

EduCode 2024 IPC/UPC Significant Changes

Based upon 2024 International Plumbing Code® and
2024 Uniform Plumbing Code®



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TIME
FOR
INTRODUCTIONS



Gary Gauthier

Director of PMG Technical Resources for the International Code Council (ICC), where I serve as a subject matter expert for ICC's Plumbing, Mechanical, Fuel Gas, Swimming Pool & Spa, and Private Sewage Disposal Codes (PMG).



WHO IS MY ICC PMG LIASON?



Mark Fasel



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Jim Cika



PLUMBING, MECHANICAL, FUEL
GAS, AND SWIMMING POOL & SPA



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The Code Council offers resources, people and ways to get involved in the process.

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<https://www.iccsafe.org/products-and-services/i-codes/pmg/>

The goal of this seminar is to provide key information on the design, installation and inspection principles based on the 2021 IPC.

Upon completion, participants will be better able to:

- Identify code enforcement issues and key code sections.
- Determine appropriate code provisions to apply to plumbing.
- Describe the application of the code to inspection, plan review and code enforcement.
- Apply the provisions of the IPC to design, installation and inspection phases of construction.



Why Does This Matter?

- State Specific Trainings
- Identify your state specific amendments adopted within your state and/or jurisdiction.
- Model codes are an ideal minimal safety starting point
- State specific amendments adjust for local environment, conditions or desire for more stringent regulations



Course Elements



1

Scope and Administration

2

Definitions

3

General Regulations

4

**Fixtures, Faucets and
Fixture Fittings**

5

Water Heaters



Course Elements



6

Water Supply and Distribution

7

Sanitary Drainage

8

Indirect Special Waste

9

Vents

10

Traps, Interceptors and Separators



Course Elements



11

Storm Drainage

12

Special Piping and
Storage Systems

13

Nonpotable Water
Systems

14

Subsurface Graywater
Soil Absorption Systems

15

Referenced Standards



Why Does This Matter?

Prescriptive vs Performance

- *Prescriptive code provisions* form a specific set of rules (a recipe) to follow to gain compliance with the code.
- *Performance code provisions* require systems or components to function in a certain way to meet the desired level of safety and performance but do not specify the method of construction.



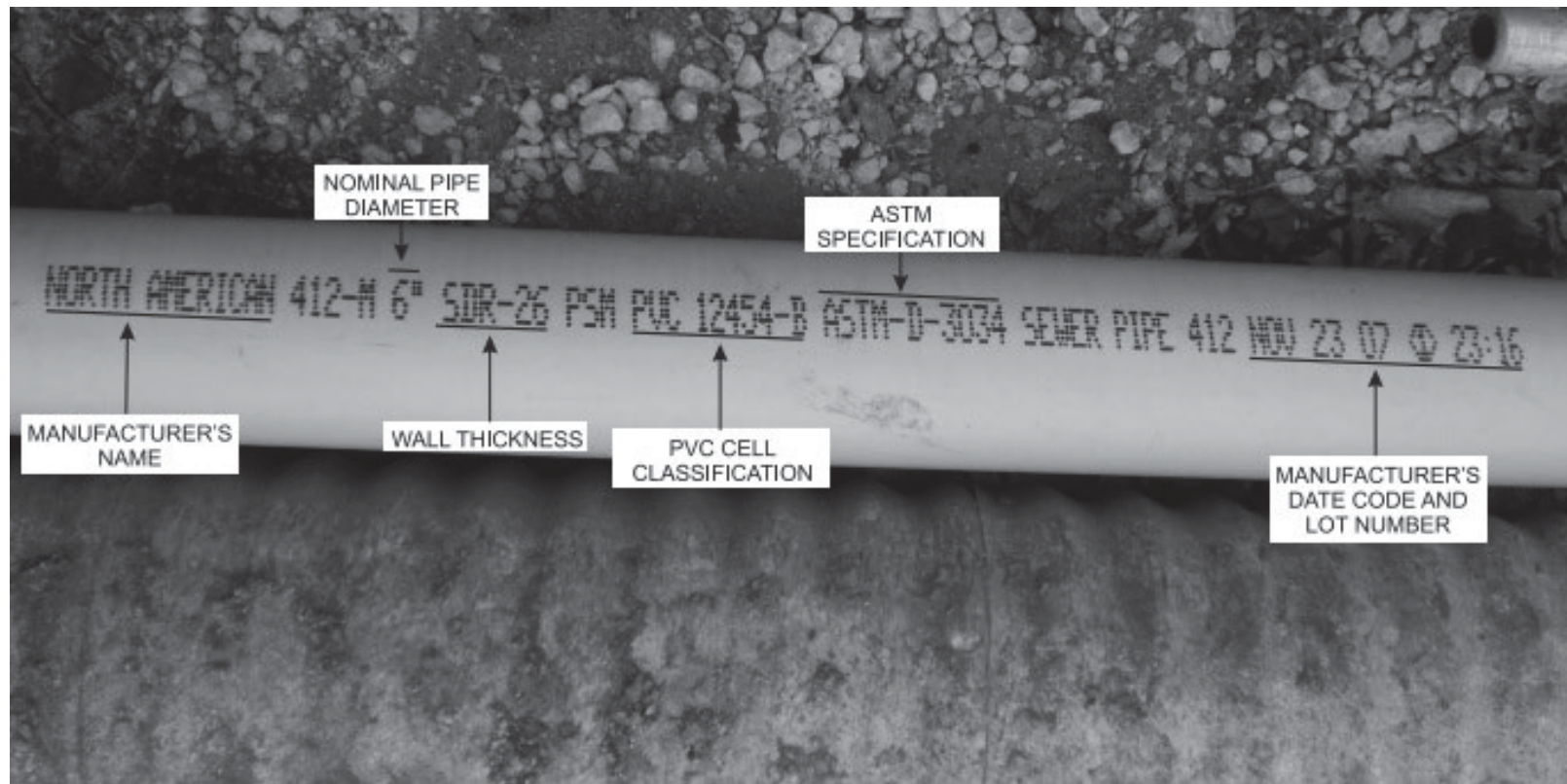
Materials and Standards

- IPC and IRC list the various product standards for plumbing materials.
- A manufactured product listing provides confirmation that the product or material has been evaluated by a third-party certification agency.
- Where there are conflicts between the code, manufacturer's installation instructions, referenced standards or other regulations, the minimum provisions of the code apply.



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Sample of Markings of PVC Pipe



IPC Commentary Figure 303.1(2) Marking of PVC Gravity Sewer Pipe

2004 IPC
Yearbook

- 17

ICC Family of Solutions



Alliance for
National & Community
Resilience



Formatting changes to 2024 I-Codes

- 2024 I-Codes® have undergone substantial formatting changes as part of the digital transformation strategy of the International Code Council® (ICC®) to improve the user experience.
- Resulting product better aligns the print and PDF versions of the I-Codes with the ICC's Digital Code content.
- Additional information can be found at iccsafe.org/design-updates.



