

Trending Accessible Design Standards:

Restrooms, Locker Rooms & Adjacent Public Spaces

Provider: AIA Florida

Course & Credit

AIA Course: S21TADS | **Credit:** 1 AIA HSW CE Hour

Provider: Ron Blank & Associates

IDCEC Course: CEU-113835 | **Credit:** 1 IDCEC CEU

RCEP Course : 166314 | **Credit:** 1 RCEP PDH for Engineers

ADA Compliant: 1 ADA fulfills State Accessibility/ADA/
Barrier-free requirements (FL, TX, CA)

Daniel Hughes

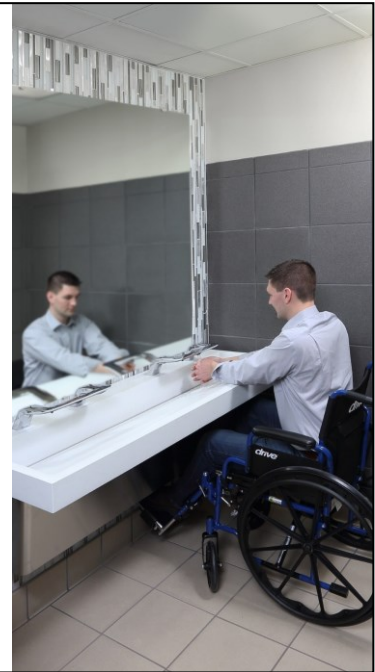
VDC-BIM Strategist | Specifications & ADA Specialist

Brianna Arpy, Allied ASID, IIDA, USGBC
VDC Coordinator | Design Specialist



Commercial Washrooms, Industrial Solutions.
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Introduce yourself, the company you represent and what qualifies you to present this material.

Presenter: Please remember, this course should be covered in 50 minutes with 10 minutes remaining for course review questions (no proprietary questions during the course or the review Q&A)

Daniel Hughes

Bradley VDC Strategist | Specifications & ADA Specialist



- GrowlManage Bradley Global VDC Initiative for Design+Construction
- National Educational Author & Speaker (AIA, CSI, AGC, IIDA, IFMA)
- National Technology Consultant, CAD/BIM Implementation-Trainer
- Corporate Owner 15 Years | Chicago Metro Market
- Served with 5 WI Architectural-Engineering Firms



Gensler * Interior Architects (IA) * SOM * VOA * Epstein * Smith+Gill * HDR * HOK * RTKL * Perkins+Will * AECOM * ross barney



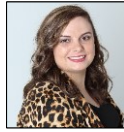
Turner Construction * Clark * Kiewit * USACE * Gilbane * HDR * KEO * HKS * Skanska USA * Stantec * Jacobs * Mortenson



Daniel Hughes – Bradley Corporation VDC Strategist, Specifications & ADA Specialist

Brianna Arpy, Allied ASID, IIDA, USGBC

Bradley VDC Coordinator | Design Specialist



- Grow Bradley Global VDC Initiative for Architecture + Design
- Wisconsin ASID Member Since 2018
- Jr. Interior Designer | M&M Office Interiors | Haworth Preferred Dealer
- Interior Design Intern | Kahler Slater Milwaukee Summer 2016
- 3+ Years Kitchen & Bath Design Experience
- University of Northern Iowa | BA Interior Design | Textiles & Apparel Minor | Certificate of Sustainability

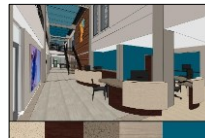
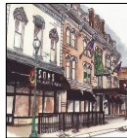
Revit Architecture * SketchUp * CET Designer * 20/20 Design Software * AutoCAD * Hand Rendering



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Brianna Arpy – Bradley Corporation VDC Coordinator and Design Specialist

Trending Accessible Design Standards:

Restrooms, Locker Rooms & Adjacent Public Spaces



Global US Manufacturer – WI, MI, OH \ Warehouses throughout US & Canada

Family-Owned \ Privately Held Since 1921

Commercial: Washroom Handwashing Systems \ Accessories | Emergency Safety Fixtures | Heaters

Serving International Projects for 45+ Years: Latin America, Europe, Australia & Middle East

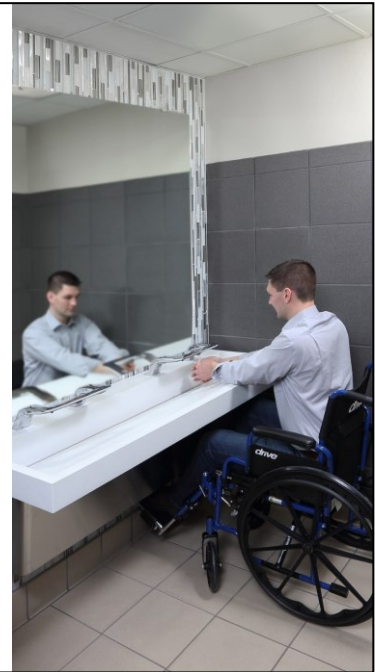
Bradley VDC-Assist \ BIM Initiative - Revit Library | 1000 Product Families (2009 - Present)

Online ADA Design Guide: Download Prebuilt Accessible Restroom Layouts: Revit, AutoCAD, PDF

Virtual Design Tool: 4 Installations, choose Products & Materials, share HQ renderings & Revit Models



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Bradley is a Global US Manufacturer with manufacturing facilities in WI, MI, OH and Regional Warehouses throughout the US & Canada

- Bradley has been Family-Owned Since 1921, manufacturing Commercial Washroom Plumbing Fixtures & Accessories, Emergency Safety Fixtures, & Tankless Water Heaters
- Serving International Projects for over 45+ Years in Latin America, Europe, Australia & Middle East.
- Bradley VDC-Assist \ BIM Initiative - Revit Library | 1000 Product Families (2009 - Present)



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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

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IDCEC Approved Course

IDCEC Class-code: **CEU-113835**
Learning Units: 1.0



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Course Description

Accessible design is a core requirement for most facility design projects. Ten (10) Emerging Accessible Design Trends & Tools demonstrate how designers are applying them to their projects.

The class identifies who needs and how to provide accessibility in the toilet & locker room space. The presentation solutions references ADA, TAS, CA Title-24, ANSI 117.1 and Canadian accessibility standards' compliance for restroom, locker room and adjacent space design.

We conclude by defining the Seven (7) principles of universal design, proper selection [specification] & placement of fixtures & accessories with their respective clearances in accordance with the identified standards.

Read the learning objectives to participants. Otherwise, generally avoid reading slide content to participants.



Learning Objectives

Participants will be able to:

- 1. Identify** 10 Emerging Accessibility Design Trends & Tools
- 2. Explain** the principles of accessibility and universal design
- 3. Assess and Apply** accessibility standards and regulations that govern accessible toilet & locker rooms
- 4. Evaluate and Apply** accessible design for toilet & Locker room layout, through fixture\accessory selection and placement

Read the learning objectives to participants. Otherwise, generally avoid reading slide content to participants.

Introduction to Accessible Design

"Three weeks ago we celebrated our nation's Independence Day. Today we celebrate another 'independence day', one that is long overdue. With today's signing of the landmark American with Disabilities Act, every man, woman, and child with a disability can now pass through once-closed doors into a bright new era of equality, independence and freedom."

President George H W Bush

July 26, 1990



In 1990, the President signed into law the Americans with Disabilities Act, however, the ADA story began decades before that when people with disabilities began to challenge societal barriers that excluded them from their communities. Early handicapped regulations were adopted to a large extent in order to address the needs of our physically handicapped military veterans in the 1970s.

Accessibility Background

1968 Architectural Barriers Act

1973 Access Board created

1990 ADA passed

2004 ADA ABA AG

2010 DOJ revised regulations

-2010 ADA Standards for Accessible Design

2012 Effective date of newest rules



www.access-board.gov

The Architectural Barriers Act – passed in 1968 addresses accessibility of federal buildings and buildings designed, built or altered with federal money.

The Access Board is an independent federal agency. It develops the design criteria for buildings, transit, telecommunications equipment, electronic and information technology. www.access-board.gov

ADA – civil rights law prohibits discrimination on the basis of disability in places of public accommodation, employment, transportation, govt services and telecommunications.

ADA/ABA – In 2004 the Access Board harmonized the ADA and ABA to make compliance easier. The intent is that this will replace the ADAAG and UFAS.

2010 – DOJ's revised regulations for Titles II and III of the ADA were published in the Federal Register in Sept 2010. 2010 ADA Standards for Accessible Design were published. Some changes related to the toilet room included:

- standard knee and toe clearance, -reach range requirements

- water closet clearance and center lines

- ambulatory stalls, -children's standards

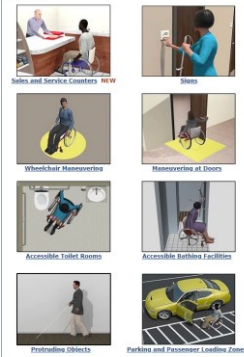
2012 – Effective March 15, 2012, compliance with the 2010 standards was required for new construction and alterations

*Title II = applies to public entities (state and local governments)

*Title III = applies to private entities (providing/owning public accommodations and commercial facilities)

Access Board Educational Resources

Animations



Download Animation Files (MP4):

The below nine animation files are in the public domain and may be downloaded and used without permission. We respectfully request that the animations be attributed to the U.S. Access Board wherever they are used.

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(If using Internet Explorer, right click the file link and select "save target as..." to save a copy)

- [Wheelchair Maneuvering](#) (27.7 MB)
- [Wheelchair Maneuvering - Captioned](#) (28.5 MB)
- [Maneuvering at Doors](#) (24 MB)
- [Maneuvering at Doors - Captioned](#) (24.4 MB)
- [Accessible Toilet Rooms](#) (19.3 MB)
- [Accessible Toilet Rooms - Captioned](#) (20.2 MB)
- [Accessible Bathing Facilities](#) (14.5 MB)
- [Accessible Bathing Facilities - Captioned](#) (15.2 MB)
- [Protruding Objects](#) (36.9 MB)
- [Protruding Objects - Captioned](#) (37.0 MB)
- [Parking and Passenger Loading Zones](#) (24.9 MB)
- [Parking and Passenger Loading Zones - Captioned](#) (22.3 MB)
- [Signs](#) (22.8 MB)
- [Signs - Captioned](#) (23.0 MB)
- [Sales and Service Counters](#) (26 MB) **NEW**
- [Sales and Service Counters - Captioned](#) (26.9 MB) **NEW**



Download Educational Animations

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<https://www.access-board.gov/ada/guides/animations/accessible-toilet-rooms.html>

https://www.youtube.com/playlist?list=PLEl0TfMZ41BoFNAJV_MMSb-zxou3QW0Uv

<https://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-ada-standards/guide-to-the-ada-standards>

10 Emerging Accessibility Trends & Tools

1. Centralized Handwashing Systems
2. Universal Restroom Design Benefits Owners
3. Knee & Toe Clearance Solutions
4. Locker Rooms: ADA Lockers & Benches
5. BIM\Revit Virtual Design Tools
6. ICC A117.1-2017 Clearances
7. No-Sight Toilet Partitions
8. BABIES Act of 2016 | Changing Tables
9. Mothers Room\Lactation\Wellness Room
10. Bariatric\Assisted-Transfer Design Guidelines



We've identified 10 Emerging Accessibility Trends and Tools; that the design market is incorporating into their design and construction projects.

