1 service sink per floor	9, 15, 16 *

I-1	Residential care	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink	2, 3, 4, 5, 6, 10, 13, 15, 16, 17, 18, 19, **20** *
I-2	Hospitals, ambulatory nursing home patients	1 per room	1 per room	1 per 15	1 per 100	1 service sink	2, 3, 4, 5, 6, 10, 13, 15, 16, 17, 18, 19, **20** *
	Employees, other than residential care	1 per 25	1 per 35	—	1 per 100	1 service sink	

OCCUPANCY	DESCRIPTION	WATER CLOSETS		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAIN	OTHER	FOOTNOTES
		MALE	FEMALE	M	F				
	Visitors, other than residential care	1 per 75		1 per 100		___	1 per 500	___	
I-3	Prisons	1 per cell		1 per cell		1 per 15	1 per 100	1 service sink	2, 3, 4, 5, 6, 10, 15, 16, 17, 18, 19, **20** *
	Reformatories, detention centers, and correctional centers	1 per 15		1 per 15		1 per 15	1 per 100	1 service sink	
	Employees	1 per 25		1 per 25		---	1 per 100	---	
I-4	Adult day care and child care	1 per 15		1 per 15		1	1 per 100	1 service sink	2, 3, 4, 5, 6, 10, 11, 12, 15, 16, 17, 19, **20** *
	Day care and child care centers	1 per 15		1 per 15		**0**	1 per 100	1 service sink per floor	
	Children under 6	1 per 10		1 per 10					
	Children over 6	1 per 12		1 per 12					
	Staff	1 per 15		1 per 15					
M	Retail stores, service stations, shops, salesrooms, markets, and shopping centers	1 per 500		1 per 750		---	1 per 1000	1 service sink	2, 3, 4, 5, 6, 10, 13, 15, 16, 17, **20** *
R-1	Hotels, motels, boarding houses (transient)	1 per sleeping unit		1 per sleeping unit		1 per sleeping unit	---	1 service sink	**20**
OCCUPANCY	DESCRIPTION	WATER CLOSETS		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAIN	OTHER	FOOTNOTES
		MALE	FEMALE	M	F				

R-2	Dormitories, fraternities, sororities, and boarding houses (not transient)	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink	**20**
R-2	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	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	Congregate living facilities with 16 or fewer people	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink	**20**
R-4	Residential care/assisted living facilities	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink	2, 3, 4, 5, 6, 10, 13, 15, 16, 17, 18, 19, **20** *

OCCUPANCY	DESCRIPTION	WATER CLOSETS		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAIN	OTHER	FOOTNOTES
		MALE	FEMALE	M	F				

S-1 S-2	Structures for the storage of goods, warehouses, storehouse and freight depots. Low and Moderate Hazard	1 per 100	1 per 100	See Section 411	1 per 1000	1 service sink	15, 16, **20** *

Footnotes to Table AC-403.1:

1. "Restaurant" occupancy refers only to establishments that sell food primarily to be consumed on the premises. Establishments that have only "stand-up" facilities for eight (8) or less persons and establishments that sell "take-out" food only shall not be classified as a "restaurant".
2. For establishments serving food and/or drinks, see Article III, "Restaurants" and Article IV, "General Food", of the Allegheny County Health Department Rules & Regulations.
3. Dipper wells ~~with running water~~ shall be provided in conjunction with the dispensing of ice cream, yogurt and/or related products.
4. One 3-compartment rinsing sink shall be installed in each bar.
5. A 3-compartment sink shall be provided when food is prepared or served on the premises.
6. Utility sinks shall be provided for washing utensils, equipment, and appurtenances in accordance with Article III, "Restaurants" and Article IV, "General Food".
7. Provide showers for 1/5 of the maximum number of students using gymnasium and/or pool at one time.
8. Staff facilities in university, college adult centers may be combined with student facilities.
9. Provide one lavatory for each five persons exposed to skin contamination with poisonous, infectious, or irritating material.
10. Sinks used for dishes, utensils and any other food related items shall be NSF approved.
11. Water closets for children under age 6 shall be of suitable size and height, and seats shall be of an open sanitary type.
12. Separate toilet facilities shall be provided in centers with daily enrollment of 25 or more children.
13. In A-2 occupancy, urinals are required in single occupancy bathrooms (does not include family bathrooms).
14. In A-2 occupancy, when the aggregate of 8 or more male and female water closets are provided, a **single-user toilet room, including** family assisted or assisted use bathroom, is required. **Single-user bath toilet, and family or assisted bathrooms may be identified as being available for use by all persons regardless of their sex.**
15. Drinking fountains are not required for occupants of 15 or fewer provided potable water is available for building occupants such as bottled water or break room sink.
16. The minimum number of required drinking fountains shall comply with Table AC-403.1 and Chapter 11 of the *International Building Code*. A single high/low drinking fountain shall be considered one fixture.
17. The occupant load for seasonal outdoor seating and entertaining areas shall be included when determining the minimum number of facilities required.
18. Toilet facilities for employees shall be separate from facilities for inmates or patients.

19. 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.

20. ~~May require more than 1 service sink per floor if no elevator equip in building.~~ **If there is noelevator equipment in the building, one (1) service sink per floor is required.**

21. If the minimum number of required plumbing fixtures for an occupancy under Table 403.1 exceeds the minimum number of required plumbing fixtures under Table 403.1 of the International Plumbing Code promulgated by the Pennsylvania Department of Labor and Industry, then the additional plumbing fixtures may be located in single-user toilet and bathing room(s), including family or assisted-use toilet and bathing room(s). Single-user toilet and bathing rooms, and family or assisted-use toilet rooms and toilet rooms and bathing rooms may be identified as being available for use by all persons regardless of their 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 *International 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*. **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 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. Separate facilities shall not be required in structures. or tenant spaces with a total occupant load, including both employees and customers, of 15 or less.

3. Separate facilities shall not be required in mercantile occupancies in which the maximum occupant load is 50 or less.

AC-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 andeach 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. Urinals will still be requiredin occupancy type A-2.

403.3 Required public toilet facilities. 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 toilet facilities shall be provided in accordance with Section 403 for all users. Employees shall be provided with toilet facilities in all occupancies. Employee toilet facilities shall be either separate or combined employee and public toilet facilities.

Exception: Public toilet facilities shall not be required in:

1. **Open or enclosed parking garages where there are no parkingattendants.**

2. **Structures and tenant spaces intended for quick transactions, including takeout, pickup and drop- off, having a public access arealess than or equal to 300 square feet (28 m2).**

******

403.3.5 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 theroom. This section does not apply to family or assisted-use toilet rooms.

403.4 Signage. Required public facilities shall be designated by legible signs ~~for each sex.~~ **that designate the sex, as required by Section 403.2.** Signs shall be readily visible and located nearthe entrance to each toilet facility. **Signs for accessible toilet facilities shall comply with Section 1111 of the International Building Code.**

******

SECTION 404
ACCESSIBLE PLUMBING FACILITIES

404.1 Where required. Accessible plumbing facilities and fixtures shall be provided in accordance with the International Building Code.

404.2 Accessible fixture requirements. Accessible plumbing fixtures

shall be installed withthe clearances, heights, spacings and arrangements in accordance with ICC A117.I.

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 405
INSTALLATION OF FIXTURES

******

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

******

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

******

SECTION 407
BATHTUBS

******

407.2 Bathtub waste outlets. Bathtubs shall have waste outlets ~~minimum of 11 /2 inches (38 mm) in diameter~~ **and an overflow outlet. The outlets shall be connected to waste tubing or piping not less than 11/ 2 inches (38 mm) in diameter.** The waste outlet shall be equipped withan approved stopper.

******

SECTION 412
FLOOR AND TRENCH DRAINS

******

AC-412.3 Size of floor drains. ~~Floor drains shall have a minimum 2-inch-diameter (51 mm) drain outlet.~~ **Floor drains installed below a basement floor must be a minimum or four (4) inches in diameter. Floor drains installed above the basement**

floor must be a minimum ofthree (3) inches in diameter. Residential emergency drains installed in laundry rooms on floors above usable space may be two (2) inches in diameter when it is properly connected to the drainage and vent system. All floor drains must be supplied with an automatic priming device. Exceptions: For residential installations, hose bibs or a laundry tray maybe substituted for an automatic priming device when the fixture is located in the same room.

******

SECTION 413
FOOD WASTE GRINDER UNITS

AC-413.1 Approval. Domestic food waste grinders shall conform to ASSE 1008. Commercial food waste grinders shall conform to ASSE 1009. ~~Food waste grinders shall not increase the drainage fixture unit load on the sanitary drainage system.~~ **The fixture unit value will increasewith the installation of a food waste grinder.**

******

SECTION 417
SHOWERS

******

AC-417.3 Shower waste outlet. ~~Waste outlets serving showers shall be at least 1 ½ inches (38 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 0.25 inch (6.4 mm) in minimum 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.~~ **Waste outlets serving showers when installed above the basement floor shall have a diameter of at least two (2) inches with removable strainers of not less than three (3) inches in diameter with strainer openings not less than 0.25 inches inminimum dimension. This requirement is not intended for bathtub-to-shower conversions that require a 1 ½ inch trap and drain connection. The connection from the waste outlet to the drainage system must be fastened in an approved manner.**

AC-417.5.2.3 Sheet lead. [REPEALED] ~~Sheet lead shall not weigh less than 4 pounds per square foot (19.5 kg/m2) 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 equivalent. Sheet lead shall be joined by burning.~~

******

SECTION 423
SPECIALTY PLUMBING FIXTURES

******

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 424
FAUCETS AND OTHER FIXTURE FITTINGS

******

424.9 Water closet personal hygiene devices. Personal hygiene devices integral to waterclosets or water closet seals shall conform to the requirements of ASME A112.4.

******

CHAPTER 5
WATER HEATERS

SECTION 501
GENERAL

******

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. **The drain valve inlet shall be not less than 3/4-inch (19 mm) nominal iron pipe size and the outlet shall be provided with male garden hose threads.** Drain valves shall conform to ASSE 1005.

******

SECTION 504
SAFETY DEVICES

******

AC- 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 to the floor~~;~~ **or** to an indirect waste receptor~~, or to the outdoors~~. ~~Wheredischarging to the outdoors in areas subject to freezing, discharge piping shall befirst piped to an indirect waste receptor through an air gap located in a conditioned area.~~

6. Discharge in a manner that does not cause personal injury or structural damage.

7. Discharge to a termination point that is readily observable by the building occupants.

8. Not be trapped.

9. Be installed so as to flow by gravity.

10. ~~Not terminate more than 6 inches (152 mm) above the floor or waste receptor.~~ **Terminate not more than 6 inches (152 mm) above and not less thantwo times the discharge pipe diameter above the floor or flood level rim of the waste receptor.**

11. Not have a threaded connection at the end of such piping.

12. Not have valves or tee fittings.

13. 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.

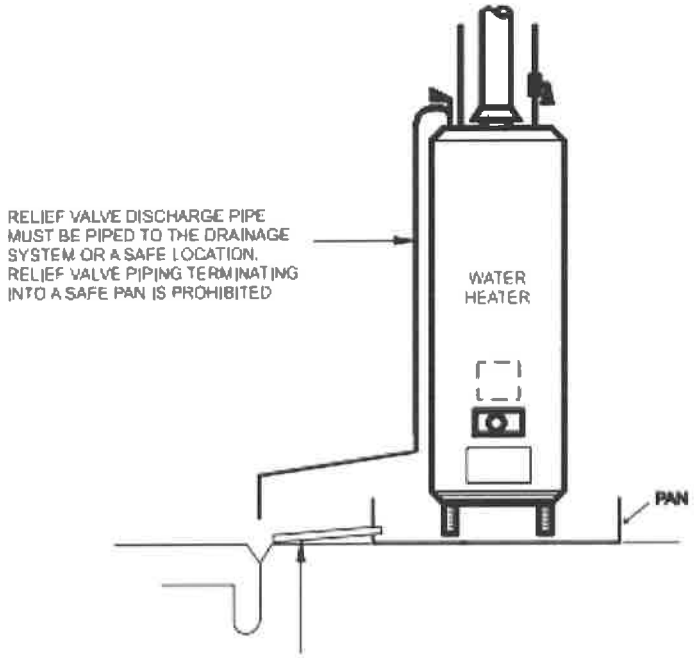
504.7 Required pan. Where water heaters or hot water storage tanks are installed in locations where leakage of the tanks or connections will cause damage, the tank or water heater shall be installed in a galvanized steel pan having a minimum thickness of 24 gauge, or other pans approved for such use.

******

504.7.2 Pan drain termination. The pan drain shall extend 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~~.

504.7.3 Water heater floor drain or drain pan required. All hot water heaters willrequire a floor drain or approved water heater drain pan regardless of their location to protect the structure and surrounding materials and areas from catastrophic failure of the water heater. This also includes basement floors.

FIGURE AC-504.7
WATER HEATER IN PAN



THE PAN DRAIN MUST DISCHARGE TO WASTE RECEPTOR, FLOOR DRAIN ~~OR TO THE EXTERIOR OF THE BUILDING~~.

******

CHAPTER 6
WATER SUPPLY AND DISTRIBUTION

SECTION 601
GENERAL

******

601.5 Rehabilitation of piping systems. Where pressure piping systems are rehabilitated using an epoxy lining system, such lining system shall comply with ASTM F 2831.

******

SECTION 605
MATERIALS, JOINTS, AND CONNECTIONS

******

AC-605.2 Lead content of water supply pipe and fittings. Pipe and pipe fittings, including valves and faucets, utilized in the water supply system shall ~~have a maximum of 8 percent lead content~~ **be lead-free pipe and fittings, as that term is defined in Section 202 of this Article and by the Pennsylvania Plumbing System Lead Ban and Notification Act at 35 P.S. §723.3.**

AC-605.2.1 Ban on repair of privately-owned lead water service lines. Repair of and/or partial replacement of existing privately-owned lead water service lines is prohibited by this Article. When an existing privately-owned lead water service line fails such that it needs to be repaired, the entire privately-owned lead water service line must be replaced with approved, lead-free pipe and fittings.