Formatting changes to 2024 I-Codes

Style Changes to the 2024 International Codes

Streamlined lists



Consistent
grouping of
associated content
*(e.g., tables immediately
follow parent sections)*



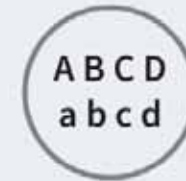
Shading for table
headers and notes



Single-column text



Modernized
font styles



We've updated style changes to improve readability, reduce page count and book size, and support sustainability.
These changes align with the Code Council's ongoing digital transformation.

Replacement of Marginal Markings w QR Codes

- Through 2021, print editions of the I-Codes identified technical changes from prior code cycles with marginal markings:
 - ! solid vertical lines for new text
 - * asterisks for relocations
 - arrows for deletion
- 2024 I-Code print editions replace the marginal markings with QR codes to identify code changes more precisely.
- A QR code is placed at the beginning of any section that has undergone technical revision. If there is no QR code, there are no technical changes to that section.



Replacement of Marginal

- In the following example from Code®(IPC®), a QR code indicates 605 from the 2021 IPC.
- Note that the change may occur in more subsections of the main

SECTION 605—MATERIALS, JOINTS AND FITTINGS

605.1 Soil and ground water. The installation of a water service or water distribution pipe in soil and ground water contaminated with solvents, fuels, organic compounds or other substances causing permeation, corrosion, degradation or structural failure of the piping system is prohibited. If conditions are suspected, a chemical analysis of the soil and ground water conditions shall be required. If the acceptability of the water service or water distribution piping material is in question and detrimental conditions exist, *approved* alternative materials or routing shall be used.

605.2 Lead content of water supply pipe and fittings. Pipe and pipe fittings utilized in the water supply system shall have not more than 8-percent lead content.

605.2.1 Lead content of drinking water pipe and fittings. Pipe, pipe fittings and fixture fittings utilized to supply water for drinking or cooking purposes shall have a weighted average lead content of 0.25 percent or less.

Scan for
Changes



52e3321

Combining
Section

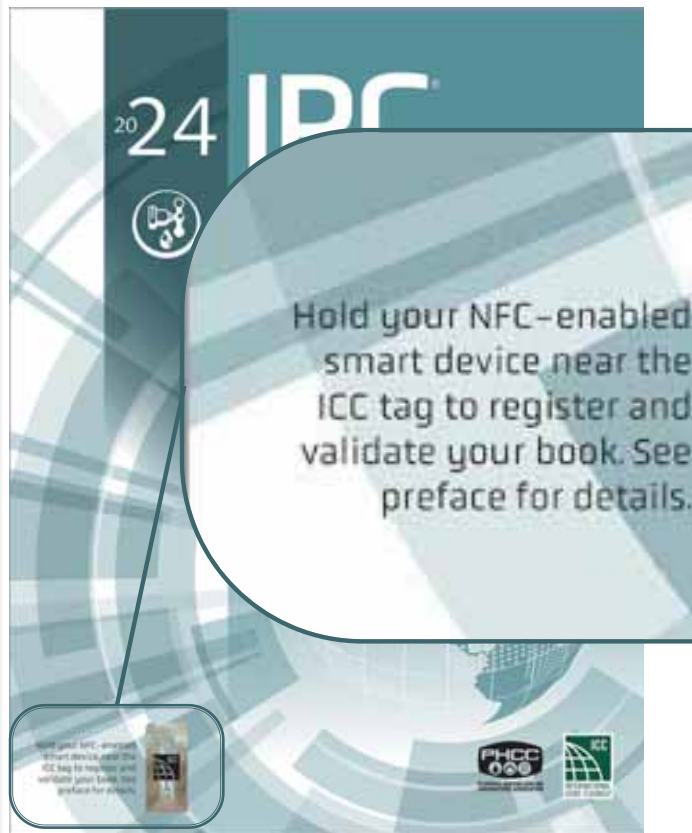
one or

Replacement of Marginal Markings w QR Codes

- To see the code changes, scan the QR code with a smart device.
 - If scanning a QR code is not an option, changes can be accessed by entering the 7-digit code beneath the QR code at the end of the following URL: **qr.iccsafe.org/** (in the above example, “**qr.iccsafe.org/52e3321**”).
 - Those viewing the code book via PDF can click on the QR code.
- All methods take the user to the appropriate section on ICC’s Digital Codes website, where technical changes from the prior cycle can be viewed.
- Digital Codes Premium subscribers who are logged in will be automatically directed to the Premium view.
- All other users will be directed to the Digital Codes Basic free view.
- Both views show new code language in blue text along with deletion arrows for deleted text and relocation markers for relocated text.
- Digital Codes Premium offers additional ways to enhance code compliance research, including revision histories, commentary by code experts and an advanced search function. A full list of features can be found at codes.iccsafe.org/premium-features.



2024 IPC and IMC offers NFC Registration



Beginning with the 2024 IPC® *and* IMC®, users will be able to validate the authenticity of their book and register it with the ICC to receive incentives.

Digital Codes Premium (codes.iccsafe.org) provides advanced features and exclusive content to enhance code compliance. To validate and register, the user will tap the ICC compatible device.

Visit iccsafe.org/nfc for more information and troubleshooting tips regarding NFC tag technology.





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- 5 Bookmark any section or subsection, define its classification, and assign a label and color to the classification.
- 6 Highlight and Annotate options keep you organized.
- 7 Display tags can be added and filtered.
- 8 Color coding identifies changes since the previous edition of the I-Code or State Code.

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- Identify significant changes between from 2021 to 2024 IPC and from 2021 to 2024 UPC
- Apply code requirements to design, plan submittals and/or inspection



Objectives

- 1) Identify the differences between code year requirements
- 2) Apply the updated code requirements to maintain the health and safety of the community
- 3) Identify changes in organization of code requirements
- 4) Apply the codes to design, plan review, and inspection requirements



Informational Icons



Addition



Deletion



Modification



Clarification

Discussion



2024 Uniform Plumbing Code[®], UPC[®]



2024 UPC Ch. 2 Definitions:

203.0 Anodeless Riser

225.0 Water Station



2024 UPC Ch. 3 General Regulations

- 301.6 Tall Wood(Mass Timber) Buildings.
- 310.0 Prohibited Fittings and Practices.
- 310.9 Female Plastic Connections



2024 UPC Ch. 4 Plumbing Fixtures & Fixture Fittings

- 404.0 Waste Fittings and Overflows.
- 404.2.1 Sinks, Lavatories, and Bathtubs.
- 404.2.2 Water Closets and Urinals.
- 408.4.3 Temperature-Actuated, Flow-Reduction Device for Individual Fixture Fittings.
- 408.5 Waste Outlet.
- 408.8.5 408.7.5 Test for Shower Receptors.
- 411.3 Water Closet Seats.
- 417.0 Faucets and Fixture Fittings.



2024 UPC Ch. 4 Plumbing Fixtures & Fixture Fittings

- 420.3 Pre-Rinse Spray Valve.
- 422.1 Notes: #6 & #7 added
- 422.1.1 Fixture Calculations.
- 422.1.2 Single Use, Family or Assisted-Use Toilet, and Bathing Facilities.
- 422.2 Separate Facilities.



