City of Philadelphia

City Council
Chief Clerk's Office
402 City Hall
Philadelphia, PA 19107

BILL NO. 250645

Introduced June 12, 2025

Councilmember Gilmore Richardson for Council President Johnson

**Referred to the
Committee on Licenses and Inspections**

AN ORDINANCE

Amending Title 4 of The Philadelphia Code, entitled "The Philadelphia Building Construction and Occupancy Code," by adopting the 2021 edition of the "International Plumbing Code" as published by the International Code Council, including introduction of new amendments and maintenance of previously adopted amendments to the 2018 International Plumbing Code, as adopted under the Pennsylvania Uniform Construction Code Act, all under certain terms and conditions.

THE COUNCIL OF THE CITY OF PHILADELPHIA HEREBY ORDAINS:

SECTION 1: Subcode "P" of Title 4 of the Philadelphia Code, entitled "The Philadelphia Plumbing Code," is hereby repealed in its entirety and replaced with a new Subcode "P" to read as follows:

SUBCODE "P" (THE PHILADELPHIA PLUMBING CODE)

Article P-1.0 Pursuant to the Pennsylvania Uniform Construction Code Act, adoption of the "2021 International Plumbing Code" with local amendments which legally existed prior to the Act and newly proposed amendments.

§ P-1.1 The "2021 International Plumbing Code" as published by the International Code Council is hereby adopted as the Philadelphia Plumbing Code, with amendments as set forth in § P-1.2.

§ P-1.2 The "2021 International Plumbing Code", copies of which are on file with the Department of Licenses and Inspections, is incorporated as if fully set forth herein, subject to the following local amendments.

§ P-1.2.1 *Italics* indicates materials added. ~~Strikethrough~~ indicates materials deleted. Deletions of large blocks of material are noted in [brackets].

§ P-1.2.2 The numbers of all local amendments shall be preceded with the prefix “P-”.

§ P-1.2.3 Throughout the code, references to “International” codes or “ICC” codes shall be deemed to refer to the “Philadelphia” codes of the same name.

§ P-1.2.4 The Department of Licenses and Inspections is authorized to publish a “Philadelphia Plumbing Code” (subject to applicable copyright laws) fully incorporating these amendments and any associated graphics that provide guidance on the application of this code.

§ P-1.2.5 THE 2021 INTERNATIONAL PLUMBING CODE:

* * *

CHAPTER 1
SCOPE AND ADMINISTRATION

[Delete the contents of this Chapter and substitute the following:]

SECTION P-101 GENERAL

P-101.1 Title. These provisions together with those provisions of the International Plumbing Code which are not hereby amended shall be known as the “Philadelphia Plumbing Code” or "this code".

P-101.2 Scope. The provisions of the Philadelphia Plumbing Code shall apply to the erection, installation, alteration, repairs, relocation, replacement, addition to, use or maintenance of plumbing systems within the City of Philadelphia. This code shall regulate nonflammable medical gas, inhalation anesthetic, vacuum piping, nonmedical oxygen systems and sanitary and condensate vacuum collection systems. The installation of fuel gas distribution piping and equipment, fuel-gas-fired water heaters and water heater venting systems shall be regulated by the Philadelphia Fuel Gas Code (Subcode “G”).

Detached one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories high with separate means of egress and their accessory structures shall comply with this code.

> *P-101.2.1 Jurisdiction outside of property lines. All plumbing systems within a structure or on a premises and extending to the curb line of the street shall be regulated by this code unless stated otherwise herein. Plumbing systems located beyond the curb line of the street and connecting to the public main or public sewer shall be regulated by the Philadelphia Water Department.*

P-101.3 Intent. The purpose of this code is to establish the minimum requirements to provide a reasonable level of safety, public health and general welfare by regulating and controlling the

design, construction, installation, quality of materials, location, operation and maintenance or use of plumbing equipment and systems.

P-101.4 Administrative provisions. This Chapter contains those provisions that are unique to the administration of this code. All other administrative provisions applicable to this code are as set forth in the Philadelphia Administrative Code.

P-101.5 Appendices. The International Plumbing Code Appendix E is hereby adopted to provide acceptable methods for the sizing of water service and water distribution piping by a designer.

SECTION P-102 INSPECTIONS AND TESTING

P-102.1 Inspections. In addition to the inspections specified in Chapter 4 of the Administrative Code, the code official shall be authorized to make or require other inspections of any construction work to ascertain compliance with the provisions of this code and other laws that are enforced.

P-102.1.1 Evaluation and follow-up inspection services. Prior to the approval of a closed, prefabricated plumbing system and the issuance of a plumbing permit, the code official shall require the submittal of an evaluation report on each prefabricated plumbing system indicating the complete details of the plumbing system, including a description of the system and its components, the basis on which the plumbing system is being evaluated, test results and similar information, and other data as necessary for the code official to determine conformance to this code.

Exception: Manufactured housing pursuant to the Manufactured Housing Construction and Safety Standards Authorization Act (35 P.S. §§ 1656.1 – 1656.9) and industrialized housing and industrialized commercial buildings pursuant to the Industrialized Housing Act (35 P.S. §§ 1651.1 – 1651.12) respectively.

P-102.1.1.1 Evaluation service. The code official shall consider the evaluation report of an approved Special Inspection Agency, registered in accordance with Section 9-1306 of The Philadelphia Code, for determining adequacy and conformance to this code.

P-102.1.1.2 Follow-up inspection. Except where ready access is provided to all plumbing systems, service equipment and accessories for complete inspection at the site without disassembly or dismantling, the code official shall be authorized to accept the inspection reports of an independent, approved inspection agency to conduct such inspections. The inspection agency shall furnish the code official with the follow-up inspection manual and a report of inspections on request, and the plumbing system shall have an identifying label permanently affixed to the system indicating that factory inspections have been performed.

P-102.1.1.3 Test and inspection records. Required test and inspection records shall be available to the code official at all times during the fabrication of the

plumbing system and the erection of the building, or such records as the code official designates shall be filed.

P-102.2 Special inspections. Special inspections of alternative engineered design plumbing systems shall be conducted in accordance with Sections P-102.1.1 and P-102.1.2.

P-102.2.1 Periodic inspection. The registered design professional or designated inspector shall periodically inspect and observe the alternative engineered design to determine that the installation is in accordance with the approved construction documents. Discrepancies shall be brought to the immediate attention of the Registered Master Plumber for correction. Records shall be kept of all inspections.

P-102.2.2 Written report. The registered design professional shall submit a final report in writing to the code official upon completion of the installation, certifying that the alternative engineered design conforms to the approved construction documents. A certificate of approval for the plumbing permit shall not be issued until this written certification has been submitted.

P-102.3 Testing. Plumbing work and systems shall be tested as required in Section 312 and in accordance with Sections P-102.3.1 through P-102.3.3. Tests shall be made by the Registered Master Plumber or his designee and observed by the code official.

P-102.3.1 New, altered, extended or repaired systems. New plumbing systems and parts of existing systems that have been altered, extended or repaired shall be tested as prescribed herein to disclose leaks and defects, except that testing is not required in the following cases:

1. In any case that does not include addition to, replacement, alteration or relocation of any water supply, drainage or vent piping.

2. In any case where plumbing equipment is set up temporarily for exhibition purposes.

P-102.3.2 Equipment, material and labor for tests. Equipment, material and labor required for testing a plumbing system or part thereof shall be furnished by the Registered Master Plumber.

P-102.3.3 Reinspection and testing. Where any work or installation does not pass any initial test or inspection, the necessary corrections shall be made to comply with this code. The work or installation shall then be resubmitted to the code official for inspection and testing.

P-102.4 Approval. After the prescribed tests and inspections indicate that the work complies in all respects with this code, a certificate of approval shall be issued by the code official.

P-102.5 Temporary connection. The code official shall have the authority to authorize the temporary connection of the building or system to the utility source for the purpose of testing plumbing systems or for use under a temporary certificate of occupancy.

SECTION P-103 PERMITS AND LICENSES

P-103.1 License required. No person shall install plumbing, water, drain or waste piping, or fixtures unless properly licensed pursuant to Title 9 Section 9-1003.

P-103.1.1 Plumbing work by unlicensed persons. No person shall hire an unlicensed person to perform plumbing work requiring a plumbing permit. Any person who has had plumbing work performed by an unlicensed person must have a Registered Master Plumber inspect such work and, if necessary, correct the installation. Permits must be secured for the unlicensed work and associated inspection activity and for any additional plumbing work performed as a result of the inspection.

P-103.2 Plumbing permits required. A plumbing permit is required to install, enlarge, alter, repair or replace any plumbing system, the installation of which is regulated by this code subject to the general permit exceptions of Section A-301.1 of the Administrative Code.

Exceptions:

1. *A plumbing permit shall not be required for the installation, alteration, enlargement, repair or replacement of special piping and storage systems regulated by Chapter 12 of this code. Such installations shall require a building permit except where subject to the exclusions or exemptions provided in the Administrative Code.*

2. *A plumbing permit shall not be required for the activities listed in Section A-301.2.4 of the Administrative Code.*

P-103.2.1 Water service & water distribution permits. A plumbing permit shall be required for the installation, repair or replacement of the water service distribution pipe located between the curb stop and the water distribution pipe of the structure. A permit from the Water Department shall be required for the installation, repair or replacement of the water service pipe from the curb stop to the public water main.

P-103.2.2 Lateral permits. A permit from the Water Department shall be required for the installation, repair or replacement of laterals from the building (house) trap to the public sewer.

P-103.3 Permit applications. Applications for plumbing permits shall be submitted in accordance with the Administrative Code.

P-103.3.1 By whom application is made: The department shall accept plumbing permit applications from the owner or lessee of the building or structure, or agent of either; by the registered design professional employed in connection with the proposed work; by the Registered Master Plumber responsible for the work; or other licensed person authorized to apply for permits pursuant to the Philadelphia Administrative Code, so long as the Registered Master Plumber responsible for the work is identified and provides confirmation of responsibility prior to the issuance of the plumbing permit.

P-103.4 Permit holder. The owner shall retain the right to change the Registered Master Plumber associated with a permit to a new Registered Master Plumber. The changing of plumbing contractors shall not require the issuance of a new permit, where the owner identifies a new Registered Master Plumber to complete the work under such plumbing permit.

P-103.4.1 Multiple Registered Master Plumbers. The Department reserves the right to issue a single plumbing permit for work to be performed by multiple Registered Master Plumbers, provided that the owner is responsible for final compliance in the event of a dispute between the named Registered Master Plumbers.

P-103.4.2 Responsibility. All Registered Master Plumbers identified on a permit shall be responsible for compliance with this code in the performance of their work. No other Registered Master Plumber shall perform work related to the permit except as a subcontractor or employee.

SECTION P-104 TEMPORARY EQUIPMENT, SYSTEMS AND USES

P-104.1 General. The code official is authorized to issue a plumbing permit for temporary equipment, systems and uses. Such permits shall be limited as to time of service but shall not be permitted for more than 180 days. The code official is authorized to grant extensions for demonstrated cause.

P-104.2 Conformance. Temporary equipment, systems and uses shall conform to the accessibility and sanitary requirements of this code as necessary to ensure the public health, safety and general welfare.

P-104.3 Temporary utilities. The code official is authorized to give permission to temporarily supply utilities before an installation has been fully completed and the final certificate of approval has been issued.

P-104.4 Termination of approval. The code official is authorized to terminate such permit for temporary equipment, systems or uses and to order the temporary equipment, systems or uses to be discontinued.

SECTION P-105 REGULATIONS

P-105.1 Authorization. The Department is authorized to promulgate technical regulations, and to amend existing such regulations as it deems necessary or appropriate from time to time, governing the manner in which plumbing work is to be performed and the materials that are to be used. Such regulations shall meet the standards set forth in Section P-106.1.1.

P-105.1.1 Standards of plumbing regulations. In developing or amending the technical regulations governing plumbing installations, the Department shall develop regulations based upon the model plumbing codes enacted through the Pennsylvania Uniform Construction Code, Act 45 of 1999, as amended (the "UCC"); to include:

1. The development of any necessary local exceptions to such model plumbing codes, provided that such amendments would equal or exceed the

minimum requirements of the UCC and remain subject to the following standards imposed by the UCC:

a. That certain clear and convincing local climatic, geologic, topographic or public health and safety circumstances or conditions justify the exception;

b. the exception shall be adequate for the purpose intended and shall meet a standard of performance equal to or greater than that prescribed by the UCC; and

c. the exception would not diminish or threaten the health, safety and welfare of the public.

2. National standards that eliminate to the greatest extent possible the use of lead in the installation of plumbing materials both to protect the soil from contamination and to meet the requirements of the Federal Reduction of Lead in Drinking Water Act.

3. National standards that allow for methods and materials which promote sustainability and conservation in the City's built environment.

4. Regulations that allow for alterations to existing plumbing systems installed under prior or current plumbing codes and standards, pursuant to updated plumbing codes enacted by the UCC.

P-105.2 Publishing of errata. When errors are found in the development and format of the technical provisions of this code after publication, the Department of Licenses and Inspections is authorized to publish errata to clarify and correct such errors.

SECTION P-106 PLUMBING ADVISORY BOARD

P-106.1 Establishment. The Plumbing Advisory Board is established in the Department of Licenses and Inspections, with such duties as may be determined by the Mayor by Executive Order.

P-106.2 Composition. The Board shall consist of seven members appointed by the Mayor and shall be chaired by one such appointed member as designated by the Mayor. The Board shall consist of: four members who are registered master plumbers; one member who is a design professional licensed or registered in the Commonwealth of Pennsylvania experienced in the design of plumbing systems; one member who shall represent the development community; and one member who shall represent the sustainability community. The Board shall also include the following non-voting ex-officio members: one member from the Department of Licenses and Inspections; one member from the Street Department; and one member from the Water Department, each of whom shall be appointed by their respective Commissioners. In the event a vacancy occurs with one of the members appointed by the Mayor, the remainder of the Board may recommend a replacement.

* * *

CHAPTER 2
DEFINITIONS

SECTION 202 - GENERAL DEFINITIONS

* * *

APPRENTICE. A person registered as an apprentice plumber by the City of Philadelphia.

BACKFLOW. Pressure created by any means in the water distribution system, which by being in excess of the pressure in the water supply mains causes a potential backflow condition.

BACKPRESSURE, LOW HEAD. A pressure less than or equal to 4.33 psi (29.88 kPa) or the pressure exerted by a 10-foot (3048 mm) column of water.

BACKSIPHONAGE. The backflow of potentially contaminated water into the potable water system as result of the pressure in the potable water system falling below atmospheric pressure of the plumbing fixtures, pools, tanks or vats connected to the potable water distribution piping.

WATER SUPPLY SYSTEM. The flow of water or other liquids, mixtures or substances into the distribution pipes *and water-supply pipes* of a potable water supply from any source except the intended source.

BONA FIDE ADDRESS. A genuine and legitimate street address where the Master Plumber conducts his or her business and where he or she can be readily contacted by the Department via telephone, mail or messenger on all regular working days of the Department.

BUILDING (*HOUSE*) DRAIN. That part of the lowest piping of a drainage system that receives the discharge from soil, waste and other drainage pipes inside and that extends ~~30 inches (762 mm)~~ *5 feet (1524 mm)* in developed length of pipe beyond the exterior walls of the building and conveys the drainage to the building sewer.

BUILDING *(HOUSE)* TRAP. ~~A device, fitting or assembly of fittings installed in the building drain to prevent circulation of air between the drainage system of the building and the building sewer~~. *A running trap, with a single hub vent, installed in the building sewer to prevent circulation of gases between the drainage system of the building and the public sewer.*

BUILDING SEWER. That part of the drainage system that extends from the end of the building drain and conveys the discharge to *an* ~~public sewer, private sewer,~~ individual sewage disposal system or *a lateral.* ~~other point of disposal.~~

COMBINED. A building sewer that conveys both sewage and storm water or other drainage.

SANITARY. A building sewer that conveys sewage only.

STORM. A building sewer that conveys storm water or other drainage, but not sewage.

DEAD END. A branch leading from a soil, waste or vent pipe; a building drain; or a building sewer, and terminating at a developed length of 2 feet (610mm) or more by means of a plug, cap or other closed fittings.

DRY VENT. Any vent that does not carry water or water-borne wastes.

FRESH AIR INLET. A means for introducing fresh air into a building drainage system through a building (house) trap.

GRIDDED WATER ~~DISTRIBUTION~~ *SUPPLY* SYSTEM. A water ~~distribution~~ *supply* system where every water ~~distribution~~ *supply* pipe is interconnected so as to provide two or more paths to each fixture supply pipe.

JOURNEYMAN PLUMBER. A person who has obtained a Journeyman Plumber license from the City of Philadelphia.

LATERAL. The piping from the public sewer to the building (house) trap which materials and installation are regulated by the Philadelphia Water Department.

MASTER PLUMBER. A person who has obtained a Master Plumber license from the City of Philadelphia.

MINOR REPAIRS. The repair of an existing plumbing fixture, including the replacement of faucets or valves or parts thereof with like material or material serving the same purpose; the clearance of stoppages; the stopping of leaks without replacement of water, drainage or vent piping; the relieving of frozen pipes; other minor replacements or repairs, not including changes in the piping to the fixtures or in drainage, vent or water-supply system, other than the aforementioned items, and not including the replacement of any plumbing fixture. Replacement or repair of hot water heaters and hydronic boilers is not considered minor repairs under this section.

PLENUM. An enclosed portion of the building structure, other than an occupiable space being conditioned, that is designed to allow air movement and thereby serve as part of the air distribution system.

PLUMBER. A person registered and licensed to install plumbing.

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

PRIVATE. In the classification of plumbing fixtures, "private" applies to fixtures in residences and apartments, and to fixtures in nonpublic toilet rooms of hotels and motels and similar installations in buildings where the plumbing fixtures are intended for utilization by a family or an individual ~~that are not public~~.

PRIVATE BUILDING SEWER. Any sanitary drainage or storm drainage sewer privately owned and maintained and not directly controlled by the City of Philadelphia.

PRIVATE WATER DISTRIBUTION PIPE. The distribution pipe privately owned and maintained and not directly controlled by the City of Philadelphia.

PUBLIC SEWER. A sewer main and associated sewer appurtenances owned by the City of Philadelphia and maintained by the Water Department.

PUBLIC OR PUBLIC UTILIZATION. In the classification of plumbing fixtures, "public" applies to fixtures *in general toilet rooms of schools, gymnasiums, hotels, airports, bus and railroad stations, public buildings, bars, public comfort stations, office buildings, stadiums, stores, restaurants and other installations where a number of fixtures are installed so that their utilization is similarly unrestricted* ~~with unrestricted exposure to walk-in traffic~~.

SLANT. An outlet connection, at the public sewer for receiving storm or sanitary waste from the lateral, which is regulated by the Philadelphia Water Department.

VERTICAL UPRIGHT. That portion of pipe that is outside of a building connecting a leader to a combination building drain or building storm sewer.

WASTE RECEPTOR. A floor sink, standpipe, hub drain, ~~or~~ floor drain *or a mop/slop sink* that receives the discharge of one or more indirect waste pipes.

WATER PIPE.

Riser. A water supply pipe that extends one full story or more to convey water to branches or to a group of fixtures.

Water Distribution Pipe. ~~A~~ *The* pipe ~~within the structure or on the premises that conveys water from the water service pipe, or from the meter when the meter is at the structure, to the points of utilization~~. *from the curb stop or curb line to the structure or through the meter pit to the first point of use if there is no structure.*

Water Service Pipe. The pipe from the water main ~~or other source of potable water supply, or from the meter when the meter is at the public right-of-way, to the water distribution system of the building served.~~ *to the curb stop or curb line as regulated by*

Philadelphia Water Department Regulations.