******

TABLE 605.3
WATER SERVICE PIPE

MATERIAL	STANDARD
******	******
~~Asbestos-cement pipe~~ [REPEALED]	~~ASTM C296~~ [REPEALED]
******	******
~~Galvanized steel pipe~~ [REPEALED]	~~ASTM A53~~ [REPEALED]
******	******

TABLE 605.4
WATER DISTRIBUTION PIPE

MATERIAL	STANDARD
******	******
Galvanized [REPEALED]	~~ASTM A53~~ [REPEALED]
******	******

TABLE 605.5
PIPE FITTINGS

MATERIAL	STANDARD
******	******

Steel **[REPEALED]**	~~ASME B16.9; ASME B16.11; ASME B16.28~~ **[REPEALED]**
******	******

******

605.11 Asbestos-cement. [REPEALED] ~~**Joints between asbestos-cement pipe or fittings shall be made with a sleeve coupling of the same composition as the pipe, sealed with anelastomeric ring conforming to ASTM D1869.**~~

******

AC-605.13 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.

AC-605.13.1 Rodding of joints on grey iron and ductile iron joints. All mechanical joints on grey iron and ductile iron pipe must be rodded in addition to the requiredthrust blocks at all changes in direction and other areas specified by the Administrative Authority.

******

AC-605.15 Copper tubing. Joints between copper or copper-alloy pipe or fittings shall comply with Sections 605.15.l through ~~605.15.4~~ **605.15.5**.

******

605.15.5 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 press- connect fitting. Press-connect joints shall be pressed with atool certified by the manufacture.

******

AC-605.16 CPVC plastic. Joints between CPVC plastic pipe and fitting shall comply with Sections 605.16.1 through 605.16.3.

******

605.16.2 Solvent cementing. Joint surfaces shall be clean and free from moisture~~, and an appropriate primer shall be applied~~. **Joints shall be made in accordance with the manufacturer's installation instructions. Where such instructions**

require that a primer be used, the primer shall be applied to the joint surfaces and a ~~S~~solvent cement, orange in color and conforming to ASTM F 493, shall be applied to ~~all~~ **the** jointsurfaces. **Where such instructions allow for a one-step solvent cement, yellow in color and conforming to ASTM F 493, to be used, the joint surface shall not requirethe 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 D2846 or ASTM F493. Solvent-cement joints shall be permitted above or below ground.

~~**Exception**: A primer is not required where all of the following conditions apply:~~

~~1. The solvent cement used is third-party certified as conforming to ASTM F 493.~~

~~2. The solvent cement used is yellow in color.~~

~~3. The solvent cement is used only for joining ½ inch (12.7 mm) through 2 inch (51 mm) diameter CPVC pipe and fittings.~~

~~4. The CPVC pipe and fittings are manufactured in accordance with ASTM D 2846.~~

******

605.17 ~~Cross-linked polyethylene plastic~~ PEX Plastic. Joints between cross-linked polyethylene plastic tubing or fittings shall comply with Sections 605.17.1 and 605.17.2.

******

605.23 Stainless steel. Joints between stainless steel pipe and fittings shall comply with Sections 605.23.1 and 605.23.~~2~~**3**.

******

605.23.3 Grooved and shouldered mechanical joints. Grooved and shouldered mechanical joints shall comply with ASTM F 1476, shall be made with an approvedelastomeric 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, 605.24.2 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.

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 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**s** ~~fitting~~ **or transition fittings**.

******

605.25 PE-RT plastic. Joints between polyethylene of raised temperature plastic tubingand fittings shall be in accordance with Section 605.25.1.

605.25.1 Mechanical joints. Mechanical joints shall be installed in accordance withthe manufacturer's instructions. Fittings for polyethylene of raised temperature plastic tubing shall comply with the

applicable standards listed in Table 605.5 and shall be installed in accordance with the manufacturer's instructions. Polyethyleneof raised temperature plastic tubing shall be factory marked with the applicable standards for the fittings that the manufacturer of the tubing specifies for use with the tubing.

AC-605.26 Chlorinated polyvinyl chloride/aluminum/chlorinated polyvinyl chloride (CPVC/AL/CPVC) pipe and tub-ing. Joints between CPVC/AL/CPVC plastic pipe orCPVC fittings shall comply with Sections 605.26.1 through 605.26.2.

605.26.1 Mechanical joints. Mechanical joints shall be installed in accordance withthe manufacturer's instructions.

605.26.2 Solvent cementing. Joint surfaces shall be clean and free from moisture,and an approved primer shall be applied. Solvent cement, orange in color and conforming to ASTM F 493, shall be applied to joint surfaces. The joint shall be made while the cement is wet, and in accordance with ASTM D 2846 or ASTM F493. Solvent cement joints shall be permitted above or below ground.

Exception: A primer is not required where all of the following conditionsapply:

1. The solvent cement used is third-party certified as conformingto ASTM F 493.
2. The solvent cement used is yellow in color.
3. The solvent cement is used only for joining ½-inch (12.7 mm) through 2-inch diameter (51 mm) CPVC/AL/CPVC pipe andCPVC fittings.
4. The CPVC fittings are manufactured in accordance withASTM D 2846.

AC-605.27 Approval of new material, joint, and connections in Allegheny County. Materials, joints, and connections not listed in this Code as approved may be approved for use by the Chief Plumbing Inspector, provided that such new material, joint,or connection does not present a hazard to public health or safety. The Chief Plumbing Inspector shall consult with the Plumbing Advisory Board when

determining whether a new material can be approved for use. The Plumbing Advisory Board may also unilaterally recommend, by affirmative vote, that a new material, joint, or connection be approved for use by the Chief Plumbing Inspector. The Department shall maintain and publish on the Department website a list of materials approved by the Chief Plumbing Inspector in this manner.

SECTION 606
INSTALLATION OF THE BUILDING WATER DISTRIBUTION SYSTEM

******

606.7 Labeling of water distribution pipes in bundles. Where water distribution piping isbundled at installation, each pipe in the bundle shall be identified using stenciling or commercially available pipe labels. The identification shall indicate the pipe contents andthe direction of flow in the pipe. The interval of the identification markings on the pipe shall not exceed 25 feet (7620 mm). There shall be not less than one identification label oneach pipe in each room, space or story.

******

SECTION 607
HOT WATER SUPPLY SYSTEM

******

607.2 Hot or tempered water supply to fixtures. The developed length of hot or temperedwater piping, from the source of hot water to the fixtures that require hot or tempered water, shall not exceed 50 feet (15 240 mm). Recirculating system piping and heat-traced piping shall be considered to be sources of hot or tempered water.

******

[E]607.5 Insulation of piping. For other than Group R2, R3 and R4 occupancies that are three stories or less in height above grade plane, piping to the inlet of a water heater and piping conveying water healed by a water heater shall be insulated in accordance with Section C404.4 of the International Energy Conservation Code. For Group R2, R3 and R4occupancies 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 R403.5.3 of the International Energy Conservation Code.

SECTION 608
PROTECTION OF POTABLE WATER SUPPLY

******

608.8 Identification of non-potable water systems. ~~In buildings w~~ **Where** nonpotable water systems are installed, the piping conveying the nonpotable water shall be identified either by color marking or metal tags in accordance with Sections 608.8.1 through 608.8.3**2.3**. ~~All nonpotable water outlets such as hose connections, open ended pipes, and faucets shall be identified at the point of use for each outlet with the words, "Nonpotable – not safe for drinking." The words shall be indelibly printed on the 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 0.5inches in height and color in contrast to the background on which they are applied.~~

608.8.1 ~~Information~~ Signage required. Nonpotable water outlets, such as hose connections, open ended pipes and faucets, shall be identified with signage that reads as follows: "Non- potable 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 608.8.1 shall appear on the required signage.**

FIGURE 608.8.1
PICTOGRAPH-DO NOT DRINK

608.8.2 ~~Color.~~ Distribution pipe labeling and marking. ~~The color of the pipe identification shall be discernable and consistent throughout the building. The color purple shall be used to identify reclaimed, rain, and gray water distribution systems.~~

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 intervals not exceeding 25 feet (7620 mm) and ateach point where the piping passes through a wall, floor or roof. Lettering shall bereadily observable within the room or space where the piping is located.

608.8.32.1 ~~Size~~ Color. ~~The size of the background color field and lettering shallcomply with Table 608.8.3.~~ **The color of the pipe identification shall be discernable and consistent throughout the building. The color purple shall be used to identify reclaimed, rain, and gray water distribution systems.**

608.8.2.2 **Lettering Size. The size of the background color field and letteringshall comply with Table 608.8.2.2.**

TABLE 608.8.32.2
SIZE OF PIPE IDENTIFICATION

PIPE DIAMETER (inches)	LENGTH BACKGROUND COLORFIELD (inches)	SIZEOF LETTERS (inches)
¾ to 1¼	8	0.5
1½ to 2	8	0.75
2½ to 6	12	1.25
8 to 10	24	2.5
over 10	32	3.5

608.8.2.3 **Identification tape. Where used, identification tape shall be at least3 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 rainwater distribution pipes, fastened at least every 10 feet (3048 mm) to each pipelength and run continuously the entire length of the pipe.

******

CHAPTER 7
SANITARY DRAINAGE

SECTION 701
GENERAL

******

AC-701.2 Sewer required. Every building in which plumbing fixtures are installed and all premises having drainage piping shall be connected to a *public sewer*, where available, or an *approved private* sewage disposal system in accordance with the ~~*International Private Sewage Disposal Code*~~ **Pennsylvania Sewage Facilities Act, 35 P.S. §§ 750.1 – 750.20a., and its implementing regulations found at Title 25 of the Pennsylvania Code, Chapters 71 – 73.**

******

AC-701.3 Public Sewers and/or Water Mains Not Available. Where public sewers and/or water mains are not immediately available, it may become necessary to construct a private sanitary sewer, storm sewer, and/or water main to connect with a public utility. A variance must be obtained from the Director prior to construction of a private sanitary sewer, storm sewer, and/or water main. Plans indicating size, materials, and method of construction must be submitted to the Administrative Authority for approval. Private sewers and/or water mains shall be constructed on the outside of building or buildings and branched into each house or building separately. When private sewers and/or water mains must cross another property or properties to connect with a public sanitary sewer, storm sewer and/or water main, an easement shall be recorded in the deeds of all affected property owners. A mutual maintenance agreement shall be recorded in the deeds of all such properties connected to a private sewer or water main system to affix equal responsibility in maintaining the private sewer (s) or water main(s). A copy of each deed shall be filed with the Administrative Authority.

AC-701.3.1 Existing Common Sewer Lateral. When the Administrative Authority identifies the existence of a common sewer lateral (CSL) that is not recorded in the Recorder of Deeds Office of Allegheny County, it may issue orders to all affected property owners to separately connect to an available public sewer, or in the alternative, to record in the Recorder of Deeds Office of Allegheny County, a document, approved by the Administrative Authority, identifying the existence of the CSL and adequately specifying the maintenance responsibilities for property owners.

AC-701.3.2 Avoiding Public Health Hazards. In order to prevent a public health hazard, all properties connected to a CSL must remain connected to that CSL untilall requirements of Section 701.3.1, above, are met.

******

701.10 Separate sewer connection. A building having plumbing fixtures installed and intended for human habitation, occupancy or use on premises abutting on a street, alley oreasement 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 connect-ingto a common *building sewer* that connects to the public *sewer*.

******

SECTION 702
MATERIALS

******

TABLE 702.2
UNDERGROUND BUILDING DRAINAGE AND VENT PIPE

MATERIAL	STANDARD
******	******
Asbestos-Cement Pipe **[REPEALED]**	~~ASTM C428~~ **[REPEALED]**
******	******

****

TABLE 702.3
BUILDING SEWER PIPE

MATERIAL	STANDARD
******	******
Asbestos-Cement Pipe **[REPEALED]**	~~ASTM C428~~ **[REPEALED]**
******	******

****

TABLE 702.4
PIPE FITTINGS

MATERIAL	STANDARD
******	******
Asbestos-Cement Pipe **[REPEALED]**	~~ASTM C428~~ **[REPEALED]**
******	******

******

SECTION 703
BUILDING SEWER

AC-703.1 Building sewer pipe near the water service. Where the building sewer is installed within 10 feet (3048 mm) of the water service, the installation shall comply with the provisions of Section AC-603.2.

AC-703.1.1 Controlling trap. A controlling trap, such as a *trap* or trap manhole, shall be required when the building storm sewer is to be connected to a combinationpublic sewer system or a storm sewer that connects to a public combination sewer.

******

703.6 Combined sanitary and storm public sewer. Where the public sewer is a combinedsystem for both sanitary and storm water, the sanitary sewer shall be connected independently to the public sewer.

******

SECTION 705
JOINTS

******

705.3 Asbestos cement. **[REPEALED]** ~~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 D1869.~~

******

SECTION 708
CLEANOUTS

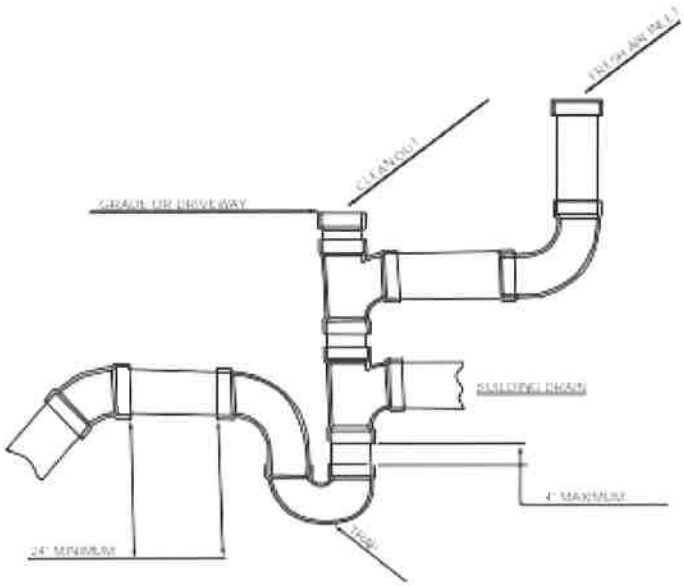
******

AC-708.3.1 Horizontal drains within buildings. All **6 inch and over** horizontal drains shall beprovided with cleanouts located not more than 100 feet (30 480 mm) apart.