2024 UPC Ch. 5 Water Heaters

- 507.5 Drainage Pan.
- 507.13 Installation in Residential Garages.
- 509.2.6 Direct-Vent Appliances.
- 509.8 Through-the-Wall Vent Termination.
- 509.13 Manually Operated Dampers.



2024 UPC Ch. 6 Water Supply and Distribution

- 603.5.19 Garbage Can Washers.
- 603.5.24~~2~~ Chemical Dispensers.
- 606.5.1 Manifolds.
- 608.3 Expansion Tanks, and Combination Temperature and Pressure-Relief Valves.
- 609.8.3 Hot-Water Recirculating Pumps.



2024 UPC Ch. 7 Sanitary Drainage

- Table 703.2
- 708.0 Grade of Horizontal Drainage Piping
- 710.9 Alarm
- 715.3 Existing Sewers



2024 UPC Ch. 8 Indirect Waste

- 814.4 Appliance Condensate Drains.
- 814.5 Point of Discharge.



2024 UPC Ch. 9 Vents

- 905.5 Location of Opening.
- 906.7 Frost or Snow Closure.
- 910.4 Connections and Size.
- 911.1 Circuit Vent Permitted.



2024 UPC Ch. 10 Traps and Interceptors

- Change: in Table 1002.2 The word ~~top~~ was removed and face was added.
- New note #3 added within Table 1002.2

#3 Horizontally wet vented bathtubs, showers and similar fixtures shall be limited to a maximum of 6 feet (1829 mm) for 1 ½ inch (40 mm) fixture drains and 8 feet (2438 mm) for 2 inch (50 mm) fixture drains, maintaining ¼ inch per foot slope (20.8mm/m).



2024 UPC Ch. 11 Storm Drainage

- 1101.13.1 Rain Leaders and Conductors.



2024 UPC Ch. 12, 13, 14

- Chapter 12 Fuel Gas Piping – Revised to correlate with NFPA 54-2021
- Chapter 13 Health Care Facilities and Medical Gas and Medical Vacuum Systems – Revised to correlate with NFPA 99-2021
- Chapter 14 Firestop Protection – No Changes



2024 UPC Ch. 15 Alternate Water Resource for Nonpotable Applications

- 1501.7 Minimum Water Quality Requirements.
- 1505.0 Reclaimed (Recycled) Water Systems.
- 1506.78 On-Site Treated Nonpotable Water Devices and Systems.



2024 UPC Ch. 16 Nonpotable Rainwater Catchment Systems

- 1603.54 Minimum Water Quality.
- ~~1503.2.4~~ 1603.20 Rainwater Diversion Valves



Discussion



2024 International Plumbing Code[®], IPC[®]



Significant Changes

Definitions

2024 IPC® Chapter 2



SECTION 202

GENERAL DEFINITIONS

ACCEPTED ENGINEERING PRACTICE. That which is established by the consensus of technical or scientific authorities.

[M] ACCESS (TO). That which enables a fixture, appliance, or equipment to be reached for the removal or movement of a panel or similar obstruction.

ACCESS COVER. A removable plate, usually secured with a fastener, used to provide access for inspection, repair or cleaning.

[BE] ACCESSIBLE. A site, building, facility or portion thereof that is capable of being reached by and used by people with disabilities.

ADAPTER FITTING. An *approved* connecting device used to join two pipe or fitting ends together.

AIR ADMITTANCE VALVE. One-way valve device installed in a piping system to prevent sewer gas from entering the building. The device shall close automatically under positive internal pressures. The device shall not be used in a system without the use of a vent pipe.



202 Definitions - Ambulatory Care Facility

[BG] AMBULATORY CARE FACILITY.

Buildings or portions thereof used to provide medical, surgical, psychiatric, nursing or similar care on a less than 24-hour basis to persons who are rendered incapable of self-preservation by the services provided or staff has accepted responsibility for care recipients already incapable.





202 Definitions - Copper Alloy

COPPER ALLOY. A homogenous mixture of two or more metals ~~alloy where the principle~~ in which copper is the primary component ~~is copper~~, such as brass and bronze.



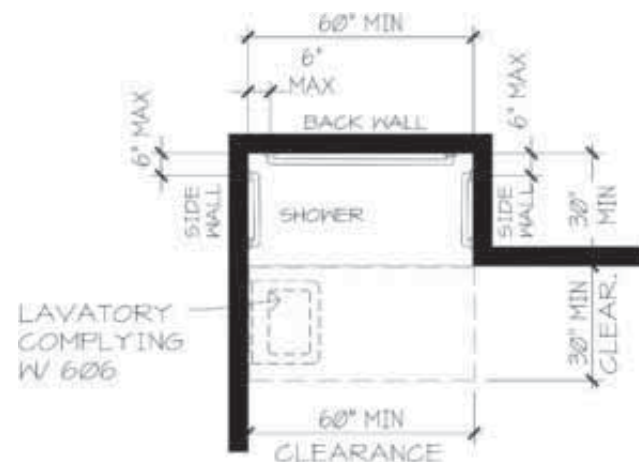
The modification of this definition makes the term "copper alloy" uniform throughout the I-Codes.





202 Definitions - Family or Assisted-use Bathing Room

[BG] FAMILY OR ASSISTED-USE BATHING ROOM. A room separate from other bathing rooms that: is intended to be used by all persons regardless of sex, families and those needing assisted care; has an independent entrance, not more than one shower or bathtub, not more than one adult-height water closet and one adult-height lavatory; and is permitted to have one urinal, one child height water closet and one child-height lavatory.



ASSISTED BATHING
ROLL-IN SHOWER -
MINIMUM SIZE





202 Definitions - Family or Assisted-use Toilet Facility

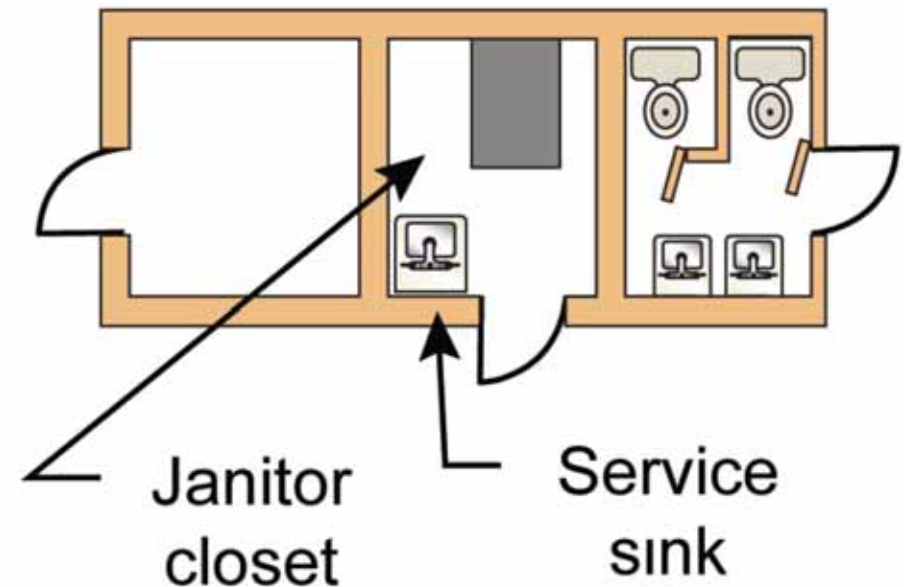
[BG] FAMILY OR ASSISTED-USE TOILET FACILITY. A room separate from other toilet facilities that: is intended to be used by all persons regardless of sex, families and those needing assisted care; has an independent entrance, not more than one adult-height water closet and not more than one adult-height lavatory; and is permitted to have one urinal, one child-height water closet and one child-height lavatory.