WATER SUPPLY SYSTEM. The water service pipe, the water distribution pipe*, the water-supply pipes,* and the necessary connecting pipes, fittings, control valves ~~and all appurtenances in or adjacent to the structure or premises~~*, tanks, water heaters, water filtering or treatment equipment, and all appurtenances forming part of the system for supplying water to plumbing fixtures or other water outlets on the premises*.

* * *

CHAPTER 3
GENERAL REGULATIONS

* * *

SECTION 301 - GENERAL

* * *

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

> Exception: Bathtubs, showers, lavatories, clothes washers and laundry trays shall not be required to discharge to the sanitary drainage system where such fixtures discharge to an approved system in accordance with Chapters 13 ~~and 14~~.

* * *

SECTION 304 – RODENT PROOFING

* * *

P-304.3 Meter boxes. Meter boxes shall be constructed in such a manner that rodents are prevented from entering a structure by way of the water service pipes *or water distribution pipe* connecting the meter box and the structure.

* * *

SECTION 305 - PROTECTION OF PIPES AND PLUMBING SYSTEM COMPONENTS

* * *

P-305.4 Freezing. Water, soil and waste pipes shall not be installed outside of a building, in attics or crawl spaces, concealed in outside walls, or in any other place subjected to freezing temperatures unless adequate provision is made to protect such pipes from freezing by insulation or heat or both. Exterior water supply *and water distribution system piping* shall be installed not less than *36" minimum below grade to the top of the pipe.* ~~6 inches (152 mm) below the frost line and not less than 12 inches (P-305 mm) below grade.~~ *Where water distribution pipe and water service pipe connect at the curb or curb stop, the piping shall be a minimum of 48" below grade to the top of the pipe.*

P-305.4.1 Sewer depth. Building sewers that connect to private sewage disposal systems shall be installed not less than ~~[NUMBER]~~ *36 inches (914 mm)* below finished grade *to the top of the pipe* at the point of septic tank connection. Building sewers shall be installed not less than ~~[NUMBER]~~ *36 inches (914 mm)* below grade *to the top of pipe*.

* * *

SECTION 306 - TRENCHING, EXCAVATION AND BACKFILL

* * *

P-306.2.3 Soft load-bearing materials. If soft materials of poor load-bearing quality are found at the bottom of the trench, stabilization shall be achieved by overexcavating not less than two pipe diameters and backfilling to the installation level of the bottom of the pipe with fine gravel, crushed stone or a concrete foundation. The concrete foundation shall be bedded with sand tamped into place so as to provide uniform load-bearing support for the pipe between joints. *When drainage is installed in filled or unstable ground, pipe shall be supported on concrete piers, seven feet apart, or a constant bed of concrete or clevis hangers attached to reinforcing rods in the concrete floor above the piping.*

* * *

P-306.4 Tunneling. ~~Where pipe is to be installed by tunneling, jacking or a combination of both, the pipe shall be protected from damage during installation and from subsequent uneven loading. Where earth tunnels are used, adequate supporting structures shall be provided to prevent future settling or caving. The length of tunneling~~ *Tunneling shall be limited to only that required to clear the obstacle above.*

P-306.5 Shoring. Shoring shall be installed in ditches and trenches as per the Occupational Safety and Health Administration's (OSHA) Excavation standards, 29 Code of Federal Regulations (CFR), Subpart P.

* * *

SECTION 308 - PIPING SUPPORT

* * *

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

* * *

TABLE *P*-308.5
HANGER SPACING

PIPING MATERIAL	MAXIMUM HORIZONTAL SPACING (feet)	MAXIMUM VERTICAL SPACING (feet)
Acrylonitrile butadiene styrene (ABS) pipe	4 [c]	10[b]
Aluminum tubing	10	15
Brass pipe	10	10
Cast-iron pipe	5[a]	15
Chlorinated polyvinylchloride (CPVC) pipe and tubing, 1 inch and smaller	3	10[b]
Chlorinated polyvinylchloride (CPVC) pipe and tubing, $1^1/_4$ inches and larger	4 [c]	10[b]
Copper or copper-alloy pipe	12	10
Copper or copper-alloy tubing, $1^1/_4$-inch diameter and smaller	6	10
Copper or copper-alloy tubing, $1^1/_2$-inch diameter and larger	10	10
Cross-linked polyethylene (PEX) pipe 1 inch and smaller	2.67 (32 inches)	10[b]
Cross-linked polyethylene (PEX) pipe $1^1/_4$ inch and larger	4 [c]	10[b]
Cross-linked polyethylene/ aluminum/cross-linked Polyethylene (PEX-AL- PEX) pipe	2.67 (32 inches)	4

Lead pipe	Continuous	4
Polyethylene/aluminum/polyethylene (PE- AL-PE) pipe	2.67 (32 inches)	4
Polyethylene of raised temperature (PE-RT) pipe 1 inch and smaller	2.67 (32 inches)	10[b]
Polyethylene of raised temperature (PE-RT) pipe $1^1/_4$ inch and larger	4 [c]	10[b]
Polypropylene (PP) pipe or tubing 1 inch and smaller	2.67 (32 inches)	10[b]
Polypropylene (PP) pipe or tubing, $1^1/_4$ inches and larger	4[c]	10[b]
Polyvinyl chloride (PVC) pipe	4[c]	10[b]
Stainless steel drainage systems	10	10[b]
Steel pipe	12	15

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

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

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

c. The maximum horizontal spacing of hangers shall be decreased to 3 feet where temperatures exceed 120 degrees Fahrenheit.

* * *

SECTION 309 - FLOOD HAZARD RESISTANCE

* * *

P-309.2 Flood hazard. For structures located in flood hazard areas, the following systems and equipment shall be located and installed as required by Section 1612 of the International Building Code.

1. ~~Water service pipes~~ *Water distribution pipe.*

* * *

SECTION 311 - TOILET FACILITIES OF WORKERS

P-311.1 General. Toilet facilities shall be provided for construction workers and such facilities shall be maintained in a sanitary condition. Construction worker toilet facilities of the nonsewer type shall conform to PSAI Z4.3 *and Table P-311.1, provided there shall not be less than one water closet on every three floors. The owner and contractors are responsible to prevent any other places on or about the site from being used for toilet purposes. Temporary toilets shall only be utilized until such time as the building drain is installed and there is a concrete slab or permanent flooring to accommodate a water closet. It is the responsibility of the General Contractor to assure that construction of the main drain proceeds as rapidly as is reasonably possible.*

TABLE P-311.1 -- MINIMUM NUMBER OF TOILET FACILITIES

NUMBER OF EMPLOYEES	*MINIMUM NUMBER OF TOILET FACILITIES*
If serviced once per week	
1-10	*1*
11-20	*2*
21-30	*3*
21-40	*4*
Over 40	*1 additional facility for each 10 additional employees*
If serviced more than once per week	
1-15	*1*
16-35	*2*
36-55	*3*
56-75	*4*
76-95	*5*
Over 95	*1 additional facility for each 20 additional employees*

P-311.2 Removal. Portable and temporary water closet facilities shall be removed, and the site shall be cleaned upon completion of construction

SECTION 312 - TESTS AND INSPECTIONS

* * *

P-312.2 Drainage and vent water test. A water test shall be applied to the drainage system either in its entirety or in sections. *If tested in sections, not more than 30 feet in height on any one system shall be tested at any one time.* If applied to the entire system, all openings in the piping shall be tightly closed, except the highest opening, and the system shall be filled with water to the point of overflow. If the system is tested in sections, each opening shall be tightly plugged (except the highest opening of the water) but no section *(except the building (house) drain and its connected yard and area drains) shall be tested with less than a 10-foot (3048 mm) head of water.* ~~except the highest openings of the section under test, and each section shall be filled with water, but sections shall not be tested with less than a 10-foot (3048 mm) head of water.~~ *In testing successive sections above the building (house) drain, at least the upper 10 feet of the next preceding section shall be re-tested so that no joint or pipe in the building (except the building (house) drain and the uppermost 10 feet of the system) shall have been submitted to a test of less than a 10-foot head of water. The water shall be kept in the system or in the portion under test for at least 15 minutes before inspection starts; the system shall then be tight at all points.*

* * *

P-312.6 Gravity sewer test. Gravity sewer tests shall consist of plugging the end of the building sewer at the *curb line* ~~point of connection with the public sewer~~, filling the building sewer with water, testing with not less than a 10-foot (3048 mm) head of water and maintaining such pressure for 15 minutes.

> *P-312.6.1 Separate test. The building (house) drain and yard area drains, including all piping to a height of 10 feet above the highest point of the building (house) drain, shall be tested separately. All traps, pipe fittings and joints shall be exposed to view when the test is made. Water shall be introduced into the system in the quantity deemed necessary by the Department. To be approved, the flow of water through the system shall be unobstructed, and there shall be no leakage through any pipe, joint, trap, or fitting and maintaining such pressure for 15 minutes.*

P-312.7 Forced sewer test. Forced sewer tests shall consist of plugging the end of the building sewer at the *curb line* ~~point of connection with the public sewer~~ and applying a pressure of 5 psi (34.5 kPa) greater than the pump rating, and maintaining such pressure for 15 minutes.

* * *

P-312.11 Completion of work. After tests have been made and approved by the inspector, covering, insulation, coating or painting of the drain, vent and water piping shall be permitted. Decals on soil, waste, and vent piping, and hot, cold and return water piping shall be installed every 10 feet on covered and uncovered lines.

* * *

SECTION 314 - CONDENSATE DISPOSAL

* * *

314.2 Evaporators and cooling coils. Condensate drain systems shall be provided for equipment and appliances containing evaporators or cooling coils. Condensate drain systems shall be designed, constructed and installed in accordance with Sections 314.2.1 through 314.2.5.

* * *

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

* * *

~~314.2.1.1 Condensate discharge. Condensate drains shall not directly connect to any plumbing drain, waste or vent pipe. Condensate drains shall not discharge into a plumbing fixture other than a floor sink, floor drain, trench drain, mop sink, hub drain, standpipe, utility sink or laundry sink. Condensate drain connections to a lavatory wye branch tailpiece or to a bathtub overflow pipe shall not be considered as discharging to a plumbing fixture. Except where discharging to grade outdoors, the point of discharge of condensate drains shall be located within the same occupancy, tenant space or dwelling unit as the source of the condensate.~~

P-314.2.1.1 Disposal into Clothes Washer Box. Condensate shall be permitted to discharge into a clothes washer box with dual drainage outlets with one outlet dedicated to the clothes washer discharge and one outlet dedicated to condensate discharge. Condensate shall also be permitted to discharge into a clothes washer box with a single drainage outlet where the inlet of the clothes washer box outlet is sized to accommodate both the clothes washer discharge and the condensate discharge.

* * *

CHAPTER 4
FIXTURES, FAUCETS AND FIXTURE FITTINGS

* * *

SECTION 403 - MINIMUM PLUMBING FACILITIES

403.1 Minimum number of fixtures. Plumbing fixtures shall be provided in the minimum number as shown in Table 403.1, based on the actual use of the building or space. Uses not shown in Table 403.1 shall be considered individually by the code official. The number of occupants shall be determined by the International Building Code.

P-403.1.1 Fixture calculations. To determine the occupant load of each ~~sex~~ *gender*, the total occupant load shall be divided in half. To determine the required number of fixtures, the fixture ratio or ratios for each fixture type shall be applied to the occupant load of each ~~sex~~ *gender* in accordance with Table 403.1. Fractional numbers resulting from applying the fixture ratios of Table 403.1 shall be rounded up to the next whole number. For calculations involving multiple occupancies, such fractional numbers for each occupancy shall first be summed and then rounded up to the next whole number.

~~Exception~~ *Exceptions:*

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

2. Where multiple-user facilities are designed to serve all genders, the minimum fixture count shall be calculated 100 percent, based on total occupant load. In such multiple-user facilities, each fixture type shall be in accordance with ICC A117.1 ~~and each urinal that is provided shall be located in a stall.~~

3. Distribution of ~~the sexes~~ *genders* is not required where single-user water closets and bathing room fixtures are provided in accordance with Section 403.1.2.

* * *

P-403.1.2 Single-user toilet and bathing room fixtures. The plumbing fixtures located in single-user toilet and bathing rooms, including family or assisted- use toilet and bathing rooms that are required by Section 1109.2.1 of the International Building Code, shall contribute toward the total number of required plumbing fixtures for a building or tenant space. Single-user toilet and bathing rooms, and family or assisted-use toilet rooms and bathing rooms shall be identified as being available for use by all persons regardless of ~~sex~~ *gender*. The total number of fixtures shall be permitted to be based on the required number of separate facilities or based on the aggregate of any combination of single-user or separate facilities.

P-403.1.3 Lavatory Distribution. Where two or more toilet rooms are provided for each ~~sex~~ *gender*, the required number of lavatories shall be distributed proportionately to the required number of water closets.

* * *

P-403.2 Separate facilities. Where plumbing fixtures are required, separate *gender-based* facilities shall be provided ~~for each sex~~.

Exceptions:

* * *

5. Separate facilities shall not be required to be designated by ~~sex~~ *gender* where single-user toilet rooms are provided in accordance with Section 403.1.2.

6. *For occupancy classifications requiring the same number of water closets and lavatories for male and female under Table 403.1*, ~~S~~separate facilities shall not be required where rooms having both water closets and lavatory fixtures are designed for use by ~~both sexes~~ *all genders* and privacy for water closets is provided in accordance with Section 405.3.4. Urinals shall ~~be located in an area visually separated from the remainder of the facility or each urinal that is provided shall be located in a stall~~ *not be permitted in facilities designed for use by all genders.*

P-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~~ *gender* and each toilet facility is required to have only one water closet, two family or assisted-use toilet facilities shall be permitted to serve as the required separate facilities. Family or assisted-use toilet facilities shall not be required to be identified for exclusive use by either ~~sex~~ *gender* as required by Section 403.4.

* * *

P-403.3.1. Access. The route to the public toilet facilities required by Section 403.3 shall not pass through kitchens, storage rooms or closets. Access to the required facilities shall be from within the building or from the exterior of the building. *Routes shall comply with the accessibility requirements of the International Building Code.* The public shall have access to the required toilet facilities at all times that the building is occupied.

* * *

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

* * *

SECTION 404 - ACCESSIBLE PLUMBING FACILITIES

* * *

P-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 ~~or ASTM C1822~~.

* * *

SECTION 405 - INSTALLATION OF FIXTURES

* * *

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

* * *

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

* * *

P-405.3.4.1 Water closet compartments serving all genders. Partitions and doors enclosing a water closet in a toilet room serving all genders shall extend from floor to ceiling to ensure privacy and safety.

* * *

SECTION 406 - AUTOMATIC CLOTHES WASHERS

* * *

P-406.2 Waste connection. The waste from an automatic clothes washer shall discharge through an air break into a standpipe in accordance with Section ~~802.3.3~~ *802.4.3* or into a laundry sink. The trap and fixture drain for an automatic clothes washer standpipe shall be not less than 2 inches (51 mm) in diameter. The fixture drain for the standpipe serving an automatic clothes washer shall connect to a 3-inch (76 mm) or larger diameter fixture branch or stack. Automatic clothes washers that discharge by gravity shall be permitted to drain to a waste receptor or an approved trench drain.

* * *

SECTION 410 - DRINKING FOUNTAINS

* * *

P-410.6 Educational Facilities. Structures or portions of structures used for educational occupancies shall be equipped with one drinking fountain for every 100 students or fraction thereof, based on the facility's actual student enrollment. At least one fountain shall be on each occupied floor of the building, without regard to the number of students. Water dispensers may be substituted for not more than fifty percent (50%) of the required number of drinking fountains. Each drinking fountain shall include a filtered water supply with a filter meeting or exceeding NSF/ANSI 53 and 42 requirements and a filter change indicator in accordance with NSF/ANSI 53.

* * *

SECTION 412 – FAUCETS AND FIXTURE FITTINGS

* * *

P-412.3 Individual shower valves. Individual shower and tub-shower combination valves shall be balanced-pressure, thermostatic or combination balanced-pressure/thermostatic valves that conform to the requirements of ASSE 1016/ASME A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1 ~~and~~. Such valves shall be installed at the point of use. Shower control valves shall be rated for the *minimum* flow rate of the installed shower head. Shower and tub-shower combination valves required by this section shall be equipped with a means to limit the maximum setting of the valve to 120°F (49°C), which shall be field adjusted in accordance with the manufacturer's instructions to provide water at a temperature not to exceed 120°F (49°C). In-line thermostatic valves shall not be utilized for compliance with this section.

P-412.4 Multiple (gang) showers. Multiple (gang) showers supplied with a single, tempered

water supply pipe shall have the water supply for such showers controlled by an approved automatic temperature control mixing valve that conforms to ASSE 1069 or CSA B125.3, or each shower head shall be individually controlled by a balanced-pressure, thermostatic or combination balanced pressure/thermostatic valve that conforms to ASSE 1016/ASME A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1 and that is installed at the point of use. Where a shower head is individually controlled, shower control valves shall be rated for the *minimum* flow rate of the installed shower head. Such valves shall be equipped with a means to limit the maximum setting of the valve to 120°F (49°C), which shall be field adjusted in accordance with the manufacturer's instructions to provide water at a temperature not to exceed 120°F (49°C). Access shall be provided to an ASSE 1069 or CSA B125.3 valve.

* * *

SECTION 413 - FLOOR AND TRENCH DRAINS

* * *

P-413.3 Size of floor drains *and trench drains*. Floor drains*, emergency floor drains, and trench drains* shall have a drain outlet not less than ~~2~~ 3 inches (~~51~~ *76 mm*) in diameter. *An adjustable repair coupling shall be permitted to connect underground piping to a floor drain or trench drain.*

Exception: Floor drains serving one and two-family dwellings shall have a drain outlet not less than 2 inches (51mm).

* * *

SECTION 414 - FLOOR SINKS

P-414.1 Approval. Sanitary floor sinks shall conform to the requirements of ASME A112.6.7. *An adjustable repair coupling shall be permitted to connect underground piping to a floor sink.*

* * *

SECTION 419 – LAVATORIES

P-419.1 Approval. Lavatories shall conform to ASME A112.19.1/CSA B45.2, ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4 or CSA B45.5/IAPMO Z124. Group wash fixtures shall conform to the requirements of Section 402. For determining the number of lavatories required by Table 403.1, every 20 inches (508 mm) of rim space*, including a faucet,* shall be considered as one lavatory. *The distance between the*

centerline of each faucet shall be no less than 20”.

* * *

SECTION - 421 SHOWERS

* * *

P-421.3 Shower waste outlet. Waste outlets serving showers shall be not less than 11/2 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 1/4 inch (6.4 mm) in least dimension. Where each shower space is not provided with an individual waste outlet, the waste outlet shall be located and the floor pitched so that waste from one shower does not flow over the floor area serving another shower. Waste outlets shall be fastened to the waste pipe in an approved manner.

Exception:

A linear shower drain shall be permitted when sized and installed in accordance with the linear drain manufacturer. The area of any linear shower drain shall be a minimum of 7 square inches (4516 mm^2).

* * *

SECTION 424 – URINALS

* * *

P-424.3 Non-water urinal connection. The fixture drain for a non-water urinal shall independently connect to a branch drain that serves one or more lavatories, water closets or water-using fixtures with not less than one drainage fixture unit that discharges upstream of such non-water urinals.