AC-708.3.2 Building sewers. **Six-inch** ~~B~~**b**uilding sewers shall be provided with cleanouts located not more than 100 feet (30 480 mm) apart measured from the upstream entrance of the cleanout. For building sewers 8 inches (203 mm) and larger, manholes shall be provided and 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.

AC-708.3.2.1 Four-inch building drains and building sewers. Cleanouts are requiredevery 50 feet.

Exception. Cleanouts at the base of a stack and fixture connections can besubstituted for floor cleanouts on building drains.



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

FIGURE AC-708.3.5.3(2)
BUILDING OR HOUSE TRAPS INSTALLED
~~GREATER THAN 4 FEET IN DEPTH~~ UNDER A SIDEWALK, DRIVEWAY OR INSIDEA BUILDING

******

AC-708.4 ~~Concealed piping.~~ Cleanout access. ~~Cleanouts on concealed piping or piping under afloor 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.~~ **Required cleanouts shall not be installed in concealed locations. For the purposes of this section, concealed locations include, but are not limited to, the inside of plenums, within walls, within floor/ceiling assemblies, below grade and in crawl spaces where the height from the crawl space floor to the nearest obstruction along the path from the crawl space opening to the clean- out location is less than 24 inches (610 mm). 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 walk- way. Where it is necessary to conceal a cleanout or to terminate a cleanoutin 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.

AC-708.4.1 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 plugsshall not be covered with mortar, plaster or any other permanent material.

AC-708.4.2 Floor cleanout assemblies. Where it is necessary to protect a cleanoutplug from the loads of vehicular traffic, cleanout assemblies in accordance with ASME Al 12.36.2M shall be installed.

******

AC-708.10 Installation arrangement. The installation arrangement of a cleanout shallenable 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 therequirements of Section 708.3.5.3.**

708.11 Prohibited use. The use of a threaded cleanout opening to add a fixture or to extendpiping shall be prohibited except where another cleanout of equal size is installed with the required access and clearance.

******

SECTION 712
SUMPS AND EJECTORS

******

712.3 Sump design. The sump pump, pit, and discharge piping shall conform to the requirements of Sections 712.3.1 through 712.3.5.

******

712.3.3 Discharge ~~piping~~ pipe and fittings. Discharge pipe and fittings ~~shall be constructed of *approved* materials.~~ **serving sump pumps and ejectors shall**

be constructed of materials in accordance with Sections 712.3.3.1 and 712.3.3.2 andshall be approved.

712.3.3.1 Materials. Pipe and filling materials shall be constructed of brass,copper, CPVC, ductile iron, PE, or PVC.

712.3.3.2 Ratings. Pipe and fittings shall be rated for the maximum system operating pressure and temperature. Pipe filling materials shall be compatible with the pipe material. Where pipe and fillings are buried in theearth, they shall be suitable for burial.

******

712.3.5 ~~Ejector~~ Pump connection to the drainage system. Pumps connected to the drainage system shall connect to the *building sewer*, ***building drain*, soil *stack*, waste *stack*, or *horizontalbranch drain*** ~~or shall connect to a wye fitting in the *building drain* at a minimum of 10 feet (3048 mm) from the base of any soil *stack*, waste *stack*, or *fixture drain*~~. Where the discharge line connects into horizontal drainage piping, the connector shall be made through a wye fitting into the top of the drainage piping **and such wye fitting shall be located not less that 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 sump to the building drainage system.

712.4.1 Macerating toilet systems. Macerating toilet systems ~~shall comply with CSA B45.9 or ASME A112.3.4 and shall be installed in accordance with the manufacturer's installation instructions~~ **require a variance approval from the Administrative Authority before installation**.

******

AC-712.5 Duplex pumping equipment. Sumps in other than one- and two-family resident receiving the discharge of six or more water closets shall be provided with duplex pumpingequipment.

******

SECTION 715
BACKWATER VALVES

715.1 Sewage backflow. ~~Where the flood level rims of plumbing fixtures are below the elevation of the manhole cover of the next upstream manhole in the public sewer, such fixtures~~

~~shall be protected by a backwater valve installed in the building drain, branch of the building drain or horizontal branch serving such fixtures. Plumbing fixtures having flood level rims above the elevation of the manhole cover of the next upstream manhole in the public sewer shall not discharge through a backwater valve.~~ **Where plumbing fixtures are installed on a floor with afinished floor elevation below the elevation of the manhole cover of the next upstream manhole in the public sewer, such fixtures shall be protected by a backwater valve installedin the building drain, or horizontal branch serving such fixtures. Plumbing fixtures installed on a floor with a finished floor elevation above the elevation of the manhole cover of the next upstream manhole in the public sewer shall not discharge through a backwater valve.**

Exception: In existing buildings, fixtures above the elevation of the manhole cover ofthe next upstream manhole in the public sewer shall not be prohibited from discharging through a backwater valve.

SECTION 716
[RESERVED]

SECTION 717
REPLACEMENT OF UNDERGROUND SEWERS BY PIPE-BURSTING METHODS

717.1 General. This section shall govern the replacement of existing building sewer pipingby pipe-bursting methods.

717.2 Applicability. The replacement of building sewer piping by pipe-bursting methodsshall be limited to gravity drainage piping of sizes 6 inches (152 mm) and smaller. The replacement piping shall be of the same nominal size as the existing piping.

717.3 Pre-installation inspection. The existing piping sections to be replaced shall be inspected internally by a recorded video camera survey. The survey shall include notationsof the position of cleanouts and the depth of connections to the existing piping.

717.4 Pipe. The replacement piping shall be manufactured with a standard dimensionratio (SDR) of 17 and in compliance with ASTM F 714.

717.5 Pipe fittings. Pipe fittings to be connected to the replacement piping shall

be of extra-high molecular weight PE3408 material and shall be manufactured with an SDR of 17 and in compliance with ASTM D 2683.

717.6 Cleanouts. Where the existing building sewer did not have cleanouts meeting therequirements of this code, clean- out fittings shall be installed as required by this code.

717.7 Post-installation inspection. The completed replacement piping section shall be inspected internally by a recorded video camera survey. The video survey shall be reviewedand approved by the code official prior to pressure testing of the replacement piping system.

717.8 Pressure testing. The replacement piping system as well as the connections to thereplacement piping shall be tested in accordance with Section 312.

CHAPTER 8
INDIRECT/SPECIAL WASTE

******

SECTION 802
INDIRECT WASTE

802.1 Where required. Food-handling equipment**, in other than dwelling units,** ~~and~~ 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 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 directlyconnected to the plumbing system in accordance with Chapter 7.

> **AC-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. Figure AC-802.1.1**

******

802.2 Installation. All 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 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.

******

CHAPTER 9
VENTS

******

SECTION AC-902
MATERIAL

AC-902.1 Material. Vent pipe and fittings for the venting system shall comply with the provisions of ~~IPC~~ Section 702.

******

SECTION AC-905
VENT TERMINAL

******

AC-905.2 Waterproof flashing. ~~Each vent terminated shall be made watertight with the roof by proper flashing.~~ **The juncture of each vent pipe with the roof line shall be made water tight by an approved flashing.**

******

AC-905.4. Location of vent terminal. No vent terminal shall be located directly beneath any door, window, or other ventilating opening of the building or of an adjacent building, nor shall the vent terminal be within ten (10) feet horizontally of such an opening unless it is at least ~~two (2) feet~~ **three (3) feet (914 mm) or more** above the top of such opening. Vent terminals shall notterminate under the overhang of a building.

******

SECTION AC-911
VENTING REQUIREMENTS FOR FLOOR DRAINS AND SIMILAR FLOOR LEVEL CONNECTED FIXTURES

AC-911.1 Floor drains and similar floor level connected fixtures above basement floor. Floor drains above the basement floor shall have traps a minimum size of three (3) inches, except emergency floor drains in laundry rooms of single-family homes, in which two (2) inch traps may be used. These emergency floor drains shall be considered plumbing fixtures~~,~~ and shall be

properly vented. Floor drains or showers with a trap size of three (3) or four (4) inches, upstream of water closets or similar fixtures, may be circuit or loop vented. When floor drains or showers are placed on a common horizontal branch with water closets or similar fixtures and located on the downstream side of such fixtures, they shall be individually vented, or they shall be isolated on their own waste branch, and circuit or loop vented. Loop or circuit vents shall be sized as provided in Table AC-901.1. They shall vent or take off in front of the last fixture connection, or be washed out by the fixture they serve, or the vent may be washed out by a higher connected fixture. **Floor drains shall not be stack vented.**

******

SECTION AC-921
ISLAND FIXTURE VENTING

AC-921.1 Limitation. Island fixture venting shall not be permitted for fixtures other thansinks and lavatories. Residential kitchen sinks with a dishwasher waste connection, a foodwaste disposer, or both, in combination with the kitchen sink waste, shall be permitted to be vented in accordance with this section.

AC-921.2 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 pointno less than 6 inches (152 mm) above the highest island fixture being vented before connecting to the outside vent terminal.

AC-921.3 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 Chapter 9 and Table AC-901.1. The lowest point of the island fixture vent shall connect fullsize 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.

CHAPTER 10
TRAPS, INTERCEPTORS, AND SEPARATORS

******

SECTION 1003
INTERCEPTORS AND SEPARATORS

******

1003.3 Grease interceptors. Grease interceptors shall comply with the requirements of Sections 1003.3.1 through 1003.3.5.

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 drainage from fixtures and equipment with grease-laden waste located in food preparation areas, such as in restaurants, hotel kitchens, hospitals, school kitchens, bars, factory cafeterias and clubs. Fixtures and equipment shall include pot sinks, pre-rinse sinks; soup kettles or similar devices; wok stations; floor drains or sinks into which kettles are drained; automatic hood wash units and dishwashers without pre-rinse sinks. Grease interceptors and automatic grease removal devices shall receive waste only from fixtures and equipment that allow fats, oils or grease to be discharged.

AC-1003.3.1.1 Grease interceptor location. ~~Grease interceptors, where necessary or required, shall not be located in any kitchen or room where food is prepared, cooked, mixed, baked, smoked, preserved, exposed, bottled, packed, handled, stored, or manufactured. This provision need not apply where a semi-automatic draw-off type grease interceptor is provided.~~ **A variance must be approved by the Administrative Authority for all grease interceptors locatedin areas where food is prepared, cooked, baked, smoked, preserved, exposed,bottled, packed, handled, stored, or manufactured regardless of what type ofgrease interceptor is used.**

******

1003.3.4 Hydromechanical Ggrease interceptors, fats oils and greases disposal systems and automatic grease removal devices. ~~Grease interceptors and automatic grease removal devices shall be sized in accordance with PDI G101, ASME A112.14.3, or ASME A112.14.4. 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. Grease interceptors and automatic grease removal devices shall be installed inaccordance with the manufacturer's instructions.~~ **Hydromechanical grease interceptors; fats, oils, and greases disposal systems and automatic grease removal devices shall be sized in accordance with ASME All2.14.3, ASME 112.14.4, ASME A112.14.6, CSA B481.3 or PDI G101. Hydromechanical grease interceptors; fats, oils, and greases disposal systems and automatic grease removal devices shall be**

designed and tested in accordance with ASME A112.14.3, ASME 112.14.4, ICSA B481.l, PDI G101 or PDI G102. Hydromechanical grease interceptors; fats, oils, andgreases disposal systems and automatic grease removal devices shall be installed in accordance with the manufacturer's instructions. Where manufacturer's instructions are not provided, hydromechanical grease interceptors; fats, oils, and greases disposal systems and automatic grease removal devices shall be installed in compliance with ASME Al 12.14.3, ASME112.14.4, ASME Al 12.14.6, CSA B481.3 or PDI G 101.

AC-Exception: Interceptors that have a volume of not less than ~~500 gallons (1893 L)~~ **1000 gallons (3786 L)** and that are located outdoors shall not be required to meet the requirements of this section.

TABLE 1003.3.4.1
CAPACITY OF GREASE INTERCEPTORS[a]

TOTAL FLOW-THROUGH RATING (gpm)	GREASE RETENTION CAPACITY (pounds)
4	~~8~~
~~6~~	~~12~~
~~7~~	~~14~~
~~9~~	~~18~~
~~10~~	~~20~~
~~12~~	~~24~~
~~14~~	~~28~~
~~15~~	~~30~~
~~18~~	~~36~~
~~20~~	~~40~~
25	50
35	70
50	100
75	150
100	200

For SI: 1 gallon per minute + 3.785 L/m, 1 pound + 0.454 kg.

a. For total flow-through ratings greater than 100 (gpm), double the flow-through rating to determine the grease retention capacity (pounds).

AC-1003.3.4.1 Grease interceptor capacity. Grease interceptors shall have the grease retention capacity indicated in Table 1003.3.4.1 for the flow-through rates indicated. **The minimum size grease interceptor at point of use inside a building is 25 gpm (95 L/m). The minimum size outside grease interceptor is1000 gallons (3786 L).**

******

1003.3.6 Gravity grease interceptors and gravity grease interceptors with fats, oils, and greases disposal systems. The required capacity of gravity grease interceptors and gravity grease interceptors with fats, oils, and greases disposal systems shall be determined by multiplying the peak drain flow into the interceptor in gallons per minute by a retention time of 30 minutes. Gravity grease interceptors shall be designed and tested in accordance with IAPMO/ANSI Z1001. Gravity grease interceptors with fats, oils, and greases disposal systems shall be designed and testedin accordance with ASME A112.14.6 and IAPMO/ANSI Z1001. Gravity grease interceptors and gravity grease interceptors with fats, oils, and greases dis-posal systems shall be installed in accordance with manu-facturer's instructions. Where manufacturer's instructions are not provided, gravity grease interceptors and gravity grease interceptors with fats, oils, and greases disposal systems shall be installed in compliance with ASME A112.14.6 and IAPMO/ANSI Z1001.