1. **Centralized Handwashing Systems.**
2. **Unisex \ Gender Neutral Restrooms**
3. **Knee & Toe Clearances**
4. **Locker Rooms: ADA Lockers & Benches**
5. **BIM Virtual Design Tools**
6. **ANSI 117.1 2017 Edition Clearances**
7. **No-Sight Toilet Partitions**
8. **BABIES Act of 2016**
9. **Mothers \ Lactation Room | Wellness Room**
10. **Bariatric (People of Size) Accessible Guidelines**

Centralized Handwashing Systems

1

Soap, Water & Hand Dryer
Centralized to Basin



The origins of the newest centralized handwashing systems entered the market over 5 years. They've grown in popularity and have become 'smart-technology' handwashing systems; that provide water, soap and hand drying; that are centrally located at the handwashing basin.

Each function (soap, water, dryer) is delivered by infrared accessible, touchless fixtures.

A visitor standing or in a wheelchair, can accomplish the entire handwashing process at the basin with their hands in the basin.

For a wheelchair visitor there is no reaching up for paper towels while the water runs down the visitors arms or onto their clothes.

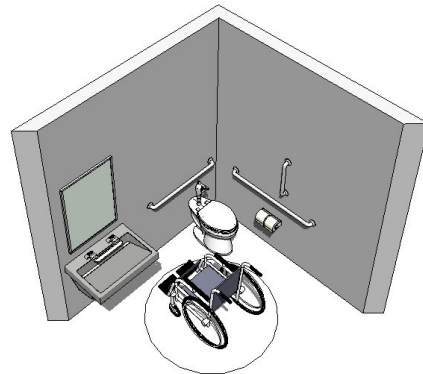
Visitors with clean, but wet hands don't need to touch the wheelchair wheels as they move from the counter to the towel dispenser or hand dryer.

Centralized Handwashing Systems

1

Soap, Water & Hand Dryer Centralized to Basin

- Accessible
- Convenient
- Low Maintenance
- Minimizes Risk
- Sustainable



Centralized Handwashing Systems offer designers the ability to reduce the room square footage while maintaining accessibility.

Each step in the handwashing process may be accomplished at one location. While convenient to all visitors, these systems reduce floor space while delivering improved & safe accessibility. Their sustainable design lowers water consumption, eliminates paper towels & waste and improves cleanliness for both visitors and owners.

Centralized handwashing systems reduce the amount of required accessible equipment to purchase & install, the total time for visitors to wash & dry hands; while minimizing the risk for all visitors of slipping or falling on wet floors.

Summary

meet accessibility codes,

reduce the owners' square footage & construction costs,

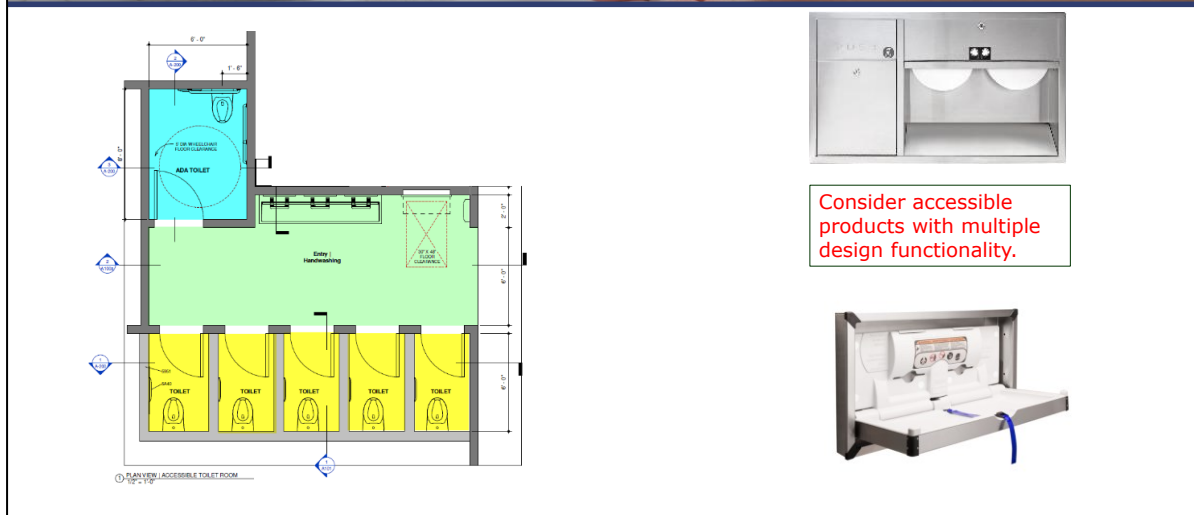
reduce the owners' risks associated with slippery, wet floors,

reduce the owners' building management costs for water, paper towel usage and maintenance,

provide a pretty cool visually-appealing, technologically-savvy handwashing product.

Universal-Accessible Restroom

2



Designers' clients are requesting and researching the design requirements for this restroom layout-type.

Universal Restrooms provide designated, private toilet rooms for both Standard and ADA accessible occupancy.

This restroom type provides owners the flexibility of defining occupancy-type without the need to change or add accessories.

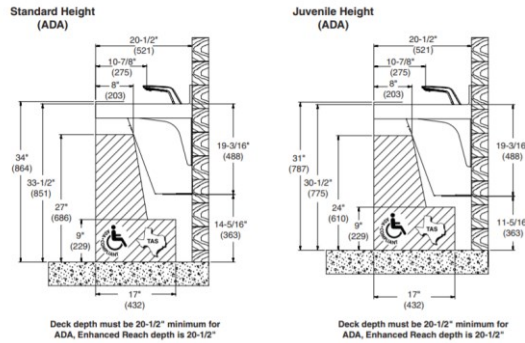
The Main Entry [GREEN] to this restroom space is designated for handwashing and diaper changing area.

This example shows 5 Standard Toilet Rooms [YELLOW] on the South Side and an ADA Toilet Room [BLUE] in the northwest corner.

Knee & Toe Clearances-Access Panel

3

ADA Standard & Juvenile Height Standard



Accessible clearances for knee and toes; are defined to ensure a wheelchair can access the faucet.

Sink and lavatory handwashing systems are often designed with access panels beneath the sink to enclose and cover the plumbing connections & mechanicals.

Security Barrier: Vandalism, Flooding & Theft:

Access panels serve as a front-line barrier to prevent visitors' unobstructed access to

1. Under-sink electronics and plumbing connections..
2. Cutting water lines; thereby flooding the restroom and other areas of the building.
3. Steal soap containers and sink electronics

Sanitization:

Restrooms require both daily cleaning and sanitization to maintain a healthy and safe environment for the facility owners' visitors.

Mold, mildew and nasty bacteria will grow in a restroom and will quickly become a health hazard without a daily/weekly cleaning schedule.

Which is easier for maintenance staff?

Cleaning and sanitizing the surface of a stainless steel access panel? OR

Cleaning and sanitizing the web of pipes, valves, wires, fixture supports, electronics and wall surface with a sanitization spray bottle

ADA Accessibility & Pipe Wrap Requirement:

Access panels ensure ADA\ANSI 117.1 knee-toe clearance access to the sink and handwashing with a wheelchair; while protecting the visitors' knees from hot pipes and sharp objects beneath the sink.

Eliminates Cost, Maintenance and Replacement of Pipe Wrap Ben

An ASTM International standard on safety for disabled individuals is defined below.

Designed to help improve safety of public restrooms for people with disabilities, **C1822, Specification** for Insulating Covers on Accessible Lavatory Piping, provides guidance on protecting people from exposed pipes in accessible restrooms.

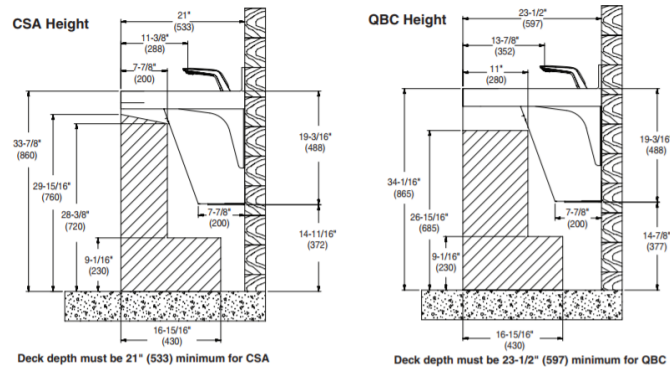
As part of the Americans with Disability Act, exposed piping in public restrooms requires insulation or configuration to protect persons in wheelchairs or with other disabilities. Insulating covers must protect against potential burns and other dangerous reactions in contact with hot or cold pipes. Sharp or rough elements of piping must be covered to reduce the potential for injury.

<https://www.buildings.com/news/industry-news/articleid/21293/title/new-ada-standard-specifies-piping-safety-in-restrooms>

This particular system shown above also meets the ICC 11" Enhanced Reach Depth requirement from face of counter to the faucet & soap.

Knee & Toe Clearances Vary

Canada & Quebec Building Code Standard

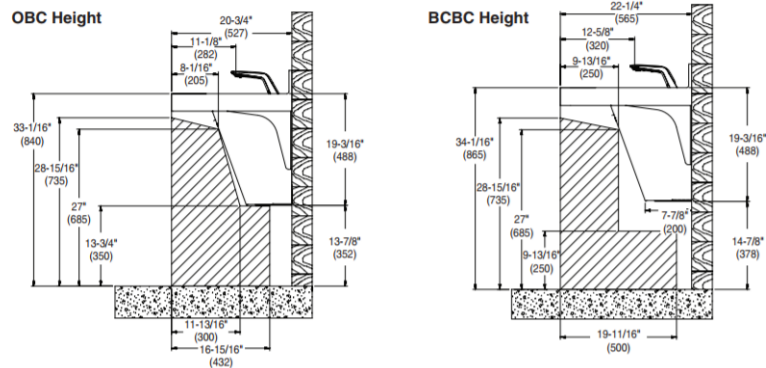


These clearance dimensions may be defined regionally.

Canada (CSA) Standard is on the Left & the Quebec Building Code (QBC) Standard is on the Right

Knee & Toe Clearances Vary

Ontario & British Columbia Building Codes



Ontario on the Left & British Columbia Building Codes is on the Right

This underscores the point; Verify accessible codes both locally and regionally.

ADA Lockers & Benches

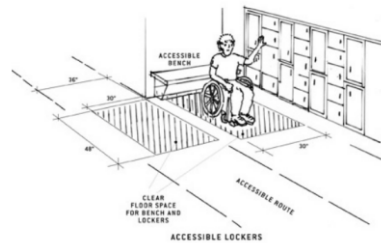
Dressing, Fitting, or Locker Rooms



When provided, dressing, fitting, or locker rooms must be accessible and comply with all ADAAG provisions. If they are in a cluster, 5 percent, or at least one must be accessible. There must be an accessible route through the door and to all elements required to be accessible in the room. Operating mechanisms provided on accessible lockers must also meet ADAAG provisions for their operation and height.

Lockers

If lockers are provided, at least 5 percent, but not less than one of each type (full, half, quarter, etc.) must be accessible. Accessible benches should be located adjacent to the accessible lockers.