* * *

SECTION 425 WATER CLOSETS

* * *

P-425.3 Water closet seats. Water closets shall be equipped with seats of smooth, nonabsorbent material. Seats of water closets provided for public or employee toilet facilities shall be of the hinged open-front *elongated* type. Integral water closet seats shall be of the same material as the fixture. Water closet seats shall be sized for the water closet bowl type.

* * *

CHAPTER 5
WATER HEATERS

* * *

SECTION 501 - GENERAL

* * *

P-501.9 Thermal expansion control. Where a storage water heater is supplied with cold water that passes through a check valve, pressure reducing valve or backflow preventer, a thermal expansion control device shall be connected to the water heater cold water supply pipe at a point that is downstream of all check valves, pressure reducing valves and backflow preventers. Thermal expansion tanks shall be sized in accordance with the tank manufacturer's instructions and shall be sized such that the pressure in the water supply system shall not exceed that required by Section P-604.8.

* * *

SECTION 503 - CONNECTIONS

* * *

P-503.3 Materials. All water heaters and water heating equipment shall have a minimum of 4 feet (1219 mm) of developed length of copper tubing or similar metallic piping material connecting directly to the inlet and outlet of the unit.

* * *

SECTION 504 - SAFETY DEVICES

* * *

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

* * *

5. Discharge to the floor, ~~to the pan serving the water heater or storage tank~~, to a waste receptor or to the outdoors.

* * *

504.7 Required Pan. Where a storage tank-type water heater or a hot water storage tank is installed in a location where water leakage from the tank will cause damage, the tank shall be installed in a pan constructed of one of the following:

* * *

P-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. Where a pan drain was not previously installed, a pan drain shall not be required for a replacement water heater installation. *The pan drain shall be permitted to discharge into a clothes washer box with dual drainage outlets with one outlet dedicated to the clothes washer discharge and one outlet dedicated to the pan drain. The pan drain shall also be permitted to drain into a clothes washer box with a single drainage outlet where the inlet of the clothes washer box outlet is sized to accommodate both the clothes washer discharge and the pan drain discharge.*

* * *

CHAPTER 6
WATER SUPPLY AND DISTRIBUTION

* * *

SECTION P-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 F2831.~~

* * *

SECTION 602 - WATER REQUIRED

* * *

P-602.1.1 Separate Water Connection. A building having plumbing fixtures installed and intended for human habitation, occupancy or use on premises abutting on a street, alley, or easement in which there is a public water main shall have a separate connection to the public water main. Where located on the same deeded property and maintained under the same ownership, multiple buildings shall not be prohibited from connecting to a common private water distribution pipe that connects to the public water main provided that the common private water distribution pipe is not placed underneath any building or structure and is connected after the existing water meter.

P-602.2.1 Non-residential. Non-residential buildings and other structures on the same deeded property and maintained under the same ownership shall be permitted to connect to a common water supply.

P-602.2.2 Residential. Where one building stands in the rear of another building on the same deeded property and maintained under the same ownership, and a separate water supply cannot be provided for the rear building through an alley, yard or other open public space, the water supply of the front building shall be permitted to serve the rear building, provided the water supply of the front building is of adequate size and in suitable condition to serve both front and rear buildings.

* * *

602.3 Individual water supply. Where a potable public water supply is not available, individual sources of potable water supply shall be utilized.

P-602.3.1 Sources. Dependent on geological and soil conditions and the amount of rainfall, individual water supplies are of the following ~~types~~ *type*: drilled *well.* ~~well, driven well, dug well, bored well, spring, stream or cistern~~. ~~Surface bodies of water and land cisterns shall not be sources of individual water supply unless properly treated by approved means to prevent contamination~~. Individual water supplies shall be constructed and installed in accordance with the applicable state and local laws. Where such laws do not address all of the requirements set forth in NGWA-01, individual water supplies shall comply with NGWA-01 for those requirements not addressed by state and local laws. *Note: Each well's water quality requires approval by the Department of Public Health.*

* * *

P-602.4 Private Water Distribution Pipes. Repairs to Existing Private water distribution pipe materials shall be in accordance with Section P-605. New or extended water distribution pipes may not cross any adjoining property lines except private water infrastructure designed in accordance with Section P-614.

* * *

SECTION P-603 - WATER ~~SERVICE~~ *DISTRIBUTION*

P-603.1 Size of water ~~service~~ *distribution* pipe. The water ~~service~~ *distribution* pipe shall be sized to supply water to the structure in the quantities and at the pressures required in this code. The water ~~service~~ *distribution* pipe shall be not less than 3/4 inch (19.1 mm) in diameter.

P-603.2 Separation of ~~water service,~~ *water distribution piping* ~~and~~, building sewer*, building drains, storm sewer or storm drainage piping.* ~~Where water service piping is located in the same trench with the building sewer, such sewer shall be constructed of materials listed in Table 702.2. Where the building sewer piping is not constructed of materials listed in Table 702.2, the water service pipe and the building sewer shall be horizontally separated by not less than 5 feet (1524 mm) of undisturbed or compacted earth.~~ *Water distribution piping shall be horizontally separated by not less than 5 feet of undisturbed or compacted earth when it is adjacent to nonmetallic pipe material serving building sewers, building drains, storm sewer or storm drainage piping. The water distribution pipe shall be separated not less than 12" vertical and 12" horizontal from the outer edge of building sewers, building drains, storm sewers or storm drainage piping where metallic piping is used.* The required separation distance shall not apply where a water ~~service~~ *distribution* pipe crosses a *building* sewer ~~pipe~~*, building drains, storm sewer or storm drainage piping,* provided that the ~~water service~~ *water distribution* piping *is at least 12" above such pipe and* sleeved to a point not less than 5 feet (1524 mm) horizontally from the *building* sewer*, building drains, storm sewer or storm drainage* pipe centerline on both sides of such crossing. The sleeve shall be of pipe materials listed in Table 605.3, 702.2 or 702.3. ~~The required separation distance shall not apply where the bottom of the water service pipe, located within 5 feet (1524 mm) of the sewer, is not less than 12 inches (305 mm) above the highest point of the top of the building sewer.~~

P-603.2.1 ~~Water service~~ *Water distribution pipe* near sources of pollution. Potable ~~water service pipes~~ *water distribution pipe* shall not be located in, under or above cesspools, septic tanks, septic tank drainage fields or seepage pits. Where soil or ground water causes contaminated conditions for piping, analysis shall be required in accordance with Section P-605.1.

P-603.3 Property Lines. Water distribution pipes may not cross adjoining property lines except private water infrastructure designed in accordance with Section P-614.

SECTION P-604 - DESIGN OF BUILDING WATER ~~DISTRIBUTION~~ *SUPPLY* SYSTEM

P 604.1 General. The design of the water ~~distribution~~ *supply* system shall conform to accepted engineering practice. Methods utilized to determine pipe sizes shall be approved.

* * *

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

TABLE P-604.3
WATER ~~DISTRIBUTION~~ *SUPPLY* SYSTEM DESIGN CRITERIA REQUIRED CAPACITY AT FIXTURE SUPPLY PIPE OUTLETS

* * *

P-604.5 Size of fixture supply. The minimum size of a fixture supply pipe shall be as shown in Table 604.5. The fixture supply pipe shall terminate not more than 30 inches (762 mm) from the point of connection to the fixture. A reduced-size flexible water connector installed between the supply pipe and the fixture shall be of an approved type. The supply pipe shall extend to the floor or wall adjacent to the fixture. The minimum size of individual ~~distribution~~ *supply* lines utilized in gridded or parallel water supply systems shall be as shown in Table 604.5. *A ridged water connector shall be required in all occupancies other than one- and two-family dwellings.*

* * *

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

* * *

P-604.8 Water pressure-reducing valve or regulator. Where water pressure within a building exceeds 80 psi (552 kPa) static, an approved water pressure-reducing valve conforming to ASSE 1003 or CSA B356 with strainer shall be installed to reduce the pressure in the building water ~~distribution~~ *supply* piping to not greater than 80 psi (552 kPa) static.

Exception: Service lines to sill cocks and outside hydrants, and main supply risers where pressure from the mains is reduced to 80 psi (552 kPa) or less at individual fixtures.

* * *

P-604.9 Water hammer. The flow velocity of the water ~~distribution~~ *supply* system shall be controlled to reduce the possibility of water hammer. A water-hammer arrestor shall be installed where quick-closing valves are utilized. Water-hammer arrestors shall be installed in accordance with the manufacturer's instructions. Water-hammer arrestors shall conform to ASSE 1010.

P-604.10 Gridded and parallel water ~~distribution~~ *supply* system manifolds. Hot water and cold water manifolds installed with gridded or parallel connected individual ~~distribution~~ *supply* lines to each fixture or fixture fitting shall be designed in accordance with Sections P-604.10.1 through P-604.10.3.

* * *

SECTION 605 – MATERIALS, JOINTS AND CONNECTIONS

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

* * *

P-605.3 Water ~~service~~ *distribution* pipe. Water ~~service~~ *distribution* pipe shall conform to NSF 61 and shall conform to one of the standards listed in Table 605.3. Water ~~service~~ *distribution* pipe or tubing, installed underground and outside of the structure, shall have a working pressure rating of not less than 160 psi (1100 kPa) at 73.4ºF (23ºC). Where the water pressure exceeds 160 psi (1100 kPa), piping material shall have a working pressure rating not less than the highest

available pressure. Water ~~service~~ *distribution* piping materials not third-party certified for water ~~distribution~~ *supply* shall terminate at or before the full open valve located at the entrance to the structure. Ductile iron water ~~service~~ *distribution* piping shall be cement mortar lined in accordance with AWWA C104/A21.4. *Any water distribution pipe serving or located within occupancies other than one-and two-family dwellings and apartments shall be metallic piping in accordance with this section and listed on Table P-605.3. All water service piping from the City water main tap to the curb stop shall conform to the regulations as set forth by the Philadelphia Water Department.*

Exception: Pipes 3 inches and larger shall be ductile iron to the meter.

Table P-605.3 Water ~~Service~~ *Distribution* Pipe

* * *

P-605.4 Water ~~distribution~~ *supply* pipe. Water ~~distribution~~ *supply* pipe and tubing shall conform to NSF 61 and shall conform to one of the standards listed in Table 605.4. Hot water ~~distribution~~ *supply* pipe and tubing shall have a pressure rating of not less than 100 psi (690 kPa) at 180ºF (82ºC). *Any water supply piping supplying or located within occupancies other than one- and two-family dwellings and apartments shall be metallic piping in accordance with this section.*

TABLE P-605.4
WATER ~~DISTRIBUTION~~ *SUPPLY* PIPE

* * *

P-605.4.1 High rise materials. Metallic piping shall be installed in buildings with an occupied floor located more than 75 feet (22,860 mm) above the lowest level of fire department vehicle access.

Exception:
Nonmetallic piping may be used within demised individual residential dwelling units located within buildings with an occupied floor located more than 75 feet (22,860 mm) and not more than 150 feet (45,720 mm) above the lowest level of fire department vehicle access.

* * *

P-605.5 Fittings. Pipe fittings shall be approved for installation with the piping material installed and shall comply with the applicable standards listed in Table 605.5. Pipe fittings utilized in water supply systems shall also comply with NSF 61. Ductile and gray iron pipe and pipe fittings utilized in water ~~service~~ *distribution* piping systems shall be cement mortar lined in accordance with AWWA C104/A21.4.

* * *

P-605.6 Flexible water connectors. *Flexible water connectors shall be prohibited.*

Exception: In one- and two-family dwellings, flexible water connectors *where* exposed to continuous pressure shall conform to ASME A112.18.6/CSA B125.6. Access shall be provided to all flexible water connectors.

* * *

`

605.13 Copper tubing. Joints between copper or copper- alloy tubing and fittings shall comply with Sections 605.13.1 through 605.13.7.

* * *

P-605.13.5 Press-connect joints. Press-connect joints shall conform to one of the standards indicated 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 a tool certified by the manufacturer. *Press-connect joints shall be limited to above ground installations only.*

* * *

P-605.13.7 Push-fit joints. Push-fit joints shall conform to ASSE 1061 and shall be installed in accordance with the manufacturer's instructions *and limited to above ground installations only.*

605.14 CPVC plastic. Joints between CPVC plastic pipe and fittings shall comply with Sections 605.14.1 through 605.14.4.

* * *

P-605.14.4 Push-fit joints. Push-fit joints shall conform to ASSE 1061 and shall be installed in accordance with the manufacturer's instructions *and limited to above ground installations only.*

* * *

SECTION P-606 - INSTALLATION OF THE BUILDING WATER ~~DISTRIBUTION~~ *SUPPLY* SYSTEM

* * *

P-606.7 Labeling of water distribution pipes in bundles. Where water distribution piping is bundled at installation, each pipe in the bundle shall be identified using stenciling or commercially available pipe labels. The identification shall indicate the pipe contents and the 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 on each pipe in each room, space or story.

* * *

SECTION 607 – HOT WATER SUPPLY SYSTEMS

* * *

607.2 Hot or tempered water supply to fixtures. The developed length of hot or tempered water 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.

* * *

P-607.2.1 Circulation systems and heat trace systems for maintaining heated water temperature in ~~distribution~~ *supply* systems. For Group R2, R3 and R4 occupancies that are three stories or less in height above grade plane, the installation of heated water circulation and temperature maintenance systems shall be in accordance with Section R403.5.1 of the International Energy Conservation Code. For other than Group R2, R3 and R4 occupancies that are three stories or less in height above grade plane, the installation of heated water circulation and heat trace systems shall be in accordance with Section C404.6 of the International Energy Conservation Code.

* * *

P-607.2.1.2 Demand recirculation controls for ~~distribution~~ *supply* systems. A water ~~distribution~~ *supply* system having one or more recirculation pumps that pump water from a heated water supply pipe back to the heated water source through a cold water supply pipe shall be a demand recirculation water system. Pumps shall have controls that comply with both of the following:

1. The control shall start the pump upon receiving a signal from the action of a user of a fixture or appliance, sensing the presence of a user

of a fixture, or sensing the flow of hot or tempered water to a fixture fitting or appliance.

2. The control shall limit the temperature of the water entering the cold water piping to 104°F (40°C).

* * *

P-607.3 Thermal expansion control. Where a storage water heater is supplied with cold water that passes through a check valve, pressure reducing valve or backflow preventer, a thermal expansion control device shall be connected to the water heater cold water supply pipe at a point that is downstream of all check valves, pressure reducing valves and backflow preventers. Thermal expansion tanks shall be sized in accordance with the tank manufacturer's instructions and shall be sized such that the pressure in the water ~~distribution~~ *supply* system shall not exceed that required by Section 604.8.

* * *

SECTION 608 - PROTECTION OF POTABLE WATER SUPPLY

608.1 General. A potable water supply system shall be designed, installed and maintained in such a manner so as to prevent contamination from nonpotable liquids, solids or gases being introduced into the potable water supply through cross connections or any other piping connections to the system. Backflow preventer applications shall conform to Table 608.1, except as specifically stated in Sections 608.2 through 608.17.10.

P-608.1.1 Backflow containment assemblies required. Backflow containment assemblies shall be installed in all buildings.

Exception: Residential buildings with four dwelling units or less.

P-608.1.2 Installation of backflow containment assemblies. Installation shall be in accordance with Philadelphia Water Department Regulation 403 and the Philadelphia Water Department Cross Connection Control Manual, as amended.

* * *

P-608.4 Potable water handling and treatment equipment. Water pumps, filters, softeners, tanks and other appliances and devices that handle or treat potable water to be supplied to the potable water ~~distribution~~ *supply* system shall be located to prevent contamination from entering the

appliances and devices. Overflow, relief valve and waste discharge pipes from such appliances and devices shall terminate through an air gap.

* * *

608.9 Identification of nonpotable water systems. Where nonpotable water systems are installed, the piping conveying the nonpotable water shall be identified either by color marking, metal tags or tape in accordance with Sections 608.9.1 through 608.9.2.3.

* * *

P-608.9.2 Distribution pipe labeling and marking. Non-potable distribution *and supply* 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 at each point where the piping passes through a wall, floor or roof. Lettering shall be readily observable within the room or space where the piping is located.

* * *

P-608.9.2.3 Identification tape. Where used, identification tape shall be not less than 3 inches (76 mm) wide and have white or black lettering on a purple field stating "CAUTION: NONPOTABLE WATER – DO NOT DRINK." Identification tape shall be installed on top of nonpotable rainwater distribution *and supply* pipes, fastened not less than every 10 feet (3048 mm) to each pipe length and run continuously the entire length of the pipe.

* * *

608.17 Connections to the potable water system. Connections to the potable water system shall conform to Sections 608.17.1 through 608.17.10.

* * *

P-608.17.4 Connections to automatic sprinkler systems and standpipe systems. The potable water supply to automatic sprinkler systems and standpipe systems shall be protected against backflow by a double check backflow prevention assembly, a double check fire protection backflow prevention assembly or a reduced pressure principle fire protection backflow prevention assembly.

Exceptions:

1. Where systems are installed as a portion of the water ~~distribution~~ *supply* system in accordance with the requirements of this code and are not provided with a fire department connection, isolation of the water supply system shall not be required.
2. Isolation of the water ~~distribution~~ *supply* system is not required for deluge, preaction or dry pipe systems.

* * *

P-608.17.7 Chemical dispensers. Where chemical dispensers connect to the potable water ~~distribution~~ *supply* system, the water supply system shall be protected against backflow in accordance with Section 608.14.1, 608.14.2, 608.14.5, 608.14.6, or 608.14.8.

P-608.17.8 Portable cleaning equipment. Where the portable cleaning equipment connects to the water ~~distribution~~ *supply* system, the water supply system shall be protected against backflow in accordance with Section 608.14.1, 608.14.2, 608.14.3, 608.14.7 or 608.14.8.

* * *

608.18 Protection of individual water supplies. An individual water supply shall be located and constructed so as to be safeguarded against contamination in accordance with Sections 608.18.1 through 608.18.~~8~~*7*.

P-608.18.1 Well locations. A potable ground water source or pump suction line shall not be located closer to potential sources of contamination than the distances shown in Table 608.18.1. In the event the underlying rock structure is limestone or fragmented shale, the local or state health department shall be consulted on well site location. The distances in Table 608.18.1 constitute minimum separation and shall be increased in areas of creviced rock or limestone, or where the direction of movement of the ground water is from sources of contamination toward the well. *Note: All well-water quality requires approval by the Department of Public Health.*

* * *

~~608.18.6 Dug or bored well casings. Dug or bored well casings shall be of water-tight concrete, tile or galvanized or corrugated metal pipe extending to not less than 10 feet (3048 mm) below the ground surface. Where the water table is more than 10 feet (3048 mm) below the ground surface, the water-tight casing shall extend below the table surface. Well casings for dug wells or bored wells con- structed with sections of concrete, tile or galvanized or corrugated metal pipe shall be surrounded by 6 inches (152 mm) of grout poured into the hole between the out- side of the casing and the ground and extending not less than 10 feet (3048 mm) below the ground surface.~~

P-608.18.~~7~~*6* Cover. Potable water wells shall be equipped with an overlapping water-tight cover at the top of the well casing or pipe sleeve such that contaminated water or other substances are prevented from entering the well through the annular opening at the top of the well casing, wall or pipe sleeve. Covers shall extend downward not less than 2 inches (51 mm) over the outside of the well casing or wall. A dug well cover shall be provided with a pipe sleeve permitting the withdrawal of the pump suction pipe, cylinder or jet body without disturbing the cover. Where pump sections or discharge pipes enter or leave a well through the side of the casing, the circle of contact shall be water tight.