1003.3.7 Direct connection. The discharge piping from a grease interceptor shall bedirectly connected to the sanitary drainage system.

1003.4 Oil separators required. ~~At repair garages, car washing facilities, at factories where oily and flammable liquid wastes are produced and in hydraulic elevator pits,~~ **At repair garages where floor or trench drains are provided, car washing facilities, 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 into the building drainage system or other point of disposal.

Exception: An oil separator is not required in hydraulic elevator pits where an approved alarm system is installed. **Such alarm systems shall not terminate the operation of pumps utilized to maintain emergency operation of the elevator by fire fighters.**

CHAPTER 11
STORM DRAINAGE

SECTION 1101
GENERAL

1101.1 Scope. The provisions of this chapter shall govern the materials, design, construction and installation of storm drainage.

AC-1101.1.1 Rain fall rate in Allegheny County. Rain fall rates, in inches per hour,are based on a storm of one-hour duration and a 100-year return period. The rain fall rate in Allegheny County is four inches per hour or shall be determined by the Administrative Authority.

AC-1101.6 Fittings and connections. All connections and changes in direction of the storm drainage system shall be made with *approved* drainage-type fittings **and material** in accordance with ~~Table 706.3.~~ **Section 702.** The fittings shall not obstruct or retard flow in the system.

******

SECTION 1102
MATERIALS

******

TABLE 1102.4
BUILDING STORM SEWER PIPE

MATERIAL	STANDARD
******	******
Asbestos-cement pipe **[REPEALED]**	~~ASTM C 428~~ **[REPEALED]**
******	******

******

TABLE 1102.5
SUBSOIL DRAIN PIPE

MATERIAL	STANDARD
******	******
~~Asbestos-cement pipe~~ **[REPEALED]**	~~ASTM C508~~ **[REPEALED]**
******	******

******

SECTION 1105
ROOF DRAINS

******

AC-1105.5 General. Roof drains shall be installed in accordance with the manufacture's instructions. The inside opening for the roof drain shall not be obstructed by the roofingmembrane material.

******

SECTION AC-1107
SECONDARY (EMERGENCY) ROOF DRAINS

AC-1107.1 Secondary drainage required. Secondary (emergency) 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. **Where primary andsecondary roof drains are manufactured as a single assembly, the inlet and outlet for each drain shall be independent.**

******

SECTION AC-1108
COMBINED SANITARY AND STORM SYSTEM

AC-1108.1 Size of combined drains and sewers. The size of a combination sanitary and storm drain or sewer shall be computed in accordance with the method in Section 1106.3. 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 ~~4,000~~ **1000** square feet (~~372~~ **93** m^2). Where the total fixture load exceeds 256 fixture units, each additional fixture unit shall be considered the equivalent of ~~15.6~~ 3.9 square feet (~~1.5~~ **.362** m^2) of drainage area. These values are based on a rainfall rate of ~~1~~**4** inch**es** (~~25~~ **101.6** mm) per hour.

******

SECTION AC-1109
VALUES FOR CONTINUOUS FLOW

AC-1109.1 Equivalent roof area. Where there is a continuous or semi-continuous 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 (~~L/m~~**gpm**) of such discharge shall be computed as being equivalent to ~~96~~ **24** square feet (~~9~~ **2.23** m^2) of roof area, based on a rainfall rate of ~~1~~**4** inch**es** (~~25.4~~ **101.6** mm) per hour.

CHAPTER 12
SPECIAL PIPING AND STORAGE SYSTEMS

******

SECTION 1202
MEDICAL GASES

[F] 1202.1 Nonflamable medical gases. Nonflamable medical gas systems, inhalation anesthetic systems, and vacuum piping systems shall be designed and installed in accordance

with NFPA 99~~C~~.

******

SECTION 1203
OXYGEN SYSTEMS

[F] 1203.1 Design and installation. Nonmedical oxygen systems shall be designed and installed in accordance with NFPA ~~50~~55 and NFPA 51.

CHAPTER 13
~~REFERENCED STANDARDS~~
NONPOTABLE WATER SYSTEMS

SECTION 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 distribution of nonpotable water. The use and application of nonpotable water shallcomply with laws, rules and ordinances applicable in the jurisdiction.

1301.2 Water Quality. Nonpotable water for each end use application shall meet the minimum water quality requirements as established for the intended application by the laws, rules and ordinances applicable in the jurisdiction. Where nonpotable water from different sources is combined in a system, the system shall comply with the most stringentof the requirements of this code that are applicable to such sources.

1301.2.1 Residual disinfectants. Where chlorine is used for disinfection, the nonpotable water shall contain not more than 4 ppm (4mg/L) of chloramines or freechlorine when tested in accordance with ASTM D 1253. Where ozone is used for disinfection, the nonpotable water shall not contain gas bubbles having elevated levels of ozone at the point of use.

Exception: Reclaimed water sources shall not be required to comply withthese requirements.

1301.2.2 Filtration Required. Nonpotable water utilized for water closet

and urinalflushing applications shall be filtered by a 100-micron or finer filter.

Exception: Reclaimed water sources shall not be required to comply withthese requirements.

1301.3 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 (12.7mm) 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, alteration and repair of nonpotable water systems. Construction documents, engineering calculations, diagrams and other such data pertaining to the nonpotable water system shall be submittedwith each permit application.

1301.4.1 Recording. The existence of a nonpotable water system shall be recorded on thedeed of ownership for the property. The certificate of occupancy shall not be issued untilthe documentation for the recording required under this section is completed by the property owner.

1301.5 Potable Water Connections. Where a potable water system is connected to a nonpotable water system, the potable water supply shall be protected against backflow by areduced pressure backflow prevention assembly or an air gap installed in accordance with Section 608.

1301.6 Approved Components and Materials. Piping, plumbing components and materialsused in collection and conveyance systems shall be manufactured of material approved for the intended application and compatible with any disinfection and treatment systems used.

1301.7 Insect and Vermin Control. The system shall be protected to prevent the entranceof 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 sustained freezing temperatures occur, provisions shallbe made to keep storage tanks and the related piping from freezing.

1301.9 Nonpotable Water Storage Tanks. Nonpotable water storage tanks shall complywith Sections 1301.9.1 through 1301.9.11.

1301.9.1 Sizing. The holding capacity of the storage tank shall be sized inaccordance with 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 constructedusing 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.

1301.9.3 Materials. Where collected on site, water shall be collected in an approvedtank 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 basecapable of withstanding the weight of the storage tank when filled to capacity.
Storage tanks shall be supported in accordance with the International BuildingCode.

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 loadswithout 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 or reclaimed water shall be provided as a source of makeup water for the storage tank. The makeup water supply shall be protected against backflow by a reduced pressure backflow prevention assembly or an air gapinstalled in accordance with Section 608. 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 droppingbelow 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.

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 shallbe protected from insects or vermin and shall discharge in a manner consistent withstorm water runoff requirements of the jurisdiction. The overflow pipe shall discharge at a sufficient distance from the tank to avoid damaging the tank foundation or the adjacent property. Drainage from overflow pipes shall be directedto prevent freezing on roof walkways. The overflow drain shall not be equipped witha 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 shallbe 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 notless 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 (3028 L) 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.

1301.9.8 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 inthe 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. 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 withthe 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 thebackground on which they are applied.

1301.9.11 Storage Tank Tests. Storage tanks shall be tested in accordance with thefollowing:

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 tankshall 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 overflowsystem 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 therefill 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, the system shall be abandoned and shall comply with the following:

1. All system piping connecting to a utility-provided water system shall be removed or disabled.

2. The distribution piping system shall be replaced with an *approved* potable water supply piping system. Where an existing potable pipe system is already in place, the fixtures shall be connected to the existing system.

3. The storage tank shall be secured from accidental access by sealing or locking tank inlets and access points, or filling with sand or equivalent.

1301.11 Trenching Requirements for Nonpotable Water Piping. Nonpotable water collection and distribution piping and reclaimed water 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 distribution 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 or shall be operable only by means of a removable key.

SECTION 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 and distribution of on-site sources of nonpotable water as permitted by the jurisdiction.

1302.2 Sources. On-site nonpotable water reuse systems shall collect waste discharge fromonly the following sources: bathtubs, showers, lavatories, clothes washers and laundry trays. Water from other approved nonpotable sources including swimming pool backwashoperations, air conditioner condensate, rainwater, cooling tower blow-down water, foundation drain water, steam system condensate, fluid cooler discharge water, food steamer discharge water, combination oven discharge water, industrial process water and fire pump test water shall also be permitted to be collected for reuse by on-site nonpotablewater reuse systems, as approved by the code official and as appropriate for the intended application.

1302.2.1 Prohibited Sources. Waste water containing urine or fecal matter shall notbe diverted to on-site nonpotable water reuse systems and shall discharge to the sanitary drainage system of the building or premises in accordance with Chapter 7. Reverse osmosis system reject water, water softener discharge water, kitchen sink waste water, dishwasher waste water and waste water discharged from wet-hood scrubbers shall not be collected for reuse in an on-site nonpotable water reuse system.

1302.3 Traps. Traps serving fixtures and devices discharging waste water to on-sitenonpotable 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 utilizedfor vents in the gray water system. Collection and vent piping materials shall comply with Section 702.

1302.4.1 Installation. Collection piping conveying untreated water for reuse shall beinstalled in accordance with Section 704.

1302.4.2 Joints. Collection piping conveying untreated water for reuse shall utilize joints *approved* for use with the distribution piping and appropriate for the intendedapplications as specified in Section 705.

1302.4.3 Size. Collection piping conveying untreated water for reuse shall be sizedin accordance with drainage sizing requirements specified in Section 710.

1302.4.4 Labeling and Marking. Additional marking of collection piping conveyinguntreated water for reuse shall not be required beyond that required for sanitary drainage, waste and vent piping by Chapter 7.

1302.5 Filtration. Untreated water collected for reuse shall be filtered as required for theintended end use. 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.

1302.6 Disinfection and Treatment. Where the intended application for nonpotable water collected on site for reuse requires disinfection or other treatment or both, it shall be disinfected as needed to ensure that the required water quality is delivered at the point of use. Nonpotable water collected on site containing untreated gray water shall be retained incollection reservoirs for a maximum of 24 hours.

1302.6.1 Gray Water Used for Fixture Flushing. Gray water used for flushing waterclosets and urinals shall be disinfected and treated by an on-site water reuse treatment system complying with NSF 350.

1302.7 Storage Tanks. Storage tanks utilized in on-site nonpotable water reuse systemsshall comply with Sections 1301.9 and 1302.7.1 through 1302.7.3.

1302.7.1 Location. Storage tanks shall be located with a minimum horizontaldistance 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 constructedin accordance with Chapters 16 through 22 of the *International 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 Outlets. Outlets shall be located not less than 4 inches (102 mm) above thebottom of the storage tank and shall not skim water from the surface.

1302.8 Valves. Valves shall be supplied on on-site nonpotable water reuse systems inaccordance with Sections 1302.8.1 and 1302.8.2.

1302.8.1 Bypass Valve. One three-way diverter valve listed and labeled to NSF 50 or other approved device shall be installed on collection piping upstream of each storage tank, or drainfield, as applicable, to divert untreated on-site reuse sources tothe 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 Section715.

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 andcleaning. 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 suppliedby the pumping system exceeds 80 psi (552 kPa) static, a pressure-reducing valve shall be installed to reduce the pressure in the nonpotable water distribution system piping to 80 psi(552 kPa) static or less. Pressure-reducing valves shall be specified and installed in accordance with Section 604.8.

1302.11 Distribution Pipe. Distribution piping utilized in on-site nonpotable water reusesystems shall comply with Sections 1302.11.1 through 1302.11.3.

Exception: Irrigation piping located outside of the building and downstream of abackflow preventer.

1302.11.1 Materials, Joints and Connections. Distribution piping shall conform tothe standards and requirements specified in Section 605.

1302.11.2 Design. On-site nonpotable water reuse distribution piping systems shallbe designed and sized in accordance with Section 604 for the intended application.

1302.11.3 Marking. On-site nonpotable water distribution piping labeling andmarking shall comply with Section 608.8.

1302.12 Tests and Inspections. Tests and inspections shall be performed in accordancewith Sections1302.12.1 through 1302.12.6.

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 withSection 1301.9.11.

1302.12.3 Water Supply System Test. The testing of makeup water supply pipingand distribution piping shall be conducted in accordance with Section 312.5.

1302.12.4 Inspection and Testing of Backflow Prevention Assemblies. Testing of abackflow preventer shall be conducted in accordance with Section 312.10.

1302.12.5 Inspection of Vermin and Insect Protection. Inlets and vents to the systemshall 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. The quality of the water for the intended applicationshall be verified at the point of use in accordance with the requirements of the jurisdiction.

1302.13 Operation and Maintenance Manuals. Operation and maintenance materials shallbe supplied with nonpotable on-site water reuse systems in accordance with Sections 1302.13.1 through 1302.13.4.

1302.13.1 Manual. A detailed operations and maintenance manual shall be suppliedin 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 modelnumber.

1302.13.3 Maintenance Procedures. The manual shall provide a schedule and procedures for all system components requiring periodic maintenance. Consumableparts, 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 forthe system.

SECTION 1303

NONPOTABLE RAINWATER COLLECTION AND DISTRIBUTION 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 distribution of rainwater for nonpotable applications, as permittedby the jurisdiction.

1303.2 Collection Surface. Rainwater shall be collected only from above-ground impervious roofing surfaces constructed from *approved* materials. Collection of water fromvehicular parking or pedestrian surfaces shall be prohibited except where the water is usedexclusively for landscape irrigation. Overflow and bleed-off pipes from roof-mounted appliances including, but not limited to, evaporative coolers, water heaters, and solar waterheaters shall not discharge onto rainwater collection surfaces.

1303.3 Debris Excluders. Downspouts and leaders shall be connected to a roof washer andshall be equipped with a debris excluder or equivalent device to prevent the contaminationof 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 ofeach 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 jurisdiction. Roof washers shallbe 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 thedesired 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 themanufacturer's instructions shall not be required to have a slope.