202 Definitions - Service Sink

SERVICE SINK. A sink exclusively intended to be used for facilitating the cleaning of a building or tenant space.

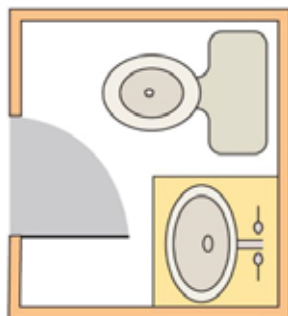
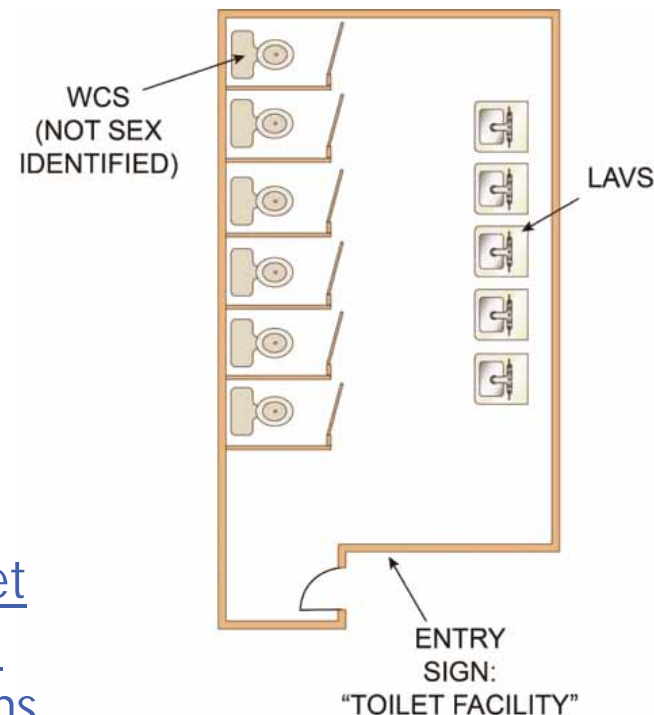




202 Definitions - Toilet Facility

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

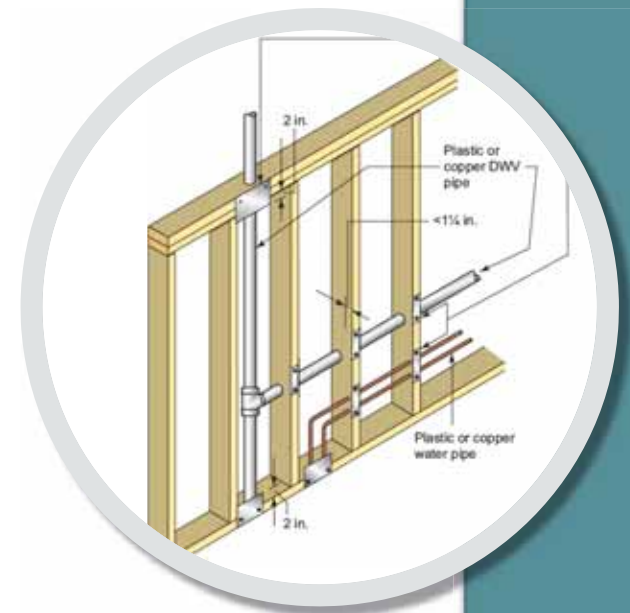
Multiple-user toilet facility. A toilet facility intended to be used by multiple occupants. Such facilities have more than one water closet and one lavatory. Each water closet is located in its own compartment that is created by vertical partitions.



Single-user toilet facility. A toilet facility intended to be used by a single occupant and that contains not less than one water closet and one lavatory.

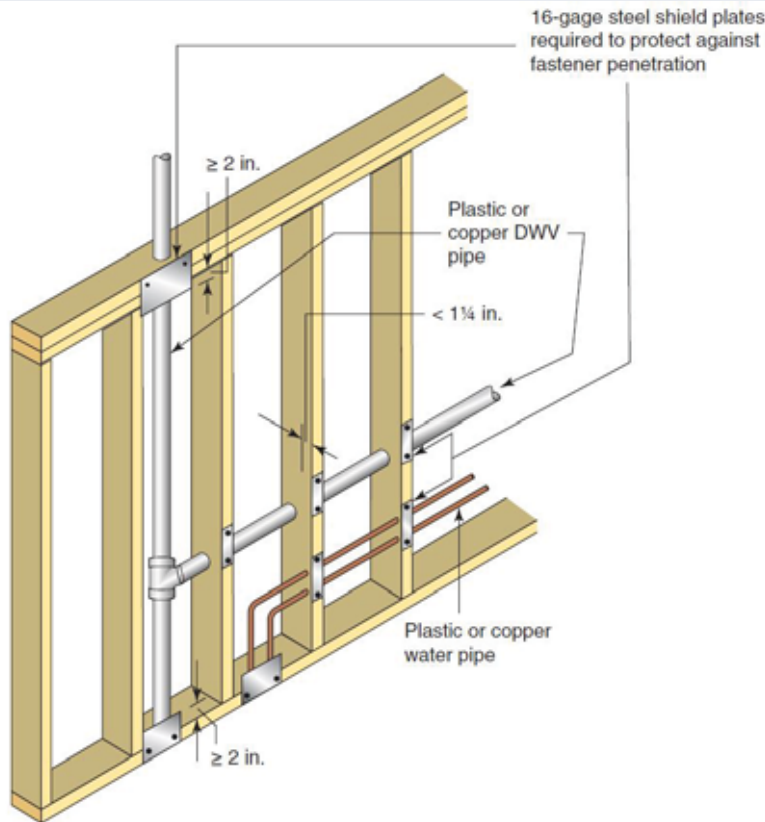
General Regulations

2024 IPC® Chapter 3





305.6 Protection against physical damage



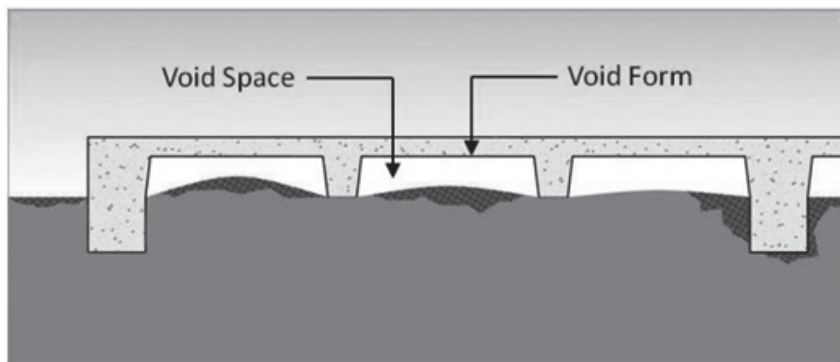
305.6 Protection against physical damage. In concealed locations where piping, other than cast iron or galvanized steel, is installed through holes or notches in studs, joists, rafters or similar members less than 1-1/4 inches (32 mm) from the nearest edge of the member, the pipe shall be protected by steel shield [plates](#). Such plates shall cover the area of the pipe where the member is notched or bored, and shall extend not less than 2 inches (51 mm) above sole plates and below top plates.