P-608.18.~~8~~*7* Drainage. Potable water wells and springs shall be constructed such that surface drainage will be diverted away from the well or spring.

* * *

SECTION 609 HEALTH CARE PLUMBING.

* * *

P-609.2 Water service *and distribution* for Group I-2, Condition 2 facilities. Hospitals Group I-2, Condition 2 facilities shall have not fewer than two water service pipes *and water distribution pipes* sized such that with the loss of the largest service pipe, the remaining service pipes will meet the water demand for the entire facility. Each water service shall have a shutoff valve in the building and a shutoff valve at the utility-provided point of connection to the water main or other source of potable water.

* * *

SECTION 610 – DISINFECTION OF POTABLE WATER SYSTEMS

P-610.1 General. New potable water systems shall be purged of deleterious matter and disinfected prior to utilization. The method to be followed shall be that prescribed by the health authority or water purveyor having jurisdiction or, in the absence of a prescribed method, the procedure described in either AWWA C651 or AWWA C652, or as described in this section.

This requirement shall apply to "on-site" or "in-plant" fabrication of a system or to a modular portion of a system.

Exception: Analysis and disinfection shall not be required for interior piping or water distribution piping servicing one- and two-family dwellings and townhouses up to three stories in height.

* * *

SECTION P-614 - PRIVATE WATER INFRASTRUCTURE

P-614.1 General. The provisions of this section shall govern the materials, design, and construction of Private Water Infrastructure.

P-614.1.1 Definitions. The following definitions shall apply to Private Water Infrastructure.

MASTER METER. A measuring device owned and maintained by the Philadelphia Water Department used to collect data and indicate water usage from multiple individually metered units in a Condominium or Planned Community.

PRIVATE WATER INFRASTRUCTURE PIPE. The pipe that is constructed on private property between the Master Meter and the Private Water Distribution Pipe owned and maintained by the Unit Owner's Association to serve some or all units within a Condominium or Planned Community.

PRIVATE WATER DISTRIBUTION PIPE. For the purposes of this section, this is limited to the section of pipe located between the Private Water Infrastructure Pipe and the individual building.

P-614.2 Materials. The Private Water Infrastructure Pipe and Private Water Distribution Pipe shall conform to one of the standards listed in Table 605.3 of this code and the requirements shall be consistent with all materials, joints and connections listed in Section 605.

P-614.3 Connections. The Private Water Distribution Pipe for each house or structure shall be connected to the Private Water Infrastructure Pipe separately. A Private Water Infrastructure Pipe used to convey both domestic and fire protection in a single pipe is permitted.

P-614.3.1 Shut off valves. Each connection of the Private Water Distribution Pipe to the Private Water Infrastructure Pipe shall have an accessible shut off valve installed no less

than 3 feet (914 mm) from the outside of the building wall and in line with the ferrule connection on the Private Water Infrastructure Pipe.

P-614.4 Access for repairs. Separation of Private Water, Sanitary Sewer and Storm Sewer Infrastructure placed in the same alignment and at a depth not exceeding 5 feet (1524 mm) shall comply with Section 603.2 of this code. Infrastructure placed at depths greater than 5 feet (1524 mm) shall be horizontally separated at a distance that allows for the approved sheeting and shoring and not less than 2 feet (609 mm).

P-614.5 Protection of structures. The Private Water Infrastructure Pipe installed parallel to footings and walls shall not extend into the bearing plane of a footing or wall in accordance with Section 307.5 of this code. Private Water Infrastructure pipe shall not be installed within 5 feet (1524 mm) of any adjoining property line. Private Water Infrastructure Pipe shall not be installed within 3 feet (914 mm) of any parallel building foundation.

P-614.6 Fire hydrants. The Private Water Infrastructure Pipe with Fire hydrant connections shall be metered and require backflow protection in accordance with Philadelphia Water Department (PWD) Regulations. The Philadelphia Fire Department shall govern the placement of fire hydrants. PWD may direct the placement of blow-offs and meters on the Private Water Distribution Pipe to ensure water quality.

Exception: A master meter on a Private Water Infrastructure Pipe used to convey both domestic and fire protection in a single pipe shall be an acceptable method to meter hydrants.

P-614.7 Easement required. Private Water Infrastructure Pipe shall require an easement with a minimum width of 12 foot (3657 mm) and must provide adequate space to replace/ repair the private infrastructure. Minimum vertical drive height clearance of 13 feet 6 inches (4115 mm) or two times the pipe depth to pipe bottom, whichever is greater, shall be provided. The easement shall also provide access to individual private water distribution pipes and valves and allow for shut- offs when necessary. No permanent structures shall be built over or in the easement unless these vertical height clearances are met.

* * *

SECTION P-615 - ABANDONED WATER SUPPLY SYSTEM AND COMPONENTS

P-615.1 Discontinuance of water service. Where a property no longer requires a water service connection the owner shall make application to the Philadelphia Water Department for a discontinuance permit. Abandoned water service piping shall be capped or plugged at the curb or shall have the ferrule removed.

P-615.2 Abandonment of water distribution piping. Abandoned water distribution piping shall be capped or plugged at the curb line or at the meter pit and properly capped or plugged inside the building or structure at the nearest possible location to the point of entry.

P-615.3 Abandoned water supply pipe. Abandoned water supply piping or water supply piping intended to serve future fixtures within a building or structure shall be capped or plugged with a fitting and provided with a valve within two feet of the point of origin of the water supply serving the abandoned piping or future fixture piping so as not to create a dead end or dead leg. Any abandoned water supply piping placed back into service shall be disinfected per Section 610.

CHAPTER 7
SANITARY DRAINAGE

* * *

SECTION 701 – GENERAL

* * *

P-701.2 Connection to sewer required. Sanitary drainage piping from plumbing fixtures in buildings and sanitary drainage piping systems from premises shall be connected to a public sewer. Where a public sewer is not available, the sanitary drainage piping and systems shall be connected to a private sewage disposal system in compliance with ~~state or local requirements.~~ *the regulations of the Department of Public Health.* ~~Where state or local requirements do not exist for private sewage disposal systems, the sanitary drainage piping and systems shall be connected to an approved private sewage disposal system that is in accordance with the International Private Sewage Disposal Code.~~

Exception: Sanitary drainage piping and systems that convey only the discharge from bathtubs, showers, lavatories, clothes washers and laundry trays shall not be required to connect to a public sewer or to a private sewage disposal system provided that the piping or systems are connected to a system in accordance with Chapter 13 ~~and 14~~.

P-701.2.1 Private Building Sewer. Repairs to existing private building sewer pipe materials shall be in accordance with Table P-702.3. New or extended private building sewers may not cross any adjoining property lines except private sanitary sewer infrastructure designed in accordance with Section P-717.

* * *

P-701.3 Separate sewer connection. A building having plumbing fixtures installed and intended for human habitation, occupancy or use on premises abutting on a street, alley or easement in which there is a public sewer shall have a separate connection with the sewer. Where located on the same lot, multiple buildings shall not be prohibited from connecting to a common building sewer that connects to the public sewer *provided that the common building sewer is not placed underneath any building or structure.*

P-701.3.1 Non-residential. Non-residential buildings and other structures on the same deeded property and maintained under the same ownership shall be permitted to connect to the same building sewer.

P-701.3.2 Residential. Where one building stands in the rear of another building on the same deeded property and maintained under the same ownership, and a separate building sewer cannot be provided for the rear building through an alley, yard or other open public space, the building sewer of the front building shall be permitted to serve the rear building, provided the building sewer of the front building is of adequate size and in suitable condition to serve both front and rear buildings.

P-701.4 Sewage treatment. Sewage or other waste from a plumbing system that is deleterious to surface or subsurface waters shall not be discharged into the ground or into any waterway ~~unless it has first been rendered innocuous through subjection to an approved form of treatment~~.

P-701.5 Damage to drainage system or public sewer. Waste detrimental to the *public sewer* system or to the functioning of the sewage-treatment plant shall be treated and disposed of in accordance with Section 1003 as directed by the code official *and the Industrial Waste Unit of the Philadelphia Water Department.*

* * *

P-701.8 Abandonment of building sewer and lateral. Abandoned laterals shall have the house trap removed, and the pipe shall be hermetically sealed by a cap or plug encased in concrete at the curb line. Laterals 8 inches (203 mm) and greater shall be sealed by a cap or plug encased in concrete at the point of connection to the public sewer. Abandoned drainage piping within the building shall be hermetically sealed by a cap or plug.

P-701.8.1 Permit. A plumbing permit is required for abandonment of building sewers and laterals and work shall be performed by a Registered Master Plumber.

P-701.9 Property Lines. Drainage piping may not cross adjoining property lines except private sewer infrastructure designed in accordance with Section P- 717.

* * *

SECTION 702 – MATERIALS

P-702.1 Above-ground sanitary drainage and vent pipe. Above-ground soil, waste and vent pipe shall conform to one of the standards listed in Table 702.1. *Any above ground soil, waste and vent piping serving or located within occupancies other than one- and two-family dwellings and apartments shall be metallic piping in accordance with this Section.*

TABLE P-702.1 -- ABOVE-GROUND DRAINAGE AND VENT PIPE

MATERIAL	*STANDARD*
* * *	
Copper or copper-alloy tubing [a] (Type K, L, M or DWV)	ASTM B75; ASTM B88; ASTM B251; ASTM B306
* * *	

a. Type K copper tubing must be used for the drainage of all urinals

P-702.1.1 High-rise material. Metallic piping shall be installed throughout buildings with an occupied floor located more than 75 feet (22,860 mm) above the lowest level of fire department vehicle access.

P-702.2 Underground building sanitary drainage and vent pipe. Underground building sanitary drainage and vent pipe shall conform to one of the standards listed in Table P-702.2. *Any underground building sanitary drainage and vent piping serving or located within occupancies other than one- and two-family dwellings and apartments shall be metallic piping in accordance with this section.*

P-702.2.1 High-rise material. Metallic piping shall be installed for all underground building sanitary drainage and vent piping for buildings- with an occupied floor located more than 75 feet (22,860 mm) above the lowest level of fire department vehicle access.

TABLE P-702.2 -- UNDERGROUND BUILDING DRAINAGE AND VENT PIPE

MATERIAL	*STANDARD*
Acrylonitrile butadiene styrene (ABS) plastic pipe in IPS diameters, including Schedule 40, DR 22 (PS 200) and DR 24 (PS 140); with a solid~~, cellular core or composite~~ wall	ASTM D2661; ~~ASTM F628; ASTM F1488;~~ CSA B181.1
Cast-iron pipe	ASTM A74; ~~ASTM A888; CISPI 301~~
* * *	

Ductile iron pipe class 56	*AWWA C151/A21.51; AWWA C115/A21.15*
* * *	
Polyvinyl chloride (PVC) plastic pipe in IPS diameters, including Schedule 40, DR 22 (PS 200) and DR 24 (PS 140); with a solid~~, cellular core or composite~~ wall	ASTM D2665; ~~ASTM F891; ASTM F1488~~; CSA B181.2
Polyvinyl chloride (PVC) plastic pipe with a 3.25-inch O.D. and a solid~~, cellular core or composite~~ wall	ASTM D2949~~, ASTM F1488~~
* * *	

P-702.3 Building sewer pipe. Building sewer pipe shall conform to one of the standards listed in Table P-702.3. *Any building sewer pipe serving or located within occupancies other than one- and two-family dwellings and apartments shall be metallic piping in accordance with this section.*

TABLE P-702.3 -- BUILDING SEWER PIPE

MATERIAL	STANDARD
Acrylonitrile butadiene styrene (ABS) plastic pipe in IPS diameters, including Schedule 40, DR 22 (PS 200) and DR 24 (PS 140); with a solid~~, cellular core or composite~~ wall	ASTM D2661; ~~ASTM F628; ASTM F1488;~~ CSA B181.1
Acrylonitrile butadiene styrene (ABS) plastic pipe in sewer and drain diameters, including SDR 42 (PS 20), PS 35, SDR 35 (PS 45), PS 50, PS 100, PS 140, SDR 23.5 (PS 150) and PS 200; with a solid~~, cellular core or composite~~ wall	~~ASTM F1488;~~ ASTM D2751
Cast-iron pipe	ASTM A74; ~~ASTM A888; CISPI 301~~
* * *	
Ductile iron pipe class 56	*AWWA C151/A21.51; AWWA C115/A21.15*
* * *	
Polyvinyl chloride (PVC) plastic pipe in IPS diameters, including Schedule 40, DR 22 (PS 200) and DR 24 (PS 140); with a solid~~, cellular core or composite~~ wall	*ASTM D2665; ~~ASTM F891; ASTM F1488;~~*
Polyvinyl chloride (PVC) plastic pipe in sewer and drain diameters, including PS 25,	~~ASTM F891; ASTM F1488;~~ ASTM D3034; CSA B182.2; CSA B182.4

SDR 41 (PS 28), PS 35, SDR 35 (PS 46), PS 50, PS 100, SDR 26 (PS 115), PS 140 and PS 200; with a solid, ~~cellular core or composite~~ wall	
Polyvinyl chloride (PVC) plastic pipe with a 3.25-inch O.D. and a solid~~, cellular core or composite~~ wall	ASTM D2949~~, ASTM F1488~~
* * *	

P-702.3.1 High-rise material. Metallic piping shall be installed for all building sewer pipe for buildings with an occupied floor located more than 75 feet (22,860 mm) above the lowest level of fire department vehicle access.

P-702.3.2 Lateral. Lateral materials and installation shall be regulated by the Philadelphia Water Department.

* * *

TABLE P-702.4 -- PIPE FITTINGS

MATERIAL	STANDARD
* * *	
Ductile iron pipe class 56	*AWWA C151/A21.51; AWWA C115/A21.15*
* * *	

* * *

P-702.6 Chemical waste system. A chemical waste system shall be completely separated from the sanitary drainage system. The chemical waste shall be treated in accordance with Section 803.2 before discharging to the sanitary drainage system. Separate drainage systems for chemical wastes and vent pipes shall be of an approved material that is resistant to corrosion and degradation for the concentrations of chemicals involved. *The restrictions on non-metallic pipe shall not apply to this section.*

702.7 *Reserved.* ~~Lead bends and traps. The wall thickness of lead bends and traps shall be not less than 1/8 inch (3.2 mm)~~

SECTION P-703 – BUILDING SEWER

P-703.1 Building sewer pipe near the water service. The proximity of a sewer to a water ~~service~~ *distribution* shall comply with Section P-603.2.

P-703.2 Drainage pipe in filled ground. Where a building sewer or building drain is installed on filled or unstable ground, the drainage pipe shall conform to one of the standards for ~~ABS plastic pipe,~~ cast-iron pipe, copper or copper-alloy tubing, ~~PVC plastic pipe or polypropylene plastic pipe~~ *or stainless steel drainage systems, Type 304 and 316L as indicated in Table P-702.3. When drainage is installed in filled or unstable ground, it shall be of cast iron or hard temper copper tube of a weight not less than type "L" or stainless steel drainage systems, Type 304 and 316L. Pipe shall be supported on concrete piers with spacing consistent with Table 308.5, or a constant bed of concrete or clevis hangers attached to reinforcing rods in the concrete floor above the piping.*

* * *

703.4 Existing building sewers and building drains. Where the entire sanitary drainage system of an existing building is replaced, existing building drains under concrete slabs and existing building sewers that will serve the new system shall be internally examined to verify that the piping is sloping in the correct direction, is not broken, is not obstructed and is sized for the drainage load of the new plumbing drainage system to be installed.

P-703.4.1 Connections to existing private building sewers. Where connections are made to existing private building sewers, all provisions of 703.4 shall apply including confirmation and acceptance of condition and sizing by a registered design professional.

P-703.4.1.1 Extension of existing private building sewers. Extension of existing private building sewers is prohibited.

* * *

703.6 Combined sanitary and storm public sewer. Where the public sewer is a combined system for both sanitary and storm water, the sanitary sewer shall be connected independently to the ~~public sewer~~ *lateral, unless otherwise approved by the Philadelphia Water Department.*

Exception: The repair or replacement of an existing combined building sewer as of the initial adoption date of this code. The size of such replacements shall comply with section 1109.2.

P-703.6.1 Separation. Storm water shall not be drained into sewers that are intended only for sanitary sewage. Sanitary waste shall not be drained into sewers that are intended only for storm water.

* * *

SECTION 704 - DRAINAGE PIPING INSTALLATION

P-704.1 Slope of horizontal drainage piping. Horizontal drainage piping shall be installed in

uniform alignment at uniform slopes. The slope of a horizontal drainage pipe shall be not less than that indicated in Table 704.1 except that where the drainage piping is upstream of a grease interceptor, the slope of the piping shall be not less than 1/4 inch per foot (2- percent slope). *Building sewer force mains are not permitted.*

TABLE P-704.1 -- SLOPE OF HORIZONTAL DRAINAGE PIPE

SIZE (inches)	MINIMUM SLOPE (inch per foot)
~~2½~~ *3* or less	¼ a
~~3~~ *4* to 6	1/8 a
8 or larger	1/16 a

* * *

P-704.5 Dead ends. In the installation or removal of any part of a drainage system, dead ends shall be prohibited. Cleanout extensions and approved future fixture drainage piping shall not be considered as dead ends.

* * *

SECTION 705 – JOINTS

* * *

705.2 ABS plastic. Joints between ABS plastic pipe or fittings shall comply with Sections 705.2.1 through 705.2.3.

P-705.2.1 *Reserved.* ~~*Mechanical joints. Mechanical joints on drainage pipes shall be made with an elastomeric seal conforming to ASTM C1173, ASTM D3212 or CSA B602. Mechanical joints shall be installed only in underground systems unless otherwise approved. Joints shall be installed in accordance with the manufacturer's instructions.*~~

* * *

P-705.2.4 *Reserved.* ~~Push-fit joints. Push-fit DWV fittings shall be listed and labeled to ASME A112.4.4 and shall be installed in accordance with the manufacturer's instructions.~~

* * *

705.3 Cast iron. Joints between cast-iron pipe or fittings shall comply with Sections 705.3.1 through 705.3.3.

* * *

P-705.3.3 Mechanical joint coupling. Mechanical joint couplings for hubless pipe and fittings shall consist of an elastomeric sealing sleeve and a metallic shield that comply with CISPI 310, ASTM C1277 or ASTM C1540. The elastomeric sealing sleeve shall conform to ASTM C564 or CSA B602 and shall be provided with a center stop. Mechanical joint couplings shall be installed in accordance with the manufacturer's instructions *and limited to above ground installations only. Unshielded mechanical couplings are not permitted.*

P-705.3.4 Repair or connection of the building (house) drain or building sewer. A cast-iron double hub fitting and fission joint when using lead and oakum shall be acceptable for repair or connection of a building (house) drain or building sewer. On one side of a repair or connection to a building (house) drain or building sewer, either a cast-iron hubless coupling consisting of a cast-iron housing complying with ASTM A1056 and C564, stainless steel nuts and bolts that comply with ANSI B18.2.1 and ANSI B18.2.2 and a neoprene gasket that comply with ASTM C564 or an adjustable repair coupling for hubless pipe and fittings consisting of an elastomeric sealing sleeve and a metallic housing that comply with CISPSI 310 and ASTM A240, the elastomeric sealing sleeve shall conform to ASTM C425 or C1173 and shall be provided with a center stop, shall be acceptable.