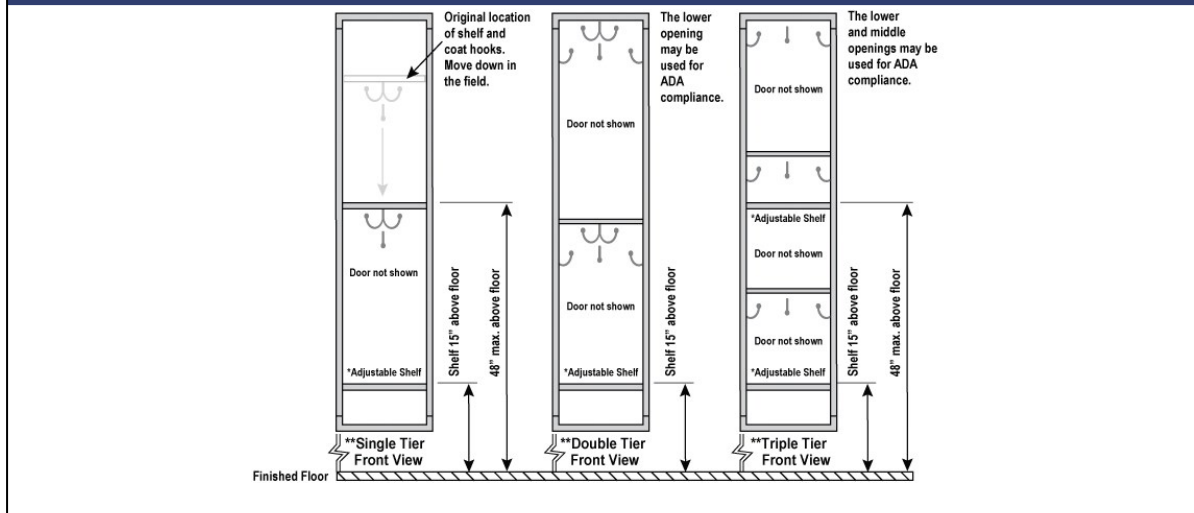
Identify ADA Lockers to Avoid Costly Returns, Construction Delays and Provide Faster installation.

5% or at least one of each type (full, half, quarter, etc.) must be accessible.

If Lockers are provided at least 5 percent, but not less than one of each type(Full, Half, Quarter Must be accessible.

Accessible benches should be located adjacent to the accessible lockers.

ADA Lockers & Benches



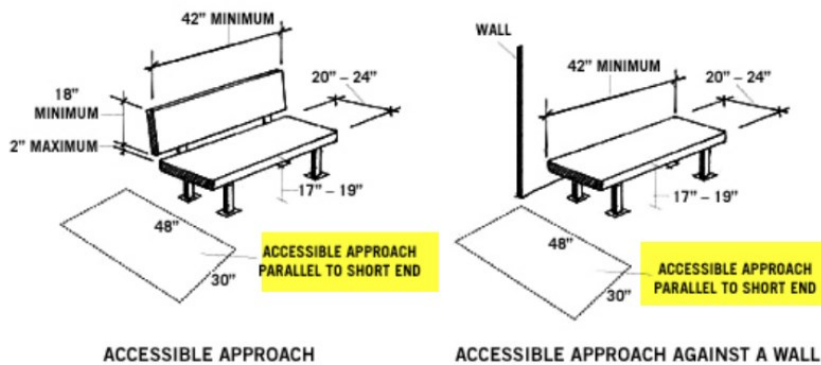
Accessible lockers have access limitations based on Enhanced Reach height of 48" Above Finished Floor.

Doors must provide visible signage or logos to identify which locker(s) are configured for ADA access.

The latch mechanism must provide access with a maximum lift force of 5lbs.

ADA Lockers & Benches

4



Accessible benches can be installed as freestanding in a room but require a back.

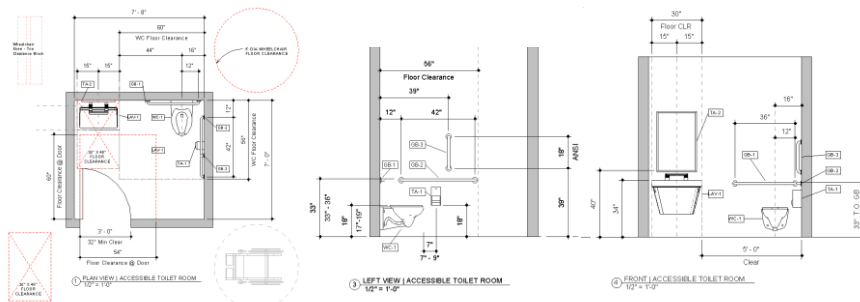
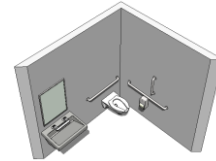
If a bench is installed next to a wall, the wall can serve as the back.

Grab bars are NOT installed

Revit Family > Room Building Blocks

5

**Assemble Quality Revit Families then...
Construct Pre-Built Revit Rooms?**



A Pre-built Revit model can be copy-pasted into a Revit Project to expedite the project startup:

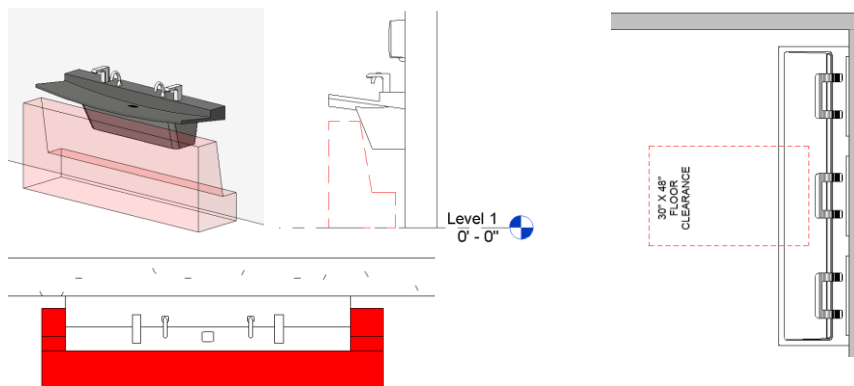
In the case of a restroom, ADA dimensional clearances and mounting heights are embedded into the room layout.

Content is already ensured to TAG and SCHEDULE correctly within the firms' Project Standards.

Lastly, pre-built Revit Rooms educate the newer staff on Accessibility Standards & Codes.

Which means staff that are billed at a lesser hourly rate can be tasked for more complex room layouts.

Prebuilt 2D / 3D Clearance Boxes & Clear Floor Spaces



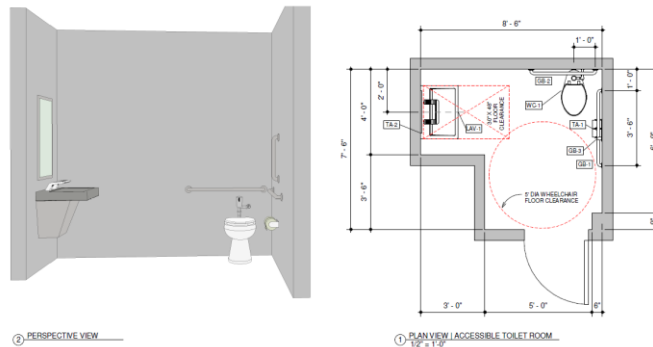
As the Building Information Modeling (BIM) process becomes mainstream, using Revit, ArchiCAD, or Bentley 3D software; designers are automating their accessibility design processes. Here are 3 common BIM for Accessibility processes:

2) BIM 3D Clearance Boxes, #2) BIM 3D Clearance Boxes like the one in red (above) are placed under sinks and lavatories to 3-dimensionally verify clearances, such as ADA Knee and Toe Clearances beneath the sink.

BIM Clearance Boxes can be used anywhere the designer wishes to verify accessible clearances are retained throughout the design process.

They are used in BIM model entrance doors, partitions, shower entrance and lockers to visually ensure access & clearances are maintained. If set correctly, BIM software (like Revit) can run interference and clash detection to identify encroachments into accessible clearances.

3D Construction Views Supporting 2D Construction Views



As the Building Information Modeling (BIM) process becomes mainstream, using Revit, ArchiCAD, or Bentley 3D software; designers are automating their accessibility design processes.

3D Construction Document Views

Designers can easily set multiple 3D camera views to better display the accessible design intent of a space.

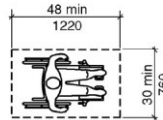
As products are positioned in line with each other in an orthographic view (2D plan & elevations), a 3D view may display & define the product installation more easily within an accessible space.

Integrating 3D Isometric and Perspective Views into the Construction Document set is becoming more common.

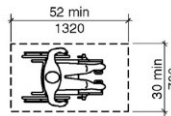
New Clearance Dimensions New Buildings

Wheelchair space

Existing – 48"

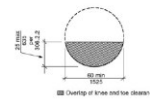


New – 52"

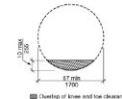


Turning space

Existing – 60"



New – 67"



Copyright 2017 International Code Council

The ICC A117.1-2017 Standard for 'Accessible and Usable Buildings and Facilities' was adopted with a first printing in May 2017.

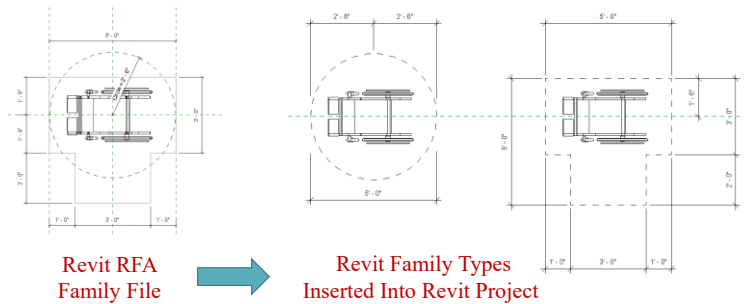
Adoption of these standards will apply to New Construction & Additions. The revised document is about 200 pages.

Consider focusing your review in the section titled "**Building Blocks**" for the **new wheelchair space clearance** updates for accessible restroom and locker room design.

- Wheelchair Space 30"W x 52" Long
- Wheelchair circular turning space 67"
- T-Shaped Turning Spaces
- Accessible Routes – 90 Degree Turn,
- Accessible Routes - Turn Around Obstruction
- Accessible Routes - Passing Space
- Room Exit - Door Maneuvering Clearances
- Room Exit – Vestibule Clearances Between 2 Doors
- Accessible Toilet Partition to Accommodate the new 52" long wheelchair clearance.
- A new Accessible End-of-Row Stall Alternative Layout

As Always, Verify accessible codes both locally and regionally.

Prebuilt 2D / 3D BIM Turning Clearances



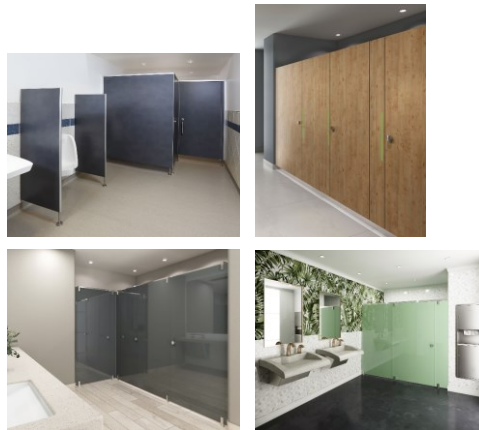
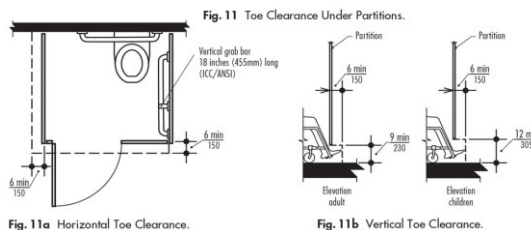
This Revit Family on the Left has 2 Accessible Clearances Family Types:

One for a single wheelchair turning diameter of 5' and the Second for a T-Shaped Turning Clearance.

No-Sight Toilet Partitions

7

No-Sight at the Doors
Full No-Sight @ Panels
Maintaining Toe Clearance



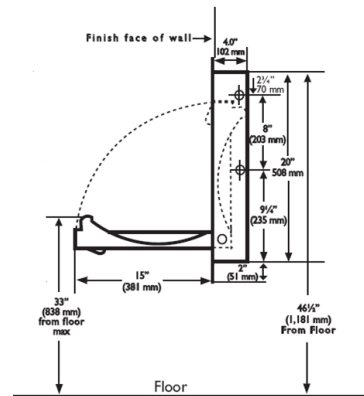
Facility Owners are selecting variations of No-Sight Toilet Partitions to provide a higher level of privacy around the toilet partition cubicle in their facilities. Some owners choose a No-Sight option that just blocks visibility into a stall at the 'side edges' of the door.