1303.5.2 Size. Gutters and downspouts shall be installed and sized in accordancewith Section 1106.6 and local rainfall rates.

1303.5.3 Cleanouts. Cleanouts shall be provided in the water conveyance system toallow *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 *International 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 roofsurfaces.

1303.7 Collection Pipe. Rainwater collection and conveyance systems shall utilize drainagepiping 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 702.

1303.7.1 Installation. Collection piping conveying captured rainwater shall beinstalled in accordance with Section 704.

1303.7.2 Joints. Collection piping conveying captured rainwater shall utilize jointsapproved for use with the distribution piping and appropriate for the intended applications as specified in Section 705.

1303.7.3 Size. Collection piping conveying captured rainwater shall be sized inaccordance with drainage sizing requirements specified in Section 710.

1303.7.4 Marking. Additional marking of collection piping conveying

capturedrainwater for reuse shall not be required beyond that required for sanitary drainage, waste and vent piping by Chapter 7.

1303.8 Filtration. Collected rainwater shall be filtered as required for the intended end use. 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 immediatelyupstream and downstream to allow for isolation during maintenance.

1303.9 Disinfection. Where the intended application for rainwater requires disinfection or other treatment or both, it shall be disinfected as needed to ensure that the required water quality is delivered at the point of use. Where chlorine is used for disinfection or treatment,water shall be tested for residual chlorine in accordance with ASTM D 1253. The levels of residual chlorine shall not exceed that allowed for the intended use in accordance with the requirements of the jurisdiction.

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 1303.10.3.

1303.10.1 Location. Storage tanks shall be located with a minimum horizontaldistance 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 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.

1303.10.3 Outlets. Outlets shall be located at least 4 inches (102 mm) above thebottom of the storage tank and shall not skimwater from the surface.

1303.11 Valves. Valves shall be supplied on rainwater collection and conveyance systems inaccordance with Section 1303.11.1.

1303.11.1 Backwater Valve. Backwater valves shall be installed on each overflowand tank drain pipe. Backwater valves shall be in accordance with Section 715.

1303.12 Pumping and Control System. Mechanical equipment including pumps, valves and filters shall be easily accessible and removable in order to perform repair, maintenanceand 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 suppliedby the pumping system exceeds 80 psi (552 kPa) static, a pressure-reducing valve shall be installed to reduce the pressure in the rainwater distribution system piping to 80 psi (552 kPa) static or less. Pressure-reducing valves shall be specified and installed in accordance with Section 604.8.

1303.14 Distribution Pipe. Distribution piping utilized in rainwater collection andconveyance systems shall comply with Sections 1303.14.1 through 1303.14.3.

Exception: Irrigation piping located outside of the building and downstream of abackflow preventer.

1303.14.1 Materials, Joints and Connections. Distribution piping shall conform tothe standards and requirements specified in Section 605 for nonpotable water.

1303.14.2 Design. Distribution piping systems shall be designed and sized inaccordance with Section 604 for the intended application.

1303.14.3 Marking. Nonpotable rainwater distribution piping labeling and markingshall comply with Section 608.8.

1303.15 Tests and Inspections. Tests and inspections shall be performed in accordancewith Sections 1303.15.1 through 1303.15.8.

1303.15.1 Roof Gutter Inspection and Test. Roof gutters shall be inspected to verifythat the installation and slope is in accordance with Section 1303.5.1. Gutters shall be tested by pouring not less than 1 gallon (3.8 l) of water into the end of the gutter opposite the collection point. The gutter being tested shall not leak and shall not retain standing water.

1303.15.2 Roofwasher Test. Roofwashers shall be tested by introducing water intothe 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 withSection 312.

1303.15.4 Storage Tank Test. Storage tanks shall be tested in accordance withSection 1301.9.11.

1303.15.5 Water Supply System Test. The testing of makeup water supply pipingand distribution piping shall be conducted in accordance with Section 312.5.

1303.15.6 Inspection and Testing of Backflow Prevention Assemblies. Testing of a backflow prevention assembly shall be conducted in accordance with Section 312.10.

1303.15.7 Inspection of Vermin and Insect Protection. Inlets and vents to the systemshall 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. The quality of the water for the intended applicationshall be verified at the point of use in accordance with the requirements of the jurisdiction. Except where site conditions as specified in ASTM E 2727 affect the rainwater, collected rainwater shall be considered to have the parameters indicatedin Table 1303.15.8.

TABLE 1303.15.8

RAINWATER QUALITY

PARAMETER	VALUE
pH	6.0-7.0
BOD	Not greater than 10 mg/L
NTU	Not greater than 2
Fecal coliform	No detectable fecal coli in 100 mL
Sodium	No detectable sodium in 100 mL
Chlorine	No detectable chlorine in 100 mL
Enteroviruses	No detectable enteroviruses in 100 mL

1303.16 Operation and Maintenance Manuals. Operation and maintenance manuals shall be supplied with rainwater collection and conveyance systems in accordance with Sections1303.16.1 through 1303.16.4.

1303.16.1 Manual. A detailed operations and maintenance manual shall be supplied inhardcopy form with all systems.

1303.16.2 Schematics. The manual shall include a detailed system schematic, and locationsand a list of all system components, including manufacturer and model number.

1303.16.3 Maintenance Procedures. The manual shall provide a maintenance schedule andprocedures 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 shutdownprocedures, as well as detailed operating procedures.

SECTION 1304
RECLAIMED WATER SYSTEMS

1304.1 General. The provisions of this section shall govern the construction,

installation,alteration and repair of systems supplying nonpotable reclaimed water.

1304.2 Water Pressure-Reducing Valve or Regulator. Where the reclaimed water pressuresupplied to the building exceeds 80 psi (552 kPa) static, a pressure-reducing valve shall be installed to reduce the pressure in the reclaimed water distribution system piping to 80 psi (552 kPa) static or less. Pressure-reducing valves shall be specified and installed in accordance with Section 604.8.

1304.3 Reclaimed Water Systems. The design of the reclaimed water systems shallconform to ASTM E 2635 and accepted engineering practice.

1304.3.1 Distribution Pipe. Distribution piping shall comply with Sections 1304.3.1.1through 1304.3.1.3.

> **Exception: Irrigation piping located outside of the building and downstream of abackflow preventer.**
>
> **1304.3.1.1 Materials, Joints and Connections. Distribution piping conveying reclaimed water shall conform to standards and requirements specified in Section605 for nonpotable water.**
>
> **1304.3.1.2 Design. Distribution piping systems shall be designed and sized inaccordance with Section 604 for the intended application.**
>
> **1304.3.1.3 Labeling and Marking. Nonpotable rainwater distribution pipinglabeling and marking shall comply with Section 608.8.**

1304.4 Tests and Inspections. Tests and inspections shall be performed in accordance withSections1304.4.1 and 1304.4.2.

> **1304.4.1 Water Supply System Test. The testing of makeup water supply pipingand reclaimed water distribution piping shall be conducted in accordance with Section 312.5.**
>
> **1304.4.2 Inspection and Testing of Backflow Prevention Assemblies. The testing ofbackflow preventers shall be conducted in accordance**

with Section 312.10.

CHAPTER AC-14
REFERENCED STANDARDS

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. The application of the referenced standards shall be as specified in Section 102.8.

AHRI

Air-Conditioning, Heating, & Refrigeration Institute
4100 North Fair Fax 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

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**
12F-2008	**Specification for Shop Welded Tanks for Storage of Production Liquids, effective April 1 2009**	**1302.7.2**

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	Specification for Load Bearing, Bonded, Waterproof Membranes for Thin Set Ceramic Tile and Dimension Stone Installation	417.5.2.5
Z4.3 – 95	Minimum Requirements for Nonsewered Waste-disposal Systems	311.1
Z21.22 – 99 (R2003)	Relief Valves for Hot Water Supply Systems with Addenda Z21.22a-2000 (R2003) and Z21.22b-2001 (R2003)	504.2, 504.4
Z124.1 – 95	Plastic Bathtub Units	407.1
Z124.2 – 95	Plastic Shower Receptors and Shower Stalls	417.1
Z124.3 – 95	Plastic Lavatories	416.1, 416.2, 417.1
Z124.4 – 96	Plastic Water Closet Bowls and Tanks	420.1
Z124.6 – 97	Plastic Sinks	415.1, 418.1
Z124.9 – 94	Plastic Urinal Fixtures	419.1

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	Table 608.1, 608.13.1
A112.1.3 – 2000 Reaffirmed 2005		

ASME

American Society of Mechanical Engineers
Three Park Avenue
New York, NY 10016-5990

Standard reference number	Title	Referenced in code section number
	Air Gap Fittings for Use with Plumbing Fixtures, Appliances, and Appurtenances	Table 608.1, 608.13.1
A112.3.1 – 2007	Stainless Steel Drainage Systems for Sanitary, DWV, Storm, and Vacuum Appliances Above and Below Ground	412.1, Table 702.1, Table 702.2, Table 702.3, Table 702.4, 708.2, Table 1102.4, Table 1102.5, 1102.6, Table 1102.7
A112.3.4 – 2000 (Reaffirmed 2004)	Macerating Toilet Systems and Related Components	712.4.1
A112.4 -14.6 – 2010	**FOG (Fats, Oils and Greases) Disposal Systems**	**1003.3.6**
A112.4.1 – 1993 (R2002)	Water Heater Relief Valve Drain Tubes	504.6
A112.4.2 - 2009	**Water Closet Personal Hygiene Devices**	**424.9**
A112.4.3 – 1999 (Reaffirmed 2004)	Plastic Fittings for Connecting Water Closets to the Drainage System	405.4
A112.6.1M – 1997 (R2002)	Floor-affixed Supports for Off-the-floor Plumbing Fixtures for Public Use	405.4.3
A112.6.2 – 2000 (Reaffirmed 2004)	Framing-affixed Supports for Off-the-floor Water Closets with Concealed Tanks	405.4.3
A112.6.3 – 2001 (Reaffirmed 2007)	2001 Floor and Trench Drains	412.1
A112.6.7 – 2001 (Reaffirmed 2007)	Enameled and Epoxy-coated Cast-iron and PVC Plastic Sanitary Floor Sinks	427.1
A112.14.1 – 2003	Backwater Valves	715.2
A112.14.3 – 2000	Grease Interceptors	1003.3.4
A112.14.3 - 2000	**Grease Interceptors**	**1003.3.4**
A112.14.4 – 2001 (Reaffirmed 2007)	Grease Removal Devices	1003.3.4
A112.14.4 – 2001	**Grease Removal Devices**	**1003.3.4**
A112.18.1 – 2005/ CSA B125.1 - 2005	Plumbing Supply Fittings	424.1, 424.2, 424.3, 607.4, 608.2
A112.18.2 – 2005/ CSA B125.2 – 2005	Plumbing Waste Fittings	424.1.2

ASME

American Society of Mechanical Engineers
Three Park Avenue
New York, NY 10016-5990

Standard reference number	Title	Referenced in code section number
A112.18.3 – 2002	Performance Requirements for Backflow Protection Devices and Systems in Plumbing Fixture Fittings	424.2, 424.6
A112.18.6 – 2003	Flexible Water Connectors	605.6
A112.18.7 – 1999 (Reaffirmed 2004)	Deck-mounted Bath/Shower Transfer Valves with Integral Backflow Protection	424.8
A112.18.9 – 2011	**Protectors/Insulators for Exposed Waste and Supplies on Accessible Fixtures**	**404.3**
A112.19.1M – 2004 (Reaffirmed 2004)	Enameled Cast Iron Plumbing Fixtures	407.1, 410.1, 415.1, 416.1, 418.1
A112.19.2 – 2003	Vitreous China Plumbing Fixtures and Hydraulic Requirements for Water Closets and Urinals	401.2, 405.9, 408.1, 410.1, 416.1, 418.1, 419.1, 420.1
A112.19.3 – 2008	**Stainless Steel Plumbing Fixtures**	**405.9, 407.1, 415.1, 416 .1, 418.1, 420.1**
A112.19.3M – 2000 (Reaffirmed 2007)	Stainless Steel Plumbing Fixtures (Designed for Residential Use)	405.9, 415.1, 416.1, 418.1
A112.19.14 – 2006 (R2011)	**Six-Liter Water Closets Equipped with a Dual Flushing Device**	**420.1**
A112.19.4M – 1994 (Reaffirmed 2004)	Porcelain Enameled Formed Steel Plumbing Fixtures	407.1, 416.1, 418.1
A112.19.5 – 2005	Trim for Water-closet Bowls, Tanks, and Urinals	425.4
A112.19.6 – 1995	Hydraulic Performance Requirements for Water Closets and Urinals	419.1, 420.1
A112.19.7M – 2006	Hydromassage Bathtub Appliances	421.1
A112.19.8M – 2007	Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs	421.1
A112.19.9M – 1991 (R2002)	Nonvitreous ceramic Plumbing Fixtures with 2002 Supplement	407.1, 408.1, 410.1, 415.1, 416.1, 417.1, 418.1, 420.1
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
A112.19.13—200 (Reaffirmed 2007)	Electrohydraulic Water Closets	420.1

(inch)

B16.3—2006	Malleable Iron Threaded FittingsClasses 150 and 300
B16.4-2006	Gray Iron Threaded Fittings Classes125 and 250
B16.9-2003	Factory-made Wrought SteelButtwelding Fittings