305.6.1 Shield plates. Shield plates shall be of steel material having a thickness of not less than 0.0575 inch (1.463 mm) (No. 16 gage).

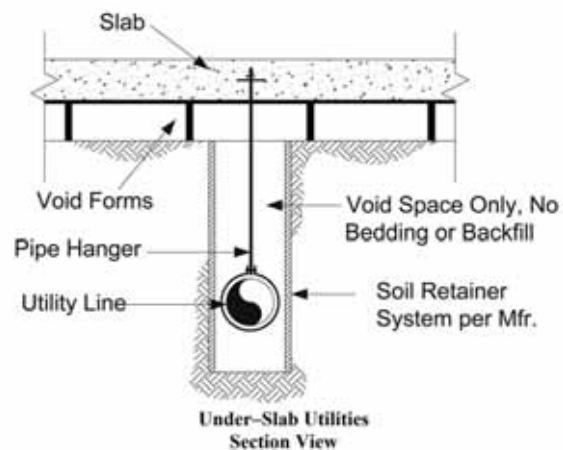


305.8 Expansive Soil

305.8 Expansive Soil. Where expansive soil is identified under buildings in accordance with Section 1803.5.3 of the International Building Code, but not removed in accordance with Section 1808.6.3 of the International Building Code, plumbing shall be protected in accordance with Section 305.8.1 or 305.8.2.



Void Space Below Slab Area and No Void Space Below Grade Beams





305.8 Expansive Soil – Cont'd

305.8.1 Nonisolated foundations. Under foundations with slabs that are structurally supported by a subgrade, buried plumbing shall be permitted.

305.8.2 Isolated foundations. Under foundations with a slab or framing that structurally spans over an under-floor space that isolates the slab or framing from the effects of expansive soil swelling and shrinking in accordance with Section 1808.6.1 of the International Building Code, the plumbing shall be suspended so that plumbing, hangers and supports are isolated, by a voidspace, from the effects of expansive soil swelling and shrinking.

Exception: Plumbing shall be permitted to be buried where it provides drainage of an under-floor space. To protect the voidspace, soil shall be sloped, benched or retained in accordance with an approved design methodology. Plumbing, hangers and supports below the slab or framing shall not be permitted to be in contact with the soil or any assemblage of materials that is in contact with soil in the active zone. A slab and plumbing shall not be permitted to be lifted as an assembly to create the voidspace unless the under-floor space is a crawl space with access to allow inspection of plumbing after lifting.

Exception: Plumbing shall be permitted to be buried where it provides drainage of an under-floor space. Organic materials subject to decay shall not be used for hangers, supports and soil retention systems. Materials subject to corrosion shall not be used for hangers, supports and soil retention systems unless protected in an approved manner. Where plumbing transitions to a buried condition beyond the perimeter of the foundation, an adequately flexible expansion joint shall be provided in the plumbing system to accommodate the effects of expansive soil swelling and shrinking.



306.2.4 Tracer Wire

306.2.4 Tracer wire. For plastic sewer piping, an insulated copper tracer wire or other approved conductor shall be installed adjacent to and over the full length of the piping. Access shall be provided to the tracer wire or the tracer wire shall terminate at the cleanout between the building drain and building sewer. The tracer wire size shall be not less than 14 AWG and the insulation type shall be listed for direct burial.

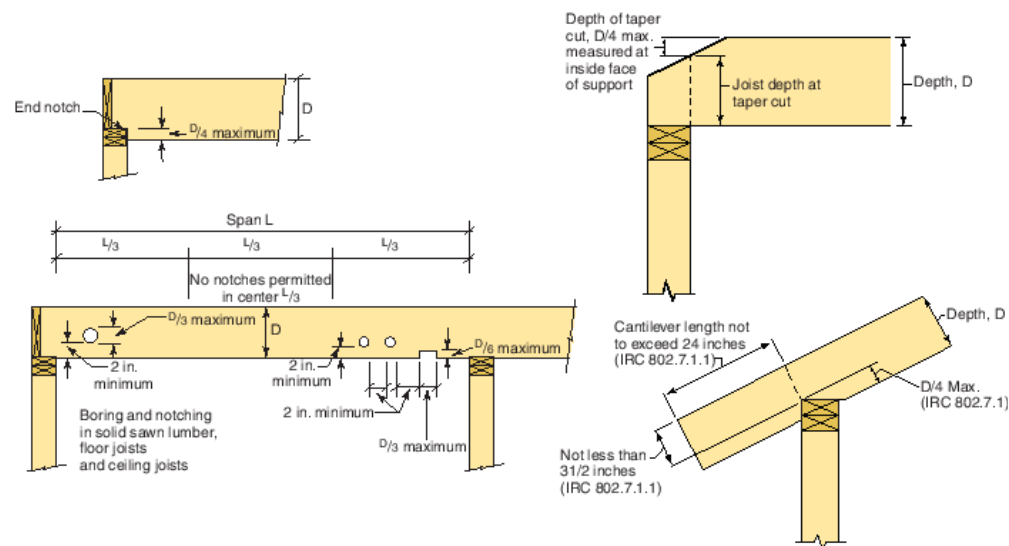




307.2, 307.3 Cutting, Notching and Boring

307.2 Cutting, notching and boring in wood framing or bored holes. The cutting, notching and boring of structural wood framing members shall comply with Section 2308.6 of the International Building Code.

307.3 Cutting and notching in cold-formed steel framing. The cutting and notching of holes in cold-formed steel framing members shall be in accordance with AISI S240 for structural members and AISI S220 for nonstructural members.