Others select a longer door panel that has a 'bottom edge'; that is closer to the floor. The longer door panel has a 'top edge' high enough to eliminate viewing over the door panel and into the stall. The partition side panels, that separate the stalls will use these new elongated dimensions.

Accessible Design Concern: As the bottom edge of doors and panels are closer to the floor, the ADA stall may need to become wider and/or deeper to accommodate the complete turning of the wheelchair within the stall, as toe clearances are no longer applicable under the panels.

Bathrooms Accessible in Every Situation or BABIES Act 2016

"Public Building" means a public building controlled by the GSA's Public Building Service.



Provide Baby Changing Area and Accessories in BOTH Men and Women Restrooms.

Subject to any reasonable accommodations that may be made for individuals in accordance with the Americans with Disabilities Act (42 U.S.C. 12101 et seq.) restrooms in a public building shall be equipped with baby changing facilities that the Administrator determines are physically safe, sanitary, and appropriate.

Vocabulary:

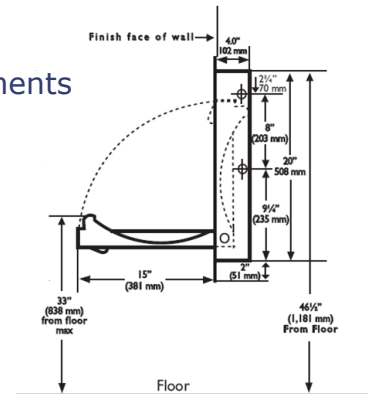
1. Pubic building.--The term 'public building' means a public building as defined in section 3301 and controlled by the Public Building Service of the General Services Administration.
2. Baby changing facility.--The term 'baby changing facility' means a table or other device suitable for changing the diaper of a child age 3 or under.
3. The Bill has several Exceptions listed; where this requirement for an existing public building may not apply.
4. Consider how other public building requirements have many times become private building standards.

Building Code Required | Men \ Women

9

Sample Locations w/Variou Code Requirements

- Arizona, California, Illinois, Wisconsin
- New York, Michigan, Nevada
- New Mexico [new construction]
- Miami-Dade, District of Columbia
- Champagne, IL, Dallas, TX



Number 8 - [Update] State & Local Building Code Requirements for Diaper Changing Stations Launch Nationwide

Here's a sampling of State, County and City that require the Baby Changing Stations in both Men & Women Restrooms.

The installation height is often violated, as 'Accessories by Owner' or vendor install changing station @ 36" AFF.

Design Notes:

.California State law will require diaper changing stations in men's, women's bathrooms - <https://www.10news.com/news/california-law-aims-to-make-it-easier-for-men-to-change-diapers-too>

.New York State now legally requires changing tables in men's restrooms [new or renovation] - <https://www.mother.ly/news/new-york-changing-table-law-dads-change-diapers>

.Miami-Dade Requirement for Diaper Changing Stations for Men & Women Room - <https://www.miamidade.gov/business/laws-baby-diaper.asp>

.Michigan Amendment to State Building Code places Changing Stations also in Mens Rooms - [http://www.legislature.mi.gov/\(S\(m22hh1x2mvtps0z3ophnokb4\)\)/mileg.aspx?page=getObject&objectName=m-cl-125-1508a](http://www.legislature.mi.gov/(S(m22hh1x2mvtps0z3ophnokb4))/mileg.aspx?page=getObject&objectName=m-cl-125-1508a)

.Nevada Amends International Building Code (IBC) -
http://www.cityofnorthlasvegas.com/IEBC_Amendments.pdf

.City of Champaign (IL) Approves Ordinance Requiring Changing Tables in Public Restrooms |
10 Different Occupancies - <https://www.chambanamoms.com/2017/06/20/city-champaign-approves-ordinance-requiring-changing-tables-restrooms/>

▪

Mother\Lactation Room - Wellness Room

9

- Washroom accessories: soap, paper towel, mirror, hooks, waste
- Countertop & basin with integrated diaper changing module,
- Wall hung diaper changing table
- Sight-screen partition to replace wing-wall construction
- Privacy curtain & rod
- Must meet [accessibility standards](#)
- Value: easier installation of prefabricated products
- Optional Accessible Shower



Private & Public facilities increasingly provide Lactation and Mother's rooms for nursing due to growing demand.

Design firms are responding to client requests to include these rooms into the design of both new and renovated construction projects.

Washington DC has recently passed legislation and joined 18 states to pass enhanced pregnancy and nursing mother protections.

Many of these state statutes, including Washington DC law also clarify and strengthen the rights of nursing mothers with room design layouts & requirements.

Emerging Mega Trend - Bariatrics

10



- Healthcare expansion – including Bariatrics – is now considered a Mega Trend in the industry
- Specifiers, designers and owners should strive to make people of size feel welcome and safe in any environment
- Universal and Inclusive Design merge the needs of both ADA and Bariatric

"the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design."

– Center for Universal Design, North Carolina State University, Ron Mace –

Healthcare expansion is considered a Mega Trend in the industry.

This includes bariatrics. Bariatrics is the branch of medicine that deals with the causes, treatment, and prevention of obesity.

According to data from the Centers for Disease Control and Prevention and the article by Gabrielle Levy with U.S. News & World Report in an article titled "Sharp Increase in Obesity Rates, Over Last Decade, Federal Data Shows."

Design Notes

Obesity among adults has risen from 33.5% in 2007 to 40% in 2016.

Severe (Morbid) obesity is also on the rise. 5.5% in 2007 to 8% of adults in 2016.

Levy, Gabrielle. "Sharp Increase in Obesity Rates, Over Last Decade, Federal Data Show." *U.S. News & World Report*, U.S. News & World Report, 26 Mar. 2018, 3:48 p.m., www.usnews.com/news/data-mine/articles/2018-03-26/sharp-increase-in-obesity-rates-over-last-decade-federal-data-show.

What are the Bariatric Codes?

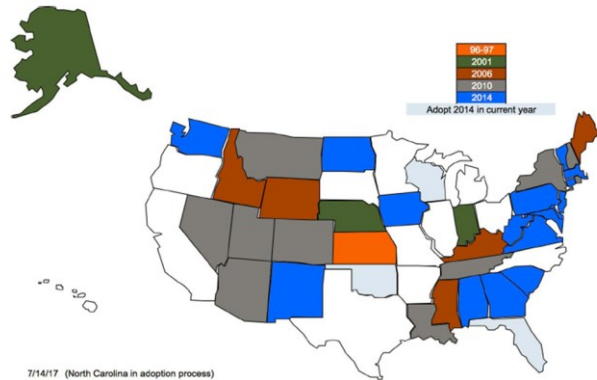
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- No set code to follow for Bariatric design (currently)
- Facility Guidelines Institute (FGI) first to offer guidance in 2010 edition of

"Guidelines for Design and Construction for Healthcare Facilities"

- FGI established 1947
- Nonprofit organization
- Most widely adopted source

FGI ADOPTION STATUS MAP



Consider these guidelines for Bariatric Design.

1. The Facility Guidelines Institute (also known as FGI) was the first organization to offer guidance in their 2010 edition of "Guidelines for Design and Construction for Healthcare Facilities".
2. FGI was founded in 1947 and is a nonprofit organization.
3. As of July 2017, FGI is the most adopted source for Bariatric Guidelines.
4. In 2018, FGI replaced the term "bariatric patients" with "patients/people of size".
5. A patient of size is someone who is Obese and Morbidly Obese. This means they have a BMI (Body Mass Index) of 30% or greater.

2.1-7.2.2.9 Grab Bars

1. Grab bars shall be anchored to a sustain a concentrated load of 250 pounds (113.50 kilograms).
2. Grab bars in toilet room used by patients of size shall be anchored to sustain a concentrated load of 800 pounds (362.87 kilograms).
3. Ends of grab bars shall be constructed to prevent snagging the clothes of patients, staff, and visitors.



For Grab Bars, the 2018 FGI guidelines state that Grab Bars in toilet rooms to be used by patients of size shall be anchored to sustain a concentrated load of 800 pounds.

In comparison, standard grab bars only need to be anchored to sustain a concentrated load of 250 pounds.

Design Notes

Appendix

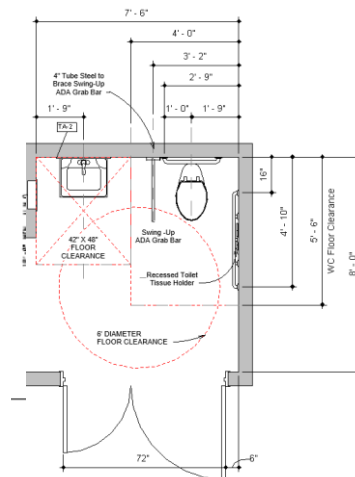
A2. 1-7.2.2.9 Grab Bars

- b. Grab bars in patient toilet rooms and bathing facilities should allow patients to be as safe and independent as possible. This includes using dropdown grab bars when needed, with or without integral toilet paper holder.

Assisted-Transfer Layout vs ADA Layout

10

1. Larger Entrance Door
2. Fold Down ADA Grab Bar Anchored to 4" Steel Tube
3. Longer Back Grab Bar
4. Longer Side Grab Bar
5. Additional Blocking for GB
6. Recessed T/P Dispenser
7. 6' Turning Diameter
8. 1' 9" to Center of WC
9. 3'6" x 4' Clear Space @ Sink
10. 4' x 5'6 Clear Space @ WC



In comparison to an ADA Layout, a Bariatric Layout has increased clearance space, structural support and larger component requirements.

- Larger Entrance Door
- Fold Down ADA Grab Bar Anchored to 4" Steel Tube
- Longer Back Grab Bar
- Longer Side Grab Bar
- Additional Blocking for Grab Bars
- Recessed T/P Dispenser
- 6' Turning Diameter
- 1' 9" to Center of WC
- 3'6" x 4' Clear Space @ Sink
- 4' x 5'6 Clear Space @ Water Closet for Front Approach



ADA & ANSI Requirements

Accessible 'Transfer'

'Transfer' defines the process of transferring an individual from a wheelchair to a water closet, shower seat, bed or locker bench.

Side or Front Method-Of-Transfer

The ADA & ANSI 117.1 Accessibility Standards, use 'Method-of-Transfer' to define the required accessible clearances at and around water closets, shower seats, beds and locker benches to complete the Transfer.

Two Common Transfer Processes

- **Independent Transfer:** The Individual Transfers themselves to a Fixture, Furniture or Accessory
- **Assisted-Transfer:** One or more people Assist the Individual to transfer to a Fixture, Furniture or Accessory

The National ADA Accessible Standards and the ICC ANSI 117.1 Accessibility Standards define Accessible Transfer

There is the highly preferred, Side Transfer from a wheelchair and the Front Transfer

Both ADA & ANSI address independent Transfer; where an individual works independently to transfer from their wheelchair to a fixture, furniture or accessory.

Products used for Bariatric purposes is applicable for Assisted-Transfer.

This is when 1 or more persons are required to transfer an individual from the wheelchair to a fixture, furniture or accessory.

ADA & ANSI Requirements

Assisted-Transfer Process Defined:

When an individual in a **wheelchair** or Hoyer lift needs one or more people to assist them with their transfer to a water closet, shower seat, bed or locker bench.

