

4101:1-29-01 Plumbing systems.

[Comment: When a reference is made within this rule to a federal statutory provision, an industry consensus standard, or any other technical publication, the specific date and title of the publication as well as the name and address of the promulgating agency are listed in rule 4101:1-35-01 of the Administrative Code. The application of the referenced standards shall be limited and as prescribed in section 102.5 of rule 4101:1-1-01 of the Administrative Code.]

**SECTION 2901
GENERAL**

2901.1 Scope. The provisions of this chapter and the *plumbing code* shall govern the erection, installation, alteration, repairs, relocation, replacement, addition to, use or maintenance of plumbing equipment and systems. Plumbing systems and equipment shall be constructed, installed and maintained in accordance with the *plumbing code*.

**SECTION 2902
MINIMUM PLUMBING FACILITIES**

2902.1 Minimum number of fixtures. Plumbing fixtures shall be provided for the type of occupancy and in the minimum number shown in Table 2902.1. Types of occupancies not shown in Table 2902.1 shall be considered individually by the building official. The number of occupants shall be determined by this code. Occupancy classification shall be determined in accordance with Chapter 3. *When the actual occupant load will be significantly different than that determined by section 1004 of the building code, the building official may establish an alternate basis for determining the occupant load. This alternate basis shall be included in the special stipulations and conditions section of the certificate of occupancy issued for that structure pursuant to section 110. For accessibility requirements, see "Chapter 11, Accessibility" of this code.*

Exception: *Facilities are not required in buildings less than 100 square feet in area if fixtures are available within 500 feet of the building.*

TABLE 2902.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a
(See Sections 2902.2 and 2902.3)

No.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	WATER CLOSETS (URINALS <i>See footnote h</i>)		LAVATORIES		BATH TUBS/ SHOWERS	DRINKING FOUNTAINS ^{e, f} (SEE SECTION 410.1 OF THE PLUMBING CODE)	OTHER
				MALE	FEMALE	MALE	FEMALE			
1	Assembly	A-1 ^d	Theaters and other buildings for the performing arts and motion pictures	1 per 125	1 per 65	1 per 200		—	1 per 500	1 service sink
		A-2 ^d	Nightclubs, bars, taverns, dance halls and buildings for similar purposes	1 per 40	1 per 40	1 per 75		—	1 per 500	1 service sink
			<u>Casinos</u>	<u>1:1-100</u>	<u>3:1-50</u>	<u>1:1-200</u>		=	=	<u>1 service sink</u>
				<u>=</u>	<u>4:51-100</u>	<u>2:201-400</u>				
				<u>2:101-200</u>	<u>6:101-200</u>	<u>3:401-750</u>				
				<u>3:201-400</u>	<u>8:201-400</u>	<u>Over 750, add one fixture for each additional 500 persons</u>				
				<u>Over 400, add one fixture each additional 250 males, and one for each 150 females</u>						
		Restaurants, banquet halls and food courts	1 per 75	1 per 75	1 per 200		—	1 per 500	1 service sink	
		A-3 ^d	Auditoriums without permanent seating, art galleries, exhibition halls, museums, lecture halls, libraries, arcades and gymnasiums	1 per 125	1 per 65	1 per 200		—	1 per 500	1 service sink
			Passenger terminals and transportation facilities	1 per 500	1 per 500	1 per 750		—	1 per 1,000	1 service sink
	Places of worship and other religious services		1 per 150	1 per 75	1 per 200		—	1 per 1,000	1 service sink	
	A-4	Coliseums, arenas, skating rinks, pools and tennis courts for indoor sporting events and activities	1 per 75 for the first 1,500 and 1 per 120 for the remainder exceeding 1,500	1 per 40 for the first 1,520 and 1 per 60 for the remainder exceeding 1,520	1 per 200	1 per 150	—	1 per 1,000	1 service sink	

