

CHAPTER 29 PLUMBING SYSTEMS

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*.

[P] 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. *When the actual occupancy load will be significantly different than that determined by Section 1003.2.2 of the building code, the building official may establish an alternate basis for the determination of the occupant load, and 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 handicap requirements, see Chapter 11.*

Exception: Facilities are not required in buildings less than 100 square feet (9.3 m²) in area if fixtures are available within 500 feet (152 400 mm) of the building.

**TABLE 2902.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a**

No.	CLASSIFICATION	USE GROUP	DESCRIPTION	WATER CLOSETS (URINALS, SEE FOOTNOTE H)		LAVATORIES		BATHUBS OR SHOWERS	DRINKING FOUNTAINS (SEE SECTION 410.1 OF THE PLUMBING CODE)	OTHER
				MALE	FEMALE	MALE	FEMALE			
1	Assembly (see Sections 2902.2, 2902.5 and 2902.6)	A-1	Theaters usually with fixed seats 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	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
			Restaurants, banquet halls and food courts	1 per 75	1 per 75	1 per 200		—	1 per 500	1 service sink
		A-3	Auditoriums without permanent seating, art galleries, exhibition halls, museums, lecture halls, libraries, arcades and gymnasiums	1 per 125	1 per 65	1 per 200		—	1 per 500	1 service sink
			Passenger terminals and transportation facilities	1 per 500	1 per 500	1 per 750		—	1 per 1,000	1 service sink
		A-3	Places of worship and other religious services. Churches without assembly halls	1 per 150	1 per 75	1 per 200		—	1 per 1,000	1 service sink
		A-4	Coliseums, arenas, skating rinks, pools and tennis courts for indoor sporting events and activities	1 per 75 for the first 1,500 and 1 per 120 for the remainder exceeding 1,500	1 per 40 for the first 1,500 and 1 per 60 for the remainder exceeding 1,500	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 1,500 and 1 per 60 for the remainder exceeding 1,500	1 per 200	1 per 150	—	1 per 1,000	1 service sink

TABLE 2902.1—continued
MINIMUM NUMBER OF REQUIRED PLUMBING FACILITIES^a

No.	CLASSIFICATION	USE GROUP	DESCRIPTION	WATER CLOSETS (URINALS, SEE FOOTNOTE H)		LAVATORIES		BATHUBS OR SHOWERS	DRINKING FOUNTAINS (SEE SECTION 410.1 OF THE PLUMBING CODE)	OTHER
				MALE	FEMALE	MALE	FEMALE			
2	Business (see Sections 2902.2, 2902.4, 2902.4.1 and 2902.6)	B	Buildings for the transaction of business, 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 50 and 1 per 80 for the remainder exceeding 50		—	1 per 100	1 service sink
3	Educational	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 patient room ^c		1 per patient room ^c		1 per 15	1 per 100	1 service sink
			Employees, other than residential care ^b	1 per 25		1 per 35		—	1 per 100	—
		I-3	Visitors, other than residential care	1 per 75		1 per 100		—	1 per 500	—
			Prisons ^b	1 per cell		1 per cell		1 per 15	1 per 100	1 service sink
			Reformatories, detention centers and correctional centers ^b	1 per 15		1 per 15		1 per 15	1 per 100	1 service sink
I-4	Adult day care and child care ^b	1 per 15		1 per 15		1 per 15 ^d	1 per 100	1 service sink		
6	Mercantile (see Sections 2902.2, 2902.5 and 2902.6) ^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
7	Residential	R-1	Hotels, motels, boarding houses (transient)	1 per guestroom		1 per guestroom		1 per guestroom	—	1 service sink
		R-2	Dormitories, fraternities, sororities and boarding house (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 ^e

(continued)

TABLE 2902.1—continued
MINIMUM NUMBER OF REQUIRED PLUMBING FACILITIES^a

No.	CLASSIFICATION	USE GROUP	DESCRIPTION	WATER CLOSETS (URINALS, SEE FOOTNOTE H)		LAVATORIES		BATHUBS OR SHOWERS	DRINKING FOUNTAINS (SEE SECTION 410.1 OF THE PLUMBING CODE)	OTHER
				MALE	FEMALE	MALE	FEMALE			
7	Residential	R-3	Attached one-, two-, and three-family dwellings (including industrialized units)	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 ^e
		R-4	Residential care/assisted living facilities	1 per 10		1 per 10		1 per 8	1 per 100	1 service sink
8	Storage (see Sections 2902.2, 2902.4 and 2902.4.1)	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 rooms shall be permitted where such room is provided with direct access from each patient room and with provisions for privacy.
- d. For day nurseries, a maximum of one bathtub shall be required.
- e. For attached one- and two-family dwellings, one automatic clothes washer connection shall be required per 20 dwelling units.
- f. Deleted.
- g. Mercantile occupancies are not required to provide customer facilities when the occupant load is 50 or less.

2902.1.1 Unisex toilet and bath fixtures. Fixtures located within unisex toilet bathing rooms complying with Section 404 of the *plumbing code* are permitted to be included in determining the minimum required number of fixtures for assembly and mercantile occupancies.

2902.2 Separate facilities. Where plumbing fixtures are required, separate facilities shall be provided for each sex. *Legible signs shall be provided at the entrance to each facility indicating the sex for which each facility is provided.*

Exceptions:

1. Separate facilities shall not be required for private facilities.
2. Separate employee facilities shall not be required in occupancies in which 15 or fewer people are employed.
3. 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.
4. Separate facilities shall not be required in mercantile occupancies in which the maximum occupant load is 50 or less.