- When an individual is using a **cane, a walker or crutches**, needs one or more people to assist their transfer to a water closet, shower seat, bed or locker bench.
- During this type of transfer the individual requires a CNA and/or Nurse and/or family\caregiver to assist with their transfer.
- The transfer will require that both the individual and those assisting with the transfer, simultaneously use the grab bars. (heavy loads)
- Requires additional clearances at and around the water closet, shower bench and beds to accommodate assistant(s), wheelchair \ Hoyer lift and the individual.
- ANSI 117.1 – 2017 defines the use of **drop-down\swing up\swing down** grab bars for Assisted-Transfer



Source: © Emily Johnson, Susan A. Thompson. Mobility in Space: Principles of Accessible Design. Second Edition. Copyright © 2017 by Taylor & Francis. All rights reserved.

Assisted Transfer may be required for individuals in wheelchairs, scooters, or if they are using a cane, walker or crutches.

A nurse, a CNA, or caregiver may be performing the Assisted-Transfer.

Assisted-Transfer requires larger floor space clearances than ADA or ANSI standards to accommodate the assistants using the space.

Unlike ADA, the ANSI Accessible Standards, provide clearance requirement for Assisted-Transfer and are referenced in the State Building Codes.

ADA & ANSI Requirements

Who requires Assisted-Transfer?

1. People of Size (Bariatric)
2. Physically or Cognitively challenged children and/or adults
3. ICU, surgical & obstetrics patients
4. Elderly that have lost mobility or lack balance control
5. Assisted Living, Memory Care, Dementia or Alzheimer patients
6. Healthcare professionals serving hospice care or individuals that are heavily medicated to reduce pain
7. Amputees, accident victims or sports injury patients; that are working through physical therapy



Assisted Transfer is required for numerous situations; listed here.

Designs with more sturdy grab bars and backing serves anytime; that grab bars & seating must support heavier loads of one or more people.

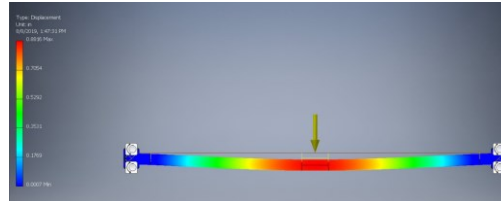
Better defined as Assisted-Transfer anytime.



Standard Grab Bar Buckles Under Loads of Assisted-Transfer?

1. The center of the grab bar is the weakest point along grab bar length.
2. It is supporting the weight and downward pressure of 2 or 3 people
3. As the bar deflects down, the top grab bar fasteners are being pulled out of the wall & bottom fasteners are pushed into the wall.

Standard Grab Fails to Support Assisted-Transfer Loads



Here's a visual representation of a standard grab bar trying to support the downward force of 2 people performing an Assisted-Transfer.

Not only is the grab bar deflecting the force it is also pulling on the wall anchors fastening it to the wall. It's FAILING.

Stronger grab bars are designed to protect BOTH the individual being transferred ... AND those performing the transfer.

ADA & ANSI Requirements

Grab Bar with Multiple Wall Anchors Prevent Buckling with Assisted-Transfer Loads

1. The center of the grab bar is the weakest point along the grab bar length. More center anchors are required for longer bars.
2. It is supporting the weight and downward pressure of 2 or 3 people.
3. Multiple Anchors Require Backer Board in the wall behind the drywall along the entire length of the grab bar.

Grab Bar Provides Intermittent Support Along the Grab Bar Length for Assisted-Transfer Loads



1. Bariatric Grab Bars Provide Intermittent Support Along the Grab Bar Length for Assisted-Transfer Loads
2. Multiple Anchors Require Backer Board in the wall, behind the drywall along the entire length of the grab bar.
3. This construction requirement should be noted when working with both designers' drawing details and contractors' installation requirements.
4. Drop Down, Swing-Up and/or Swing-Down grab bars for Assisted-Transfer; recommend anchoring them to 4x4 Steel Column in the wall.



ADA & ANSI Requirements

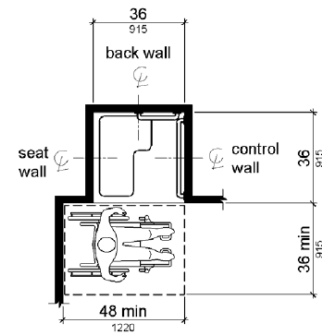
Assisted-Transfer definition(s):

Products are designed for when a **wheelchair-bound** individual requires 'Assisted-Transfer' from the wheelchair onto a

- Water closet (toilet).
- Shower seat.
- Locker bench

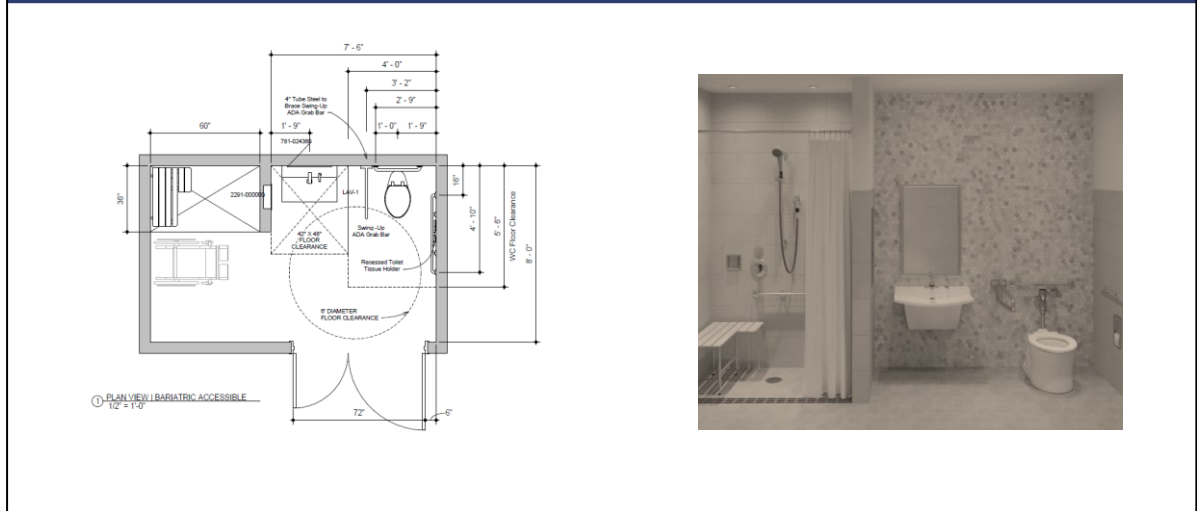
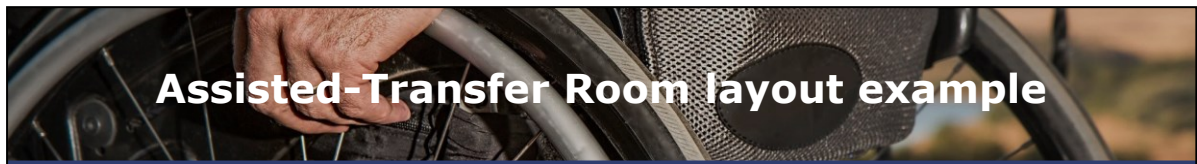
Products are designed for when individuals using **a cane, walker or crutches**; require 'Assisted-Transfer' onto a

- Water closet (toilet).
- Shower seat.
- Locker bench



Note: inside finished dimensions measured at the center points of opposing sides

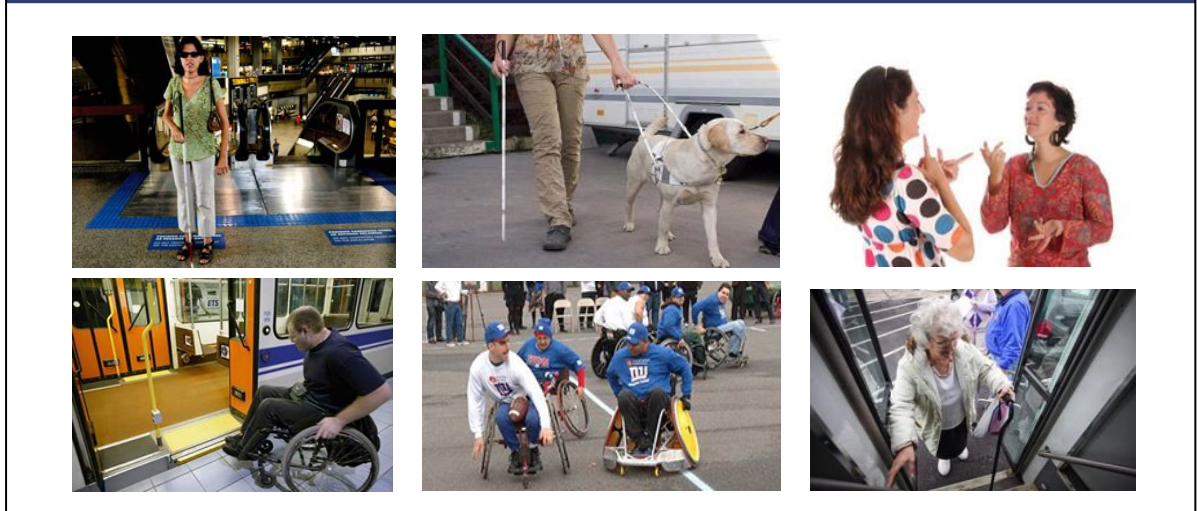
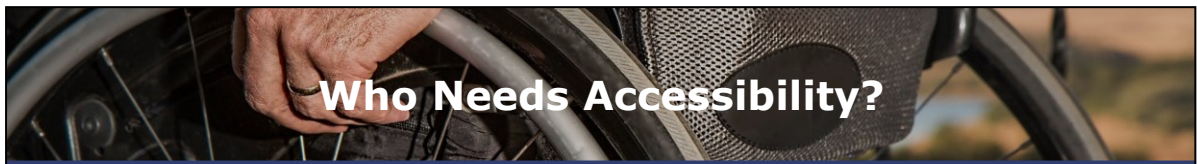
Assisted-Transfer situations require stronger products with reinforced fastening to provide safer installations for wheelchair visitor and caregivers.



Here's an Assisted-Transfer Shower Room & Restroom Floor Plan.

The lavatory which has a shorter enhanced reach (11" from face of sink to water) complements the Assisted-Transfer assistants.

The shower space is longer to accommodate a shower bench with room for nursing or care-giver assistance.



Over 50 million Americans have some kind of physical, sensory, cognitive, or mental disability based on a published July 25 2012 US Census Bureau

Here's a summary breakdown:

1. 57 million, 19% of the population
2. 8 million had difficulty seeing
3. 7 million experienced difficulty hearing
4. 31 million had difficulty walking or climbing stairs, or used a wheelchair, cane, crutches or walker.
5. 20 million had difficulty lifting or grasping.

Who Else Needs Accessibility?

People with other disabilities

- You don't need a wheelchair to need accessibility
- Often, building users have temporary disabilities
- Some disabilities are not apparent



The ADA has made community life more accessible for all of us.

1. With automatic doors, sidewalk ramps, stair rails, wider hallways, accessible toilet rooms and attention to the design and construction of buildings, everyone has benefited.
2. Temporarily disabled folks like someone with a broken leg and even people carrying packages or dragging luggage find it easier to move through built facilities.

Accessibility and Other Challenges

Managing infants & children

- Parents have learned the advantage of increasingly accessible environments



Accessibility-based adaptations have proven especially useful to parents managing young children.

Any parent with children-in-tow will tell you how much easier (and safer) it is to take your children into an accessible toilet room stall with them.

We want Accessibility for everyone!

Accessibility and Other Challenges

Child-sized toilet rooms

- Accessibility regulations include special provisions for areas used by children



The ADA/ABA guidelines includes more detailed provisions for reach ranges and fixture heights for children of various ages.

Early childhood education centers, and childhood care was brought to our places of employment: office, industrial, & manufacturing over 15 years ago.

