

Planning Public Washrooms

A look at accessories

By Luc Aubé

Washrooms are a top concern for building owners. A well-designed facility projects a strong image to the user. In this regard, the public washroom is considered third in design importance, following the building envelope and lobby.¹

When designing a public washroom, specifiers often look at the available products and combination that best meets their clients' needs. Washroom accessories ranging from toilet tissue dispensers to grab bars to framed mirrors may be necessary for any given washroom. As several hundred models are available, specifiers must consider the:

- type of traffic using the facility;
 - type of walls on which equipment is mounted;
 - logical location to place equipment; and
 - level of design sophistication to meet the client's general budget.
- Attention to details such as traffic flow and volume are necessary—the former influences equipment location and latter impacts its capacity. Expenses are also important, as washrooms create the highest maintenance costs per square foot in a typical building.

Product offerings have been developed over time because of changing market needs. Manufacturer catalogues used as selection tools are often taken for granted; sometimes, the reasons why certain

restroom accessories exist are forgotten by the next generation of specifiers. Knowing product history can help design professionals understand reasons for a particular component and the problems it is trying to solve.

A history of washroom design

In the 1960s, the washroom equipment market was very different from what it is today. No architectural mandate or division within *MasterFormat* pertaining to washroom design existed. Typically, a few weeks before a new building opened to staff and the public, janitorial supply distributors were brought in to provide sanitation products and related dispensing equipment. Distributors sold this equipment to the owner, and then supplied them with a constant flow of staples such as paper, soap, and cleaning items. In many cases, washroom equipment was merely an inconvenient stepping stone for distributors to secure the ongoing flow of their other products. Consequently, little thought was given to equipment and how it fit into the architect's design scheme. This neglect presented a dilemma for the architect, whose signature represents the quality of his or her work for the building owner, as well as potential clients in the future.

A restroom horror story

In the early 1960s, a prominent American architect contacted a manufacturer and explained the problem of mismatched washroom accessories and architectural design. This architect described the resultant problems of not having control over all stages of washroom design. At the time, janitorial supply distributors provided washroom equipment at the end stages of design; usually, these accessories were mismatched, and ruined the intended architectural esthetic. He described the following scenario at a new building:

When the building opens, visitors using the washroom facilities will see imported tiles, marble countertops with carefully selected designer faucets and lavatories, good lighting reflecting into a wall-to-wall mirror, and tastefully selected colours to complement the décor.

However, they will also notice a purple plastic soap dispenser glued directly onto the mirror and a metal towel dispenser, painted white, screwed into the imported Italian tiles. Patrons may trip over a red plastic waste receptacle shoved in between the counter and adjacent wall.

In the women's washroom, a padlocked sanitary napkin vendor is screwed to the wall and accompanied by beige napkin disposal bins fastened to the brand new toilet partition panels. Garish stickers reminding the building owner where to call to get products replenished are everywhere, with lettered logos embossed on the front of this equipment to mark who owns the washroom.

A few years later, visitors might find this equipment has been replaced with another set, made of different colours and finishes



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Luxury hotels that frequently renovate or modernize their guestroom designs use more fashionable fixtures, accepting the products will become outdated as trends change.

(because another janitorial distributor has the contract for supplies). The imported tiles will now bear scars of the holes leftover by the previous equipment, and a ghosting shadow marking where the defunct equipment used to be.

Evolution of a solution

The architect wanted the manufacturer to develop a few simple products to resolve this dilemma, enabling him to control design all the way to the finishing execution of the project, including washroom

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accessories. It was determined products should be designed to last the life of the building, to avoid changes that could damage walls and the planned esthetics of the washroom.

Another design criterion stated products should be recessed into the wall, eliminating protrusion into the space while reducing exposure to vandalism. Recessed products also deter removal and replacement by owners. However, if necessary, recessed products can be removed and replaced by similar equipment of the same size.

For utilitarian products and dispensers, there is often a desire for humble, sober, and timeless design that does not become the centre of attention. This architect suggested stainless steel because it offers:

- a noble and timeless raw material;
- an esthetic that blends with any other surface and offers a classic look (whereas colour is more subject to fashion trends); and
- high sanitation standards, achieved in part by germ and chemical resistance, and waterproof qualities.

