

Plus-size Plumbing Fixtures and Design

Is the toilet big enough for the big American?

From athletes to the obese, many find that the plus-size toilet meets their first-class needs.

The basic design of the water closet has remained virtually unchanged since the early 1900s. Because the activity that occurs on a water closet is a sensitive subject, few people have actually reviewed the fixture's adequacy for today's world. Great strides in technology, materials, and ergonomics have been made; however, the water closet still has the same basic dimensions.

The comfort and durability of office chairs, car seats, and furniture have greatly increased in the last 100 years. Look at the chair in your office: It is a product of years of ergonomic research and development. In contrast, in the rest room you will find a water closet that is not much different in comfort as the one used by President Taft.

This past year, several companies introduced new water closets to the market. Because people come in different sizes, the water closet now comes in a new plus size. This plus-size fixture is becoming very popular with people who don't find the standard water closet comfortable or safe, such as athletes and others who don't fit on a one-size-fits-all water closet. Hotels and resorts are also finding a market for suites that include larger beds, toilet rooms, and plumbing fixtures.

Not too long ago, the market had a narrow selection of bathtub fixtures. A buyer could choose between a five- or six-foot-long tub with few options. Today, many sizes of tubs and whirlpool tubs match any choice and price range. This range of choices is becoming available for water closets.

APPLICATIONS FOR THE PLUS SIZE

The goal for manufacturers is to build a comfortable, safe water closet that can be used for standard-size and non-standard-size persons alike, because the standard water closet is not comfortable for all people, and a water closet may fail when used by people who exceed its design weight ratings.

There is a limit to the amount of weight a standard wall-hung water closet can withstand before breaking. It is not unusual for large facilities and institutions to stock extra water closets to replace those broken by users. Some are broken because of vandalism, while other users exceed the recommended weight limit. Wall-hung lavatories installed in arm's reach of the water closet are also broken when users lean on them to stand up from a water closet.

I designed a remodel project for a small arena where very popular wrestling matches take place. At times, the fans tried to imitate their favorite wrestling hero's moves in the public rest room. They stood and jumped from the water closets and lavatories onto their opponents. While the intent was to have a little fun, the result was broken water closets and lavatories.

Health care facilities have patients of all sizes who also need these fixtures. Patients should not be concerned with the safety of a fixture and the potential harm if the fixture breaks underneath them.

Plumbing engineers have specified stainless steel prison-type fixtures in some of these applications. Floor-mounted fixtures are rated for higher weight limits and work in some situations. In some cases, there are needs for larger fixtures.

FIXTURES

Several manufactures have fixtures rated for more than 500 pounds. Some of these fixtures are made from traditional china, while others are made of stainless steel painted white to resemble china. Residential tank-type fixtures are available for homes, condos, resorts, and hospitality. Flushometer or flush-valve fixtures are also available. The fixtures come in Americans With Disabilities Act heights, and the seats are supplied with or without lids, round or elongated, with heavy-duty hinges.

Most of these fixtures are designed to install in the place of a regular water closet, with 12-inch rough-in from the hole in the floor to the back wall. This can be an advantage when installing the fixture in a retrofit application. Customers also will be pleased that they can remove the fixture and install a standard fixture in the future without changing the piping in the wall.

These fixtures use the low-flow, 1.6-gallon flush valves as mandated by the government, and they clear solids from the trapway as well as standard fixtures.

Some of these fixtures have an extra-elongated seat that can provide as much as 9 extra inches in the opening than a standard elongated bowl. The result is more comfort for the user.

These fixtures are important in facilities that cater to all types of patrons. Some patrons who do not feel safe and comfortable using the standard fixture might wait until they go



Photo: Great John Manufacturers

First-class water closets are now available for upscale facilities that cater to athletes or others who find large accommodations fit their lifestyle and comfort. Seats are 25 inches wide.

home or not enter the facility at all. This can cause discomfort and the impression that the facility's management is not aware of or interested in their needs. Facility owners may find that installing plus-size fixtures shows that they are interested in the comfort and safety of all people.

Hygiene is an important consideration with plus-size fixtures. In Western culture, toilet paper is the preferred method for hygiene, but it may not be the best option for all people. The bidet concept may be the best approach for hygiene, but space in a toilet room for an additional fixture next to the water closet may not be available. To meet this need, plus-size combination bidets and seats can clean the user with heated water while providing a wide, comfortable seat. The plumbing engineer may not find it appropriate to specify this fixture for public rest rooms, but they are appropriate in residential and some health care applications.

HEALTH CARE TOILET ROOM DESIGN

The health care industry provides services to all people with the goals of comfort and safety. Health care facilities may serve people up to 1,000 pounds (referred to as bariatric patients). Hospital patients often are in a compromised position, with limited mobility. As a result, the design professional must be sensitive to these needs when designing a bariatric patient room suite and, in particular, a bariatric toilet room.

Design information is available for the plumbing engineer from fixture manufacturers and hospital equipment manufacturers. Hill-Rom Co. developed a group called the Bariatric Room Design Advisory Board (BRDAB) to explore the development of industry standards for the design of equipment and facilities for bariatric patients. Due to the special needs of these patients, the plumbing engineer must be creative in developing a safe design for the plumbing system that also meets code requirements.

Because this is a new concept, it is important for the design team, owner, and operator to take the whole building approach to these areas. The whole building approach involves the designers, contractors, users, and operators early in the design process to develop an efficient design that minimizes future conflicts in construction and operation.

The plumbing designer must keep in mind two basic design parameters when designing a plus-size toilet room: the comfort and safety of the patient and the comfort and safety of the staff. Patients should have water closets that are comfortable for their size and fixtures that are designed not to fail or break. The staff needs access and space around the patient so they can attend to the patient's needs without lifting or moving the patient, potentially causing the caregiver strain or injury.