1. We need to consider the user group when we design these facility occupancies.
2. Proper toilet room design helps reinforce good hygiene habits in children.
3. Children will not learn healthy habits if we make our toilet rooms inaccessible.
4. They must be able to reach a sink, the soap and either a warm air dryer or towels.
5. Good user-oriented design is at the heart of accessibility. It is more generally referred to as Universal Design.

What is Universal Design?

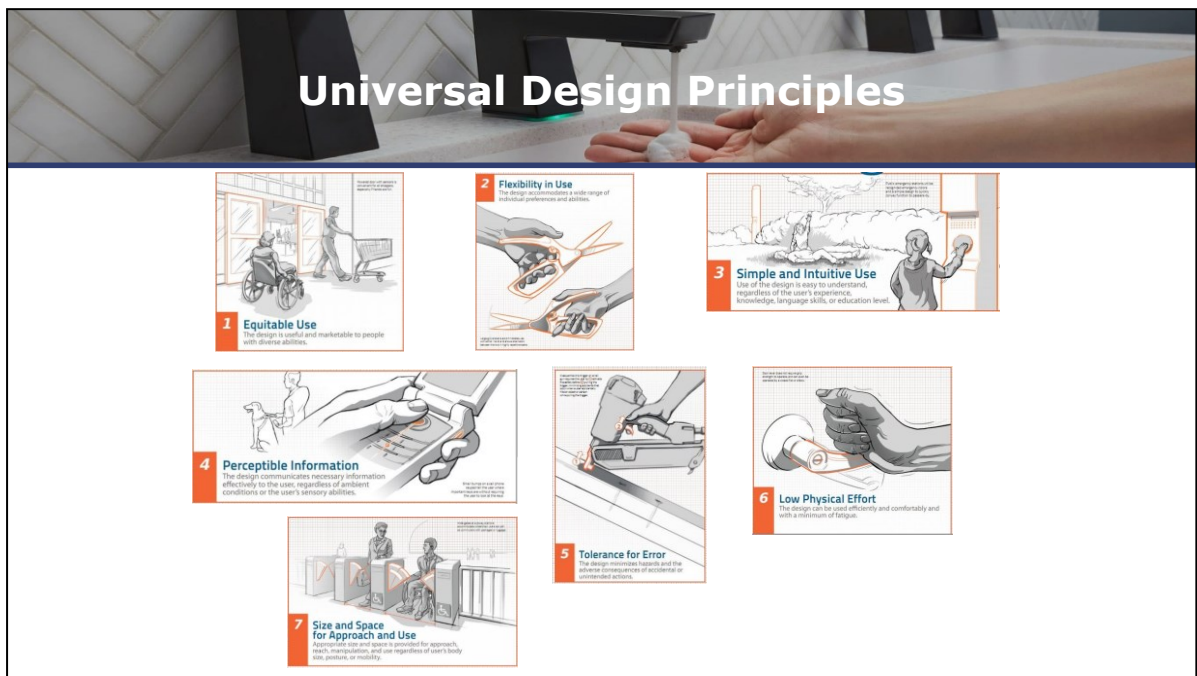
"... the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design."

– Ron Mace



What is Universal Design?

- The Center for Universal Design is a national research, information, and technical assistance center that evaluates, develops, and promotes universal design in housing, public and commercial facilities, and in the design of related products.
- The authors, a working group of architects, product designers, engineers and environmental design researchers, collaborated to establish the following Principles of Universal Design to guide a wide range of design disciplines including environments, products, and communications.
- These seven principles may be applied to evaluate existing designs, guide the design process and educate both designers and consumers about the characteristics of more usable products and environments



Images representing the 7 Universal Design Principles

- 1. Equitable Use**
- 2. Flexibility in Use**
- 3. Simple and Intuitive Use**
- 4. Perceptible Information**
- 5. Tolerance for Error**
- 6. Low Physical Effort**
- 7. Size and Space for Approach & Use**

The Principles of Universal Design

1

Principle One: Equitable Use

The design is useful and marketable to people with diverse abilities.



* Copyright 1997 NC State University, The Center for Universal Design

[We suggest you read the text of each Principle (on the slide) and discuss the related guidelines for each principle (below in these notes)]

GUIDELINES FOR PRINCIPLE ONE: Equitable Use

1. Provide the same means of use for all users: identical whenever possible; equivalent when not.
2. Avoid segregating or stigmatizing any users. Try to avoid specifying or installing the one ADA sink that looks different than all the other sinks.
3. Provisions for privacy, security, and safety should be equally available to all users.
4. Make the design appealing to all users.

The Principles of Universal Design

2

Principle Two: Equitable Use

The design accommodates a wide range of individual preferences and abilities



GUIDELINES FOR PRINCIPLE TWO: Flexibility in Use

1. Provide choice in methods of use.
2. Accommodate right- or left-handed access and use.
3. Facilitate the user's accuracy and precision.
4. Provide adaptability to the user's pace.

The Principles of Universal Design

3

Principle Three: Simple and Intuitive Use

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.



GUIDELINES FOR PRINCIPLE THREE: Simple and Intuitive Use

1. Eliminate unnecessary complexity.
2. Be consistent with user expectations and intuition.
3. Accommodate a wide range of literacy and language skills.
4. Arrange information consistent with its importance.
5. Provide effective prompting and feedback during and after task completion

The Principles of Universal Design

4

Principle Four: Perceptible Information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.



GUIDELINES FOR PRINCIPLE FOUR: Perceptible Information

1. Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
2. Provide Voice alerts and signage in airports, train stations and subway.
3. Provide adequate contrast between essential information and its surroundings.
4. Maximize "legibility" of essential information.
5. Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).
6. Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

The Principles of Universal Design

5

Principle Five: Tolerance for Error

The design minimizes hazards and the adverse consequences of accidental or unintended actions.



GUIDELINES FOR PRINCIPLE FIVE: Tolerance for Error

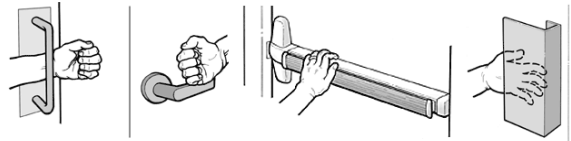
1. Car keys that can be inserted up or down to start a car is a great example.
2. Similar to software, provide “undo” feature that can correct mistakes with out penalty.
3. Provide warnings of hazards and errors.
4. Arrange elements to minimize hazards and errors: display best, most accessible & less confusing options
5. Discourage unconscious action in tasks that require vigilance.

The Principles of Universal Design

6

Principle Six: Low Physical Effort

The design can be used efficiently and comfortably with minimum fatigue.



GUIDELINES FOR PRINCIPLE SIX: Low physical effort

1. Allow user to maintain a neutral body position.
2. Use reasonable operating forces.
3. Minimize repetitive actions.
4. Minimize sustained physical effort
5. Lever or Loop handles on doors and faucets; activate lamps by touch, not by turning tiny knob.

Identified ADA products; that requires a person to PUSH or PULL or LIFT an operable part; needs to be tested for 309.4 ADA\ANSI Compliance:

Five pounds maximum force for operation.

The Principles of Universal Design

7

Principle Seven: Size and Space Approach and Use

Appropriate size and space is provided for approach, reach, manipulation and use regardless of user's body size, posture or mobility.



GUIDELINES FOR PRINCIPLE SEVEN: Size and Space for Approach and Use

1. Provide a clear line of sight to important elements for any seated or standing user.
2. Make reach to all components comfortable for any seated or standing user.
3. Accommodate variations in hand and grip size.
4. Provide adequate space for the use of assistive devices or personal assistance.
5. Extra wide aisles or turnstiles. Clear spaces around appliances, ATMs, mailboxes, etc.

Codes, Guidelines and Universal Design

Design professionals integrate accessibility requirements from many sources

- National model codes
- State and municipal codes
- Federal project requirements
- Federal and state civil rights statutes
- Universal design standards of practice

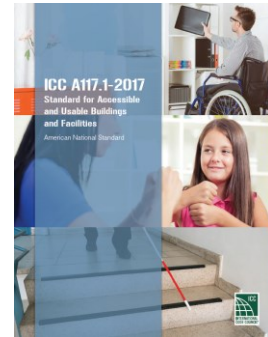


- There is no one single source of accessibility and universal design requirements or information for design professionals
- Often the designer must integrate requirements from several sources, and even resolve conflicts between different sets of requirements.
- In addition, special project requirements may lead to provisions in addition to those required under regulations.

Codes, Guidelines, and Universal Design

National Model Accessibility Code

- ANSI A117.1-2009 Accessible and Useable Buildings and Facilities is still widely adopted.
- New edition coordinated with updated Federal requirements
- The ANSI A117.1-2017 Version may be purchased from ANSI at www.ansi.org or www.iccsafe.org and other online sources.



1. Many states developed and adopted their own accessibility requirements during the 70s as part of the state building codes.
2. They in turn gave rise to the ANSI standard.
3. The 2009 ANSI Edition was integrated with the Federal ADA/ABA Accessibility Guidelines.
4. The national model accessibility code ANSI A117.1 is published by the International Codes Council or ICC.
5. The 2017 ANSI Edition was issued in May 2017 and is under review for inclusion in Federal, Regional and Local Building Codes & Standards.

Codes, Guidelines, and Universal Design

State and municipal building codes

- May incorporate additional requirements
- May modify national model code requirements

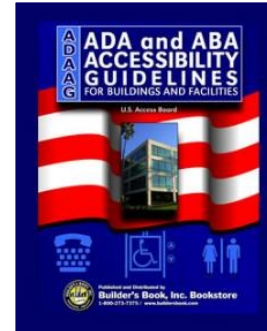


1. Some states have continued to develop and modify their own accessibility building code requirements.
2. Others may modify the ANSI model code documents, or may adopt one of them outright.
3. Design professionals must determine what the regulatory requirements are at the project location.

Codes, Guidelines, and Universal Design

Federal government facility accessibility requirements

- **ADA/ABA Accessibility Guidelines** apply, based on each Federal agency's requirements, but largely uniformly applied
- Replaces Uniform Federal Accessibility Standards (UFAS)
- Available online at www.access-board.gov

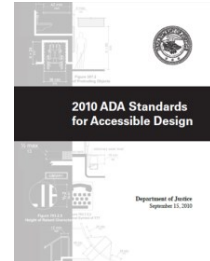


- Projects built for ownership or occupancy by the Federal government must comply with the updated ADA/ABA Accessibility Guidelines (ADA/ABA AG).
- The structure of the ADA/ABA AG parallels that of the industry standard ANSI/ICC A117.1.
- Chapters and elements use the same numbering and images.
- Provisions are in most cases identical. This represents a significant “coming together” of federal and industry standardization efforts, which will be a long term advantage to users of these documents.

Codes, Guidelines, and Universal Design

Federal *Civil Rights* Accessibility Requirements

- The Americans with Disabilities Act
- Independent of building code requirements
- The ADA Standards for Accessible Design (2010), issued and enforced by the US Department of Justice –
- Available online at www.access-board.gov



- The Americans with Disabilities Act is the major Federal civil rights legislation underlying the development of accessibility regulations throughout the US.
- The ADA is Federal civil rights statute, not a building code. It is typically not enforced by building code officials.
- It is enforced through federal courts by US Dept of Justice - usually when a citizen files a complaint or a lawsuit
- Violation of the ADA can result in fines and other actions for both owner and design professionals

Codes, Guidelines, and Universal Design

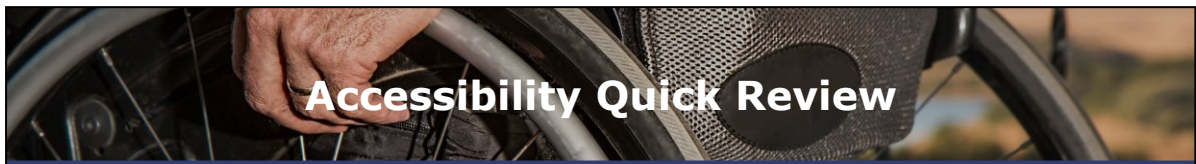
Verify requirements of local authorities

- Code official's authority stems from local and state statute
- Local code official does not enforce civil rights statutes such as the ADA
- Satisfying local code does not necessarily satisfy ADA and vice-versa
- When in doubt, go with the more stringent requirements

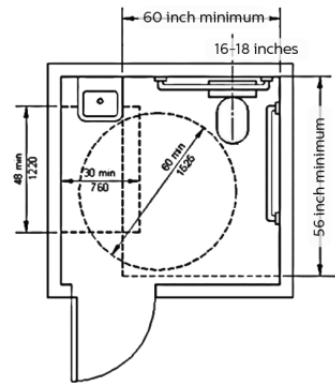
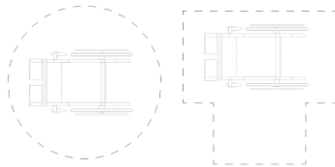


The design professional should proceed with care when working in a new code jurisdiction. Always verify!