Additionally, he requested the units be designed for universal dispensing to fit most manufacturers' standard product formats. This scheme ensures the owner can get the best possible price when shopping for supplies.

The janitorial industry sells staple products, and works on thin margins if generic products are sold. To address this problem, manufacturers in this segment often supply equipment for free with longer-term contracts of supply. The equipment is typically designed to only work with their brand of supplies (e.g. paper, hand soap, toilet paper, and feminine napkins). By installing this 'free' equipment, janitorial manufacturers often corner building owners into a



Photo courtesy ASI/Matrous



Photo by Prasanthi Vasanthakumar

Counter-mounted soap dispensers (top) make for a neater washroom. With wall-mounted versions (bottom), excess soap often messily pools on the counter instead of falling in the sink.

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lucrative, proprietary, non-competitive position. Once the contract ends, the owner may find a cheaper supplier that offers a contract with its own proprietary brand. This change results in the replacement of equipment, a process that may leave holes in the walls and shadows of the previous equipment on painted or light-sensitive surfaces.

The dialogue between this architect and manufacturer resulted in the first fully recessed, stainless steel paper towel dispenser. The success of this installation led to exponential growth in the number of items designed to offer a full package. Manufacturers in North America multiplied, keeping the industry competitive. By 1975, the product line had evolved to highly specialized levels with hundreds of items for myriad needs. The line further expanded to include groups of equipment for specific buildings, such as jails and hospitals. Design considerations included specific traffic needs and exposure to vandalism. The product line's reach expanded from the washroom to encompass showers and dressing rooms, as well as corridors where modular accessories were developed for more sophisticated design needs.

Different design families also evolved as traffic behaviour changed with time. For example, current requirements for resistance to vandalism in public buildings are much greater than they were 35 years ago. The first design product family featured 22-gauge stainless steel doors and cabinets for most applications. In current applications,

this construction is only acceptable for light use or small budgets. By the mid-1970s, the requirement had moved to 18-gauge doors with 20-gauge cabinets. Today, manufacturers have introduced 16-gauge doors with fully welded corners to withstand the level of abuse common in most buildings.

Construction Specifications Canada (CSC) and the Construction Specifications Institute (CSI) developed their own section under *MasterFormat's* Division 10 called 'Washroom Accessories,' initially known as section 10800. The newer section, 10 28 00—Toilet, Bath, and Laundry Accessories, is a result of the level of sophistication and architectural demand for this product group.

Leading manufacturers expanded to other sections within Division 10. For example, some made toilet partitions of various types that grew into a major fit for the market as they employ the same distribution channels. A few manufacturers added lockers, another major Division 10 product line, also using the same distribution channels. The industry offers the convenience of packaging and servicing several sections together (including consulting services to architects), lowering overall acquisition costs and increasing quality of the service to the project.

It should be kept in mind this entire product line was created and developed by specifiers that recognized their clients' needs. For the architect, it became a primary tool to control the building's design and therefore his or her professional signature.

Browsing the catalogue...

A manufacturer's catalogue may contain hundreds of products, presenting an overwhelming selection to the specifier. However, essentially, only eight different items are necessary for most buildings:

- paper towel dispenser and/or hand dryer;
- waste receptacle;
- soap dispenser;
- mirror;
- napkin vendor;
- napkin disposal unit;
- toilet tissue dispenser; and
- a set of grab bars.

From this baseline of eight items, myriad product designs evolved, with variations in function, capacity, wall condition, and budget. A set of logical filters can help the designer select the proper equipment for a specified use. Well-designed catalogues can also be useful tools in the decision-making process.

The first page of a manufacturer's catalogue typically features the various collections available. In the current market, products with higher construction gauges have become the standard as washroom accessories amount for less than one-tenth of one per cent of the total construction cost. Therefore, quality has almost no impact on total project cost.

Equipment capacity

From a traffic expectation perspective, equipment should be selected with capacity in mind.

Paper towel dispensers/waste receptacles

Paper towel dispensers should have enough capacity to avoid running out of paper frequently. Specifying a deeper unit, such as one with a depth of 150 or 200 mm (6 or 8 in.), is ideal. Equipment of this size

can dispense any type of paper towel, as well as a larger quantity of towels. Single-fold or even roll form is greatly beneficial and creates long-term cost-savings. Waste receptacle capacity must be proportionate to towel usage expectations.