		A-5	Stadiums, amusement parks, bleachers and grandstands for outdoor sporting events and activities	1 per 75 for the first 1,500 and 1 per 120 for the remainder exceeding 1,500	1 per 40 for the first 1,520 and 1 per 60 for the remainder exceeding 1,520	1 per 200	1 per 150	—	1 per 1,000	1 service sink
2	Business	B	Buildings for the transaction of business, professional services, other services involving merchandise, office buildings, banks, light industrial and similar uses	1 per 50		1 per 80		—	1 per 100	1 service sink ⁱ
3	Education	E	Educational facilities	1 per 50		1 per 50		—	1 per 100	1 service sink
4	Factory and industrial	F-1 and F-2	Structures in which occupants are engaged in work fabricating, assembly or processing of products or materials	1 per 100		1 per 100		See Section 411 of the plumbing code	1 per 400	1 service sink
5	Institutional	I-1	Residential care	1 per 10		1 per 10		1 per 8	1 per 100	1 service sink
		I-2	Hospitals, ambulatory nursing home patients ^b	1 per per room ^c		1 per per room ^c		1 per 15	1 per 100	1 service sink
			Employeess, other than residential care ^b	1 per 25		1 per 35		—	1 per 100	—
			Visitors, other than residential care	1 per 75		1 per 100		—	1 per 500	—

		I-3	Prisons ^b	1 per cell	1 per cell	1 per 15	1 per 100	1 service sink
		I-3	Reformatories, detention centers and correctional centers ^b	1 per 15	1 per 15	1 per 15	1 per 100	1 service sink
			Employees ^b	1 per 25	1 per 35	—	1 per 100	—
		I-4	Adult day care and child care	1 per 15	1 per 15	1	1 per 100	1 service sink
6	Mercantile ^g	M	Retail stores, service stations, shops, salesrooms, markets and shopping centers	1 per 500	1 per 750	—	1 per 1,000	1 service sink ⁱ
7	Residential	R-1	Hotels, motels, boarding houses (transient)	1 per sleeping unit	1 per sleeping unit	1 per sleeping unit	—	1 service sink
		R-2	Dormitories, fraternities, sororities and boarding houses (not transient)	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
		R-2	Apartment house	1 per dwelling unit	1 per dwelling unit	1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per 20 dwelling units

		R-3	Multiple single family dwellings	1 per dwelling unit	1 per dwelling unit	1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per dwelling unit
		R-3	Congregate living facilities with 16 or fewer persons and other R-3 occupancies	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
		R-4	Residential care/assisted living facilities	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
8	Storage	S-1 S-2	Structures for the storage of goods, warehouses, storehouses and freight depots, low and moderate hazard	1 per 100	1 per 100	See Section 411 of the plumbing code	1 per 1,000	1 service sink

- a. The fixtures shown are based on one fixture being the minimum required for the number of persons indicated or any fraction of the number of persons indicated. The number of occupants shall be determined by this code.
- b. Toilet facilities for employees shall be separate from facilities for inmates or patients.
- c. A single-occupant toilet room with one water closet and one lavatory serving not more than two adjacent patient sleeping units shall be permitted where such room is provided with direct access from each patient sleeping unit and with provisions for privacy.
- d. The occupant load for seasonal outdoor seating and entertainment areas shall be included when determining the minimum number of facilities required.
- e. The minimum number of required drinking fountains shall comply with Table 2902.1 and Chapter 11.
- f. Drinking fountains are not required for an occupant load of 15 or fewer.
- g. *Mercantile occupancies are not required to provide public facilities when the occupant load is 50 or less.*
- h. *In each bathroom or toilet room, urinal shall not be substituted for more than 67 percent of the required water closets in assembly and educational occupancies. Urinals shall not be substituted for more than 50 percent of the required water closets in all other occupancies.*
- i. *For business and mercantile occupancies with an occupant load of 15 or fewer, service sinks shall not be required.*

2902.1.1 Fixture calculations. To determine the occupant load of each sex, 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 in accordance with Table 2902.1. Fractional numbers resulting from applying the fixture ratios of Table 2902.1 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: 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.

2902.1.2 Family or assisted use toilet and bath fixtures.

Fixtures located within family or assisted use toilet and bathing rooms required by Section 1109.2.1 are permitted to be included in the number of required fixtures for either the male or female occupants in assembly and mercantile occupancies.

2902.2 Separate facilities. Where plumbing fixtures are required, separate facilities shall be provided for each sex.

Exceptions:

1. Separate facilities shall not be required for dwelling units and sleeping units.
2. Separate facilities shall not be required in structures or tenant spaces with a total occupant load, including both employees and customers, of 15 or ~~less~~fewer.
3. Separate facilities shall not be required in mercantile occupancies in which the maximum occupant load is ~~50 or less~~100 or fewer.