1. Don't assume that meeting the ADA means you have met all accessibility requirements. Verify local code requirements as well, both the model code and state or local amendments.
2. Likewise, don't assume that if you have met the local code requirements that you have also met the requirements of ADA!
3. Most formal complaints and action taken under the ADA have been for gross and persistent violations.

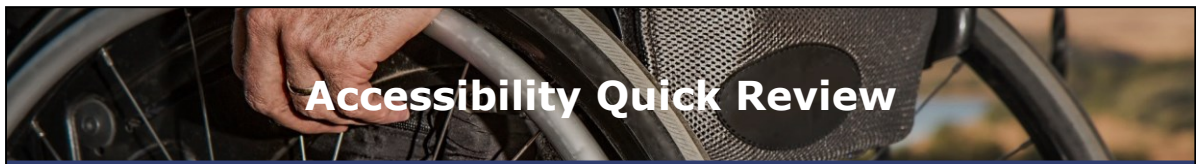


- Turning space is 60" diameter. The space can include knee and toe clearances.
- Door may swing into wheelchair turning space
- Door may not swing into required clear space for any fixture



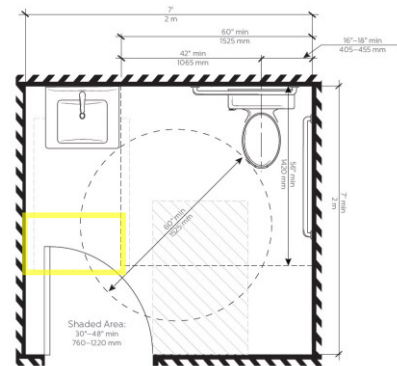
We're now going to walk through a quick review of ADA/ABA AG that affect toilet room design:

1. A turning space is required if a person can wheel inside a space and close the door behind them.
2. This prevents them from getting trapped inside the space.
3. A Wheel chair utilizes a 30" x 48" floor space. Therefore, any space that is larger than that would permit full entry, thus requiring a turning space.
4. The increased use of larger wheelchairs and scooters means that larger maneuvering spaces should be considered when designing public restrooms.
5. An alternative 60 by 60 inch T-shaped turning space with 36 inch wide aisles is acceptable in some circumstances (but not in toilet rooms).
6. A door may not swing into a required clear floor or ground space at a fixture. However, an exception is made in single occupancy toilet rooms as we'll see on the next slide.



Single occupant room

- Center line of water closet must be 16-18" from wall
- Door may swing into clear floor space
- 60" turning space required



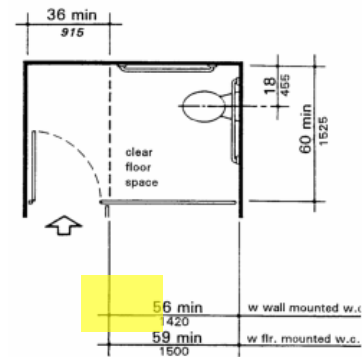
Single occupant room should allow for a user to enter the room and maneuver to all fixtures from a wheelchair.

- Center line of the Water closet is mounted at 16-18" from the wall.
- This distance ensures that grab bars can be effectively used to maneuver one's self as needed.
- A lavatory fixture next to the water closet cannot encroach onto the clear floor area of the accessible water closet, but the clear floor area of the lavatory can.
- This is because the lavatory fixture itself can be an obstruction and could make it difficult to transfer onto the water closet.
- The clear floor area of the fixtures can overlap each other, therefore those are allowed to be shared by both fixtures.
- In other wheelchair accessible stalls, the doors shall not swing into the clear floor space or clearances required for any fixture.
- However, in a single occupant room, if a clear floor space of 30 x 48 is provided within the room beyond the arc of the door swing, (like that outlined in yellow) doors can swing into the clear floor space or clearance required for any fixture.
- This allows the wheelchair user adequate room to maneuver out of the path of the door.

Accessibility Quick Review

Wheelchair accessible Compartment

- Water closet centerline is 16" - 18"
- Flush activator on the wide side of the water closet for easy access
- Door can not swing into required clear floor or ground space



1. The wheelchair accessible compartment is usually at the end of a bank of compartments in an alcove.
2. Clear floor space is slightly different depending on the type of water closet installed. (60" x 56" or 59")
3. Ensure the flush activator is installed on the open side of the water closet.
4. Designers should consider the issue of gaining access to the cubicle in an emergency.
5. The in-swing door may pose problems, and special hardware such as an emergency spring-loaded stop or lift up on the door panel to provide access.

Accessibility Quick Review

Ambulatory Compartment

- Width is 35"-37"
- Water closet center line is 17-19"
- Vertical grab bars required by ANSI/ICC

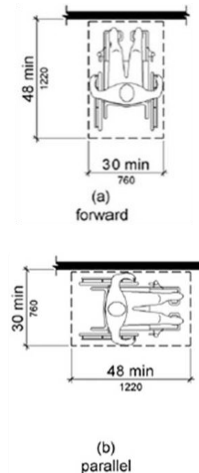


1. An Ambulatory stall is required where 6 or more stalls or combination of stalls and urinals are installed.
2. These are designed slightly narrower so that a person can reach both grab bars to assist them.
3. Notice the VERTICAL GRAB BARS in this photo - An 18" vertical grab bar is required by ICC/ANSI in all accessible compartments.
4. Remember, ANSI/ICC is a standard and adopted into building codes. They tend to pass things that enlarge the standard.
5. Providing a vertical grab bar is really more useful for the elderly and ADA does not consider the elderly to be disabled.
6. So far the vertical grab bar has not been incorporated into ADA.
7. ANSI/ICC also updates the standard regularly which ADA does not so you'll see more changes in ANSI more often than ADA.

Accessibility Quick Review

Clear Floor Space

- To approach and use fixture or accessory, wheelchair user needs clear floor or ground space of 30 inches wide by 48 inches deep
- Accessible urinals, lavatories, and accessories require clear floor space



1. Clear floor space may be forward or parallel approach.
2. When centered in a front approach to the accessory, right or left hand access is possible.
3. A portion of the clear floor space may be located under fixtures or accessories provided knee and toe clearance is provided.

Accessibility Quick Review

Reach Ranges and Mounting Heights

- Mount toilet accessories with mechanisms and controls between 15 and 48 inches high
- Forward and side reach limited to 48 inches AFF
- Limited requirements for children's use provided



1. Side approach is possible for some fixtures and accessories, but may limit access by persons with lateral reach limitations.
2. Designers should examine fixture and accessory cut sheets to determine height of control mechanisms and dispenser openings.
3. Note the difficulty of a child reaching the soap dispenser, or seeing herself in the mirror.
4. Both handicapped and able-bodied people have difficulty using side-mounted soap dispensers.

Accessibility Quick Review

Reach Ranges and Mounting Heights

- Element may be mounted above fixtures from 20 to 25 inches deep, if reach range height is limited to 44 inches



- Reach ranges differ depending on a front or side approach and as well as obstructed or unobstructed approach.
- Unobstructed reach ranges for front and side approach are 15" to 48" max
- Measurements differ for obstructed side approaches.

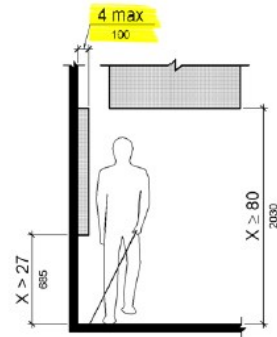
Design Notes

- An obstructed forward range of less than 20" can still have a max height of 48".
- At 20 to 25 inches deep, a reach range of 44 inches applies.
- At over 25 inches deep, accessories must be relocated.

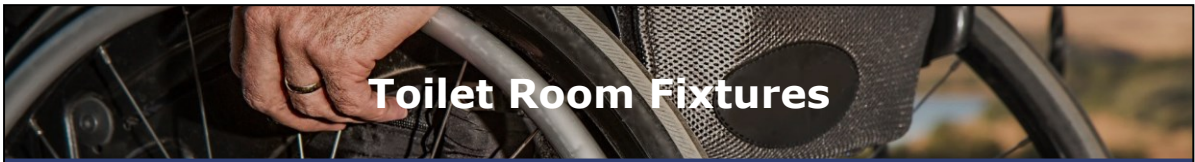
Accessibility Quick Review

Protruding Objects

- Visually impaired persons rely on accessible paths being free of unanticipated hazards



1. Originally formulated to protect visually impaired users, limits on protruding objects help protect all users from injury.
2. Protruding clearances apply at the wall and above the person.
3. Specifying recessed accessories will keep the pathway clear.



Toilet Room Fixtures

Water Closets

- Seat heights of 17-19 inches in all national standards.
- Flush valve location is a frequent accessibility error – it must be on approach side of water closet *not* next to the wall.
- Top Flush valve button is acceptable so visitor can manual flush from wheelchair and remains clear of grab bar.



- The Height of Water Closet seat for adults is 17” – 19” above finished floor (AFF)
- Flush valve should be on the wide (or open) side of the toilet

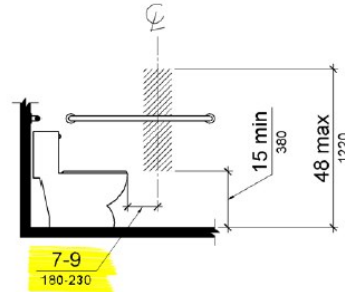
Design Notes

- Location of flush valve on narrow side of compartment is out of reach of user after transferring back to wheelchair
- Review whether local codes or special population needs (such as elderly population) may require non-standard toilet seat height.

Toilet Room Fixtures

Water Closets

- Coordinate grab bar and toilet tissue dispenser locations
- Must have 12" clear space above the grab bar when mounting a dispenser



1. One of the most frequently violated accessibility provision, after entry door pressures, is the location of the toilet tissue dispenser.
2. The shaded area represents point of dispensing, not of the physical body of the unit.
3. Toilet tissue dispenser dimensions are to point of centerline of dispensing.

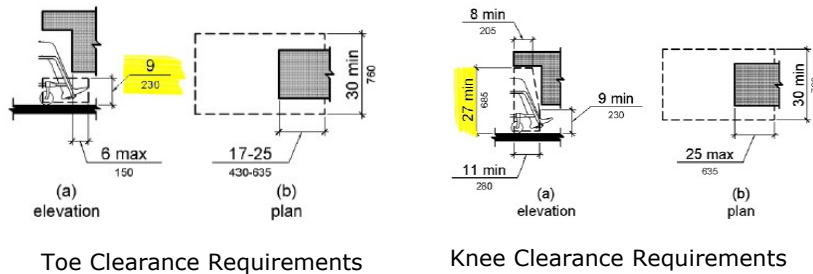
Design Notes

1. Note the ADA mounting height of 15" to 48". ANSI requires an 18" minimum mounting height.
2. However, mounting at 18" also meets the ADA of a 15" minimum.
3. So, even though these requirements are different, they are not in conflict.