The first consideration in a bariatric toilet room is to have a water closet that is designed to carry a patient weighing 1,000 pounds or more. The plumbing engineer needs to decide if the stainless steel or china fixture best fits the needs of the patient. The designer may include a detail to instruct the contractor about the special installation requirements for the larger fixture. These fixtures are not difficult or expensive to install—they are just different than the installation of standard water closets.



Photo: Solution Comfort Seat

In healthcare bariatric suites, a bidet/seat combination may help with patient hygiene needs.

Some room designers will request space on both sides of the fixture to be a minimum 21 inches between the wall and the fixture. This is done so staff can assist the patient around the fixture. ADA grab bar standards may not be adequate for severely obese patients, and grab bars may need to extend further from the back wall. Toilet paper dispensers should be moved to within reach of the fixture.

The layout of a typical toilet room has a wall-hung lavatory next to the water closet. Because of its location, patients often grab the fixture and use it as a support to help them stand up. However, the lavatory is not designed for this purpose and can break from the wall, causing harm to the patient. To solve this problem, grab bars may be installed in front of the fixture or at a location next to the fixture to help patients support themselves as they stand.

The water closet seat and bidet combination may be required in the toilet room. Many patients as well as staff cannot adequately clean a patient, and a bidet seat may aid in this effort.

Some of these requirements do not meet the local code-required clearance for water closets and ADA grab bars. However, many of these changes help the comfort, safety, and recovery of the patient, while they reduce the risk of injury to the caretaker. As a result, the design team and the owner may want to coordinate these changes with the local code authority early in the design process. Local code officials need to be on the design team to help make the room a safe place for all.

Patient dignity is also an important concept for the design team to keep in mind. A severely obese patient may have lim-

ited contact with the public, and staying in a hospital can be a humiliating event. The design of the toilet room can aid in preserving that dignity with the installation of an appropriately sized water closet, grab bars, and adequate space to move.

NON-HEALTH CARE TOILET ROOM DESIGN

The design and layout of non-health care toilet rooms are different than the health care application. In health care, it is known that the patient is obese. As a result, grab bars, lifts, and other pieces of equipment can be in clear sight and part of the room design.

In the non-health care environment, these fixtures often are used as a sign of comfort and luxury. Some patrons such as athletes who use these fixtures are at the height of their physical condition. Facilities celebrate and honor their size by providing an environment that caters to them. For example, many professional basketball and football teams have custom-made aircraft with large seats and extra leg- and headroom for the passengers' comfort. This is perceived as first-class accommodations for very important people. It is not perceived as an airplane for overweight people.

The same holds true for a toilet room design that may include a plus-size water closet. The first impression must not be that the room is for obese people. Rather, the impression should be that this is a first-class room for very important people. Thus, the design team must disregard the usual rule of thumb measurements when locating fixtures and toilet paper dispensers.

Increasing the size of the casework lavatory, faucet, shower, and bathtub can distract attention from the large size of the water closet. This holds true in first-class residential and hospitality toilet rooms. The same concept can carry over to the design of rest rooms in public buildings, airports, and universities that use plus-size fixtures.

Designers can use the installation of these fixtures to show users that this facility is different than other buildings and that the owner and staff want to make all people feel comfortable, welcome, and anticipated. When users leave the facility, they may not remember the type of floor covering or the color of the walls, but they will remember that the toilet was comfortable and safe and that they were welcome. **PSD**



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FROM THE PUBLISHER

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sion. Share your knowledge—you will find it stimulating and rewarding.

Ouch! I don't think we've ever received the number of phone calls and e-mails regarding a cover as we have for the November/December 2006 cover. It is often difficult to come up with cover art that best describes the feature article in each issue of *PS&D*. For that issue, the feature was "Designing Animal Research Facilities," and I must admit that I thought the cover was a clear pictorial representation of the feature article. The complaints were that we showed the "terrible" side of research laboratories and that we were insensitive to the plight of the animals used for testing.

We surely did not mean to upset anyone—and if we did, we sincerely apologize. We also did not intend to be insensitive to the plight of animals used in research. We do not condone animal research. Nor do we condone hundreds of other causes that blight the landscape of human existence.

We will do our best to be more aware in the future of sensitive issues and topics. To start, this issue shows nothing but beakers and liquid on the cover. The feature is "Best Practices for Water Purification Design." And, no, we do not condemn water conservation! **PSD**

CODE UPDATE

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Section 602 of ANSI A117.1 specifies that the "spout outlet for an accessible drinking fountain shall be 36 inches above the floor or ground."

Item 10(a) of Section 4.1.3 Accessible Buildings: New Construction of the 1994 ADA Standards for Accessible Design states: "Where only one drinking fountain is provided on a floor there shall be a drinking fountain which is accessible to individuals who use wheelchairs in accordance with 4.15 [Drinking Fountains and Water Coolers] and one accessible to those who have difficulty bending or stooping. (This can be accommodated by the use of a 'hi-lo' fountain; by providing one fountain accessible to those who use wheelchairs and one fountain at a standard height convenient for those who have difficulty bending; by providing a fountain accessible under 4.15 and a water cooler; or by such other means as would achieve the required accessibility for each group on each floor.)"

Item 10(b) of Section 4.1.3 of the 1994 ADA Standards for Accessible Design states: "Where more than one drinking fountain or water cooler is provide on a floor, 50 percent of those provided shall comply with 4.15 and shall be on an accessible route."

ANSI A117.1 has no specific requirement for the hi-lo drinking fountain. Since the 1994 ADA standard is more stringent than the ANSI A117.1 standard, and it is the official federal government requirement, I advise people that they should install the hi-lo drinking fountain in at least 50 percent of the locations where drinking fountains are required. **PSD**