310 Toilet Facilities Requirements

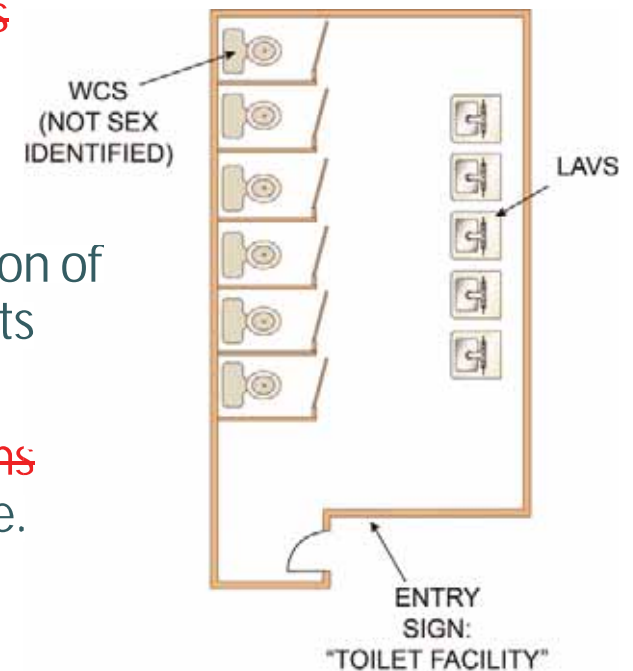
SECTION 310

~~WASHROOM AND~~ TOILET ~~ROOM~~ FACILITIES REQUIREMENTS

310.1 Light and ventilation. ~~Washrooms and toilet rooms~~ Toilet facilities shall be illuminated and ventilated in accordance with the International Building Code and International Mechanical Code .

310.2 Location of fixtures and compartments. The location of plumbing fixtures and the requirements for compartments and partitions shall be in accordance with Section 405.3.

310.3 Interior finish. Interior finish surfaces of toilet ~~rooms~~ facilities shall comply with the International Building Code.





312.4 Drainage and Vent Vacuum Test

312.4 Drainage and vent vacuum test. The portion of the drainage and vent system under test shall be evacuated of air by a vacuum type pump to achieve a uniform gauge pressure of negative 5 pounds per square inch or a negative 10 inches of mercury column (negative 34 kPa). This pressure shall be held without the removal of additional air for a period of 15 minutes. Any adjustments to the test pressure required because of changes in ambient temperatures or the seating of gaskets shall be made prior to the beginning of the test period.



Fixtures, Faucets, and Fixture Fittings

2024 IPC® Chapter 4





Table 403.1 Minimum Number of Required Plumbing Fixtures

TABLE 403.1—MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES ^a (See Sections 403.1.1 and 403.2)									
NO.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS (URINALS: SEE SECTION 424.2)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAIN (SEE SECTION 410)	OTHER
			MALE	FEMALE	MALE	FEMALE			
2	Business	Buildings for the transaction of business, nonmedical professional services, other services involving merchandise, office buildings, banks, light industrial and similar uses	1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50		1 per 40 for the first 80 and 1 per 80 for the remainder exceeding 80		—	1 per 100	1 service sink ^e
		Ambulatory care facilities and outpatient clinics	1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	1 per 50		—	1 per 100	1 service sink per floor

[Other changes to the table are not shown for brevity.]





403.1.1 Fixture Calculations

403.1.1 Fixture calculations. [Text remains unchanged]

Exceptions:

1. The total occupant load shall not be required to be divided in half where approved statistical data indicate a distribution of the sexes of other than 50 percent of each sex.
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 is not required where single-user water closets and bathing room fixtures are provided in accordance with Section 403.1.2.~~





403.1.2 Fixtures in Single-user Toilet Facilities and Bathing Rooms

403.1.2 Fixtures in single-user toilet facilities and bathing rooms fixtures. The plumbing fixtures located in single-user toilet facilities and single-user bathing rooms, including family or assisted-use toilet facilities 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. The number of fixtures in single-user toilet facilities, single-user bathing rooms and family or assisted-use toilet facilities shall be deducted proportionately from the required gender ratios of Table 403.1. Single-user toilet facilities and bathing rooms, and family or assisted-use toilet facilities and bathing rooms shall be identified as being available for use by all persons regardless of their sex.

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~~ multiple-user facilities.





403.2 Separate Facilities

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

Exceptions:

Items 1-5 [Text unchanged.]

6. Separate toilet facilities shall not be required where rooms having both water closets and lavatory fixtures are designed for use by all persons regardless of sex and privacy is provided for water closets ~~and urinals~~ in accordance with Section 405.3.4 and for urinals in accordance with Section 405.3.5.

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.

405.3.5 Urinal partitions. Each urinal utilized by the *public* or employees shall occupy a separate area with walls or partitions to provide privacy. The horizontal dimension between walls or partitions at each urinal shall be not less than 30 inches (762 mm). The walls or partitions shall begin at a height not greater than 12 inches (305 mm) from and extend not less than 60 inches (1524 mm) above the finished floor surface. The walls or partitions shall extend from the wall surface at each side of the urinal not less than 18 inches (457 mm) or to a point not less than 6 inches (152 mm) beyond the outermost front lip of the urinal measured from the finished backwall surface, whichever is greater.





403.2.1 Family or Assisted-use Toilet Facilities Serving as Separate Facilities

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

403.1.2 Fixtures in single-user toilet facilities and bathing rooms. The plumbing fixtures located in single-user toilet facilities and single-user bathing rooms, including family or assisted-use toilet facilities and bathing rooms, shall contribute toward the total number of required plumbing fixtures for a building or tenant space. The number of fixtures in single-user toilet facilities, single-user bathing rooms and family or assisted-use toilet facilities shall be deducted proportionately from the required gender ratios of Table 403.1. Single-user toilet facilities and bathing rooms, and family or assisted-use toilet facilities and bathing rooms shall be identified as being available for use by all persons regardless of their sex.



403.3.6 Door Locking

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

Exception: The egress door of a multiple-occupant toilet room shall be permitted to be lockable from inside the room where all the following criteria are met:

1. The egress door shall be lockable from the inside of the room only by authorized personnel by the use of a key or other approved means.
2. The egress door shall be readily openable from the toilet room in accordance with International Building Code Section 1010.2.
3. The egress door shall be capable of being unlocked from outside the room with a key or other approved means.





403.4 Signage

403.4 Signage. Required public toilet facilities shall be provided with signs that ~~designate the~~ indicate whether the facility is to be used by males, by females, or by all persons regardless of sex ~~as required by Section 403.2~~. Signs shall be readily visible and located near the entrance to each toilet facility. Signs for accessible toilet facilities shall comply with Section 1112 of the International Building Code.

1111.2 Signs identifying toilet or bathing rooms. Signs required in Section 403.4 of the International Plumbing Code identifying toilet rooms and bathing rooms shall be visual characters, raised characters and braille complying with ICC A117.1. Where pictograms are provided as designations for toilet rooms and bathing rooms, the pictograms shall have visual characters, raised characters and braille complying with ICC A117.1.