2902.2.1 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/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 2902.4.

2902.3 Required public toilet facilities. Customers, patrons and visitors shall be provided with public toilet facilities in structures and tenant spaces intended for public use as required in this code. The number of plumbing fixtures located within the required toilet facilities shall be provided in accordance with Section 2902.1 for all users. Employees shall be provided with toilet facilities in all

occupancies. Employee toilet facilities shall either be separate or combined employee and public toilet facilities.

2902.3.1 Access. The route to the public toilet facilities required by Section 2902.3 shall not pass through kitchens, storage rooms, closets *or similar spaces not available to the public*. Access to the required facilities shall be from within the building or from the exterior of the building. All routes shall comply with the accessibility requirements of this code. The public shall have access to the required toilet facilities at all times that the building is occupied. *The building owner is permitted to control access to the toilet facilities. Where such access is controlled, a sign shall be posted indicating how access is to be obtained.*

2902.3.2 Location of toilet facilities in occupancies other than covered mall buildings. In occupancies other than covered mall buildings, the required public and employee toilet facilities shall be located not more than one story above or below the space required to be provided with toilet facilities and the path of travel to such facilities shall not exceed a distance of 500 feet (152 400 mm).

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

2902.3.3 Location of toilet facilities in covered mall buildings. In covered mall buildings, the required public and employee toilet facilities shall be located not more than one story above or below the space required to be provided with toilet facilities, and the path of travel to such facilities shall not exceed a distance of 300 feet (91 440 mm). In covered mall buildings, the required facilities shall be based on total square footage, and facilities shall be installed in each individual store or in a central toilet area located in accordance with this section. The maximum travel distance to the central toilet facilities in covered mall buildings shall be measured from the main entrance of any store or tenant space. In covered mall buildings, where employees' toilet facilities are not provided in the individual store, the maximum travel distance shall be measured from the employees' work area of the store or tenant space.

2902.3.4 Pay facilities. Where pay facilities are installed, such facilities shall be in excess of the required minimum facilities.

2902.4 Signage. A legible sign designating the sex shall be provided in a readily visible location near the entrance to each toilet facility. Signs for accessible toilet facilities shall comply with *Chapter 11*.

2902.4.1 Directional signage. Directional signage indicating the route to the public facilities shall be posted in accordance with Section 3107. Such signage shall be located in a corridor or aisle, *near* the entrance to the facilities for customers and visitors.

2902.5 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 travel distance of 500 feet (152 400 mm) 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 (91 440 mm). Drinking fountains shall be located on an accessible route.*

SECTION 2903 TOILET ROOM REQUIREMENTS

2903.1 Water closet compartment. Each water closet utilized by the public or employees shall occupy a separate compartment with walls or partitions and a door enclosing the fixtures to ensure privacy.

Exceptions:

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

2903.2 Urinal partitions. *Deleted.*

2903.3 Interior Finish. Interior finish surfaces of toilet rooms shall comply with Section 1210.

2903.4 Toilet room openings. Toilet rooms shall not open directly into a room used for the preparation of food for service to the public.

SECTION 2904 INSTALLATION OF FIXTURES

2904.1 Water supply protection. The supply lines and fittings for every plumbing fixture shall be installed so as to prevent backflow.