A112.1016	**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	605.10.3, 605.12.3, 605.14.4, 605.16.3, 605.18.1, 705.2.3, 705.4.3, 705.9.4, 705.12.1, 705.14.3
		Table 605.5, Table 702.4, Table 1102.7
		Table 605.5, Table 702.4, Table 1102.7
		Table 605.5, Table 702.4, Table 1102.7
B 16.29 – 2012	**Wrought Copper and Wrought Copper Alloy Solder Joint ~~Drainage Fittings (DWV)~~**	**~~Table 702.4, Table 1102.7~~**
B16.11-2005	Forged Fittings, Socket-welding and Threaded	Table 605.5, Table 702.4, Table 1102.7
B16.12—1998 (Reaffirmed 2006)	Cast-iron Threaded Drainage Fittings	Table 605.5, Table 702.4, Table 1102.7
B16.15—2006	Cast Bronze Threaded Fittings	Table 605.5, Table 702.4, Table 1102.7
B16.18—2001 (Reaffirmed 2005)	Cast Copper Alloy Solder Joint Pressure Fittings	Table 605.5, Table 702.4, Table 1102.7
B16.22—2001 (Reaffirmed 2005)	Wrought Copper and Copper Alloy Solder Joint Pressure Fittings	Table 605.5, Table 702.4, Table 1102.7
B16.23—2002 (Reaffirmed 2006)	Cast Copper Alloy Solder Joint Drainage Fittings DWV	Table 605.5, Table 702.4, Table 1102.7
B16.26—2006	Cast Copper Alloy Fittings for Flared Copper Tubes.	Table 605.5, Table 702.4, Table 1102.7
B16.28—1994	Wrought Steel Buttwelding Short Radius Elbows and Returns	Table 605.5, Table 702.4, Table 1102.7
B16.29—2001	Wrought Copper and Wrought Copper Alloy	

ASME — **American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016-5990**

Standard reference number	Title	Referenced in code section number
	Solder Joint Drainage Fittings (DWV)	Table 605.5, Table 702.4, Table 1102.7
B16.51 – 2011	**Copper and Copper Alloy Press-Connect Pressure Fittings**	**Table 605.5**

ASSE — **American Society of Sanitary Engineering, 901 Canterbury Road, Suite A, Westlake, OH 44145**

Standard reference number	Title	Referenced in code section number
1001-02	Performance Requirements for Atmospheric Type Vacuum Breakers	425.2, Table 608.1, 608.13.6, 608.16.4.1
1002-99	Performance Requirements for Antisiphon Fill Valves (Ballcocks) for Gravity Water Closet Flush Tanks	425 3.1, Table 608.1
1003-01	Performance Requirements for Water Pressure Reducing Valves	604.8
1004-90	Performance Requirements for Backflow Prevention Requirements for Commercial Dishwashing Machines	409.1
1005-99	Performance Requirements for Water Heater Drain Valves	501.3
1006-89	Performance Requirements for Residential Use Dishwashers	409.1
1007-92	Performance Requirements for Home Laundry Equipment Performance Requirements for Home Laundry Equipment	406.1, 406.2
1008-89	Performance Requirements for Home Laundry Equipment	413.1
1009-90	Performance Requirements for Commercial Food Waste Grinder 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
1012-02	Performance Requirements for Backflow Preventers with Intermediate Atmospheric Vent	Table 608.1, 608 13.3, 608.16.2
1013-05	Performance Requirements for Reduced Pressure Principle Backflow Preventers and Reduced Pressure Fire Protection Principle Backflow Preventers	Table 608.1, 608 13.3, 608.16.2

ASSE

American Society of Sanitary Engineering
901 Canterbury Road, Suite A
Westlake, OH 44145

Standard reference number	Title	Referenced in code section number
1015-05	Performance Requirements for Double Check Backflow Prevention Assemblies and Double Check Fire Protection Backflow Prevention Assemblies	Table 608.1, 608.13.7
1016-96	Performance Requirements for Individual Thermostatic, Pressure Balancing and Combination Control Valves for Individual Fixture Fittings	424.3, 424.4, 607.4,
1017-03	Performance Requirements for Temperature Actuated Mixing Valves for Hot Water Distribution Systems	501.2, 613.1

1018-01	Performance Requirements for Trap Seal Primer Valves; Potable Water Supplied	1002.4
1019-04	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
1024-04	Performance Requirements for Dual Check Valve Type Backflow Preventers (for Residential Supply Service or Individual Outlets)	605.3.1, Table 608.1
1035-02	Performance Requirements for Laboratory Faucet Backflow Preventers	Table 608.1, 608.13.6
1037-90	Performance Requirements for Pressurized Flushing Devices for Plumbing Fixtures	452.2
1044-01	Performance Requirements for Trap Seal Primer Devices Drainage Types and Electronic Design Types	1002.4
1047-05	Performance Requirements for Reduced Pressure Detector Fire Protection Backflow Prevention Assemblies	Table 608.1, 608.13.2
1048-05	Performance Requirements for Double Check Detector Fire Protection Backflow Prevention Assemblies	Table 608.1, 608.13.7
1050-02	Performance Requirements for Stack Air Admittance Valves for Sanitary Drainage Systems	917.1
1051-02	Performance Requirements for Individual and Branch Type Air Admittance Valves for Sanitary Drainage Systems-fixture and Branch Devices	917.1
1052-04	Performance Requirements for Hose Connection Backflow Preventers	Table 608.1, 608.13.6

ASSE

American Society of Sanitary Engineering
901 Canterbury Road, Suite A
Westlake, OH 44145

Standard reference number	Title	Referenced in code section number
1055-97	Performance Requirements for Chemical Dispensing Systems	608.13.9
1056-01	Performance Requirements for Spill Resistant Vacuum Breaker	Table 608.1, 608.13.5, 608.13.8
1060-96	Performance Requirements for Outdoor Enclosures for Backflow Prevention Assemblies	608.14.1
1061-06	Performance Requirements for Removable and Nonremovable Push Fit Fittings	Table 605.5
1062-97	Performance Requirements for Temperature Actuated, Flow Reduction Valves to Individual Fixture Fittings	424.7

1066-97	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, 424.5, 607.1
1079-2005	Dielectric Pipe Unions	605.24.1, 605.24.3
5013-98	Performance Requirements for Testing Reduced Pressure Principle Backflow Prevention Assembly (RPA) and Reduced Pressure Fire Protection Principle Backflow Preventers (RFP)	312.10.2
5015-98	Performance Requirements for Testing Double Check Valve Backflow Prevention Assembly (DCVA)	312.10.2
5020-98	Performance Requirements for Testing Pressure Vacuum Breaker Assembly (PVBA)	312.10.2
5047-98	Performance Requirements for Testing Reduced Pressure Detector Fire Protection Backflow Prevention Assemblies (RPDA)	312.10.2
5048-98	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	312.10.2
A53/A53M-06a	Specification for Pipe, Steel, Black and Hot-dipped, Zinc-coated Welded and Seamless	Table 605.3, Table 605.4, Table 702.1
A74-06	Specification for Cast-iron Soil Pipe and Fittings	Table 702.1, Table 702.2, Table 702.3, Table 702.4, 708.2, 708.7, Table 1102.4, Table 1102.5, Table 1102.7
A312-A312M-06	Specification for Seamless and Welded	

ASSE

American Society of Sanitary Engineering
901 Canterbury Road, Suite A
Westlake, OH 44145

Standard reference number	Title	Referenced in code section number
	Austenitic Stainless Steel Pipes	Table 605.3, Table 605.4, Table 605.5, 605.23.2
A733-03	Specification for Welded and Seamless Carbon Steel and Austenitic Stainless Steel Pipe Nipples	Table 605.8
A778-01	Specification for Welded Unannealed Austenitic Stainless Steel Tubular Products	Table 605.3, Table 605.4, Table 605.5
A888-07a	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, 708.7, Table 1102.4, Table 1102.5, Table 1102.7

B32-04	Specification for Solder Metal	605.14.3, 605.15.4, 705.9.3, 705.10.3
B42-02e01	Specification for Seamless Copper Pipe, Standard Sizes	Table 605.3, Table 605.4, Table 702.1
B43-98(2004)	Specification for Seamless Red Brass Pipe, Standard Sizes	Table 605.3, Table 605.4, Table 702.1
B75-02	Specification for Seamless Copper Tube	Table 605.3, Table 605.4, Table 702.1, Table 702.2, Table 702.3, Table 1102.4
B88-03	Specification for Seamless Copper Water Tube	Table 605.3, Table 605.4, Table 702.1, Table 702.2, Table 702.3, Table 1102.4
B152/B 152M-06a	Specification for Copper Sheet, Strip Plate and Rolled Bar	402.3, 417.5.2.4, 425.3.3, 902.2
B251-02e01	Specification for General Requirements for Wrought Seamless Copper and Copper-alloy Tube	Table 605.3, Table 605.4, Table 702.1, Table 702.2, Table 702.3, Table 1102.4
B302-02	Specification for Threadless Copper Pipe, Standard Sizes	Table 605.3, Table 605.4, Table 702.1
B306-02	Specification for Copper Drainage Tube (DWV)	Table 702.1, Table 702.2, Table 1102.4
B447-07	Specification for Welded Copper Tube	Table 605.3, Table 605.4
B687-99 (2005)e01	Specification for Brass, Copper and Chromium-plated Pipe Nipples	Table 605.8
B813-00e01	Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube	605.14.3, 605.15.4, 705.9.3, 705.10.3
B828-02	Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube	

ASSE	**American Society of Sanitary Engineering** **901 Canterbury Road, Suite A** **Westlake, OH 44145**	
Standard reference number	**Title**	**Referenced in code section number**
	and Fittings	605.14.3, 605.15.4, 705.9.3, 705.10.3
C4-04e01	Specification for Clay Drain Tile and Perforated Clay Drain Tile	Table 702.3, Table 1102.4, Table 1102.5
C14-07	Specification for Nonreinforced Concrete Sewer, Storm Drain and Culvert Pipe	Table 702.3, Table 1102.4
C76-07	Specification for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe	Table 702.3, Table 1102.4
C296-(2004)e01	Specification for Asbestos-cement Pressure Pipe	Table 605.3
C425-04	Specification for Compression Joints for Vitrified Clay Pipe and Fittings	705.15, 705.19
C428-97(2006)	Specification for Asbestos-cement	

	Nonpressure Sewer Pipe	Table 702.2, Table 702.3, Table 702.4, Table 1102.4
C443-05a	Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets	705.6, 705.19
C508-00(2004)	Specification for Asbestos-cement Underdrain Pipe	Table 1102.5
C564-04a	Specification for Rubber Gaskets for Cast-iron Soil Pipe and Fittings	705.5.2, 705.5.3, 705.19, Table 1102.4
C700-07	Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated	Table 702.3, 702.4, Table 1102.4, Table 1102.5
C1053-00(2005)	Specification for Borosilicate Glass Pipe and Fittings for Drain, Waste, and Vent (DWV) Applications	Table 702.1, Table 702.4
C1173-06	Specification for Flexible Transition Couplings for Underground Piping System	705.2.1, 705.7.1, 705.14.1, 705.15, 705.16.1, 705.19
C1277-06	Specification for Shielded Coupling Joining Hubless Cast-iron Soil Pipe and Fittings	705.5.3
C1440-03	Specification for Thermoplastic Elastomeric (TPE) Gasket Materials for Drain, Waste, and Vent (DWV), Sewer, Sanitary and Storm Plumbing Systems	705.19
C1460-04	Specification for Shielded Transition Couplings for Use with Dissimilar DWV Pipe and Fittings Above Ground	705.19
C1461-06	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	705.19
C1540-04	Specification for Heavy Duty Shielded Couplings Joining Hubless Cast-iron Soil Pipe and Fittings	705.5.53

ASSE

American Society of Sanitary Engineering
901 Canterbury Road, Suite A
Westlake, OH 44145

Standard reference number	Title	Referenced in code section number
C1563-04	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	705.5.2
D1527-99(2005)	Specification for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe, Schedules 40 and 80	Table 605.3
D1785-06	Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80 and 120	Table 605.3
D1869-95(2005)	Specification for Rubber Rings for Asbestos-cement Pipe	Table 605.3
D2235-04	Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings	Table 605.3
D2239-03	Specification for Polyethylene (PE) Plastic	

	Pipe (SIDR-PR) Based on Controlled Inside Diameter	605.11, 605.24, 705.3, 705.19
D2241-05	Specification for Poly (Vinyl Chloride) (PVC) Pressure-rated Pipe (SDR-Series)	605.10.2, 705.2.2, 705.7.2
D2282-(2005)99e01	Specification for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe (SDR-PR)	Table 605.3
D2464-06	Specification for Threaded Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80	Table 605.3
D2466-06	Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40	Table 605.3
D2467-06	Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80	Table 605.5, Table 1102.7
D2468-96a	Specification for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe Fittings, Schedule 40	Table 605.5, Table 1102.7
D2564-04e01	Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems	Table 605.5, Table 1102.7
D2609-02	Specification for Plastic Insert Fittings for Polyethylene (PE) Plastic Pipe	605.21.2, 705.8.2, 705.14.1
D2657-07	Practice for Heat Fusion-joining of Polyolefin Pipe and Fitting	Table 605.5, Table 1102.7
D2661-06	Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings	605.19.2, 705.16.1
D2665-07	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, 705.2.2, 705.7.2, Table 1102.4, Table 1102.7
D2672-96a(2003)	Specification for Joints for IPS PVC Pipe Using Solvent Cement	Table 605.3

ASSE	**American Society of Sanitary Engineering** **901 Canterbury Road, Suite A** **Westlake, OH 44145**	
Standard reference number	**Title**	**Referenced in code section number**
D2683-04	Standard Specification for Socket-type Polyethylene fittings for Outside Diameter-controlled Polyethylene Pipe and Tubing	Table 605.5
D2729-04e01	Specification for Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings	Table 1102.5
D2737-03	Specification for Polyethylene (PE) Plastic Tubing	Table 605.3
D2751-05	Specification for Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings	Table 702.3, Table 702.4, Table 1102.7
D2846-D2846M-066	Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Hot and Cold Water Distribution Systems	Table 605.3, Table 605.4, Table 605.5, 605.16.2
D2855-96(2002)	Standard Practice for Making Solvent-	

	cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings	605.22.2, 705.8.2, 705.14.2
D2949-01ae01	Specification for 3.25-in Outside Diameter Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings	Table 702.1, Table 702.2, Table 702.3, Table 702.4
D3034-06	Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings	Table 702.3, Table 702.4, Table 1102.7, Table 1102.4
D3035-03	Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter	Table 605.3
D3139-98(2005)	Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals	605.10.1, 605.22.1
D3212-96a(2003)e01	Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals	705.2.1, 705.8.1, 705.14.1, 705.16.2
D3261-03	Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing	Table 605.
D3311-06a	Specification for Drain, Waste and Vent (DWV) Plastic Fittings Patterns	Table 1102.7
D4068-01	Specification for Chlorinated Polyethylene (CPE) Sheeting for Concealed Water-containment Membrane	417.5.2.2
D4551-96(2001)	Specification for Poly (Vinyl Chloride) (PVC) Plastic Flexible Concealed Water-containment Membrane	417.5.2.1
F405-05	Specification for Corrugated Polyethylene (PE) Tubing and Fittings	Table 1102.5
F409-02	Specification for Thermoplastic Accessible and Replaceable Plastic Tube and Tubular Fittings	424.1.2, Table 1102.7