> *Note: An adjustable repair coupling shall be permitted on each side of the repair or connection. The use of two adjustable repair couplings shall require a concrete encasement of the coupling on both sides of the repair or connection.*

P-705.3.5 Replacement of existing building (house) traps. For replacement of an existing building (house) trap an adjustable repair coupling for hubless pipe and fitting consisting of an elastomeric sealing sleeve and a metallic housing that comply with CISPI 310 and ASTM A240, the elastomeric sealing sleeve shall conform to ASTM C425 or C1173 and shall be provided with a center stop, shall be permitted on one side of the trap.

Note: Under severe conditions, an adjustable repair coupling shall be permitted on each side of the trap. The use of two adjustable repair couplings shall require a concrete encasement of the coupling on the street side of the trap.

* * *

705.5 Copper Pipe. Joints between copper or copper-alloy pipe or fittings shall comply with Sections 705.5.1 through 705.5.5.

* * *

P-705.5.2 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions *and limited to above ground installations only. Unshielded mechanical couplings are not permitted.*

P-705.5.3 Solder joints. Solder joints shall be made in accordance with the methods of ASTM B828. Cut tube ends shall be reamed to the full inside diameter of the tube end. Joint surfaces shall be cleaned. A flux conforming to ASTM B813 shall be applied. The joint shall be soldered with a solder conforming to ASTM B32. *All solder joints shall be made with lead-free solder and flux. "Lead free" shall mean a chemical composition equal to or less than 0.2-percent lead.*

705.6 Copper Tubing. Joints between copper or copper-alloy tubing or fittings shall comply with Sections 705.6.1 through 705.6.3.

* * *

P-705.6.2 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions *and limited to above ground installations only. Unshielded mechanical couplings are not permitted.*

P-705.6.3 Solder joints. Solder joints shall be made in accordance with the methods of ASTM B828. Cut tube ends shall be reamed to the full inside diameter of the tube end. Joint surfaces shall be cleaned. A flux conforming to ASTM B813 shall be applied. The joint shall be soldered with a solder conforming to ASTM B32. *All solder joints shall be made with lead-free solder and flux. "Lead free" shall mean a chemical composition equal to or less than 0.2-percent lead.*

705.8 Steel. Joints between galvanized steel pipe or fittings shall comply with Sections 705.8.1 and 705.8.2.

* * *

P-705.8.2 Mechanical joints. Joints shall be made with an approved elastomeric seal. Mechanical joints shall be installed in accordance with the manufacturer's instructions *and limited to above ground installations only. Unshielded mechanical couplings are not permitted.*

705.9 Lead. Joints between lead pipe or fittings shall *be prohibited* ~~comply with Sections 705.9.1 and 705.9.2~~.

~~705.9.1. Burned. Burned joints shall be uniformly fused together into one continuous piece. The thickness of the joint shall be not less than the thickness of the lead being joined. The filler metal shall be of the same material as the pipe.~~

~~705.9.2. Wiped. Joints shall be fully wiped, with an exposed surface on each side of the joint not less than ¾ inch (19.1 mm). The joint shall be not less than 3/8 inch (9.5 mm) thick at the thickest point.~~

705.10 Lead.

P-705.10.1 Mechanical joints. *Prohibited*. ~~Mechanical joints on drainage pipe shall be made with an elastomeric seal conforming to ASTM C1173, ASTM D3212 or CSA B602. Mechanical joints shall not be installed in above-ground systems, unless otherwise approved. Joints shall be installed in accordance with the manufacturer's instructions.~~

P-705.10.2 Solvent cementing. Joint surfaces shall be clean and free from moisture. A purple primer that conforms to ASTM F656 shall be applied. Solvent cement not purple in color and conforming to ASTM D2564, CSA B137.3, CSA B181.2 or CSA B182.1 shall be applied to all joint surfaces. The joint shall be made while the cement is wet and shall be in accordance with ASTM D2855. Solvent cement joints shall be permitted above or below ground.

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

~~1. The solvent cement used is third-party certified as conforming to ASTM D2564.~~

~~2.The solvent cement is used only for joining PVC drain, waste and vent pipe and fittings in nonpressure applications in sizes up to and including 4 inches (102 mm) in diameter.~~

* * *

705.10.4. *Reserved.* ~~Push-fit joints. Push-fit joints shall conform to ASME A112.4.4 and shall be installed in accordance with the manufacturer's instructions~~

* * *

705.12 Polyethylene plastic pipe.

* * *

P-705.12.2 Mechanical joints. Mechanical joints in drainage piping shall be made with an elastomeric seal conforming to ASTM C1173, ASTM D3212 or CSA B602. Mechanical joints shall be installed in accordance with the manufacturer's instructions *and limited to above ground installations only. Unshielded mechanical couplings are not permitted.*

705.13 Polyolefin plastic.

* * *

P-705.13.2 Mechanical and compression sleeve joints. Mechanical and compression sleeve joints shall be installed in accordance with the manufacturer's instructions. *and limited to above ground installations only. Unshielded mechanical couplings are not permitted.*

* * *

705.14 Polyvinylidene fluoride plastic.

* * *

P-705.14.2 Mechanical and compression sleeve joints. Mechanical and compression sleeve joints shall be installed in accordance with the manufacturer's instructions *and limited to above ground installations only. Unshielded mechanical couplings are not permitted.*

* * *

P-705.15 Polypropylene plastic. The joint between polypropylene plastic pipe and fittings shall incorporate an elastomeric seal. The joint shall conform to ASTM D3212. The joint shall conform to ASTM D3212. Mechanical joints shall ~~not~~ be installed ~~below ground~~ *in accordance with product specifications.*

P-705.16 Joints between different materials. Joints between different piping materials shall be made with a mechanical joint of the compression or mechanical-sealing type conforming to ASTM C1173, ASTM C1460 or ASTM C1461. *and limited to above ground installations only*. Connectors and adapters shall be approved for the application and such joints shall have an elastomeric seal conforming to ASTM C425, ASTM C443, ASTM C564, ASTM C1440, ASTM F477, CSA A257.3M or CSA B602, or as required in Sections 705.16.1 through 705.16.7. Joints between glass pipe and other types of materials shall be made with adapters having a TFE seal. Joints shall be installed in accordance with the manufacturer's instructions.

* * *

P-705.16.5 Lead pipe to other piping material. Joints between lead pipe and other piping material shall be *prohibited.* ~~made by a wiped joint to a caulking ferrule, soldering nipple or bushing or shall be made with an approved adapter fitting.~~

* * *

SECTION 706 - CONNECTIONS BETWEEN DRAINAGE PIPING AND FITTINGS

* * *

TABLE P-706.3 - FITTINGS FOR CHANGE IN DIRECTION

TYPE OF FITTING PATTERN	CHANGE IN DIRECTION		
	Horizontal to vertical	Vertical to horizontal	Horizontal to horizontal
* * *			
Quarter bend	X	X [a, *d*]	X [a]

* * *

d. A quarter bend shall be permitted in lieu of an ideal bend, on a dry vent above the highest fixture and in a storm system.

* * *

SECTION 708 - CLEANOUTS

P-708.1 Cleanouts required. Cleanouts shall be provided for drainage piping in accordance with Sections 708.1.1 through 708.1.12. *A cleanout shall be provided at or near the base of each vertical waste or soil stack.*

P-708.1.1 Horizontal drains and building drains. Horizontal drainage pipes *and building drains* ~~in buildings~~ shall have cleanouts located at intervals of not more than ~~100~~ *50* feet (~~30,480~~ *15,240* mm) for lines four inch in diameter or less. ~~Building~~ *Horizontal drainage pipes and building* drains shall have cleanouts located at intervals of not more than 100 feet (30,480 mm) *for lines five inch in diameter and above,* ~~,~~ except where manholes are used instead of cleanouts, the manholes shall be located at intervals of not more than ~~400~~ *200* feet (~~122~~ *61* m). The interval length shall be measured from the cleanout or manhole opening, along the developed length of the piping to the next drainage fitting providing access for cleaning, the end of the horizontal drain or the end of the building drain.

Exception: Horizontal fixture drain piping serving a nonremovable trap shall not be required to have a cleanout for the section of piping between the trap and the vent connection for such trap.

* * *

708.1.10 Cleanout access. 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 11/2 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.

* * *

P-708.1.10.2 Floor cleanout assemblies. Where it is necessary to protect a cleanout plug from the loads of vehicular traffic, cleanout assemblies in accordance with ASME A112.36.2M shall be installed. *Note: An adjustable repair coupling shall be permitted to connect underground piping to a cleanout.*

* * *

SECTION 709 - FIXTURE UNITS

* * *

TABLE P-709.1 – DRAINAGE FIXTURE UNITS FOR FIXTURES AND GROUPS

FIXTURE TYPE	DRAINAGE FIXTURE UNIT VALUE AS LOAD FACTORS	MINIMUM SIZE OF TRAP (inches)
* * *		
Emergency floor drain	0	~~2~~ *3*
Floor Drains[b]	~~2~~ *3*	~~2~~ *3*
* * *		

* * *

SECTION 710 – DRAINAGE SYSTEM SIZING

710.1 Maximum fixture unit load. The maximum number of drainage fixture units connected to a given size of building sewer, building drain or horizontal branch of the building drain shall be determined using Table P-710.1(1). The maximum number of drainage fixture units connected to a given size of horizontal branch or vertical soil or waste stack shall be determined using Table P-710.1(2).

TABLE P-710.1(1): BUILDING DRAINS AND SEWERS

Diameter of Pipe (inches)	Maximum Number of Drainage Fixture Units Connected to Any Portion of the Building Drain or the Building Sewer, Including Branches of the Building Drain			
	Slope per Foot			
	1/16-inch	1/8-inch	¼-inch	½-inch
* * *				
3	-	~~36~~ -	42	50
* * *				

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.

* * *

P-712.3.2 Sump pit. The sump pit shall be not less than 18 inches (457 mm) in diameter and not less than 24 inches (610 mm) in depth, unless otherwise approved. The pit shall be provided with access and shall be located such that all drainage flows into the pit by gravity. The sump pit shall be constructed of tile, concrete, steel, plastic or other approved materials. The pit bottom shall be solid and provide permanent support for the pump. The sump pit shall be fitted with a gastight removable cover that is installed not more than 2 inches (51 mm) below grade or floor level. The cover shall be adequate to support anticipated loads in the area of use. The sump pit shall be vented in accordance with Chapter 9.

Exception: An elevator sump pit shall not require a sealed cover.

712.3.3 Discharge pipe and fittings. Discharge pipe and fittings serving sump pump and ejectors shall be constructed of materials in accordance with Sections P-712.3.3.1 and 712.3.3.2.

P-712.3.3.1 Materials. Pipe and fitting materials shall be constructed of copper or copper-alloy, CPVC, ductile iron, PE, ~~or~~ PVC~~,~~ *solid wall, galvanized steel pipe or stainless steel pipe for residential applications limited to one- and two-family dwellings. Discharge piping serving or located within occupancies other than one- and two-family dwellings and apartments shall be metallic piping in accordance with this Section*

* * *

P-712.4 Sewage pumps and sewage ejectors. A *duplex* sewage pump or sewage ejector shall automatically discharge the contents of the sump to the building drainage system. *A simplex pump or sewage ejector shall be permitted for one- and two-family dwellings and where serving a single plumbing fixture waste, a single waste receptor or both in all other occupancies.*

P-712.4.1 Macerating toilet systems. Macerating toilet systems shall comply with ASME A112.3.4/CSA B45.9 and shall be installed in accordance with the manufacturer's instructions, *and shall be limited to use in one- and two-family residential dwellings only.*

P-712.4.2 Capacity. A sewage pump or sewage ejector shall have the capacity and head for the application requirements. Pumps or ejectors that receive the discharge of water closets shall be capable of handling spherical solids with a diameter of up to and including 2 inches (51 mm). Other pumps or ejectors shall be capable of handling spherical solids with a diameter of up to and including 1/2 inch (13 mm). The capacity of a pump or ejector based on the diameter of the discharge pipe shall be not less than that indicated in Table P-712.4.2.

Exceptions:

1. Grinder pumps or grinder ejectors that receive the discharge of water closets shall have a discharge opening of not less than 1 1/4 inches (32 mm).
2. Macerating toilet assemblies that serve single water closets shall have a discharge opening of not less than 3/4 inch (19.1 mm). ~~.~~ *and shall be limited to use in one- and two-family residential dwellings only.*

* * *

SECTION 714 - BACKWATER VALVES

P-714.1 Sewage backflow. Where plumbing fixtures are installed on a floor with a finished floor elevation below the *fresh air inlet termination* ~~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, or horizontal branch serving such fixtures. Plumbing fixtures installed on a floor with a finished floor elevation above the elevation of the *fresh air inlet termination* ~~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 *fresh air inlet termination* ~~manhole cover of the next upstream manhole in the public sewer~~ shall not be prohibited from discharging through a backwater valve.

Note: For building sub-drains that service fixtures below the fresh air inlet termination that discharges into the building gravity drainage system by automatic pumping equipment, the required check valve installed with the pump shall provide sufficient means of protection against backflow.

* * *

SECTION 715 - VACUUM DRAINAGE SYSTEMS

* * *

715.2 System design. Vacuum drainage systems shall be designed in accordance with the vacuum drainage system manufacturer's instructions. The system layout, including piping layout, tank assemblies, vacuum pump assembly and other components necessary for proper function of the system shall be in accordance with the manufacturer's instructions. Plans,

specifications and other data for such systems shall be submitted to the code official for review and approval prior to installation.

* * *

P-715.2.5 Materials. Vacuum drainage pipe, fitting and valve materials shall be in accordance with the vacuum drainage system manufacturer's instructions and the requirements of this chapter *and supersede the requirements contained in Section 702.*

* * *

SECTION P-716 – REPLACEMENT OF UNDERGROUND BUILDING SEWERS AND BUILDING DRAINS BY PIPE BURSTING METHODS

P-716.1 General. This section shall govern the replacement of existing building sewer and building *(house)* drain~~age~~ piping *by pipe-bursting methods and shall not extend past the curb line.*

P-716.2 Applicability. The replacement of ~~existing~~ building sewer~~s~~ and building *(house)* drain~~age~~ piping by pipe-bursting methods shall be limited to gravity drainage piping of sizes *6* inches (152 mm) ~~in diameter~~ and ~~larger~~ smaller. The replacement piping shall be of the same nominal size as the existing piping. *A plumbing permit shall be issued by the Department of Licenses and Inspections for this work and the work shall be properly inspected. Proof satisfactorily to the Department shall be provided that the PA One Call and any other applicable agency has been properly notified prior to issuing a permit for this work.*

P-716.3 Pre-installation inspection. The existing piping sections to be replaced shall be inspected internally by a recorded video camera survey *and the existing pipe to be replaced shall be introduced with water to identify any imperfections in alignment.* The survey shall include notations of the position of cleanouts and the depth of connections to the existing piping.

P-716.4 Pipe. The replacement pipe shall be made of high-density polyethylene (HDPE) and shall have a standard dimension ratio (SDR) of 17. The pipe shall be in compliance with ASTM F714 *and shall conform to the manufacturer's specifications and guidelines for installation and use.*

P-716.5 Pipe fittings. Pipe fittings to be connected to the replacement pipe shall be made of high-density polyethylene (HDPE) and shall be in compliance with ASTM D2683 *and shall conform to the manufacturer's specifications and guidelines for installation and use.*

P-716.6 Cleanouts. Where the existing building sewer or building *(house)* drain did not have cleanouts meeting the requirements of this code, cleanout fittings shall be installed as required by this code.

P-716.7 Post-installation inspection. The completed replacement piping section shall be inspected internally by a recorded video camera survey *and the existing pipe to be replaced shall be introduced with water to identify any imperfections in alignment that would not allow for approval of the installation.* The video survey shall be reviewed and approved or disapproved by the code official prior to pressure testing of the replacement piping system.

* * *

SECTION P-717 - PRIVATE SANITARY SEWER INFRASTRUCTURE ~~RELINING BUILDING SEWERS AND BUILDING DRAINS~~

P-717.1 General. The provisions of this Section shall govern the materials, design, and construction of Private Sanitary Sewer Infrastructure.

P-717.1.1 Definitions
The following definitions shall apply to Private Sanitary Sewer Infrastructure.

PRIVATE SEWER INFRASTRUCTURE. The sewer pipe that is constructed on private property between the Lateral and the Building Sewer owned and maintained by the unit owner's association to serve some or all units within a Condominium or Planned Community.

Sanitary: Private sewer infrastructure that conveys sewage only.

Storm: Private sewer infrastructure that conveys storm water or other drainage, but not sewage.

P-717.2 Materials. Private Sanitary Sewer Infrastructure shall conform to all of the requirements listed in Section 702 of this code.

P-717.3 Slope of private sanitary sewer infrastructure. Private sanitary sewer infrastructure shall be installed in uniform alignment at uniform slopes. The slope of private sanitary sewer infrastructure shall be in accordance with Section 704 of this code.

P-717.4 Connections. The building sewers for each house or structure shall be connected to the Private Sanitary Sewer Infrastructure separately. Each connection shall be made with a wye branch and be fitted with a Building Trap and Fresh Air Inlet in line with the connection point in accordance with the Section 1002.6 of this code.

P-717.5 Depth of Private Sanitary Sewer Infrastructure. Private Sanitary Sewer Infrastructure shall be installed not less than 36 inches (914 mm) measured from the top of pipe.

P-717.6 Access for Repairs. Separation of Private Water, Sanitary Sewer, and Storm Sewer Infrastructure placed in the same alignment and at a depth not exceeding 5-feet shall comply

with Section 603.2 of this code. Infrastructure placed at depths greater than 5-feet shall be horizontally separated at a distance that allows for the approved sheeting and shoring and not less than 2-feet.

P-717.7 Protection of structures. Private sanitary sewer infrastructure piping installed parallel to footings and walls shall not extend into the bearing plane of a footing or wall in accordance with Section 307.5 of this code. Private sanitary sewer infrastructure piping shall not be installed within 5 feet (1524 mm) of any adjoining property line. Private sanitary sewer infrastructure Pipe shall not be installed within 3 feet (914 mm) of any parallel building foundation.

P-717.8 Cleanouts required. Cleanouts shall be provided for Private Sanitary Sewer Infrastructure in accordance with the provisions of this code for sanitary drainage pipe in Section 708.1. All building sewers connected to Private Sanitary Sewer Infrastructure shall be fitted with an approved Building Trap and Fresh Air Inlet. The sewer will not require a trap and Fresh Air Inlet at the connection to the lateral but will require a manhole or cleanout at the property line before entering the public right-of-way

P-717.9 Manholes. Manholes will be required for Private Sanitary Sewer Infrastructure 8-inches in diameter and greater at changes in direction, grade, and size. All manholes shall have inverts built with channels extending up to the pipe crown to ensure uniform flow in accordance with Section 708.1 of this code

P-717.10 Sewage Backflow. Backwater valves shall be installed in accordance with Section 714.1 of this code

P-717.11 Easement required. Private Sanitary Sewer Infrastructure shall require an easement with a minimum width of 12' and must provide adequate space to replace/repair the private services. Minimum vertical drive height clearance of 13'-6" or 2x pipe depth to pipe bottom, whichever is greater, shall be provided

* * *

SECTION P-718 – RELINING BUILDING SEWERS ~~REHABILITATION OF BUILDING SEWERS AND BUILDING DRAINS~~

P-718.1 ~~717.1~~ General. This section shall govern the relining of existing building sewers~~ and building drainage piping~~ *for one-and two family dwellings. Relining of building sewers for commercial occupancies is prohibited.*

P-718.2 ~~717.2~~ Applicability. The relining of existing building sewers ~~and building drainage piping~~ shall be limited to gravity drainage piping 4 inches (102 mm) in diameter and larger. The relined piping shall be of the same nominal size as the existing piping.