2902.3 Number of occupants of each sex. The required water closets, lavatories and showers or bathtubs shall be distributed equally between the sexes based on the percentage of each sex anticipated in the occupant load. The occu-

pant load shall be composed of 50 percent of each sex, unless statistical data approved by the building official indicate a different distribution of the sexes.

2902.4 Location of employee toilet facilities in occupancies other than assembly or mercantile. Access to toilet facilities in occupancies other than mercantile and assembly shall be from within the employees' working area. Employee facilities shall be either separate facilities or combined employee and public facilities.

Exception: Facilities that are required for employees in storage structures or kiosks, and are located in adjacent structures under the same ownership, lease or control, shall be a maximum travel distance of 500 feet (152 m) from the employees' working area.

2902.4.1 Travel distance. The required toilet facilities in occupancies other than assembly or mercantile shall be located not more than one story above or below the employees' working area and the path or travel to such facilities shall not exceed a distance of 500 feet (152 m).

Exception: The location and maximum travel distances to required employee toilet facilities in factory and industrial occupancies are permitted to exceed that required in Section 2902.4.1, provided the location and maximum travel distance are approved by the building official.

2902.5 Location of employee toilet facilities in mercantile and assembly occupancies. Employees shall be provided with toilet facilities in building and tenant spaces utilized as restaurants, nightclubs, places of public assembly and mercantile occupancies. The employee facilities shall be either separate facilities or combined employee and public facilities. The required toilet facilities shall be located not more than one story above or below the employees' work area and the path of travel to such facilities, in other than covered malls, shall not exceed a distance of 500 feet (152 m). The path of travel to required facilities in covered malls shall not exceed a distance of 300 feet (91 m).

Exception: Employee toilet facilities shall not be required in tenant spaces where the travel distance from the main entrance of the tenant spaces to a central toilet area does not exceed 300 feet (91 m) and such central toilet facilities are located not more than one story above or below the tenant space.

2902.6 Public facilities. Customers, patrons and visitors shall be provided with public toilet facilities in structures and tenant spaces intended for public use as required in the code. Access to public facilities shall not be through a kitchen or other area not open and available to the public. Public toilet facilities shall be located not more than one story above or below the space required to be provided with public toilet facilities and the path of travel to such facilities shall not exceed a distance of 500 feet (152 m).

2902.6.1 Covered malls. In covered mall buildings, the path of travel to required toilet facilities shall not exceed a distance of 300 feet (91 m). 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.

2902.6.2 Pay facilities. Where pay facilities are installed, such facilities shall be in excess of the required minimum facilities.

2902.6.3 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 ICC A117.1.

**SECTION 2903
INSTALLATION OF FIXTURES**

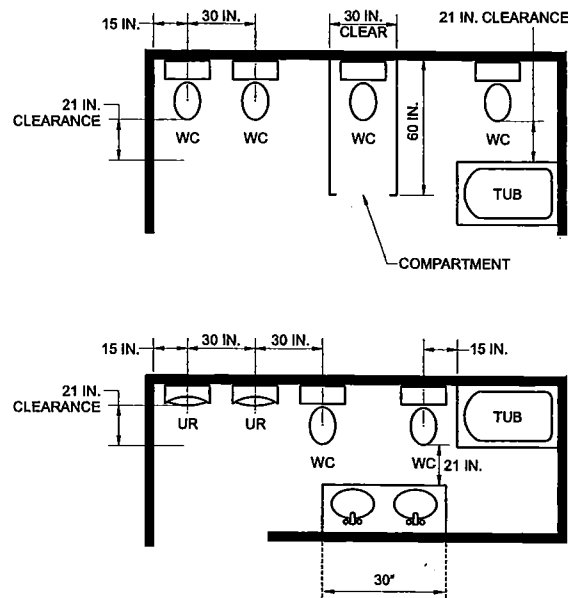
2903.1 Water supply protection. The supply lines and fittings for every plumbing fixture shall be installed so as to prevent backflow.

2903.2 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.

2903.3 Setting. Fixtures shall be set level and in proper alignment with reference to adjacent walls.

2903.3.1 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 water closets,

urinals and adjacent fixtures. There shall be at least a 21-inch (533 mm) clearance in front of the water closet, urinal or bidet to any wall, fixture or door. Water closet compartments shall not be less than 30 inches (762 mm) wide or 60 inches (1524 mm) deep. There shall be at least a 21-inch (533 mm) clearance in front of a lavatory to any wall, fixture or door (see Figure 2903.3.1). See Chapter 11 for the minimum required dimensions for accessible fixtures.



For SI: 1 inch = 25.4 mm.

**FIGURE 2903.3.1
FIXTURE CLEARANCE**

2903.3.2 Urinals. A urinal shall not be set closer than 15 inches (381 mm) from the center of the urinal to any side wall, partition, vanity or other obstruction, or closer than 30 inches (762 mm) center-to-center between urinals (see Figure 2903.3.1).

2903.4 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 adapter. 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 setting compound conforming to FS TT-P-1536A.

2903.5 Floor flanges. Floor flanges for water closets or similar fixtures shall not be less than 1/8 inch (3.2 mm) thick for brass, 1/4 inch (6.4 mm) thick for plastic and 1/4 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 1/4 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.

2903.6 Securing floor outlet fixtures. Floor outlet fixtures shall be secured to the floor or floor flanges by screws or bolts of corrosion-resistant material.

2903.7 Securing wall-hung water closet bowls. Wall-hung water closet bowls shall be supported by a concealed metal carrier which 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 A112.6.1.

2903.8 Water-tight joints. Joints formed where fixtures come in contact with walls or floors shall be sealed.

2903.9 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, nor shall any water remain in the overflow when the fixture is empty.

2903.9.1 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.