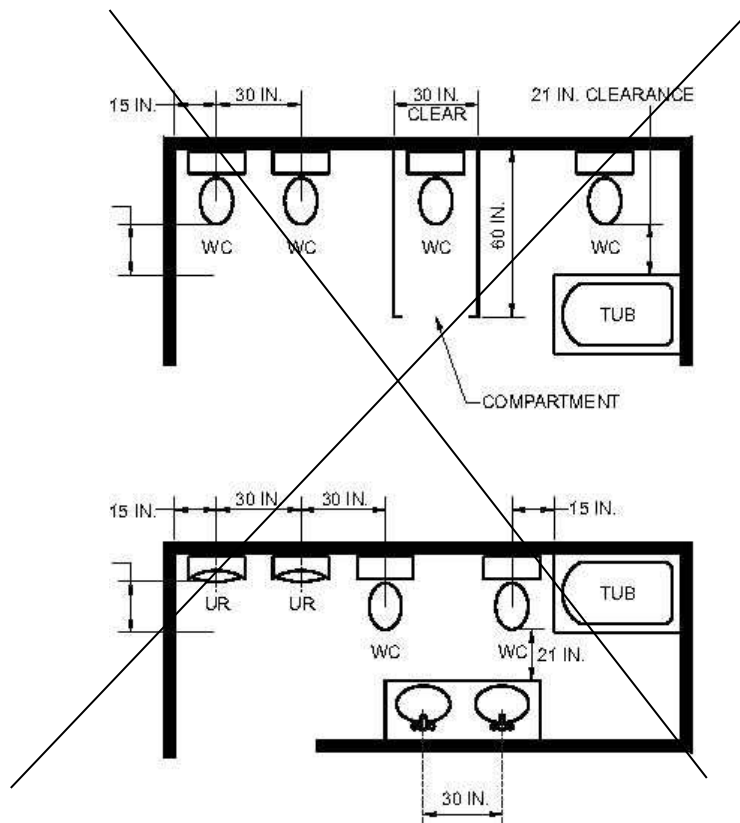
2904.2 Access for cleaning. Plumbing fixtures shall be installed so as to afford easy access for cleaning both the fixture and the area around the fixture.

2904.3 Setting. Fixtures shall be set level and in proper alignment with reference to adjacent walls.

2904.3.1 Water closets, urinals, lavatories and bidets. A water closet, urinal, lavatory or bidet shall not be set closer than 15 inches (381 mm) from its center to any side wall, partition, vanity or other obstruction, or closer than 30 inches (762 mm) center-to-center between adjacent fixtures. There shall be ~~at least~~ not less than a 21-inch (533 mm) clearance in front of the water closet, urinal, lavatory or bidet to any wall, fixture or door. Water closet compartments shall ~~not~~ be not less than 30 inches (762 mm) wide in width and not less than 60 inches (1524 mm) deep (see Figure 2904.3.1). in depth for floor-mounted water closets and not less than 30 inches (762 mm) in width and 56 inches (1422 mm) in depth for wall-hung water closets.

2904.3.2 Public lavatories. In employee and public toilet rooms, the required lavatory shall be located in the same room as the required water closet.

2904.4 Floor and wall drainage connections. Connections between the drain and floor outlet plumbing fixtures shall be made with a floor flange. The flange shall be attached to the drain and anchored to the structure. Connections between the drain and wall-hung water closets shall be made with an approved extension nipple or horn adaptor. The water closet shall be bolted to the hanger with corrosion-resistant bolts or screws. Joints shall be sealed with an approved elastomeric gasket, flange-to-fixture connection complying with ASME A112.4.3 or an approved setting compound.



For SI: 1 inch = 25.4 mm.

**FIGURE 2904.3.1
FIXTURE CLEARANCE**

2904.4.1 Floor flanges. Floor flanges for water closets or similar fixtures shall not be less than 0.125 inch (3.2 mm) thick for brass, 0.25 inch (6.4 mm) thick for plastic, and 0.25 inch (6.4 mm) thick and not less than a 2-inch (51 mm) caulking depth for cast-iron or galvanized malleable iron.

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

2904.4.2 Securing floor outlet fixtures. Floor outlet fixtures shall be secured to the floor or floor flanges by screws or bolts of corrosion-resistant material.

2904.4.3 Securing wall-hung water closet bowls.

Wall-hung water closet bowls shall be supported by a concealed metal carrier that is attached to the building structural members so that strain is not

transmitted to the closet connector or any other part of the plumbing system. The carrier shall conform to ASME A112.6.1M or ASME A112.6.2.

2904.5 Water-tight joints. *Joints formed where fixtures come in contact with walls or floors shall be sealed.*

2904.6 Plumbing in mental health centers. *Deleted.*

2904.7 Design of overflows. *Where any fixture is provided with an overflow, the waste shall be designed and installed so that standing water in the fixture will not rise in the overflow when the stopper is closed, and no water will remain in the overflow when the fixture is empty.*

2904.7.1 Connection of overflows. *The overflow from any fixture shall discharge into the drainage system on the inlet or fixture side of the trap.*

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

2904.8 Slip joint connections. *Fixtures with concealed slip joint connections shall be provided with an access panel or utility space at least 12 inches (305 mm) in its smallest dimension or other approved arrangement so as to provide access to the slip joint connections for inspection and repair.*

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Certification

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