Soap dispensers

In any project, one should generally specify as many counter-mounted soap dispensers as possible. Residual soap should fall in the sink, instead of pooling on the counter—with wall-mounted versions, the latter frequently occurs. As most of their equipment is hidden under the countertop, counter-mounted dispensers minimize visibility and subsequent hindrance to the desired esthetic. They also offer practically unlimited capacity.

Several options are available to the designer in terms of capacity and maintenance reduction, including central reservoir systems for high-traffic areas. So-called 'free' proprietary soap dispensers typically double or triple the cost of the dispensed soap. For owners of large buildings, this arrangement can result in significant expenses compared to a more standard dispenser.

Toilet tissue dispensers

Flushed out all day long, toilet paper is a constant expense for building owners. Therefore, careful selection of dispensing equipment is important. The best units are designed to deplete rolls completely as one drops in place when the other finishes. Conventional designs with side-by-side rolls can encourage janitors to throw away butt rolls that would not last all day, resulting in wasted paper and money.



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- Higher risk of ponding
- Complex and expensive maintenance - pipes are often difficult to access

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Large capacity and ease of filling while being locked are a must when considering the right equipment. Again, 'free' toilet tissue dispensers can average up to 30 per cent more in tissue paper costs, and lock the owner in with a single product/supplier.

Traffic type

The type of people using a washroom strongly influences the kind of equipment it needs.

Feminine equipment

Sanitary napkin disposal units are necessary for women's washrooms. Their absence can result in high repair costs of clogged piping and toilets. Simple stainless steel, surface-mounted units can be sufficient. There is a growing trend for partition-mounted units, which cut maintenance costs as one in two stalls must be emptied. Their larger capacity also reduces the need for frequent emptying. Napkin/tampon-dispensing equipment is standard as well, present in most washrooms.

Grab bars

For a truly accessible washroom, grab bars are installed for reasons beyond meeting building code requirements relating to people with special needs. An aging population, increased obesity, and greater mobility of all age groups creates a wider demand for this equipment. Planning ahead with these trends in mind can reduce or eliminate costs of having to make changes later. Grab bars can be inexpensively included in several, if not all, stalls.

As building codes vary by province, architects should refer to the appropriate provincial/city code for applicable requirements pertaining to people with special needs.

Baby change stations

Travelling with children is common, creating the need for baby change stations in most public washrooms, including those in office buildings, schools, and entertainment centres. As men and women tend to share parenting duties, baby change stations should be located in washrooms of both sexes.

Traffic pattern

Equipment choice is also influenced by traffic pattern. For example, an office building typically has a steady and moderate flow of traffic with peaks at lunchtime and closing time. Sports stadiums, theatres, and school facilities encounter an extreme rush to washrooms in small periods, such as during halftime, intermission, and class changes. Appropriate equipment for an office building can therefore be very different from a stadium. Traffic pattern affects the quantity of equipment necessary to handle peak loads, as well as the type and placement of equipment.

Equipment layout

For high peak-traffic washrooms, separate towel dispensers and waste receptacles may be favoured over the combination units frequently employed. This author recommends placing large recessed towel dispensers adjacent to lavatories and deep recessed waste receptacles close to the exit. This arrangement forces patrons to move toward the exit, inviting them out when washrooms are typically clogged by sudden, heavy traffic.



Photo courtesy ASI/Watrous

By keeping their parts hidden beneath the countertop, counter-mounted dispensers minimally impede the washroom's overall esthetic.

Hand dryers

Using hand dryers instead of traditional paper towels/disposal units is a feasible option, especially for peak traffic volumes. Hand dryers offer tremendous cost savings (*i.e.* they incur less than 1/10 the cost of using traditional paper towels), energy savings, and environmental benefits (by saving forests and reducing waste disposal).

As the push for recognition under the Canada Green Building Council's (CaGBC's) Leadership in Energy and Environmental Design (LEED Canada) program grows, hand dryers may become the norm for public washrooms. At the writing of this article, no credits are available specifically for their use, but the industry is working on this possibility for future LEED updates.