ASSE

American Society of Sanitary Engineering
901 Canterbury Road, Suite A
Westlake, OH 44145

Standard reference number	Title	Referenced in code section number
F437-06	Specification for Threaded Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80	Table 605.5
F438-04	Specification for Socket-type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40	Table 605.5
F439-06	Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80	Table 605.5
F441/F441M-02	Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80	Table 605.3, Table 605.4
F442/F442M-99(2005)	Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR)	Table 605.3, Table 605.4
F447-07	Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe	605.24, 705.19

F493-04	Specification for Solvent Cements for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe and Fittings	605.16.2
F628-06e01	Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe with a Cellular Core	Table 702.1, Table 702.2, Table 702.3, Table 702.4, 705.2.2, 705.7.2, Table 1102.4, Table 1102.7
F656-02	Specification for Primers for Use in Solvent Cement Joints of Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings	605.22.2, 705.8.2, 705.14.2
F714-06a	Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter	Table 702.3
F876-06	Specification for Cross-linked Polyethylene (PEX) Tubing	Table 605.3, Table 605.4
F877-07	Specification for Cross-linked Polyethylene (PEX) Plastic Hot and Cold Water Distribution Systems	Table 605.3, Table 605.4, Table 605.5
F891-04	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, Table 1102.7
F1055-98(2006)	Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene Pipe and Tubing	Table 605.5
F1281-07	Specification for Cross-linked Polyethylene/Aluminum/ Cross-linked Polyethylene (PEX-AL-PEX) Pressure Pipe	Table 605.3, Table 605.4, Table 605.5, 605.21.1
F1282-06	Specification for	

ASSE

American Society of Sanitary Engineering
901 Canterbury Road, Suite A
Westlake, OH 44145

Standard reference number	Title	Referenced in code section number
	Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure Pipe	Table 605.3, Table 605.4, Table 605.5, 605.21.1
F1412-01e01	Specification for Polyolefin Pipe and Fittings for Corrosive Waste Drainage	Table 702.1, Table 702.2, Table 702.4, 705.17.1
F1488-03	Specification for Coextruded Composite Pipe	Table 702.1, Table 702.2, Table 702.3
F1673-04	Polyvinylidene Fluoride (PVDF) Corrosive Waste Drainage Systems	Table 702.1, Table 702.2, Table 702.3, Table 702.4, 705.18.1
F1807-07	Specification for Metal Insert Fittings Utilizing a Copper Crimp Ring for SDR9 Cross-linked Polyethylene (PEX) Tubing	Table 605.5
F1866-07	Specification for Poly (Vinyl Chloride) (PVC)	

	Plastic Schedule 40 Drainage and DWV Fabricated Fittings	Table 702.4, Table 1102.7
F1960-07	Specification for Cold Expansion Fittings with PEX Reinforcing Rings for Use with Cross-linked Polyethylene (PEX) Tubing	Table 605.5
F1974-04	Specification for Metal Insert Fittings for Polyethylene/Aluminum/Polyethylene and Cross-linked Polyethylene/Aluminum/Cross-linked Polyethylene Composite Pressure Pipe	Table 605.5, 605.21.1
F1986-01(2006)	Specification for Multilayer Pipe, Type 2, Compression Fittings and Compression Joints for Hot and Cold Drinking Water Systems	Table 605.3, Table 605.4, Table 605.5
F2080-05	Specifications for Cold-expansion Fittings with Metal Compression-sleeves for Cross-linked Polyethylene (PEX) Pipe	Table 605.5
F2098-04e01	Standard specification for Stainless Steel Clamps for Securing SDR9 Cross-linked Polyethylene (PEX) Tubing to Metal Insert Fittings	Table 605.5
F2159-05	Specification for Plastic Insert Fittings Utilizing a Copper Crimp Ring for SDR9 Cross-linked Polyethylene (PEX) Tubing	Table 605.5
F2262-05	Specification for Cross-linked Polyethylene/Aluminum/Cross-linked Polyethylene Tubing OD Controlled SDR9	Table 605.3, Table 605.4
F2306/F2306M-05	12" to 60" Annular Corrugated Profile-wall Polyethylene (PE) Pipe and Fittings for Gravity Flow Storm Sewer and Subsurface Drainage Applications	Table 1102.4, Table 1102.7

ASSE

American Society of Sanitary Engineering
901 Canterbury Road, Suite A
Westlake, OH 44145

Standard reference number	Title	Referenced in code section number
F2389-06	Specification for Pressure-rated Polypropylene (PP) Piping Systems	Table 605.3, Table 605.4, Table 605.5, 605.20.1
F2434-05	Standard Specification for Metal Insert Fittings Utilizing a Copper Crimp Ring for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Cross-linked Polyethylene/ Aluminum/Cross-linked Polyethylene (PEX AL-PEX) Tubing	Table 605.5

ASTM

ASTM International
100 Barr Harbor Drive
West Conshohocken, PA 19428 – 2959

Standard reference number	Title	Referenced in code section number
D 1253 – 08	**Standard Test Method for Residual Chlorine in Water**	**1301.2.1, 1303.9**
E 2727 – 10	**Standard Practice for the Assessment of Rainwater Quality**	**1302.8.1**
F 1476 – 07	**Standard Specification for Performance of Gasketed Mechanical Couplings for Use in Piping Applications**	**Table 605.5, 605.23.3**
F 1548 – 01 (2006)	**Standard Specification for the Performance of Fittings for Use with Gasketed Mechanical Couplings Used in Piping Applications**	**Table 605.5**
F 2735 – 09	**Standard Specification for Plastic Insert Fittings for SDR9 Cross-linked Polyethylene (PEX) and Polyethylene of Raised Temperature (PE-RT) Tubing**	**Table 605.5**
F 2855 – 11	**~~Specification Poly (Vinyl Chloride)/Aluminum/Poly (Vinyl Chloride)~~ (CPVC/AL/CPVC) Composite Pressure Tubing**	**Table 605.3, Table 605.4**

AWS

American Welding Society
550 N.W. LeJeune Road
Miami, FL 33126

Standard reference number	Title	Referenced in code section number
A5.8-04	Specifications for Filler Metals for Brazing and Braze Welding	605.12.1, 605.14.1, 605.15.1, 705.4.1, 705.9.1, 705.10.1

AWWA

American Water Works Association
6666 West Quincy Avenue
Denver, CO 80235

Standard reference number	Title	Referenced in code section number
C104-98	Standard for Cement-mortar Lining for Ductile-iron Pipe and Fittings for Water	605.3, 605.5
C104/A21.4 – 08	**Cement-mortar Lining for Ductile-iron Pipe and Fittings for Water**	**605.3, 605.5**
C110-A21.10-03	Standard for Ductile-iron and Gray-iron Fittings, 3 Inches through 48 Inches, for Water	Table 605.5, Table 702.4, Table 1102.7
C111-00	Standard for Rubber-gasket Joints for Ductile-iron Pressure Pipe and Fittings	605.13

C115/A21.15-99	Standard for Flanged Ductile-iron Pipe with Ductile-iron or Gray-iron Threaded Flanges	Table 605.3, Table 605.4
C151/A21.51-02	Standard for Ductile-iron Pipe, Centrifugally Cast for Water	Table 605.3, Table 605.4
C153-00/A21.53-00	Standard for Ductile-iron Compact Fittings for Water Service	Table 605.5
C510-00	Double Check Valve Backflow Prevention Assembly	Table 608.1, 608.13.7
C511-00	Reduced-pressure Principle Backflow Prevention Assembly	Table 608.1, 608.13.2, 608.16.2
C651-99	Disinfecting Water Mains	610.1
C652-02	Disinfection of Water-storage Facilities	610.1
C901 – 08	**Polyethylene (PE) Pressure Pipe and Tubing ½ inch (13 mm) Through 3 inch (76 mm) for Water Service**	**Table 605**
C904 – 08	**Cross-linked Polyethylene (PEX) Pressure Pipe ½ inch (13 mm) Through 3 inch (76 mm) for Water Service**	**Table 605.3**
D100 – 05	**Standard for Welded Carbon Steel Tanks for Water Storage**	**1302.7.2**
D115 – 06	**Standard for Tendon Prestressed-Concrete Water Tanks**	**1302.7.2**
D 120 – 09	**Standard for Thermosetting Fiberglass-Reinforced Plastic Tanks**	**1302.7.2**

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, 708.7, Table 1102.4, Table 1102.5, Table 1102.7
310-04	Specification for Coupling for Use in Connection with Hubless Cast-iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste and VentPiping Applications	705.5.3

CSA

Canadian Standards Association
5060 Spectrum Way
Mississauga, Canada L4W 5N6

Standardreference number	Title

		Referenced in codesection number
B45.1-02	Ceramic Plumbing Fixtures	408.1, 416.1, 418.1, 419.1, 420.1
B45.2-02	Enameled Cast-iron Plumbing Fixtures	407.1, 415.1, 416.1, 418.1
B45.3-02	Porcelain Enameled Steel Plumbing Fixtures	407.1, 416.1, 418.1
B45.4-02	Stainless-steel Plumbing Fixtures	415.1, 416.1, 418.1, 420.1
B45.5-02	Plastic Plumbing Fixtures	407.1, 416.2, 417.1, 419.1, 420.1, 421.1
B45.9-99	Macerating Systems and Related Components	712.4.1
B 45.15 –2011	**Flush Valves and Spuds for Water Closets, Urinals and Tanks**	**425.4**
B 45.5 – 11	**Plastic Plumbing Fixtures**	**407. 1, 415.1, 416.1, 416.2, 417.1, 419. 1, 420. 1**
B 125.16 – 2011	**Performance Requirements for Individual Thermostatic, Pressure Balancing and Combination Control Valves for Individual Fixture Fittings**	**424.3, 424.4, 607.4**
B 64.1 – 11	**Vacuum Breakers, Atmospheric Type (AVB)**	**425.2, Table 608.1, 608.13.6, 608.16.4.1**
B64.1.2-01	Vacuum Breakers, Pressure Type (PVB)	Table 608.1, 608.13.5
B 64.1.2 – 11	**Pressure Vacuum Breakers, (PVB)**	**Table 608.1, 608.13.5**
B64.2.1-01	Vacuum Breakers, Hose Connection Type (HCVB) with Manual Draining Feature	Table 608.1, 608.13.6
B 64.2.1 – 11	**Vacuum Breakers, Hose Connection Type (HCVB)**	**Table 608.1, 608.13**

CSA **Canadian Standards Association5060 Spectrum Way Mississauga, Canada L4W 5N6**

Standardreference number	Title
~~B64.2.1.1-01~~	~~Vacuum Breakers, Hose Connection DualCheck Type (HCDVB)~~
B 64.2.2 – 11	**Vacuum Breakers, Hose Connection Type(HCVB) with Automatic Draining Feature**
B 64.3 – 11	**Backflow Preventers, Dual Check ValveType with Atmospheric Port (DCAP)**
B 64.4 – 11	**Backflow Preventers, Reduced Pressure**

Table 608.1, 608.13.6

		Referenced in codesection number
	Principle Type (RP)	**Table 608. I, 608.13.3, 608.16.2** **Table 608.1, 608.13.2, 608.16.2**
B64.4.1-01	Backflow Preventers, Reduced Pressure Principle Type for Fire Sprinklers (RPF)	Table 608.1, 608.13.2
B64.5-01	Backflow Preventers, Double Check Type (DCVA)	Table 608.1, 608.13.7
B64.5.1-01	Backflow Preventers, Double Check Type for Fire Systems (DCVAF)	Table 608.1, 608.13.7
B64.6-01	Backflow Preventers, Dual Check Valve Type (DuC)	605.3.1, Table 608.1
B64.7-94	Vacuum Breakers, Laboratory Faucet Type (LFVB)	Table 608.1, 608.13.6
B64.10/B64.10.1-01	Manual for the Selection and Installation of Backflow Prevention Devices/Manual for the Maintenance and Field Testing of Backflow Prevention Devices	312.10.2
B7994(2000)	Floor, Area and Shower Drains, and Cleanouts for Residential Construction	412.1
B125-01	Plumbing Fixtures	424.4, 424.6, 425.4
B125.1/ASME A112.18.1-05	Plumbing Supply Fittings	424.1, 424.2, 424.3, 607.4, 608.2
B125.2/ASME A112.18.2-05	Plumbing Waste Fittings	424.1.2
B125.3-2005	Plumbing Fittings	416.5, 424.5, 425.3.1, Table 608.1
B137.1-02	Polyethylene Pipe, Tubing and Fittings for Cold Water Pressure Services	Table 605.3
B137.2-02	PVC Injection-moulded Gasketed Fittings for Pressure Applications	Table 605.5, Table 1102.7
B137.3-02	Rigid Poly (Vinyl Chloride) (PVC) Pipe for Pressure Applications	Table 605.3, Table 605.4, Table 605.5, 605.22.2, 705.82, 705.14.2
B137.5-02	Cross-linked Polyethylene (PEX) Tubing Systems for Pressure Applications—with Revisions through September 1992	Table 605.3, Table 605.4, Table 605.5
B137.6-02	CPVC Pipe, Tubing and Fittings for Hot and Cold Water Distribution Systems—with Revisions through May 1986	Table 605.3, Table 605.4
B 137.9 – 13	**Polyethylene/ Aluminum/ Polyethylene Composite Pressure Pipe Systems**	**Table 605.3, Table 605.5, 605.21.1**
B 137.10 – 11	**Cross-linked Polyethylene/Aluminum/ Polyethylene Composite Pressure Pipe Systems**	