P-718.3 ~~717.3~~ Preinstallation requirements. Prior to commencement of the relining installation, the existing piping sections to be relined shall be descaled and cleaned. After the cleaning process has occurred and water has been flushed through the system, the piping shall be inspected internally by a recorded video camera survey.

> *P-718.3.1* ~~717.3.1~~ Preinstallation recorded video camera survey. The video survey shall include verification of the project address location. The video shall include notations of the cleanout and fitting locations, and the approximate depth of the existing piping. The video shall also include notations of the length of piping at intervals not greater than 25 feet (7620 mm).

P-718.4 ~~717.4~~ Permitting*. A plumbing permit shall be issued by the Department of Licenses and Inspections for this work and the work shall be properly inspected. Proof satisfactory to the Department shall be provided showing that the PA One Call and any other applicable agency has been properly notified prior to issuing a permit for this work.* Prior to permit issuance, the code official shall review and evaluate the preinstallation recorded video camera survey to determine if the piping system is capable ~~to be~~ *of being* relined in accordance with the proposed lining system manufacturer's installation requirements and applicable referenced standards.

P-718.5 ~~717.5~~ Prohibited applications. Where review of the preinstallation recorded video camera survey reveals that piping systems are not installed correctly or defects exist, relining shall not be permitted. The defective portions of piping shall be exposed and repaired with pipe and fittings in accordance with this code. Defects shall include, but are not limited to, backgrade or insufficient slope, complete pipe wall deterioration or complete separations such as from tree root invasion or improper support.

P-718.6 ~~717.6~~ Relining materials. The relining materials shall be manufactured in compliance with applicable standards and certified as required in Section 303. Fold-and-form pipe reline materials shall be manufactured in compliance with ASTM F1504 or ASTM F1871.

P-718.7 ~~717.7~~ Installation. The installation of relining materials shall be performed in accordance with the manufacturer's installation instructions, applicable referenced standards and this code.

> *P-718.7.1* ~~717.7.1~~ Material data report. The installer shall record the data as required by the relining material manufacturer and applicable standards. The recorded data shall

include but is not limited to the location of the project, relining material type, amount of product installed and conditions of the installation. A copy of the data report shall be provided to the code official prior to final approval.

P-718.8 ~~717.8~~ Post-installation recorded video camera survey. The completed, relined piping system shall be inspected internally by a recorded video camera survey after the system has been flushed and flow-tested with water. The video survey shall be submitted to the code official prior to finalization of the permit. The video survey shall be reviewed and evaluated to provide verification that no defects exist. Any defects identified shall be repaired and replaced in accordance with this code.

P-718.9 ~~717.9~~ Certification. A certification shall be provided in writing to the code official, from the permit holder, that the relining materials have been installed in accordance with the manufacturer's installation instructions, the applicable standards and this code.

P-718.10 ~~717.10~~ Approval. Upon verification of compliance with the requirements of Sections *P-718.1* ~~717.1~~ through *P-718.9* ~~717.9~~, the code official shall approve the installation.

SECTION P-719 – REHABILITATION OF BUILDING SEWERS

P-719.1 ~~Section 718.1~~ Cure-in-place. Sectional cure-in-place rehabilitation of building sewer piping ~~and sewer service lateral piping~~ shall be in accordance with ASTM F2599 *and shall be limited to one- and two-family dwellings.* Hydrophilic rings or gaskets in cure-in-place rehabilitation of building sewer piping ~~and sewer service lateral piping~~ shall be in accordance with ASTM F3240 to ensure water tightness and elimination of ground water penetration.

P-719.2 Applicability. The cure-in-place rehabilitation of existing building sewer piping shall be limited to gravity drainage piping 4-inches (102 mm) in diameter and larger. The cure-in-place rehabilitation piping shall be of the same nominal size as the existing piping.

P-719.3 Preinstallation requirements. Prior to commencement of the cure-in-place rehabilitation installation, the existing piping sections to be rehabilitated shall be descaled and cleaned. After the cleaning process has occurred and water has been flushed through the system, the piping shall be inspected internally by a recorded video camera survey.

P-719.3.1 Preinstallation recorded video camera survey. The video survey shall include verification of the project address location. The video shall include notations of the cleanout and fitting locations, and the approximate depth of the existing piping. The video shall also include notations of the length of piping at intervals not greater than 25 feet (7620 mm).

P-719.4 Permitting. A plumbing permit shall be issued by the Department of Licenses and Inspections for this work and the work shall be properly inspected. Proof satisfactory to the

Department shall be provided that the PA One Call and any other applicable agency has been properly notified prior to issuing a permit for this work. Prior to permit issuance, the code official shall review and evaluate the preinstallation recorded video camera survey to determine if the piping system is capable of being relined in accordance with the proposed rehabilitation system manufacturer's installation requirements and applicable referenced standards.

P-719.5 Prohibited applications. Where review of the preinstallation recorded video camera survey reveals that piping systems are not installed correctly or defects exist, rehabilitation shall not be permitted. The defective portions of piping shall be exposed and repaired with pipe and fittings in accordance with this code. Defects shall include, but are not limited to, backgrade or insufficient slope, complete pipe wall deterioration or complete separations such as from tree root invasion or improper support.

P-719.6 Cure in place rehabilitation materials. The rehabilitation materials shall be manufactured in compliance with applicable standards and certified as required in Section 303.

P-719.7 Installation. The installation of cure in place rehabilitation materials shall be performed in accordance with the manufacturer's installation instructions, applicable referenced standards and this code.

> *P-719.7.1 Material data report. The installer shall record the data as required by the cure in place rehabilitation material manufacturer and applicable standards. The recorded data shall include, but is not limited to, the location of the project, rehabilitation material type, amount of product installed and conditions of the installation. A copy of the data report shall be provided to the code official prior to final approval.*

P-719.8 Post-installation recorded video camera survey. The completed, rehabilitated piping system shall be inspected internally by a recorded video camera survey after the system has been flushed and flow-tested with water. The video survey shall be submitted to the code official prior to finalization of the permit. The video survey shall be reviewed and evaluated to provide verification that no defects exist. Any defects identified shall be repaired and replaced in accordance with this code.

P-719.9 Certification. A certification shall be provided in writing to the code official, from the permit holder, that the cure in place rehabilitation relining materials have been installed in accordance with the manufacturer's installation instructions, the applicable standards and this code.

P-719.10 Approval. Upon verification of compliance with the requirements of Sections P-719.1 through P-719.9, the code official shall approve the installation.

* * *

CHAPTER 8
INDIRECT/SPECIAL WASTE

* * *

SECTION 802 INDIRECT WASTES

802.1 Where required. Food-handling equipment, in other than dwelling units, clear-water waste, humidifiers, dishwashing machines and utensils, pots, pans and dishwashing sinks shall discharge through an indirect waste pipe as specified in Sections 802.1.1 through 802.1.7. Fixtures not required to be indirectly connected by this section and the exception to Section 301.6 shall be directly connected to the plumbing system in accordance with Chapter 7.

P-802.1.1 Food handling. Equipment and fixtures utilized for the storage, preparation and handling of food *and ice, including bars sinks,* 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.

* * *

P-802.1.4 Swimming pools. ~~Where w~~*W*aste water from swimming pools, backwash from filters *shall discharge to the sanitary drainage system* and water from pool deck drains discharge to the ~~building~~ *sanitary* drainage system. ~~, the~~ *Swimming pool waste water discharge and pool deck drains* shall be through an indirect waste pipe by means of an air gap.

P-802.1.5 Nonpotable clear-water waste. Where devices and equipment such as process tanks, filters, drips and boilers discharge nonpotable water to the building drainage system, the discharge shall be through an indirect waste pipe by means of an air break or an air gap.

Note: This waste may discharge on to a roof and into the storm system.

* * *

P-802.1.7 Food utensils, dishes, pots and pans sinks. Sinks, in other than dwelling units, used for the washing, rinsing or sanitizing of utensils, dishes, pots, pans or service ware used in the preparation, serving or eating of food shall discharge indirectly through an air gap ~~or an air break~~ to the drainage system.

Exception: Fixtures not used for food preparation are permitted to be directly connected to the drainage system.

* * *

P- 802.4 Waste receptors. For other than hub drains that receive only clear-water waste and standpipes, a removable strainer or basket shall cover the outlet of waste receptors. Waste receptors shall not be installed in concealed spaces. Waste receptors shall not be installed in plenums, crawl spaces, attics, interstitial spaces above ceilings and below floors. Ready access shall be provided to waste receptors. *For the purpose of this section, a mop/slop sink shall be considered a waste receptor for clear water waste only.*

* * *

P-802.4.2 Hub drains *and floor sinks*. A hub drain shall be in the form of a hub or a pipe extending not less than 1 inch (25 mm) above ~~a water-impervious~~ *the finished* floor. *Floor sinks shall be set not less than 1 inch (25 mm) above the finished floor to the flood level rim.*

* * *

SECTION 803 – SPECIAL WASTES

P-803.1 Neutralizing device required for corrosive wastes. ~~Corrosive liquids, spent acids or other harmful chemicals that destroy or injure a drain, sewer, soil or waste pipe, or create noxious or toxic fumes or interfere with sewage treatment processes shall not be discharged into the plumbing system without being thoroughly diluted, neutralized or treated by passing through an approved dilution or neutralizing device. Such devices shall be automatically provided with a sufficient supply of diluting water or neutralizing medium so as to make the contents noninjurious before discharge into the drainage system. The nature of the corrosive or harmful waste and the method of its treatment or dilution shall be approved prior to installation.~~ *All discharges into the public sewers are subject to regulation by the Philadelphia Water Department. The Philadelphia Water Department prohibits the discharge of any corrosive liquids, including but not limited to spent acids or other harmful chemicals that destroy or injure a drain, sewer, soil or waste pipe, or create noxious or toxic fumes or interfere with sewage treatment processes. Where treatment prior to discharge is required, liquids shall not be discharged into the plumbing system without being thoroughly neutralized or treated in compliance with Philadelphia Water Department regulations.*

* * *

P-803.3 Radioactive waste. No waste containing radioactive substances shall be discharged into any portion of a plumbing system, unless so treated or handled as the Department of Public Health prescribes by regulation to prevent public health hazard.

CHAPTER 9
VENTS

SECTION P-901 – GENERAL

* * *

P-901.2 Trap seal protection.

* * *

P-901.2.2 Relief Vent. A relief vent pipe shall be installed on the building (house) drain before the main building (house) trap inside the building and be connected to the nearest vent line for any building 75 feet or higher. On building (house) drains of 8 inches or less, the vent shall be a minimum of 4 inches. On building (house) drains 10 inches and over, the relief vent shall be a minimum of 5 inches.

* * *

P-901.3 Chemical waste vent systems. The vent system for a chemical waste system shall be independent of the sanitary vent system and shall terminate separately through the roof to the outdoors. ~~or to an air admittance valve that complies with ASSE 1049. Air admittance valves for chemical waste systems shall be constructed of materials approved in accordance with Section 702.5 and shall be tested for chemical resistance in accordance with ASTM F1412.~~

* * *

SECTION P-903 – VENT TERMINALS

903.1 Roof extension. The vent pipe shall terminate by extending to the outdoors through the roof or the side wall in accordance with one of the methods identified in Sections 903.1.1 through 903.1.4.

P-903.1.1 Roof extension unprotected. Open vent pipes that extend through a roof shall be terminated not less than ~~[NUMBER]~~ *24* inches (*610* mm) above the roof.

* * *

~~903.2 Frost closure. Where the 97.5 percent value for outdoor design temperature is 0°F (-18°C) or less, vent extensions through a roof or wall shall be not less than 3 inches (76 mm) in diameter. Any increase in the size of the vent shall be made not less than 1 foot (305 mm) inside the thermal envelope of the building.~~

* * *

SECTION P-904 – OUTDOOR VENT EXTENSIONS

* * *

P-904.3 Vent termination. Vent stacks or stack vents shall terminate outdoors to the open air ~~or to a stack-type air admittance valve in accordance with Section 918~~.

* * *

SECTION P-905 – VENT CONNECTIONS AND GRADES

P-905.1 Connection. Individual, branch and circuit vents shall connect to a vent stack, stack vent~~,~~ ~~air admittance valve~~ or extend to the open air.

* * *

P-905.6 Vent for future fixtures. Where the drainage piping has been roughed-in for future fixtures, a rough-in connection for a vent shall be installed. The vent size shall be not less than one-half the diameter of the rough-in drain to be served *or a full-size vent when serving drainage piping as part of a single- stack vent system*. The vent rough-in shall connect to the vent system, or shall be vented by other means as provided for in this chapter. The connection shall be identified to indicate that it is a vent.

* * *

SECTION 915 – COMBINATION WASTE AND VENT SYSTEM

P-915.1 Type of fixtures. A combination waste and vent system shall not serve fixtures other than floor drains, sinks, lavatories and drinking fountains. Combination waste and vent systems shall not receive the discharge from a *food waste disposer or* clinical sink.

* * *

SECTION 917 - SINGLE-STACK VENT SYSTEM

* * *

P-917.6 Additional venting required. Additional venting shall be provided where more than one water closet discharges to a horizontal branch and where the distance from a fixture trap to the

stack exceeds the limits in Section 917.4. Where additional venting is required, the fixture(s) shall be vented by individual vents, common vents, wet vents, circuit vents, or a combination waste and vent pipe. The dry vent extensions for the additional venting shall connect to a branch vent, vent stack, stack vent, ~~air admittance valve,~~ or shall terminate outdoors.

* * *

SECTION P-918 – AIR ADMITTANCE VALVES

P-918.1 General. Vent systems utilizing air admittance valves shall comply with this section. ~~Stack-type air admittance valves shall conform to ASSE 1050.~~ Individual ~~and branch type~~ air admittance valves shall conform to ASSE 1051. *Air admittance valves shall be allowed for permitted alterations to the plumbing system in one and two family dwellings in place of an individual vent for a single fixture drain other than a water closet or any other soil waste.*

* * *

P-918.3 Where permitted. *An* individua~~l, branch and circuit~~ vents shall be permitted to terminate with a connection to an individual ~~or branch type~~ air admittance valve in accordance with Section P-918.3.1. Stack vents and vent stacks shall be *prohibited* ~~permitted~~ to terminate to stack-type air admittance valves in accordance with Section P-918.3.2.

P-918.3.1 Horizontal branches. Individual ~~and branch-type~~ air admittance valves shall vent only *a single* fixtures that ~~are~~ *is* on the same floor level and connect*ed* to a horizontal branch drain *or vertical waste stack*. ~~Where the horizontal branch is located more than four branch intervals from the top of the stack, the horizontal branch shall be provided with a relief vent that shall connect to a vent stack or stack vent, or extend outdoors to the open air. The relief vent shall connect to the horizontal branch drain between the stack and the most downstream fixture drain connected to the horizontal branch drain. The relief vent shall be sized in accordance with Section 906.2 and installed in accordance with Section 905. The relief vent shall be permitted to serve as the vent for other fixtures.~~

P-918.3.2 Stack. Stack-type air admittance valves shall be prohibited. ~~from serving as the vent terminal for vent stacks or stack vents that serve drainage stacks having more than six branch intervals.~~

P-918.4 Location. Individual ~~and branch-type~~ air admittance valves shall be located not less than 4 inches (102 mm) above the ~~horizontal branch drain or~~ fixture drain being vented. ~~Stack-type air admittance valves shall be located not less than 6 inches (152 mm) above the flood level~~ ~~rim of the highest fixture being vented. The air admittance valve shall be located within the~~ ~~maximum developed length permitted for the vent. The air admittance valve shall be installed~~ ~~not less than 6 inches (152 mm) above insulation materials.~~

* * *

P-918.8 Prohibited installations. Air admittance valves shall not be installed in nonneutralized special waste systems as described in Chapter 8. ~~except where such valves are in compliance with ASSE 1049, are constructed of materials approved in accordance with Section 702.5 and are tested for chemical resistance in accordance with ASTM F1412.~~ Air admittance valves shall not be located in spaces utilized as supply or return air plenums. Air admittance valves shall not be used to vent sumps or tanks ~~except where the vent system for the sump or tank has been designed by an engineer~~. Air admittance valves shall not be installed on outdoor vent terminals for the sole purpose of reducing clearances to gravity air intakes or mechanical air intakes. *Air admittance valves shall not be used in any other applications other than described in P-918.1.*

[Delete Section 919 and Replace as follows:]

SECTION P-919 - PHILADELPHIA SINGLE-STACK WASTE AND VENT SYSTEM

* * *

P-919.1 Scope. The City of Philadelphia has the oldest known model plumbing code in the country dating back to June 30, 1885. Since the inception of the Philadelphia Plumbing Code, one of the main characteristics and theories has been the single stack method of waste and vent. This code and the single stack theory has stood the test of time and continues today to be a model code copied by many other codes as a base line. Every building and structure in the City of Philadelphia as of this writing has been built incorporating this methodology of the single stack theory. This section is intended to be used for any modification or rebuilding of any of these existing structures, homes or buildings or as an option for any planned new construction in the future. Systems utilizing this section shall not be permitted to incorporate any other methods of design contained in other sections of this code.

P-919.2 Drainage system sizing.

> *P-919.2.1 Fixture-Unit values. The relative load weights of fixtures shall be determined in accordance with Table P-919.2(a).*
>
> *P-919.2.2 Values for fixtures not listed. Fixture unit values for fixtures that are not listed in Table P-9-19.2(a) and cannot be determined by similarity to a fixture listed therein shall be determined by Table 919.2(b).*
>
> > *P-919.2.2.1 Values for indirect waste receptor. The drainage fixture unit load of an indirect waste receptor receiving the discharge of indirectly connected fixtures shall be the sum of the drainage fixture unit values of the fixtures that*

discharge to the receptor, but not less than the drainage fixture unit value given for the indirect waste receptor in Table P-919.2(a) or 919.2(b).

P-919.2.2.2 Clear-water waste receptors. Where waste receptors such as floor drains, floor sinks and hub drains receive only clear-water waste from display cases, refrigerated display cases, ice bins, coolers and freezers, such receptors shall have a drainage fixture unit value of one half.

P-919.2.3 Values for continuous flow. For a continuous or semi-continuous flow in a sanitary drainage system, such as from a bilge pump, ejector, air conditioning equipment, commercial laundry, dishwashing equipment, or similar device, each gallon per minute flow shall be deemed to be two fixture-units.

P-919.2.4 Maximum fixture-unit load. The maximum number of fixture-units connected to a given size of house drain, horizontal branch, or vertical soil or waste stack, shall be determined by Table P-919.2(c).

P-919.2.5 Soil stack size. The size of a soil or waste stack is determined by the fixture units on the stack plus the fixture units on the horizontal branch from the base of the soil or waste stack connected to the building drain.

P-919.2.6 Horizontal branch size. The size of all horizontal branch lines including the horizontal branch from the base of the soil or waste stack connected to the building drain is determined by the fixture units and gradient fall.

P-919.2.7 Building drain/building sewer size. The size of the building drain is determined by its gradient fall and total number of fixture units.

P-919.2.8 Fall for small piping. Horizontal drainage piping of 3-inch diameter and less shall be installed with a fall of not less than 1/4 inch per foot.

