APPENDIX H

Bibliography

H.1 Summary

Rather than a traditional bibliography format, resources are listed by category to speed the location of information on a specific subject. These include all aspects of airport restrooms, both within the space and leading to them, and encompass fixtures, materials, systems, and operations. While the research team was able to find information on nearly every topic sought, it was not surprising to find that a comprehensive resource specifically for airport restrooms did not exist. The assumption of need for this guidebook was confirmed. Resources that rose above the others in usefulness are highlighted. The categories, organized in approximate order of use in the project development process, are as follows:

- Sociopsychological
- Customer Service
- Codes
- Planning
- Guidelines and Standards
- Design
- Passenger Comfort
- Accessibility
- Specialty Rooms
- Surfaces
- Plumbing
- Heating, Ventilating, and Air Conditioning
- Electrical
- Lighting
- Technology
- Sustainability
- Cleaning
- Maintenance
- Terminology and History

H.2 Resources

Sociopsychological

There are two “must read” books if you want an in depth of how people use and respond to public restrooms. At the top of the list below is “The Bathroom” and “Toilet.” The late architect, Alexander Kyra, first write the academic treatise, “The Bathroom” at Cornell University in 1966. The focus was originally on residential bathrooms but in 1976 section on public restrooms and how bathrooms are used by people with disabilities were added. The hard to find book is an unparalleled resource including the history of personal hygiene facilities, social and psychological aspects of using bathrooms, and how we use them anatomically and physiologically. Many frustrations with restroom fixtures and accessories might be minimized if product developers read this book.

Molotch and Norén’s book “Toilet” is a collection of largely academic essays on a variety of aspects of public restrooms. It’s a great accounting of the evolution and often revolution of public restrooms, a process that continues today, perhaps even with this guidebook, especially in regards to gender and access.
Customer Service

For a comprehensive study people’s attitudes toward airport restrooms, another “must read” document is the 2008 study by AIR, “In Search of the Perfect Restroom.” The group works with 40 airports worldwide and conducted a survey of travelers, meetter/greeters/well-wishers, and vendor employees for both airports and airlines. The survey results consist of representative comments from the participants regarding the major components of airport restrooms such as signage, stalls, lighting, odors and noise, etc.

- Airports Council International (ACI), Airport Service Quality (ASQ) Survey.

Codes

There are three building codes that restrooms must follow. The two fundamental codes are listed below. The third is the local building code, whether state or municipality, which may amend the two below or reference one of the older building codes still in existence. Mechanical and electrical codes are cited in those sections below.


Planning

The resources that follow encompass Airport Terminal Planning as a whole. Sections within these sources only briefly, if at all, discuss the topic of restroom planning and design. See the “Guidelines/Standards” section for more detailed information which specifically pertains to restrooms.

- Seth Young, Alexander Wells, “Airport Planning and Management,” 2011.
Guidelines and Standards

While there are only a few, the design standards and guidelines by some of the larger airports provide an excellent basis for an airport to develop its own standards. The scope is typically comprehensive, thorough, and the products well vetted. The standards published by the Los Angeles World Airports (LAWA) and Dallas-Fort Worth International Airport (DFW) are probably the most well-established. Other airport guidelines are provided below as well as standards from government agencies. A draft guideline by the ICC is listed and has an intriguing scope, however the material is primarily distillation of the ICC building code requirements.

- Salt Lake City Department of Airports, “Fixture and Finish Standards,” March 1, 2013.

Design

There are few resources that focus specifically on airport restrooms, but there are many books, articles, and websites devoted to public restrooms in general. A great organization is the American Restroom Association with numerous resources on public restroom design, initiatives, regulations, guidelines, etc. FacilitiesNet is another useful resource for articles on a wide variety of facilities-related topics including restrooms. Many of the citations below provide detailed insights into particular aspects of the restroom while other articles and books are more oriented to glossy photos, which can be invaluable for generating ideas.

- Britloos.co.uk, British Toilet Association.
- Dr. Clara Reed, “A Code of Practice for Public Toilets in Britain,” University of the West of England.
Passenger Comfort

Many aspects of public restrooms cause unease: the perception of being unclean equals rampant germs; privacy also means potentially unsafe, lines to get in after delayed deplaning, etc. There has been a rise of articles and blogs devoted to praises and rants about experiences in public restrooms, even those in airports. Below is a sampling.

- ehow.com, “How to Protect Yourself from Germs in Public Restrooms.”
- ehow.com, “How to Stay Safe in a Public Restroom.”

Accessibility

The Americans with Disabilities Act remains the core design standard for providing unhindered access to facilities to people with disabilities. The American National Standards Institute ANSI a117.1 is the document that codifies the ADA legislation, which most building codes use as a basis. Remember to verify amendments that local codes may have adopted. As with all building codes, ANSI a117.1 is the minimum requirement. Every disability has unique needs that often go beyond the minimum and sometimes conflicts with the needs of other disabilities. The resources below provide a starting point for further study.

- cae.org.uk/italtransfer.html, “How Do Wheelchair Users Transfer To and From the WC?”
- flyfriendlyskies.com, “Briefing on new European legislation that gives greater rights to air passengers with disabilities or reduced mobility.”
- flyfriendlyskies.com, “DOT Technical Assistance on ADA Regulations for Service Animals and Mobility Devices.”
Specialty Rooms
A crop of spaces related to the restrooms are becoming more common in airports. Lactation rooms for both travelers and airport employees now have guidelines to reference, as do service pet relief areas, which are required by the FAA. Showers are more common in airports overseas, but if their popularity grows in the US, resources are available.