CSA

Canadian Standards Association
5060 Spectrum Way
Mississauga, Canada L4W 5N6

Standard reference number	Title	Referenced in code section number
		Table 605.3, Table 605.4, Table 605.5, 605.21
B137.11-02	Polypropylene (PP-R) Pipe and Fittings for Pressure Applications	Table 605.3, Table 605.4, Table 605.5
B181.1-02	ABS Drain, Waste and Vent Pipe and Pipe Fittings	Table 702.1, Table 702.2, Table 702.3, Table 702.4, 705.2.2, 705.7.2, 715.2, Table 1102.4, Table 1102.7
B181.2-02	PVC Drain, Waste, and Vent Pipe and Pipe Fittings— with Revisions through December 1993	Table 702.1, Table 702.2, 705.8.2, 705.14.2, 715.2
B 181.3 – 11	**Polyolefin and Polyvinylidene Fluoride (PVDF) Laboratory Drainage Systems**	
		Table 702.1, Table 702.2, Table 702.3, Table 702.4
B182.1-02	Plastic Drain and Sewer Pipe and Pipe Fittings	705.8.2, 705.14.2, Table 1102.4
B182.4-02	PVC Sewer Pipe and Fittings (PSM Type)	Table 702.3, Table 1102.4, Table 1102.5
B182.6-02	Profile PVC Sewer Pipe and Fittings	Table 702.3, Table 1102.4, Table 1102.5
B182.8-02	Profile Polyethylene Sewer Pipe and Fittings for Leak-proof Sewer Applications	Table 1102.5
B 182.8 – 11	**Profile Polyethylene (PE) Storm Sewer and Drainage Pipe and Fittings**	
		Table 1102.5
B 483.1	**Drinking Water Treatment Units**	**611.1, 611.2**
B 481.1 – 12	**Testing and Rating of Grease Interceptors Using Lard**	**1003.3.4**
B 481.3 – 12	**Sizing, Selection, Location and Installation of Grease Interceptors**	
		1003.3.4
CAN/CSA-A257.1M-92	Profile Polyethylene Storm Sewer and Drainage Pipe and Fittings	Table 1102.5
CAN/CSA-A257.2M-92	Circular Concrete Culvert, Storm Drain, Sewer Pipe and Fittings	Table 702.3, Table 1102.4
CAN/CSA-A257.3M-92	Reinforced Circular Concrete Culvert, Storm Drain, Sewer Pipe and Fittings	Table 702.3, Table 1102.4
CAN/CSA-B64.1.1/01	Joints for Circular Concrete Sewer and Culvert Pipe, Manhole Sections and Fittings Using Rubber Gaskets	705.6, 705.19
CAN/CSA-B64.2-01	Vacuum Breakers, Atmospheric Type (AVB)	425.5, Table 608.1, 608.13.6
CAN/CSA-B64.2.2-01	Vacuum Breakers, Hose Connection Type (HCVB) with Automatic Draining Feature	Table 608.1, 608.13.6
CAN/CSA-B64.3-01	Backflow Preventers, Dual Check Valve Type with Atmospheric Port (DCAP)	Table 608.1, 608.13.3, 608.16.2
CAN/CSA-B64.4-01	Backflow Preventers, Reduced Pressure Principle Type (RP)	Table 608.1, 608.13.2, 608.16.2
CAN/CSA-B64.10-01	Manual for the Selection, Installation, Maintenance and Field Testing of Backflow Prevention Devices	312.10.2

CSA

Canadian Standards Association
5060 Spectrum Way
Mississauga, Canada L4W 5N6

Standard reference number	Title	Referenced in code section number
CAN/CSA-B137.9-02	Polyethylene/Aluminum/Polyethylene Composite Pressure Pipe Systems	Table 605.3, Table 605.5, 605.21.1
CAN/CSA-B137.10M-02	Cross-linked Polyethylene/Aluminum/Polyethylene Composite Pressure Pipe Systems	Table 605.3, Table 605.4, Table 605.5, 605.21.1
CAN/CSA-B181.3-02	Polyolefin Laboratory Drainage Systems	Table 702.1, Table 702.2, Table 702.4, 705.17.1
CAN/CSA-B182.4-02	Profile PVC Sewer Pipe and Fittings	Table 702.3, Table 1102.4, Table 1102.5
CAN/CSA-B602-02	Mechanical Couplings for Drain, Waste and Vent Pipe and Sewer Pipe	705.2.1, 705.5.3, 705.6, 705.7.1, 705.14.1, 705.15, 705.16.2, 705.19

IAPMO

IAPMO Group
4755 E. Philadelphia
Ontario, CA 91761

Standard reference number	Title	Referenced in code section number
Z 1001 – 2007	**Prefabricated Gravity Grease Interceptors**	**1003.3.6**
Z124 – 2011	**Plastic Plumbing Fixtures**	**407.1, 415.1, 416.1, 416.2, 417.1, 419.1, 420.1**

ICC

International Code Council
500 New Jersey Ave, NW
6th Floor
Washington, DC 2001

Standard reference number	Title	Referenced in code section number
IBC-09	International Building Code®	201.3, 305.4, 307.1, 307.2, 307.3, 308.2, 309.1, 310.1, 310.3, 403.1, Table 403.1, 404.1, 407.3, 417.6, 502.6, 606.5.2, 1106.5
IEBC-09	International Existing Building Code®	101.2
IECC-09	International Energy Conservation Code®	313.1, 607.2, 607.2.1
IFC-09	International Fire Code®	201.3, 1201.1
IFGC-09	International Fuel Gas Code®	101.2, 201.3, 502.1

ICC

International Code Council
500 New Jersey Ave, NW
6th Floor
Washington, DC 2001

Standard reference number	Title	Referenced in code section number
IMC-09	International Mechanical Code®	201.3, 307.6, 310.1, 422.9, 502.1, 612.1, 1202.1
IPSDC-09	International Private Sewage Disposal Code®	701.2
IRC-09	International Residential Code®	101.2

ISEA

International Safety Equipment Association
1901 N. Moore Street, Suite 808
Arlington, VA 22209

Standard reference number	Title	Referenced in code section number
Z358.1-98	Emergency Eyewash and Shower Equipment	411.1

NFPA

National Fire Protection Assocation
1 Batterymarch Park
Quincy, MA 02169-7471

Standard reference number	Title	Referenced in code section number
50-01	Bulk Oxygen Systems at Consumer Sites	1203.1
51-07	Design and Installation of Oxygen-fuel Gas Systems for Welding, Cutting and Allied Processes	1203.1
55 – 13	**Compressed Gases and Cryogenic Fluids Code**	**1203.1**
70-08	National Electric Code	502.1, 504.3, 1113.1.3
99C-05	Gas and Vacuum Systems	1202.1

NSF

NSF International
789 Dixboro Road
Ann Arbor, MI 48105

Standard reference number	Title	Referenced in code section number
3-2007	Commercial Warewashing Equipment	409.1

NSF

NSF International
789 Dixboro Road
Ann Arbor, MI 48105

Standard reference number	Title	Referenced in code section number
14-2007	Plastic Piping System Components and Related Materials	303.3, 611.3
18-2007	Manual Food and Beverage Dispensing Equipment	426.1
42-2007e	Drinking Water Treatment Units—Aesthetic Effects	611.1, 611.3
44-2004	Residential Cation Exchange Water Softeners	611.1, 611.3
50 – 2012	**Equipment for Swimming Pools, Spas, Hot Tubs and other Recreational Facilities**	**1302.8.1**
53-2007	Drinking Water Treatment Units—Health Effects	611.1, 611.3
58-2006	Reverse Osmosis Drinking Water Treatment Systems	611.2
61-2007a	Drinking Water System Components—Health Effects	410.1, 424.1, 605.3, 605.4, 605.5, 605.7, 611.3, 611.3
62-2004	Drinking Water Distillation Systems	611.1
350 – 2011	**Onsite Residential and Commercial Water Reuse Treatment Systems**	**1302.6.1**

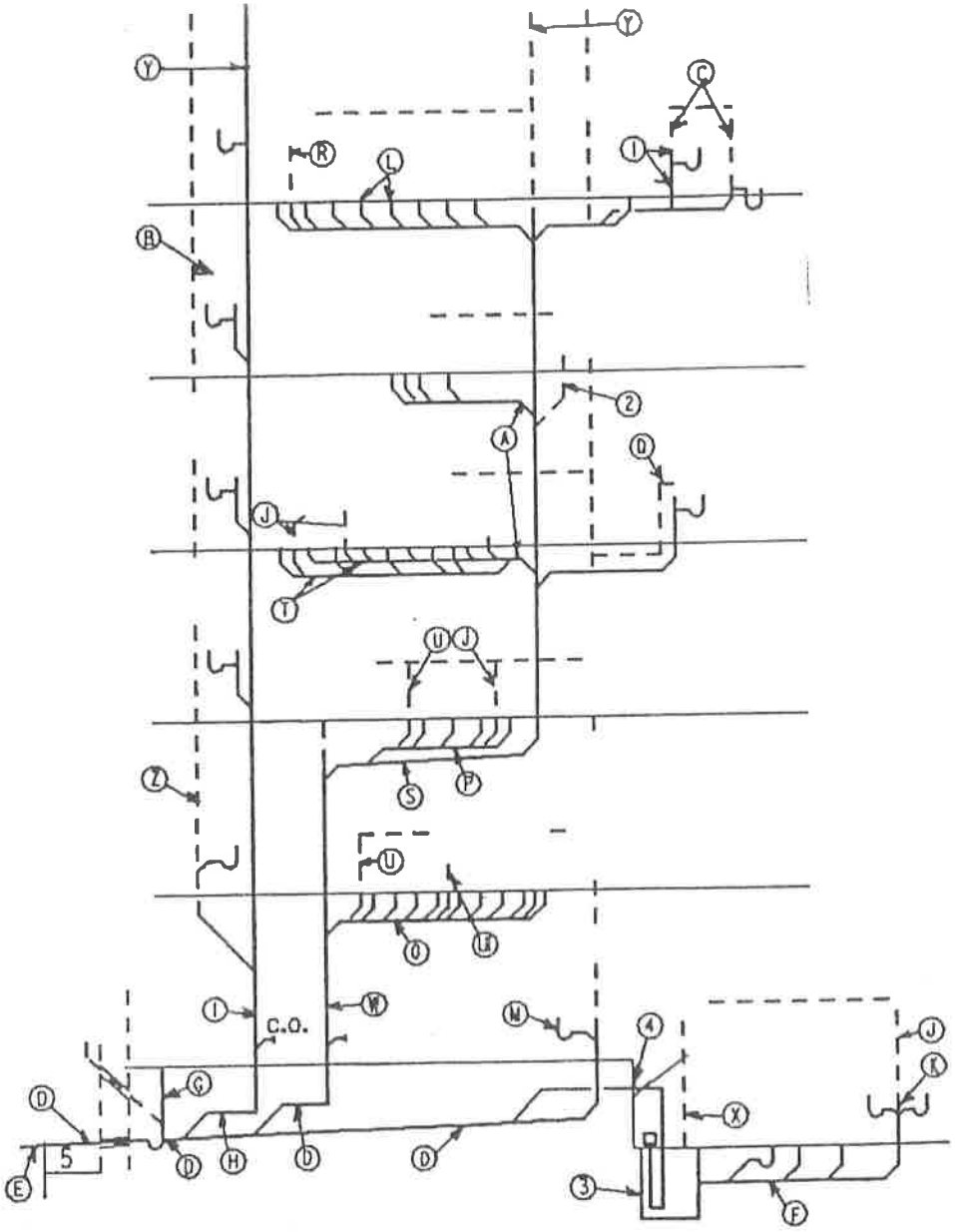
PDI

Plumbing and Drainage Institute
8000 Turnpike Street, Suite 300
North Andover, MA 01845

Standard reference number	Title	Referenced in code section number
G101(2003)	Testing and Rating Procedure for Grease Interceptors with Appendix of Sizing and Installation	1103.3.4
PDI G101 (2012)	**Testing and Rating Procedure for Grease Interceptors with Appendix of Sizing and Installation Data**	**1003.3.4**
PDI G102 (2009)	**Testing and Certification for Grease Interceptors with Fog Sensing and Alarm Devices**	**1003.3.4**

UL	Underwriters Laboratories, Inc. 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
142 – 2006	Steel Aboveground Tanks for Flammable and Combustible Liquids with revisions through February 12, 2010	1302.7
430 – 2009	Waste Disposers-with revisions through March 23, 2011	413 .1
508-99	Industrial Control Equipment—with Revision through July 2005	314.2.3
1316 – 1994	Glass-Fiber Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols and Alcohol Gasoline Mixtures with revisions through May 12, 2006	1302.7.2
1746 – 2007	External Corrosion Protection Systems for Steel Underground Storage Tanks	1302.7

APPENDIX AC-H
ILLUSTRATION



A. Branch Interval
B. Branch Vent
C. Back Vent
D. Building Drain
E. Building Sewer
F. Building Sub-drain
G. Building (house) trap
H. Branches of Bldg. Drain
I. Continuous Waste & Vent
J. Circuit Vent
K. Dual or Common Vent
L. Fixture Drain
M. Fixture Drain at base of main or vent stack
N. Fresh Air Inlet
O. Horizontal Branch
P. Isolated Soil or Waste Branch
Q. Loop Vent Arrangement for Island Type Fixtures
R. Loop Vent (Regular)
S. Offset in Soil Stack
T. Parallel Soil Branches for back to back fixtures
U. Relief Vents
U^1 Intermediate Relief Vent for more than 8 WC's on one branch
V. Relief Vent for Offset
W. Soil Stack
X. Sump Vent Sized as a Branch Circuit or Loop Vent
Y. Stack Vent
Z. Vent Stack
1. Waste Stack
2. Yoke Vent – used when more than 10 Branch Interval
3. Sump or Ejector Cast Iron
4. Sump Discharge