P-919.2.9 Fall for large piping. Horizontal drainage piping of more than 3 inches and up to and including 6 inches in diameter shall be installed with a fall not less than 1/8 inch per foot. Horizontal drainage piping larger than 6-inch diameter shall be installed with a fall of not less than 1/16 inch per foot.

P-919.2.10 High-rise buildings. If a vertical soil or waste stack is 75 feet (23 m) in height and not more than 160 feet (49 m) in height, the vertical soil or waste stacks connected to the house drain or to any of its branches shall be one size larger than given in Table 919.2(c), and this shall also apply when the soil or waste stacks are connected to a horizontal branch pipe that discharges into a soil or waste stack. If a vertical soil or waste stack is more than 160 feet in height, the vertical soil or waste stacks connected to

the house drain or to any of its branches shall be two sizes larger than given in Table 919.2(c), and this shall also apply when the vertical soil or waste stacks are connected to the horizontal branch pipe that discharges into a soil or waste stack. The size of the main soil stack shall be sized according to the largest branch entering the stack, except if the amount of fixture units requires a larger size. The developed length of the soil or waste stacks shall be determined by measuring the distance between the center line of the horizontal branch pipe and to an elevation 6" above the flood level rim of the highest fixture. If a relief vent is installed on all horizontal branches below the highest fixture and between the soil or waste stacks and the first fixture on the horizontal branch, the soil or waste stack sizes shall be in accordance with Table 919.2(c), regardless of the height of the soil or waste stack. The diameter of a relief vent shall not be less than one-half the diameter of the horizontal branch to which it is connected, with a minimum size of 1½ inches (38 mm). The maximum number of fixture units connected to the relief vent shall be in accordance with Table 919.9(a). The size of the branch line and its stack shall be determined by the developed length of the stack.

TABLE P-919.2(a) - FIXTURE-UNIT VALUES

FIXTURES	*PRIVATE INSTALL-ATIONS*	*PUBLIC INSTALL-ATIONS*	*MINIMUM TRAP SIZES (INCHES)*
Bathroom group consisting of 1 lavatory, 1 water closet, 1 bathtub or shower stall	*6*	*-*	*-*
Bathtub with 1-1/2 inch trap [a]	*2*	*3*	*1-1/2*
Bathtub with 2-inch trap [a]	*3*	*4*	*2*
Cup sink	*-*	*2*	*1-1/4*
Dishwashers, domestic, automatic	*4*	*-*	*1-1/2[c]*
Drinking fountain	*-*	*1/2*	*1-1/4*
Floor drain	*3*	*3*	*3*
Kitchen sink with 1-1/2 inch trap [b]	*3*	*3*	*1-1/2*
Kitchen sink with 2-inch trap [b]	*-*	*4*	*2*
Laundry tray with 1-1/2 inch trap (1 or 2 compartment)	*3*	*3*	*1-1/2*
Laundry tray with 2-inch trap	*-*	*4*	*2*
Lavatory with 1-1/4 inch or 1-1/2 inch trap	*1*	*2*	*1-1/4*
Lavatory, barber, beauty parlor, or surgeons	*-*	*3*	*1-1/2*
Service sink (slop sink), mop receptor	*-*	*3*	*3*
Service sink, flushing rim with flush valve	*-*	*6*	*3*
Shower stall with 1-1/2 inch or 2 inch trap	*2*	*3*	*1-1/2*
Shower stall with required 3-inch trap	*-*	*6*	*3*
Urinal, stall and washout	*-*	*2*	*1-1/2*
Urinal, pedestal, siphon-jet and blow-out	*-*	*4*	*2*
Urinal, non-water	*-*	*1*	*1-1/2*

Wash fountain, duo	*-*	*2*	*2*
Wash fountain, any other size	*-*	*5*	*2*
Washing machine, domestic, automatic	*4*	*-*	*2*
Water closet	*3*	*6*	*3*
Fountain cuspidor (dental chair)	*-*	*1*	*1-1/4*
Sink, soda fountain or bar	*-*	*2*	*1-1/2*

For SI:1 inch=25.4 mm

a. With or without showerhead over bathtub.

b. With or without garbage grinder unit, or dishwasher, in sink with 1-1/2 or 2-inch trap.

c. Commercial dishwasher shall include minimum 2-inch trap.

TABLE P-919.2(b) — OTHER FIXTURE VALUES

Required Fixture Drain or Trap Size	*Fixture Unit Value*	
	Private Installations	*Public Installations*
1-1/4 inch	*1*	*2*
1-1/2 inch	*2*	*3*
2-inch	*3*	*4*
3-inch	*4*	*6*
4-inch	*4*	*8*

TABLE P-919.2(c) — MINIMUM PIPE SIZES ACCORDING TO FIXTURE LOAD
(Maximum Fixture-Units that may be connected)

House Drain or Horizontal Branch					*Vertical Soil or Waste Stack*
Pipe size (Inches)	*1/16" Fall*	*1/8" Fall*	*1/4" Fall*	*1/2" Fall*	
1¼			*2*	*2*	
1½			*4*	*6*	*6*
2			*10*	*18*	*20*
2½			*27*	*36*	*36*
3			*48[a]*	*65[a]*	*75[b]*
4		*50*	*100*	*200*	*225*
5		*130*	*225*	*420*	*480*
6		*330*	*480*	*875*	*1,015*
8	*500*	*850*	*1,100*	*2,000*	*2,320*
10	*1,050*	*1,650*	*2,320*	*3,800*	*4,500*
12	*1,800*	*3,000*	*4,500*	*6,500*	*8,100*

15	*3,600*	*6,000*	*8,100*	*10,000*	*13,600*

Note a: Limit 2 water closets.
Note b: Limit 6 water closets.

P-919.2.11 Minimum size of soil and waste pipe. No soil or waste stack shall be smaller than the largest branch draining into it regardless of the height of the building. Soil stacks receiving the discharge of water closets shall not be less than 3 inches in diameter, as provided in Table P- 919.2(c). Three-inch Soil stacks shall be limited to six water closets. No horizontal soil pipe or waste pipe draining water closets shall be less than 3 inches in diameter. When using 3-inch ideal bends (closet bends) to receive the discharge of water closets, this fitting shall be a blind bend containing no drainage connections for other fixtures. No waste pipe shall be less than 1-1/4 inches in diameter.

P-919.2.12 Building drain/building sewer. The minimum size of the main house drain receiving the discharge of water closets shall be 4 inches inside nominal diameter.

P-919.3 Venting

P-919.3.1 Required. All fixtures shall be adequately vented to prevent siphonic action and to protect trap seals.

P-919.3.2 Connection. The seal of every fixture trap in a plumbing system shall be protected by being individually connected to a properly vented drain.
Exception: Leader traps, area drain traps, and yard drain traps.

P-919.3.3 Stack vents. Every soil or waste stack shall be extended vertically, full size, as a stack vent to open air.

P-919.3.4 Vent stacks. A vent stack or main vent shall be installed with a soil or waste stack when relief vents or other branch vents are required in more than five branch intervals. The vent stack shall terminate independently in the open air above the roof or shall be connected with the stack vent at least 6 inches above the flood level rim of the highest fixture and shall connect with the soil or waste stack through, at, or below the lowest horizontal soil or waste branch, or with the house drain, in such manner as to prevent the accumulation of rust scale. When water closets are installed on this lowest horizontal branch, they shall be connected to the side of the horizontal branch.

P-919.3.5 Vent required. Every building in which plumbing is installed shall have at least one stack vent or vent stack which shall be equal in size of the diameter of the building sewer and shall run undiminished in size as directly as possible from the building sewer through to the open air above the roof. The minimum size of the stack vent or vent stack shall be 4” (102mm).

P-919.4 VELOCITY BREAKS IN SOIL OR WASTE STACKS OVER 300' IN HEIGHT

P-919.4.1 Required. Velocity breaks shall be required in soil or waste stacks over 300 feet in height to impede the velocity of the waste. At each velocity break, the stack shall be offset by two 45-degree breaks. A relief vent one-half the size of the soil stack shall be installed at the top of the second 45-degree break and shall be connected to the nearest vent stack.

P-919.4.2 Intervals. Velocity breaks shall be installed on any floor level within the first ten stories of the soil or waste stack and at intervals of not more than 20 stories above the lowest velocity break and each break thereafter.

P-919.4.3 Relief vent. A relief vent pipe shall be installed on the main drain before the main house trap inside the building and be connected to the nearest vent line for any building 75 feet or higher. On main drains of 8 inches or less, the vent shall be a minimum of 4 inches. On main drains 10 inches and over, the relief vent shall be a minimum of 5 inches.

P-919.5 Ventilation of Branch or Horizontal Pipes

P-919.5.1 Vent required. Every branch, horizontal soil pipe, or waste pipe to which a group of two or more fixtures is to be connected shall have a vent of the same size as the branch by: extending the branch full size as through the roof; connecting to the stack vent 6 inches above the highest fixture; or connecting to the vent stack 6 inches above the highest fixture connected to the branch. The horizontal branch from the base of a stack shall be connected to the building drain.)

P-919.5.2 Alternatives. Where the center of a water closet outlet is not more than 48 inches in developed length from the center of 4-inch vented soil pipe on a vertical line, or through a wye or wye and 1/8 bend on a vented horizontal line, connection of small fixture wastes - not exceeding two that are 1-1/2 inches or less in diameter - to the side of an ideal bend (closet bend) above the center line without an additional vent, or by using no-hub, copper, ABS or PVC pipe and fittings. Where the center of a water closet outlet is not more than 18 inches from the center of a 3-inch vented soil pipe and the 4-inch ideal bend (closet bend) is connected directly to a sanitary tee on a vertical line, connection of small fixture wastes - not exceeding two that are 1-1/2 inches or less in diameter – to the sides of the bend above the center line without an additional vent and in accordance with Section P-919.2.11. As an alternative to increasing the size of a stack from 3 inches to 4 inches, a merion/stack tee fittings shall be used to receive the discharge of a water closet and small fixture wastes.

P-919.5.3 Merion/stack tee fittings. The water closet soil line connected to a merion/stack tee fittings shall be a maximum of 8 feet developed length. The ideal bend (closet bend) shall not be less than 4 inches nominal diameter when receiving

the discharge of small fixture wastes. When using 3-inch ideal bends (closet bend) to receive discharges of water closets, this fitting shall be a blind bend containing no drainage connections for other fixtures.

P-919.5.4 Existing stacks in buildings where the center of a water closet outlet is more than 4 feet but not more than 8 feet from the center of a vented soil pipe, an additional 1- 1/2-inch vent will be permitted if the vent is no longer than 30 feet, provided the conditions are the same as in Section P-919.5.3.

P-919.6 Fixture Venting

P-919.6.1 Minimum vent size. Any single water closet branch more than 8 ft. in length or waste branch for fixtures other than water closets more than 12 feet in length shall have a vent sized at least one-half the diameter of the branch pipe. Depending on its length, the number of fixture units connected shall be in accordance with Table P-919.9(a).

P-919.7 Venting of Offsets.

P-919.7.1 Stack offsets. Offsets in soil or waste stacks at an angle greater than 45 degrees from the vertical serving fixtures above the offset shall be vented as provided in Sections P-919.7.2 or P-919.7.3.

P-919.7.2 Yoke venting offsets. Such offsets shall be provided with a yoke vent equal to one-half the diameter of the vent stack or soil stack but not less than 11/2 inches (38 mm). The lower end of the yoke vent shall connect to the soil or waste stack through a wye below the offset and above the next lower horizontal branch, and the upper end shall connect to the stack vent or the vent stack not less than 6 inches (152 mm) above the highest fixture. The yoke vent may connect to a vent stack on the floor level above or higher provided the connection is a minimum of 6 inches (152 mm) above the flood level rim of the next fixture on the stack above the offset.

P-919.7.3 Separate Venting. Such offsets shall be vented as two separate soil or waste stacks, with the stack section below the offset and the stack section above the offset.

P-919.7.4 Venting not required. All buildings of not more than three stories having a soil or waste stack with one offset at an angle greater than 45 degrees from the vertical and which does not exceed 10 feet in length shall not require additional venting. No fixtures shall be permitted above the offset, except that one small fixture may be installed for a heel wash.

P-919.8 Vent Headers

P-919.8.1 Vent header permitted. Stack vents and vent stacks shall be permitted to connect into a common vent header at the top of the stacks and extend to the open air above the roof at one point. Such header shall be sized in accordance with the requirements of Table P-919.9(a). As per Section P-919.5, the size of the horizontal branch entering a stack shall have a vent of the same size; therefore, one of the stacks entering into a common vent header shall be of the same size as the branch entering the stack and shall maintain that size through the roof. Other sizes of the header can then be sized as per Table P-919.9(a).

P-919.8.2 Sizing. The number of fixture units considered in sizing the vent header shall be the sum of all fixture units on all stacks connected thereto. The developed length shall be the longest vent length from the intersection at the base of the most distant stack to the vent header terminal in the open air above the roof. The latter shall be extended to the open air above the roof as a direct extension of one stack.

P-919.9 Size and length of vents.

P-919.9.1 Length of vents. The length of a vent shall be its developed length from the lowest connection of the vent with the soil stack, waste stack, or house drain to the vent terminal above the roof.

P-919.9.2 Size of stack vent. The diameter of a stack vent shall not be less than the diameter of the soil or waste stack of which it is an extension.

P-919.9.3 Size of vent stacks. A vent stack or main vent connecting relief vents, circuit vents or loop vents shall have a diameter of at least one-half the diameter of the soil or waste stack to which the vent stack or main vent is connected, but in no case less than 1-1/2 inches (38 mm). The maximum number of fixture units connected to the vent stack shall be in accordance with Table 919.9(a). The vent stack or main vent shall not be less in size than the branch, circuit, or loop vent it is servicing. Where fixtures are installed on the house drain behind the line of vent, a minimum vent stack of 1-1/2 inches (38 mm) shall be required for small fixtures having a fixture unit value not greater than 10 drainage fixture units and a minimum of a 2 inch (51 mm) vent for one or more water closets and other fixtures, except if a larger size is required according to Table 919.9(a).

P-919.9.4 Size of relief vent. The diameter of a relief vent shall not be less than one-half the diameter of the horizontal branch to which it is connected, with a minimum size of 1-1/2 inches. The maximum number of fixture units connected to the relief vent shall be in accordance with Table P- P-919.9(a).

TABLE 919.9(a) — SIZE AND LENGTH OF VENTS

Fixture Units Connected	*Diameter of Vent (inches) — Maximum Length of Vent (feet)*							
	1½”	*2”*	*2½”*	*3”*	*4”*	*5”*	*6”*	*8”*

13	*75*	*310*						
26	*70*	*300*						
47	*35*	*140*	*450*					
72	*23*	*85*	*260*	*650*				
98	*18*	*75*	*240*	*600*				
195		*30*	*95*	*240*	*1000*			
293		*22*	*70*	*180*	*750*			
390			*28*	*70*	*320*	*1000*		
624			*20*	*50*	*240*	*750*		
969				*20*	*95*	*240*	*1000*	
1320				*18*	*70*	*180*	*750*	
2165					*30*	*80*	*350*	*1000*

CHAPTER 10
TRAPS, INTERCEPTORS AND SEPARATORS

* * *

SECTION 1002 - TRAP REQUIREMENTS

* * *

P-1002.3 Prohibited traps. The following types of traps are prohibited:

1. Traps that depend on moving parts to maintain the seal.
2. Bell traps.
3. Crown-vented traps.
4. Traps not integral with a fixture and that depend on interior partitions for the seal~~, except those traps constructed of an approved material that is resistant to corrosion and degradation~~.
5. "S" traps.
6. Drum traps.

~~Exception~~ *Exceptions*:

1. Drum traps used as solids interceptors and drum traps serving chemical waste systems shall not be prohibited.

2."S" traps are permitted to be used as a direct replacement to a previously installed "S" trap.

3. Traps with interior partitions serving chemical waste systems shall not be

prohibited.

* * *

P-1002.4.1.5 *Reserved.* ~~Fixture drain connection for trap priming. A fixture drain from a lavatory or hand sink shall serve as a method of providing trap seal protection for an emergency floor drain, a trench drain, or a floor sink where such fixtures are located in the same room. A fixture drain from a drinking fountain shall serve as a method of providing trap seal protection for an emergency floor drain, a trench drain, or a floor sink where such fixtures are in the same room or in a room adjacent to the room having the drinking fountain. The fixture drain shall not be routed on or above the surface of the floor and shall connect to the floor drain, trench drain, or floor sink at a point that is below the flood level rim and above the inlet to the trap of the receiving fixture.~~

P-1002.6 BUILDING *(HOUSE)* TRAPS *AND FRESH AIR INLETS*. ~~Building (house)traps shall be prohibited.~~ *A building (house) trap shall be required for every building, structure or house with a building sewer connected to sanitary or combined sewer. A building (house) trap shall be located at the curb line of the building, structure or house that it is servicing. The building (house trap) shall not be less in size than the house drain pipe it traps, and in no case less than 5 inches for sanitary or combination sewers or 6 inches for storm sewers. No flex seal coupling shall be permitted. Fresh air inlets shall be 4 inches for 5-inch and 6-inch drains; 6 inches for 8-inch drains; two 6-inch vents for 10-inch drains with 8-inch standpipe; two 6-inch vents for 12-inch drains with 10-inch standpipe; two 6-inch vents for 15-inch drains with 10-inch standpipe. Where two fresh air inlets are used, connections shall be made by use of a wye on the standpipe. Vents larger than 6 inches shall not terminate at ground level. In lieu of multiple vents, use of "Shuster" type vent or equal, properly sized, shall be permitted.*

P-1002.6.1 Fresh air inlet location. Fresh air inlets shall lead to the outer air and open at a convenient point, on the footway in the front of the building or at the curb line and shall have a cover with openings at least three-fourths of the area of the pipe. In no case shall an air inlet open within 10 feet of any door, window, or fresh air intake for a heater or ventilation system.

P-1002.6.2 Fresh air inlet requirements. Fresh air inlets shall be so arranged as to prevent the admission of sticks or other articles that would tend to obstruct the main trap. They shall be at least 1/4 inch in thickness and fastened with brass screws or bolts in order that the top can be removed if necessary, and the body shall be caulked fast to the upright pipe by a lead joint. Only approved air inlets shall be used.

P-1002.6.3 Relief Vent. A relief vent shall be installed on the building (house) drain before the main building (house) trap inside the building and be connected to the

nearest vent line for any building 75 feet or higher. On building (house) drains of 8 inches or less, the vent shall be a minimum of 4 inches . On building (house) drains 10 inches and over, the relief vent shall be a minimum of 5 inches.

* * *

SECTION 1003 – INTERCEPTORS AND SEPARATORS

* * *

P-1003.1 Where required. Interceptors and separators shall be provided to prevent the discharge of oil, grease, sand and other substances harmful or hazardous to the public sewer, the private sewage system or the sewage treatment plant or processes. *Interceptors and separators shall be connected to the sanitary sewer.*

P-1003.2 Approval. The size, type and location of each interceptor and of each separator shall be designed and installed in accordance with the manufacturer's instructions and the requirements of this section based on the anticipated conditions of use. Wastes that do not require treatment or separation shall not be discharged into any interceptor or separator. *As an appurtenance contained within the plumbing system, the interceptor or separator shall not be limited by the material construction of the unit.*

1003.3 Grease interceptors. Grease interceptors shall comply with the requirements of Sections 1003.3.1 through 1003.3.8.