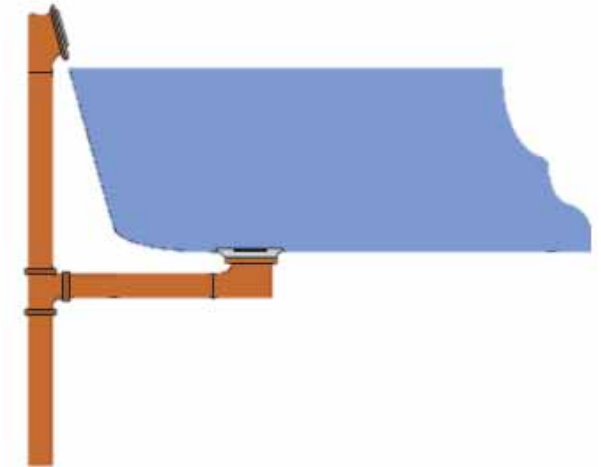




407.2 Bathtub Waste Outlets and Overflows

407.2 Bathtub waste outlets and overflows.

Bathtubs shall be equipped with a waste outlet that is not less than 1 ½ inches (38 mm) in diameter. The waste outlet shall be equipped with a watertight stopper. Where an overflow is installed in a bathtub, the piping from the overflow outlet shall be connected upstream of the fixture trap. The overflow outlet shall discharge to the trap whether the waste outlet is closed or open ~~the overflow shall be not less than 1 ½ inches (38 mm) in diameter.~~





410.1 Approval

410.1 Approval. Drinking fountains shall conform to ASME A112.19.1/CSA B45.2, ASME A112.19.2/CSA B45.1 or ASME A112.19.3/CSA B45.4, ~~and water coolers shall conform to ASHRAE 18.~~ Drinking fountains, water coolers and water dispensers shall conform to NSF 61, Section 9. Electrically operated, refrigerated drinking water coolers and water dispensers shall be listed and labeled in accordance with UL 399.





412.2 Hand Showers

412.2 Hand showers. Hand-held showers shall conform to ASME A112.18.1/CSA B125.1. Hand-held showers shall provide backflow protection in accordance with ASME A112.18.1/CSA B125.1 or shall be protected against backflow by a device complying with ASME A112.18.3 [or ASSE 1014](#).





412.10 Head Shampoo Sink Faucets

412.10 Head shampoo sink faucets. Head shampoo sink faucets shall be supplied with hot water that is limited to not more than 120°F (49°C). Each faucet shall have integral check valves to prevent crossover flow between the hot and cold water supply connections. The means for regulating the maximum temperature shall be one of the following:

1. A limiting device conforming to ASSE 1070/ASME A112.1070/CSA B125.70.
2. A water heater conforming to ASSE 1082 [or ASSE 1084](#).
3. A temperature-actuated, flow-reduction device conforming to ASSE 1062.





412.12 Electrically Heated or Cooled Water Dispensers

412.12 Electrically heated or cooled water dispensers.
Electrically heated or cooled water dispensers shall comply with ASSE 1023.





419.6 Soap dispenser

419.6 Soap dispenser. Soap dispensers shall be provided for public lavatories.





423.3 Footbaths and pedicure baths

423.3 Footbaths and pedicure baths. The water supplied to specialty plumbing fixtures, such as pedicure chairs having an integral foot bathtub and footbaths, shall be limited to not greater than 120°F (49°C) by a water temperature-limiting device that conforms to ASSE 1070/ASME A112.1070/CSA B125.70 or by a water heater complying with ASSE 1082 or 1084.





424.2 Substitution for water closets

424.2 Substitution for water closets. In each bathroom or toilet room, urinals shall not be substituted for more than 67 percent of the required water closets for males according to Table 403.1 in assembly and educational occupancies. Urinals shall not be substituted for more than 50 percent of the required water closets for males according to Table 403.1 in all other occupancies.



Discussion



Water Heaters

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501.9 Lead content

501.9 Lead content. Water heaters that are part of the potable water distribution system shall comply with NSF 372 and shall have a weighted average lead content of 0.25 percent or less.





504.7 Required pan

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:

Items 1-3 [Text unchanged.]

~~A plastic pan shall not be installed beneath a gas-fired water heater.~~

4. A plastic pan installed beneath a gas-fired water heater shall be constructed of material having a flame spread index of 25 or less and a smoke developed index of 450 or less when tested in accordance with ASTM E84 or UL 723.

Water heaters installed in pans shall comply with Section 314.2.3.2.



Water Supply and Distribution

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Table 604.4 Maximum Flow Rates and Consumption for Plumbing Fixtures & Fixture Fittings

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

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY ^b
Shower head ^{a,c}	<u>2.0</u> 2.5 gpm at 80 psi

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

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

b. Consumption tolerances shall be determined from referenced standards.

c. Shower heads shall comply with all requirements for high-efficiency showerheads in ASME A112.18.1/CSA B125.1

[Remainder of table not shown for brevity.]



Table 605.3 Water Service Pipe

TABLE 605.3 – WATER SERVICE PIPE

MATERIAL	STANDARD
Stainless steel tubing (Type 304/304L)	ASTM A269/A269M; ASTM A312; ASTM A778
Stainless steel tubing (Type 316/316L)	ASTM A269/A269M; ASTM A312; ASTM A778

[Remainder of table not shown for brevity.]



Table 605.4 Water Distribution Pipe

TABLE 605.4 – WATER DISTRIBUTION PIPE

MATERIAL	STANDARD
Stainless steel tubing (Type 304/304L)	ASTM A269/A269M; ASTM A312; ASTM A778
Stainless steel tubing (Type 316/316L)	ASTM A269/A269M; ASTM A312; ASTM A778

[Remainder of table not shown for brevity.]





605.14.2 Solvent cementing

605.14.2 Solvent cementing. Joint surfaces shall be clean and free from moisture. Joints shall be made in accordance with the pipe manufacturer's installation instructions. Solvent-cement joints shall be permitted above or below ground. Where such instructions require that a primer be used, the primer shall be applied to the joint surfaces and a solvent cement orange in color and conforming to ASTM F493 shall be applied to the joint surfaces. The joint shall be made in accordance with ASTM D2855 and while the cement is fluid. Where such instructions allow for a one-step solvent cement, yellow or green in color and conforming to ASTM F493, to be used, the joint surfaces shall not require application of a primer before the solvent cement is applied. The joint shall be made in accordance with ~~ASTM D2846 or ASTM F493.~~ ASTM F3328 and while the cement is wet.

~~Solvent-cemented joints shall be permitted above or below ground.~~



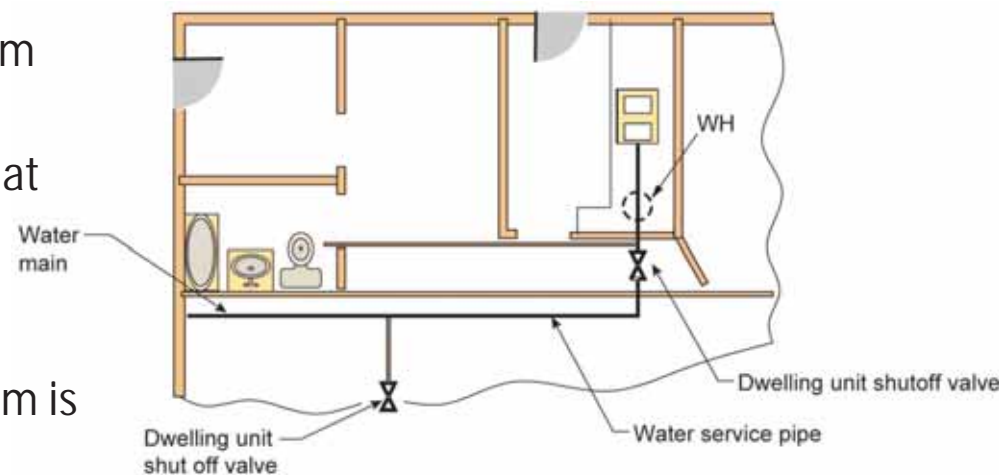


606.1 Location of full-open valves

606.1 Location of full-open valves. *Full-open valves* shall be installed in the following locations:

1. On the building water service pipe from the public water supply near the curb.
2. On the water distribution supply pipe at the entrance into the structure.
 - 2.1. In multiple-tenant buildings three stories or less in height, where a common water supply piping system is installed to supply other than one- and two-family dwellings, a main shutoff valve shall be provided for each tenant.