Lactation Rooms / Mother’s Rooms/Nursing Rooms
- La Leche League International

Service Pet Relief Areas
- Department of Transportation,”14 CFR Part 382 Nondiscrimination on the Basis of Disability in Air Travel,” 2010.

Showers
- Abudhabiairport.ae,
  http://www.abudhabiairport.ae/english/airport-information/airport-facilities/toilets-and-showers.aspx (an example of showers as a specialty room)

Surfaces
There are numerous standards organizations that regulate the manufacturer of the products that end up in restrooms – ASTM, ISO, ANSI, etc. But the best starting point to understanding the properties, installation methods, and maintenance requirements for floor, wall, ceiling, and counter products are the professional associations specific to those materials. The primary organizations for products typically used in restrooms are listed below.
- Metalwork: National Association of Architectural Metal Manufacturers (NAAMM)
- Stainless Steel: International Stainless Steel Forum (ISSF)
- Millwork: Architectural Woodwork Institute (AWI)
- Solid Surfacing: ICPA Solid Surface Council
- Metal Doors: Hollow Metal Manufacturers Association (HMMA)
- Door Hardware: Door Hardware Institute (DHI)
- Glazing: Glass Association of North America (GANA)
- Veneer Plaster and Gypsum Board: Gypsum Association
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- Tile: Tile Council of America
- Acoustic Ceilings: Ceilings and Interior Systems Construction Association (CISCA)
- Epoxy Terrazzo: The National Terrazzo and Mosaic Association (NTMA)
- Signage: International Sign Association (ISA)
- Stall Partitions: American Restroom Association

Plumbing

Plumbing is what makes our modern day restrooms operate. The plumbing of a public restroom includes the following: toilets, urinals, sinks, soap dispensers, floor drains, and piping to each of those. There are many advances in plumbing fixtures to reduce water usage while remaining sanitary. The more touchless the bathroom, the less likely is the transfer of germs. Automated systems include flush valves, dual flush valves, self-cleaning toilet seats, faucets, and soap dispensers. Another plumbing improvement in public restrooms is the electric tank-less water heater. These provide warm water immediately while using less power and reducing water usage. The American Disabilities Act provides standards for all plumbing fixtures. Also, a public restroom must comply with the International Building Codes.

- Mark Knurek, “Recreational Restrooms: Take Your Cues from some of the Best Restrooms in the Sporting World,” Plumbing Engineer, October 2012.

Heating, Ventilating, and Air Conditioning

Heating, ventilating, and air conditioning of public restrooms are key to making them comfortable and odor-free. There are numerous air freshening systems that can be installed inside and outside to help freshen the area. A public restroom must comply with the International Building Codes.


Electrical

Power requirements for restrooms may not seem like a big item, however, safety and convenience are essential to the user’s experience, from providing outlets for maintenance to additional outlets for travelers adjacent to mirrors and make-up counters. Power is also required for the mechanical equipment, powered accessories, and is integral with the technology systems incorporated into the restrooms. The codes below provide guidance with working in “wet” spaces and low voltage systems.

- NFPA 70, National Electrical Code, 2011.

**Lighting**

Lighting has a powerful effect on the traveler’s experience, setting the overall mood of the space, even adding to the perception of cleanliness. Occupancy sensors and daylight controls can provide energy savings. The IES reference listed below provides the industry’s technical standards and guidelines to provide effective and efficient lighting.


**Technology**

Resources for integrating technology with restrooms are limited but growing as new technologies are developed. The majority of resources are focused on customer service instead of technology within the restroom itself. The technologies that provide increased customer service include mobile applications for locating restrooms, providing feedback on restroom facilities, or delivering messages to customers from the restroom mirrors. Most information available is provided by the application vendors as little is available from independent sources.

- Conversionation.net, “There is a QR Code in a Public Toilet Near You,” J-P De Clerck, August 22, 2011.
- sitorskquat.com—app for finding clean public restrooms
- Toiletocity by thebathroomdiaries.com – app for finding clean public restrooms

**Sustainability**

The LEED program run by the USGBC is the grand parent of the sustainability movement. Its list of initiatives is a great place to look for ideas that can be applied in restrooms. Numerous other resources exist, such as the two listed below, that provide links to green product manufacturers and guidelines for greener construction.

- Green Building Initiative (GBI).
- Green Building Pages.
- US Green Building Council (USGBC), Leadership in Energy & Environmental Design (LEED) program.

**Cleaning**

Restrooms in airports are among the most intensely cleaned in our built environment, often cleaned several times a day. A clean restroom is inviting and comforting to travelers, while restrooms that are improperly cleaned can cut years from the life of the materials. Ideally every airport should have a Standard Operating procedure (SOP) for cleaning such as the example from Blue Grass Airport included in the Case Studies section. The American Restroom Association has a numerous resources to guide in the development of such a manual as does Clean Link.


**Maintenance**

As with cleaning, keeping fixtures and accessories in good working order will add years to the life of the products and minimize the frustrations of visitors who encounter broken or faulty equipment.


**Terminology and History**

What do we call these rooms where we use the toilet, wash, bath (at home anyway). Do we really rest there? It seems every English speaking country has its own favorite. “Restroom” appears to be the norm in the US. The Canadians are fairly protective of the term “washroom,” and the Brits are fond of “loo.” In this guidebook, we have opted for the contextual norm and use “restroom.” If you are curious about the etymology of these terms, the following resources provide some interesting insight.

- ideafinder.com/history/inventions/papertowel.htm, “Paper Towels.”