* * *

P-1003.3.5 Hydromechanical grease interceptors, fats, oils and greases disposal systems and automatic grease removal devices. Hydromechanical grease interceptors *shall be of semi-automatic design equipped with a full port type ball valve on the discharge side of the interceptor and a draw-off located in the grease accumulating chamber of the interceptor. Hydromechanical grease interceptors;* fats, oils, and greases disposal systems and automatic grease removal devices shall be sized in accordance with ASME A112.14.3, ASME A112.14.4, 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 A112.14.4, CSA B481.1, PDI G101 or PDI G102. Hydromechanical grease interceptors; fats, oils, and greases 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 A112.14.3, ASME A112.14.4, ASME A112.14.6, CSA B481.3 or PDI G101.

P-1003.3.5.1 Grease interceptor capacity. Grease interceptors shall have the grease retention capacity indicated in Table 1003.3.5.1 for the flow-through rates indicated *with a minimum capacity of 20 gallons per minute of flow and 40 pounds of grease retention capacity.*

* * *

TABLE P-1003.3.5.1 – CAPACTIY OF GREASE INTERCEPTORS

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

* * *

P-1003.4 Oil separators required. 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 oil-bearing, grease-bearing or flammable wastes shall be discharged before emptying into the building drainage system or other point of disposal. *Interceptors and separators shall be connected to the sanitary sewer.*

* * *

P-1003.4.2 Oil separator design. Oil separators shall be listed and labeled, or designed in accordance with Sections P-1003.4.2.1, ~~and~~ P-1003.4.2.2 *and P-1003.4.2.3.*

* * *

P-1003.4.2.3 Tightness. Oil interceptors shall be constructed so as to be oil-tight and shall have easily removable water-tight and gas-tight covers.

* * *

P-1003.11 Hair interceptor. An approved hair interceptor shall be installed wherever hair is introduced into the drainage system in sufficient quantity to cause line stoppage and shall be installed in connection with the following uses or occupancies.

P-1003.12 Plaster interceptor. A plaster interceptor is required on all types of sinks or plumbing fixtures where plaster, earthen or sedimentary materials are to be used.

* * *

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.

1101.1.1 Private Building Storm Sewer. Repairs to existing private building storm sewer pipe materials shall be in accordance with Table P-1102.4. New or extended private building storm sewers may not cross any adjoining property except when included as part of an approved post construction Storm Water Management Plan in accordance with Philadelphia Water Department regulations or private storm sewer infrastructure designed in accordance with P-1115.

P-1101.2 Disposal. *All* ~~R~~rainwater from roofs and storm water from paved areas, yards, courts and courtyards shall drain to an approved place of disposal. For one- and two-family dwellings, and where approved, storm water is permitted to discharge onto flat *pervious* areas, such as ~~streets or~~ lawns, *or area drains* provided that the storm water flows away from the building.

P-1101.2.1 Area drain. Area drains shall be provided on all premises in the locations required by items 1 through 6 below:

1. *Paved areas, courts, open shafts in excess of 5000 square feet.*
2. *Driveways of any area which slope downward toward the building.*
3. *Terrain which slopes downward toward the building within 10 feet of the building's exterior walls.*
4. *Terrain which creates a low elevation such that standing water is possible.*
5. *Terrain which slopes downward toward adjacent property in such a manner as to concentrate the flow of runoff.*

Exception: Where terrain slopes toward a natural watercourse such as a creek, stream or river, an area drain shall not be required.

6. *At the low point of any swales on the property.*
   Exception: Where terrain slopes toward a natural watercourse such as a creek, stream or river, an area drain shall not be required.

* * *

P-1101.3 Prohibited drainage. Storm water shall not be drained into sewers intended for sewage only.

Exceptions:

1. Drains contained in enclosed parking garage not exposed to the outside climatic elements.

2. Drains receiving washdown, soil, oil, fat/grease or any other hazardous waste.

* * *

[BS][1]P-1101.7 Roof design. Roofs shall be designed for the maximum possible depth of water that will pond thereon as determined by the relative levels of roof deck and overflow weirs, scuppers, edges or serviceable drains in combination with the deflected structural elements. In determining the maximum possible depth of water, all primary roof drainage means shall be assumed to be blocked. The maximum possible depth of water on the roof shall include the height of the water required above the inlet of the secondary roof drainage means to achieve the required flow rate of the secondary drainage means to accommodate the design rainfall rate as required by Section 1106.

Exception:

Canopies, marquees, balconies, and similar extended roof surfaces with a total of 300 square feet or less, shall not require drainage unless the areas include a parapet.

* * *

P-1101.9 Backwater valves. Storm drainage systems shall be provided with backwater valves as required for sanitary drainage systems in accordance with Section 714. *For building sub-drains that service fixtures below the fresh air inlet termination that discharges into the building gravity drainage system by automatic pumping equipment, the required check valve installed with the pump shall provide sufficient means of protection against backflow.*

Exception: Storm drainage systems and private on-site stormwater management systems located outside the 100-year floodplain or connected to the public storm sewer.

* * *

SECTION 1102 - MATERIALS

* * *

P-1102.2 Inside storm drainage conductors. Inside storm drainage conductors installed above ground shall conform to ~~one~~ *all* of the *requirements and* standards listed in ~~Table~~ *Section 702* ~~702.1~~.

P-1102.3 Underground building storm drain pipe. Underground building storm drain pipe shall conform to ~~one~~ *all* of the *requirements and* standards listed in ~~Table~~ *Section 701* ~~702.2~~.

* * *

TABLE P-1102.4 BUILDING STORM SEWER PIPE

MATERIAL	STANDARD
* * *	
Cast-iron pipe	ASTM A74*;* ~~ASTM A888; CISPI 301~~
* * *	
Ductile iron pipe class 56	*AWWA C151/A21.51; AWWA C115/A21.15*
* * *	

* * *

TABLE P-1102.5 SUBSOIL DRAIN PIPE

MATERIAL	STANDARD
* * *	
Cast-iron pipe	ASTM A74; ~~ASTM A888~~; CISPI 301
* * *	

1102.6 Roof drains. Roof drains shall conform to ASME 112.3.1 or ASME A112.6.4. *Roof drain materials shall comply with Sections P-1102.2 & P-702.1.* ~~Roof drains, other than siphonic roof~~

~~drains, shall be tested and rated in accordance with ASME ASME A112.6.4 or ASPE/IAPMO Z1034.~~

* * *

SECTION 1103 - TRAPS

P-1103.1 Main trap. Leaders and storm drains connected to a combined sewer shall be trapped. Individual storm water traps shall be installed on the storm water drain branch serving each conductor, or a single trap shall be installed in the main storm drain just before its connection with the combined building sewer or the public sewer. *A single hooded catch basin located within the property line shall be the equivalent of a building (house) trap for the connection to a street combined sewer.* Leaders and storm drains connected to a building storm sewer shall not be required to be trapped.

* * *

P-1103.4 Cleanout. ~~A cleanout shall be installed on the building side of the trap and shall be provided with access.~~ *A cleanout or a building storm sewer house trap shall be required on a dedicated storm sewer system where the building storm sewer connects at the curb.*

* * *

SECTION P-1106 – SIZE OF CONDUCTORS, LEADER AND STORM DRAINS

P-1106.1 General. The size of the vertical conductors and leaders, building storm drains, building storm sewers and any horizontal branches of such drains or sewers shall be based on a ~~the 100-year hourly~~ rainfall rate *of 4.5" per hour.* ~~*indicated in Figure 1106.1 or on other rainfall rates determined from approved local weather data.*~~

Exceptions:

1. *Existing building storm drainage systems without secondary roof drainage installed in accordance with section 1108 shall be designed based on a rainfall rate of 6" per hour.*
2. *The size of building storm drainage systems serving green roof systems, approved by the Philadelphia Water Department, shall be based on a rainfall rate of 3.1" per hour.*

{Delete Figure 1106.1}

* * *

SECTION P-1107 – SIPHONIC ROOF DRAINAGE SYSTEMS

P-1107.1 General. Siphonic roof drains and drainage systems shall be *prohibited.* ~~designed in accordance with ASME A112.6.9 and ASPE 45.~~

* * *

SECTION 1109 – COMBINED SANITARY AND STORM PUBLIC SEWER

P-1109.1 General. Where the public sewer is a combined system for both sanitary and storm water, the storm sewer shall be connected independently to the *lateral* ~~public sewer~~.

Exception: The repair or replacement of an existing combined building sewer as of the initial adoption date of this code.

P-1109.2 Size of the existing combined building drains and building sewers. The size of the existing combined building drains and building sewers when being replaced in kind shall not be less than 4" and not having a slope less than 1/8" per foot (1 percent).

P-1109.3 Size of existing combined building drains and building sewers when adding additional load. The size of a combination sanitary and storm drain or sewer shall be computed in accordance with the method in Table P-1109.4. The fixture units shall be converted into an equivalent projected roof or paved area. Allowance in square feet of pitched roofs or paved areas for fixture units shall be as follows: 7 square feet for each of the first 1,500 Fixture Units; 5 square feet for each of the next 1,500 Fixture Units, 4 square feet for each of the next 2,000 Fixture Units, and 3 square feet for each Fixture Unit thereafter. These values are based on a rainfall rate of 6 inches (127 mm) per hour.

[DELETE TABLE P-1109.4 AND REPLACE]

TABLE P-1109.4 MAXIMUM HORIZONTAL PROJECTED ROOF AREA IN SQUARE FEET FOR BUILDING STORM DRAINS AT VARIOUS SLOPES

Diameter (Inches)	*Fall Per Foot*			*Vertical Leaders*
	1/8"	*1/4"*	*1/2"*	
3		*930*	*1,300*	*1,750*
4	*1,585*	*2,100*	*3,300*	*3,650*
5	*2,875*	*3,800*	*5,300*	*6,000*
6	*4,300*	*6,000*	*9,000*	*10,800*
8	*9,200*	*13,000*	*18,000*	*23,000*
10	*16,500*	*25,000*	*35,000*	*40,000*
12	*26,600*	*40,000*	*60,000*	*65,000*

15	*47,500*	*75,000*	*100,000*	*115,000*
16	*57,250*	*92,500*	*131,000*	
18	*67,000*	*110,000*	*162,000*	
20	*85,500*	*135,000*	*196,000*	
24	*155,000*	*225,000*		
30	*295,000*	*416,000*		

* * *

SECTION 1113 – SUMPS AND PUMPING SYSTEMS

P-1113.1 Pumping System.

* * *

P-1113.1.4 Piping. Discharge piping shall meet the requirements of Section 1102.2, 1102.3 or 1102.4 and shall include a ~~gate~~ *full open* valve and a full flow check valve. Pipe and fittings shall be the same size as, or larger than, the pump discharge tapping.

~~Exception: In one- and two-family dwellings, only a check valve shall be required, located on the discharge piping from the pump or ejector.~~

SECTION P-1114 – SUSTAINABLE GREEN ROOF DRAINAGE SYSTEMS

P-1114.1 General. A green roof drainage system receiving storm water discharge solely from a green roof shall be engineered in accordance with this section and the design, submittal, approval, inspection and testing requirements of Section 316.1.

P-1114.2 Green Roof design. Green roof designs shall comply with section 1101.7. Support for the weight of the green roof system shall be accounted for in the building structural design and prepared by a licensed design professional for all new building construction and alterations or retrofits to existing structures.

P-1114.2.1 Green roof rainfall rates. The green roof drainage system shall be designed based on the reduced rainfall rate in accordance with Section 1106.1 only where approved through the Philadelphia Water Department and shall satisfy the design, installation and maintenance requirements set forth by the Philadelphia Water Department and, if applicable, the Philadelphia Zoning Code.

P-1114.3 Green Roof Drains. Roof drains serving green roofs shall conform to requirements of Chapter 11 and be protected with a means to prevent sediment and debris from entering the

storm drainage piping system, including provisions for roof drain access for general maintenance.

SECTION P-1115 - PRIVATE STORM SEWER INFRASTRUCTURE

P-1115.1 General. The provisions of this section shall govern the materials, design, and construction of Private Storm Sewer Infrastructure.

P-1115.1.1 Definitions. The following definitions shall apply to Private Storm Sewer Infrastructure.

PRIVATE SEWER INFRASTRUCTURE. The sewer pipe that is constructed on private property between the Lateral and the Building Sewer owned and maintained by the Unit Owner's Association to serve some or all units within a Condominium or Planned Community.

SANITARY. Private sewer infrastructure that conveys sewage only.

STORM. Private sewer infrastructure that conveys storm water or other drainage, but not sewage.

P-1115.2 Materials. Private Storm Sewer Infrastructure shall conform to Table P-1102.4 of this code.

P-1115.3 Slope of private storm sewer infrastructure. Private storm sewer infrastructure shall be installed in uniform alignment at uniform slopes. The slope of private storm sewer infrastructure shall be in accordance with Section 704 of this code.

P-1115.4 Connections. The building storm sewers for each house or structure shall be connected to the Private Storm Sewer Infrastructure separately.

P-1115.5 Depth of Private Storm Sewer Infrastructure. Private Storm Sewer Infrastructure shall be installed not less than 36 inches (914 mm) measured from the top of pipe.

P-1115.6 Access for repairs. Separation of Private Water, Sanitary Sewer, and Storm Sewer Infrastructure placed in the same alignment and at a depth not exceeding 5-feet shall comply with Section 603.2 of this code. Infrastructure placed at depths greater than 5-feet shall be horizontally separated at a distance that allows for the approved sheeting and shoring and not less than 2-feet.

P-1115.7 Protection of structures. Private storm sewer infrastructure installed parallel to footings and walls shall not extend into the bearing plane of a footing or wall in accordance with Section 307.5 of this code. Private storm sewer infrastructure shall not be installed within 5 feet

(1524 mm) of any adjoining property line. Private storm sewer infrastructure Pipe shall not be installed within 3 feet (914 mm) of any parallel building foundation.

P-1115.8 Cleanouts required. Cleanouts shall be provided for Private Storm Sewer Infrastructure in accordance with the provisions of this code for storm drainage pipe in Section 708.1. Where the public sewer is combined, all building sewers connected to Private Storm Sewer Infrastructure shall be fitted with an approved Building Trap and Fresh Air Inlet. The sewer will not require a trap and Fresh Air Inlet at the connection to the lateral but will require a manhole or cleanout at the property line before entering the public right-of- way.

P-1115.9 Manholes. Manholes will be required for Private Storm Sewer Infrastructure 8-inches in diameter and greater at changes in direction, grade, and size. All manholes shall have inverts built with channels extending up to the pipe crown to ensure uniform flow in accordance with Section 708.1 of this code.

P-1115.10 Storm backflow. Backwater valves shall be installed in accordance with Section 1101.9 of this code. For building sub-drains that service fixtures below the fresh air inlet termination that discharges into the building gravity drainage system by automatic pumping equipment, the required check valve installed with the pump shall provide sufficient means of protection against backflow.

P-1115.11 Easement required. Private Storm Sewer shall require an easement with a minimum width of 12' and must provide adequate space to replace/repair the private services. Minimum vertical drive height clearance of 13'-6" or 2x pipe depth to pipe bottom, whichever is greater, shall be provided.

* * *

CHAPTER 13
NONPOTABLE WATER SYSTEMS

SECTION 1301 – GENERAL

1301.1 General. 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. For nonpotable rainwater systems, the provisions of CSA B805/ICC 805 shall be an alternative for regulating the ~~materials,~~ design, construction and installation of systems for rainwater collection, storage, treatment and distribution of nonpotable water. The use and application of nonpotable water shall comply with laws, rules and ordinances applicable in the jurisdiction.

* * *

P-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 *water* distribution piping *or water supply* 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.

P-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~~ *distribution* pipe within 5 feet (1524 mm) of the nonpotable water pipe is not less than 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 not less than 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~~ *distribution* pipe crosses a nonpotable water pipe, provided that the potable water ~~service~~ *distribution* pipe is sleeved for a distance of not less than 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.

* * *

SECTION 1302 – ON-SITE NONPOTABLE WATER REUSE SYSTEMS

* * *

P-1302.10 Water pressure-reducing valve or regulator. Where the water pressure supplied by 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 *or water supply piping* to 80 psi (552 kPa) static or less. Pressure-reducing valves shall be specified and installed in accordance with Section 604.8.

P-1302.11 Distribution or *water supply* pipe. Distribution *or water supply* piping utilized in on-site nonpotable water reuse systems shall comply with Sections 1302.11.1 through 1302.11.3.

* * *

P-1302.11.3 Marking. On-site nonpotable water distribution *or water supply* piping labeling and marking shall comply with Section 608.9.

* * *

SECTION 1303 – NONPOTABLE RAINWATER COLLECTION AND DISTRIBUTION SYSTEMS

* * *

P-1303.13 Water pressure-reducing valve or regulator. Where the water pressure supplied by the pumping system exceeds 80 psi (552 kPa) static, a pressure-reducing valve shall be installed to reduce the pressure in the rainwater distribution *or water supply* system piping to 80 psi (552 kPa) static or less. Pressure-reducing valves shall be specified and installed in accordance with Section 604.8.

P-1303.14 Distribution *or water supply* pipe. Distribution piping *or water supply piping* utilized in rainwater collection and conveyance systems shall comply with Sections 1303.14.1 through 1303.14.3.

P-1303.14.1 Materials, joints and connections. Distribution piping *or water supply* piping shall conform to the standards and requirements specified in Section 605 for nonpotable water.

P-1303.14.2 Design. Distribution piping *or water supply piping* systems shall be designed and sized in accordance with Section 604 for the intended application.

P-1303.14.3 Marking. Nonpotable rainwater distribution piping *or water supply* piping labeling and marking shall comply with Section 608.9.

* * *

SECTION P-1304 – RECLAIMED WATER SYSTEMS

* * *

P-1304.2 Water pressure-reducing valve or regulator. Where the reclaimed water pressure supplied 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 or *water supply* system piping to 80 psi (552 kPa) static or less. Pressure-reducing valves shall be specified and installed in accordance with Section 604.8.

P-1304.3 Reclaimed water systems.

P-1304.3.1 Distribution *or water supply* pipe. Distribution piping *or water supply piping* shall comply with Sections 1304.3.1.1 through 1304.3.1.3.

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

P-1304.3.1.1 Materials, joints and connections. Distribution piping *or water supply* piping conveying reclaimed water shall conform to standards and requirements specified in Section 605 for nonpotable water.

P-1304.3.1.2 Design. Distribution piping *or water supply piping* systems shall be designed and sized in accordance with Section 604 for the intended application.

P-1304.3.1.3 Labeling and marking. Nonpotable distribution piping *or water supply* piping labeling and marking shall comply with Section 608.9.

* * *

CHAPTER 14
SUBSURFACE LANDSCAPE IRRIGATION SYSTEMS

[Delete the contents of this Chapter in its entirety.]

Reserved.

APPENDIX E
SIZING OF WATER PIPING SYSTEM

The International Plumbing Code Appendix E is adopted to provide acceptable methods for the sizing of water service and water distribution piping by a designer.
Notwithstanding the definitions set forth in Chapter 2 of this code, the following definitions apply to this Appendix.

WATER DISTRIBUTION PIPE. The pipe from the curb stop or curb line to the structure or through the meter pit to the first point of use if there is no structure.

WATER SERVICE PIPE. The pipe from the water main to the curb stop or curb line as regulated by Philadelphia Water Department Regulations.

WATER SUPPLY PIPES. The pipes within a structure or premises which convey water from the water distribution pipe to the plumbing fixtures or other outlets.