Current hand dryer technology is significantly more advanced than its predecessors. These units dry hands faster, offer greater user comfort, operate at lower noise levels, and consume less energy to achieve the same results. People are now more comfortable using hand dryers and resistance to using them has almost disappeared.

Previous resentment toward hand dryer use occurred for various reasons, stemming primarily from social culture. The time taken to dry hands—usually 30 seconds—was less preferable over the few seconds it took to dry hands with a paper towel. An inadequate number of dryers to serve traffic volumes was also problematic as patrons did not like waiting in line to dry their hands. People were also less environmentally conscious about saving trees (and their relation to paper towel production). Additionally, a survey by the Paper Manufacturer Association about a decade ago suggested dryers carried bacteria and spread them into a room. This slanted study's base was false, as all dryers operate with a 'red-hot' electric element that kills bacteria. Newer hand dryers offer no-touch operation with electronic sensors, helping eliminate perceptions of poor hygiene.²

Specifying an appropriate number of dryers per washroom can diminish user resistance. Although the optimal number depends on traffic density and patterns in the building, the following ratios can be used as guidelines:

- for a typical, steady flow washroom, one dryer per three lavatories might suffice;
- for an intermittent traffic flow with peak times such as lunch and coffee breaks, two dryers per three lavatories may be suitable; and
- for cases such as stadiums (where thousands of people flood the washroom for short periods), one hand dryer per lavatory may be the best investment.

Framed mirrors

More than 90 per cent of current projects use framed mirrors instead of simple, unframed glazing because of resistance to silver spoilage and installation security. The initial cost difference is far compensated by a permanent and trouble-free installation for the building's life. Most mirrors are specified as full-size that span at least the width of the counter. Tilted mirrors are not needed if a standard mirror can be dropped right down to the backsplash of the countertop. These mirrors then meet most building codes pertaining to people with special needs without compromising esthetics. Counters replaced stand-up, china sinks, lowering the available space to install the mirror—therefore, tilted mirrors were no longer needed.

Originally, before counters were widely used, most sinks were stand-up style or hung on walls. Soap dispensers were mounted above and over the wall-hung sink, forcing the mirror's base above the 1118 mm (44 in.) off-the-floor height required by most building codes for accessibility. In these cases, a person in a wheelchair could not see his or her reflection in the high mirror. Tilted mirrors were employed to solve this problem. Now, with the wide use of full-length counters and counter-mounted soap dispensers, mirrors can be dropped over the backsplash of the counter, 864 mm (34 in.) off the floor, well within code requirements. Consequently, tilted mirrors are no longer required except in areas where wall-hung sinks are used.

Wall condition selection

Recessed equipment is always the best selection for various reasons. However, there are cases where wall conditions will not allow full

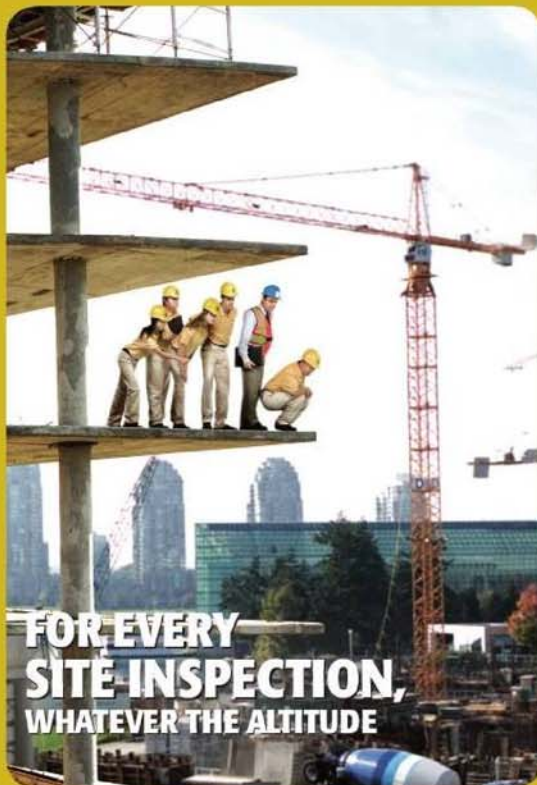
recessing, forcing the equipment to be selected as surface-mounted or, better, semi-recessed. Generally, equipment should not project more than 100 mm (4 in.) from the wall to meet most provincial building code sections for people with special needs. Therefore, hand dryers exceeding this measurement are unfeasible. Improved hand dryers with units designed for surface mounting at 100 mm or less has eliminated this restriction.

