

# Chapter 4

## Fixtures, Faucets, and Fixture Fittings

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### Section 403

The minimum number of plumbing facilities required in various occupancies.

The following is an example for calculating the minimum facilities required in a 350-seat restaurant with 10 employees. The building measures 60 feet X 100 feet.

Look at Table 403.1 in the IPC. Find No. 1- Assembly-*Restaurants*. Look first at sections 403.2, 403.5 and 403.6 as noted in the Classification column. **When using any table, be sure to read all applicable footnotes.**

### Section 403.2

We must provide separate facilities for each sex unless the facility is exempt by this section. *It appears the facility is not exempt.* Since 350 guests will be occupying this building, we must provide separate facilities for each sex.

### Section 403.3.3

If an employee or the public is any farther than 500 feet from a restroom then we need to build another toilet facility. Our restaurant measures 60' x 100', so it is impossible for an employee to be farther than 500 feet from the restroom. Also, note the restrooms may be located one story above or below the occupied story, but no higher or lower.

### Calculating number of water closets

- 1) Determine the number of occupants.  
 $350 \text{ guests} + 10 \text{ employees} = 360 \text{ people}$
- 2) Determine number of males and females.  
403.3 states that you should assume 50% for each sex unless statistical data indicate otherwise. For the example we would have the following:  
 $360 \text{ people} \times .50 = 180 \text{ males}$   
 $360 \text{ people} \times .50 = 180 \text{ females}$

- 3) Go to Table 403.1, *Restaurants*. Under the Water Closets column there is one WC for every 75 males and one WC for every 75 females. Since we have 180 males and 180 females we divide each by 75 to get the number of WC's required for each sex.  $180 \text{ males} / 75 = 2.4$  (3 water closets are required)\*  $180 \text{ females} / 75 = 2.4$  (3 water closets are required).

## Section 424.2

Urinals shall not be substituted for more than 67% of the required water closets. In other words, two-thirds of the water closets may be substituted for with urinals. Therefore, the men's room may have 1 water closet and 2 urinals. ( $3 \times .67 = 2.01$  urinals, rounded **down** to 2. If the math came out to 1.9 urinals, then only one urinal could be substituted because you must round down)

## Calculating number of lavatories

Under the *Lavatories* column it shows 1 per 200 of each sex.  $180 \text{ male} / 200 = .9$  (rounded up = 1 lavatory),  $180 \text{ females} / 200 = .9$  (rounded up = 1 lavatory). Note- lavatories must be in the same room as the water closet (some codes have exceptions for daycare or K-5 classes, see section 405.3.2)

## Calculating number of drinking fountains

Under the *Drinking Fountain* column we use the total number of occupants (360).  $360 / 500 = .72$  (rounded up = 1 drinking fountain. Because this is a restaurant serving water, a water fountain is optional. See the note below.

### Important Notes

- Drinking fountains are not allowed in toilet rooms.
- If the restaurant serves water, a drinking fountain is not required. (This exception only applies to restaurants. Refer to Section 410.1.)
- Bottled water dispensers may be substituted for not more than 50% of the required water fountains.
- IPC states that code enforcement official may approve bottled water or faucet water if there are 15 or fewer occupants. Some states do not require water fountains in restaurants, nightclubs or bars, see Section 410

## Service sinks

Under the other column, one service sink is required. Some states allow a can wash or mop sink as a substitute. Read all footnotes.

## Section 405, Installation of fixtures

Expect a question from this section, especially Section 405.3.1.

## Sections 406-425

These sections discuss the requirements for the installation of various fixtures. If you have a question about food grinders, can washes, showers, etc. it will likely be answered by these pages.

### Section 406.2 Waste connection of washing machine

*Note: Clothes washer waste may be conveyed through a 2" trap and fixture drain. However, the branch drain or stack the fixture connects to, must be minimum 3". (see definition of horizontal branch drain or fixture branch).*

## International Accessibility Code

The accessibility code is relatively cut and dry. Almost all answers to questions dealing with handicap or disability issues will be found in Chapters 1, 11,12,13,18, 28, 30, or 39.

Chapter 1 lists all the occupancy groups required to be made usable by persons with disabilities. The other chapters deal with specifics. Do not forget to use the index, as it is very detailed.

Generally, all public toilets and toilets installed in commercial buildings must be made handicap accessible. The one exception is a private toilet room in a private office, which must be made to be adaptable to be accessible. Below are the highlights of the Accessibility Code:

- Each occupancy must have at least one assessable toilet.
- The turnaround area must be at least 60 inches in diameter. If the toe space under cabinets and fixtures is at least 8 ¾ inches high, then a maximum of 6 inches for each side may be used toward this requirement.
- The water closet must be 16 ½ - 19 1/2 inches high, extend a maximum of 18 inches away from one side wall and a minimum of 18 inches from center of water closet to side wall, and flush handle to be on widest side no more than 44 inches off the floor.
- The lavatory must extent a minimum of 17 inches from the wall, extend 34-36 inches off the floor, and offer a 29-inche knee clearance beneath.

- Grab bars must be 33-36 inches above the floor. In a stall, the bars must be on both side walls unless one sidewall is located greater than 18 inches from the edge of the water closet. Then, a rear bar must also be installed. The side bar must be at least 42 inches long and begin within 12 inches from the back wall. The rear bar must be at least 36 inches long and begin within 6 inches of the side wall.
- Urinals - The lip must be a maximum of 17 inches off the floor and extend a minimum of 14 inches from the rear wall.
- Drinking fountains - If drinking fountains are required, 50% of them must have spouts no more than 36 inches from the floor. If only one fountain is required, then both a high and low or a single combination hi/low fountain must be installed. If an odd number of fountains are required, round down the number and divide by 2 to determine the number of low fountains needed (5 fountains required, round down to 4, divide by 2 = 2 low fountains).

## END OF SAMPLE PLUMBING COURSE

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