Items 3–8 [Text remains unchanged.]





607.2.1 Commercial energy provisions

607.2.1 Commercial energy provisions. In *occupancies* that are required to comply with the commercial provisions of the *International Energy Conservation Code*, the *developed length* of hot or tempered water piping shall be limited in accordance with Sections C404.5.1 through C404.5.2.1 of that code.





Table 608.1 Application of Backflow Preventers

TABLE 608.1 – APPLICATION OF BACKFLOW PREVENTERS

DEVICE	DEGREE OF HAZARD	APPLICATION ^b	APPLICABLE STANDARDS
Backflow prevention assemblies:			
Double check backflow prevention assembly and double check fire protection backflow prevention assembly	Low Hazard	Backpressure or backsiphonage Sizes 3/8"–16" <u>1/4"–16"</u>	ASSE 1015; AWWA C510; CSA B64.5; CSA B64.5.1
Double check detector fire protection backflow prevention assemblies	Low Hazard	Backpressure or backsiphonage Sizes 2" <u>1"–16"</u>	ASSE 1048

[Remainder of table not shown for brevity.]



Sanitary Drainage

2024 IPC® Chapter 7





Table 702.3 Building Sewer Pipe

TABLE 702.3 – BUILDING SEWER PIPE

MATERIAL	STANDARD
<u>Polyethylene (PE) plastic pipe (corrugated wall)</u>	<u>ASTM F2947/F2947M</u>
<u>Polyethylene (PE) plastic pipe (profile wall)</u>	<u>ASTM F2763</u>

[Remainder of table not shown for brevity.]



702.6 Chemical waste system

702.6 Chemical waste system. A chemical waste drainage system, including its vent system, shall be completely ~~separated~~ independent from the sanitary drainage system. Separate drainage systems for chemical waste and vent pipes shall conform to one of the standards indicated in Table 702.6. 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~~ Chemical waste drainage system pipe and fitting materials shall be resistant to corrosion and degradation for the concentrations of chemicals involved per manufacturer recommendations.





Table 702.6 Chemical Waster Drainage System Pipe and Fittings

TABLE 702.6 – CHEMICAL WASTE DRAINAGE SYSTEM PIPE AND FITTINGS

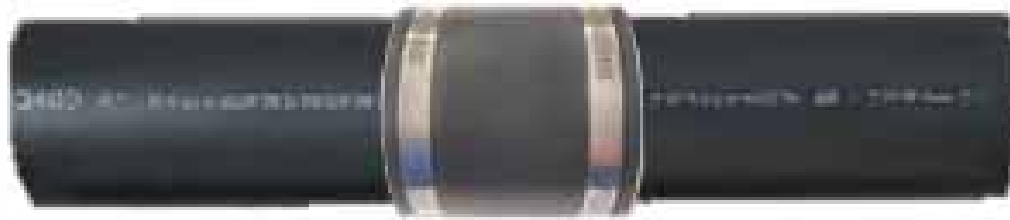
<u>MATERIAL</u>	<u>STANDARD</u>
<u>Chlorinated polyvinyl chloride (CPVC)</u>	<u>ASTM F2618</u>
<u>Borosilicate glass</u>	<u>ASTM C1053</u>
<u>High silicon iron</u>	<u>ASTM A518/A518M</u>
<u>Polyolefin</u>	<u>ASTM F1412, CSA B181.3</u>
<u>Polyvinylidene fluoride (PVDF)</u>	<u>ASTM F1673, CSA B181.3</u>





705.2.4 Mechanical joints above ground

705.2.4 Mechanical joints above ground. Mechanical joint couplings used above ground to connect ABS pipe to ABS pipe shall be of the shielded type and shall be marked by the manufacturer as being recommended for the application.





705.10.5 Mechanical joints above ground. Mechanical joint couplings used above ground to connect PVC pipe to PVC pipe shall be of the shielded type and shall be marked by the manufacturer as being recommended for the application.



Vents

2024 IPC® Chapter 9





901.3 Chemical waste drainage vent systems

901.3 Chemical waste drainage vent systems. The vent system for a chemical waste drainage system shall be independent of ~~the sanitary vent system and shall terminate separately~~ any sanitary drainage vent system. The termination of a chemical waste drainage vent system shall be through the roof to the outdoors or to an air admittance valve that complies with ASSE 1049. Air admittance valves for chemical waste drainage systems shall be constructed of one of the materials ~~approved in accordance with Section~~ indicated in Table 702.6 and shall be tested for chemical resistance in accordance with ASTM F1412.





902.1.1 Chemical waste drainage system vents

902.1.1 Chemical waste drainage system vents. The pipe and fitting materials for a chemical waste drainage vent system shall be in accordance with Section 702.6. The methods utilized for construction and installation of such venting system shall be in accordance with the pipe and fitting manufacturers' instructions.



Storm Drainage

2024 IPC® Chapter 11





Table 1102.4 Building Storm Sewer Pipe

TABLE 1102.4 – BUILDING STORM SEWER PIPE

MATERIAL	STANDARD
Polyethylene (PE) plastic pipe	ASTM F667; ASTM F2306/F2306M; ASTM F2648/F2648M; ASTM F2763 ; ASTM F2947/F2947M ; CSA B182.8
Polypropylene (PP) pipe	ASTM F2764 ; ASTM F2881; CSA B182.13

[Remainder of table not shown for brevity.]





Table 1102.5 Subsoil Drain Pipe

TABLE 1102.5 – SUBSOIL DRAIN PIPE

MATERIAL	STANDARD
Cast-iron pipe	ASTM A74; ASTM A888; CISPI 301
Polyethylene (PE) plastic pipe	ASTM F667 ; CSA B182.1; CSA B182.6; CSA B182.8

[Remainder of table not shown for brevity.]





Table 1102.7 Pipe Fittings

TABLE 1102.7 – PIPE FITTINGS

MATERIAL	STANDARD
Polyethylene (PE) plastic pipe	ASTM F667/F667M ; ASTM F2306/F2306M; ASTM F2763 ; ASTM F2947/F2947M
Polypropylene (PP) pipe	ASTM F2764 ; ASTM F2881/F2881M
Polyvinyl chloride (PVC) plastic	ASTM D2665; ASTM D3311; ASTM F1866; ASTM F3202

[Remainder of table not shown for brevity.]



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