Special conditions

As mentioned, architects have expanded the line of washroom accessories to include security items for special conditions, such as areas prone to extreme vandalism. These locations include:

- hospitals;
- prisons;
- hotels;
- amusement parks; and
- universities and colleges.

For example, psychiatric wards in hospitals have coat hooks with a 'drop-down' design to help prevent suicide by hanging. Toilet tissue dispensers intended for correctional facilities are designed to prevent weapons being concealed in them. For example, in older models, inmates could hide knives or shanks in the spindle or core of the toilet tissue roll. The newer, high-security units are simply a stainless steel hole in the wall with the roll core facing the user, exposing items concealed under, in, or behind the roll. Gauges used in fabrication are selected to prevent vandalism and equipment damage.



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The janitor's closet

The janitor's closet needs its own line of equipment, such as combination shelves, hooks, and holders to hang mops. This equipment helps prevent rot and mildew forming on cleaning tools (e.g. wet mops shoved in a closet corner) that may cause odours and become a janitorial nuisance. Pail hooks, coat hooks, and extra shelves are equipment for the janitor's closet supplied by this section rather than purchased after the building opens.

Hotel and hospital rooms

When creating washrooms for hospitals, nursing homes, extended care facilities, and home care environments, architects are often asked for designs that last the building's life. Such equipment cannot be highly design-oriented—it needs to be sober to appear current decades from now. In these situations, architects may opt for a more conservative look, instead of using a lot of colour and modern finishes. Typically, these sober designs are specified if the client does not plan to change the equipment or renovate/update bathrooms in the next 10 to 20 years. In contrast, luxury hotels that might renovate or modernize their guest room designs every five years may use more fashionable equipment, knowing it will become outdated as trends change. Again, 'life-of-the-building' designs require a timeless approach to avoid relating the equipment's esthetic to a certain fashion period.

Swing-up grab bars

These types of bars are commonly used in washrooms that need either side- or front- loading from a wheelchair, or have no sidewall from which to hang a straight grab bar. Swing-up grab bars are used extensively in Europe and are gaining popularity in North America. Several kinds are available, and the best choice depends on the environment. Some lock in the upper position, whereas others do not. Due to liability concerns, units that do not lock in the upper position are more popular in North America.

Lockable units are not securely or obviously locked to let people know of the dangers. In other words, a locked, swing-up grab bar has nothing to indicate the unit is not in the fully locked position.



Equipment layout is critical in keeping washroom traffic moving.

Therefore, these units are only recommended in facilities where permanent staff handles this bar for a user.

In contrast, unlocked units have a friction hinge that prevents the bar from 'free-falling,' eliminating the possibility of fear or even injury. As locked bars may cause user confusion, this author does not recommend their use in Canada and promotes unlocked versions instead. To avoid issues of liability, North American lawyers also recommend controlled-friction, free, swing-up bars in place of lockable units. In Europe, both types have been used without major problems for decades.

Conclusion

There is more to washroom design than meets the eye. As architects have worked on resolving problems for clients, building owners can now reap the benefits of advancements in washroom equipment. Using generic products that can accept most brands minimizes costs, as proprietary systems often increase overall expenses for building owners. The evolution of product variations has resolved most problems encountered by owners, enabling them to plan for, and enjoy, optimal washroom design. 📌

Notes

¹For study details on this ICI Real Estate Professionals information, contact the author.

²For details on this study, contact the author.

Luc Aubé is vice-president and general manager of the Canadian and European Operations for ASI/Watrous, a division of American Specialties Inc. Involved with the Division 10 industry since 1981, he has worked in sales and has held a number of executive positions. For more than 17 years, Aubé also owned a large manufacturer's agency in Ontario, representing high-quality product lines to the architectural community. He chaired Construction Specifications Canada's (CSC's) Toronto Chapter from 1989 to 1991 and filled various executive positions at the Chapter level for more than 15 years. In this time, Aubé contributed to technical articles and helped develop building codes and standards. He can be reached via e-mail at laube@asiwatrous.com.