Toilet Room Fixtures

Lavatories

- Require 30" x 48" clear floor space
- Mounting height, clear knee and toe space



1. You have to have protection from piping underneath to avoid pipe burns if hot water supplied.
2. No sharp or abrasive surfaces allowed under the lav.
3. Mount lavatories at 34" for adults (measured at front of basin rim or counter height – whichever is higher)
4. Be aware of the proper heights for to achieve compliant knee and toe clearances.
5. Knee and toe clearance dimensions are in our Speaker Notes under Design Notes.

Design Notes

Toe Clearance is 9" and extends 17" (min) to 25" (max) under the lav with a minimum width of 30".

The 6" max indicates the amount of space that can be allowed to be considered 'toe clearance' particularly when a turning space is found partially underneath an element.

When planning a turning space under counters, only 6" max should be designated for the toes.

Space under an element between 9" and 27" (AFF) is considered Knee Clearance. It can extend 25" under the lav – again at 9" AFF. It also has a minimum width of 30"

Where knee clearance is required under an element as part of a clear floor space, the clearance should be 11 deep at 9" AFF and 8" at 27" AFF

Toilet Room Fixtures

Accessible Lavatory controls



▪ Lever



▪ Paddle



▪ Infrared

Faucet controls
require grasping
and twisting – not
accessible!



Accessible Faucet Type Definitions:

1. These various types of lavatory controls make turning the water on and off easy for anyone with a disability.
2. The lever has the advantage of being useful to anyone who needs to use only one hand.
3. The most “Universal Design” control is the Infrared (although it is not intuitive and might need some instruction)
4. Hand operated metering faucets must remain open at least 10 seconds.



Toilet Room Accessories

General Tips on Specifying Toilet Accessories

- Most manufacturers produce several types of each accessory that meet national accessibility requirements
- Not all models meet accessibility requirements!
- Not all models meet specific state or local requirements!
- Fabrication quality varies among manufacturers
 - Compare actual samples before specifying
 - Name approved manufacturers/products to control quality

Here are a few tips when you're writing specifications for toilet accessories:

1. Not all models of all toilet accessories will meet accessibility requirements.
2. Limitations include Reach Range conflicts and added Force to Operate.
3. Consider obtaining actual samples of each accessory from manufacturers to verify quality before naming products.
4. Most specifications utilize named acceptable manufacturers/products.

Design Notes

Where named products not allowed, lowest quality will be submitted.

Quality of manufacturing is sometimes difficult to describe and enforce.

Quality issues include both durability and aesthetics:

Metal quality: alloy, type, thickness, finish quality

Fabrication quality: forming accuracy, welds

Toilet Room Accessories

Grab Bars

- Outside diameter 1 ¼" – 2"
- Circular, oval or rounded rectangle shape
- Mounting height 33" – 36" AFF
- Coordinate with toilet tissue dispenser
- Special local requirements



Commercial/institutional grab bars are typically stainless steel.

1. Grab bars with Circular cross sections can have diameter of between 1 ¼" and 2".
2. Grab bars with Non-circular cross section dimension of 2" max and a perimeter dimension between 4" and 4.8"
3. There must be a 1-½ inch clearance to wall/partition when mounted.
4. 1-1/2" clearance required to mount a protruding object below and a the grab bar.
5. Some municipalities will require vertical grab bars which is an (ICC/ANSI A117.1).

Design Notes

- 1-1/2" clearance required to mount a protruding object below the grab bar and a minimum of 12" if object mounted above the grab bar.
- Finish may be smooth or peened; peened recommended for wet locations.
- It is important to coordinate the selection of the toilet tissue dispenser type and location to avoid interference with grab bar mounting and use.
- Some user populations may be aided by additional length of horizontal bars or by additional vertical bars. Remember meeting ADA is really the MINIMUM design requirement.

Toilet Room Accessories

Mirror Units

- Product Selection
 - Mounting: Fixed, Angle, Adjustable
 - Frame: Channel, Angle, Unframed
 - Glass or stainless steel
- Location: Bottom of reflective surface 40 inch maximum AFF



Accessible Mirror Basics

1. Unframed units are not recommended where subject to abuse.
2. Adjustable Angle Mirrors are not recommended where subject to abuse
3. The Bottom of the Mirror's Reflective Surface must NOT exceed 40" above the finish floor.
4. A Full Length Mirror can become your ADA compliant mirror if you can't meet the 40" requirement.

Design Notes

1. Full length mirrors are also very useful to building users.
2. Quality of silvering and coating is key to avoiding mirror surface deterioration
3. Corrosion-resistant copper-free coatings and double-coat heat-cured coatings protect silvering.
4. Some manufacturers offer extended warranties against deterioration.

Toilet Room Accessories

This is too high



A wheelchair user can't see themselves in this mirror (neither can young children)

Toilet Room Accessories

Toilet tissue dispensers

- Product Selection
- Mounting Type
- Location
- Issues



Here are examples of dispensers that ‘meet’ the Free Roller dispenser requirement:

Remember the 1-1/2” clearance of dispenser from the grab bar.

Design Notes:

Product Selection: Housed or open; single or replacement roll; standard or jumbo size roll

Mounting Type: Dual-side partition; wall surface; wall recessed

Installation Location: Installed within the acceptable Reach Ranges previously highlighted.

Toilet Room Accessories

Exceeds Reach Range



1. This bulk dispenser is convenient for the janitor but out of reach of even able-bodied users.
2. It is mounted too far forward for anyone to comfortably reach.

Toilet Room Accessories

Soap dispensers

- Product Selection
- Location
- Operating Mechanism
- Issues



Accessible Soap Dispensers

1. Locate within the Reach Range and Oriented Toward the User.
2. Ensure the Operating Mechanism meets the Ease of Operation of Less Than 5 pounds of force

Design Notes

- Product Selection: Deck mount; Wall surface mount; Wall recessed mount
- Issues: Durable; Ease of service; Ease of repair

Toilet Room Accessories

Difficult to use by all visitors!



This side-mounted commodity dispenser is difficult to use for able-bodied users and inaccessible from a wheelchair

Toilet Room Accessories

Paper Towel Dispensers

- Product Types
- Location
- Operating Mechanism
- Issues



Accessible Paper Towel Dispensers

1. Locate Within Reach Range and Oriented Toward User
2. Ensure the Operating Mechanism meets the Ease of Operation requirement of Less Than 5 Pounds of Force
3. To meet ADA it can not protrude more than 4" from the wall if located in the circulation routes and access aisles.

Design Notes:

- Product Types: Wall surface; Wall recessed; Combination units
- To meet ADA it can not protrude more than 4" from the wall from 27" wall height to 80" high in the circulation routes and access aisles.
- Issues: Durable; Ease of service; Ease of repair. Adequate towel and waste capacity

Toilet Room Accessories

Waste receptacles

- Product Types
- Location
- Operating Mechanism
- Issues



Accessible Paper Towel Dispensers and Waste:

1. Built-in recessed units prevent blocking accessible path
2. Location: Some health departments dictate location between lavatory and door
3. Units need to meet the ADA requirement of less than 5 lbs of force to operate.
4. People don't like to touch receptacle covers and others' towels with their clean hands; preference for an open waste container

Design Notes:

- Operating Mechanism: Many waste containers do not have an actual operating mechanism, however, some are available with a door or cover that pushes in for you to drop the paper towels into.
- Many sizes available; allow for adequate sized receptacles based on occupancy and frequency of service
- Receptacle only or combination dispenser/receptacle units
- Available as Recessed and semi-recessed mounting;

Toilet Room Accessories

Incorporating Towel Dispensing & Waste into a Single Unit, recessed or semi-recessed will solve this problem.



Health Code Verification:

1. Verify that Local health codes do not dictate locating the paper dispenser adjacent to the toilet room door.

Design Notes

1. This bulk dispenser is doubly inaccessible: too high, no clear approach, and a protruding object as well
2. Note the strong argument for built-in waste receptacles!
3. Local health codes frequently dictate locating the paper dispenser adjacent to the toilet room door which may require added space.

Toilet Room Accessories

Hand Dryers

- Product Types
- Location
- Operating Mechanism
- Issues



Accessible Heated Hand Dryers

1. Ensure wall surface-mounted hand dryers, meet the Protrusion requirement if they are located on the accessible path.
2. Sensor-operated dryers comply with operating mechanism requirements
3. Ensure Dryer is installed to meet Reach Range requirements
4. Ensure Operating Mechanism meets Ease of Operation, Less than 5 pounds of Force for Manual Touch Dryers

Design Notes:

Product Types: Wall surface; Wall recessed

Issues: Adequate performance; durable; ease of service; ease of repair

How Many ADA Violations Can You Find?

The next time the documents say "Accessories by Owner" will your toilet room end up like this?



Next slide has violations tagged.

How Many ADA Violations Can You Find?



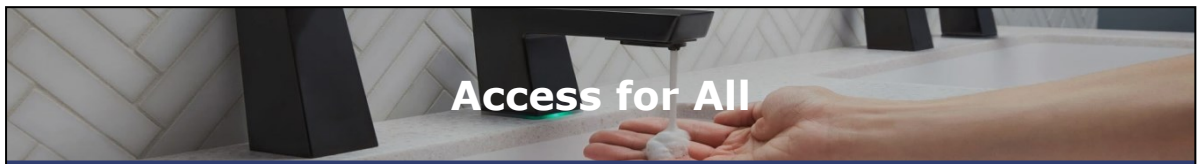
Toilet Room Design

For all toilet rooms, be sure to:

- Specify and locate all accessories
- Apply the principles of universal design
- Provide accessories meeting ADA/ABA AG and ANSI/ICC
- Verify state and local accessibility requirements
- Recess protruding accessories not located in alcoves
- Provide 30 by 48 inch clear floor space at fixtures and accessories



Read the content of this slide



Learning Objective

- Be able to explain the principles of accessibility and universal design

- 1 equitable use.
- 2 flexibility in use.
- 3 simple and intuitive to use.
- 4 perceptible information.
- 5 tolerance for error.
- 6 low physical effort.
- 7 size and space for approach and use.

We reviewed the seven principles of universal design.

We discussed how universal design applies to the issues of accessibility.

We discussed how true accessible design goes beyond regulations.

Access for All

Learning Objective

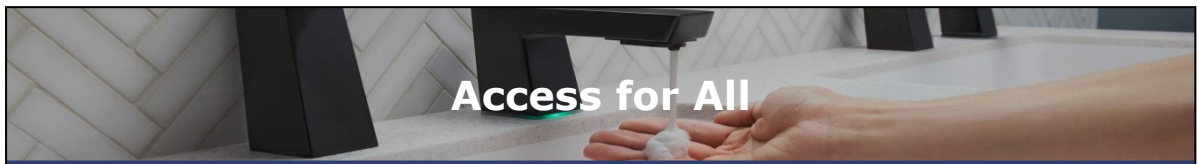
- Apply regulations governing accessibility in the toilet room



We reviewed the Federal, state, and local sources of accessibility regulations governing the design of toilet rooms.

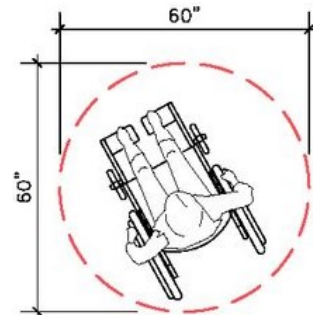
We discussed the relationships, and evolving coordination, between these different regulations.

We provided sources for additional information for these regulations.



Learning Objective

- Apply accessible design to toilet room components



We discussed the elements of accessibility within the toilet room, including:

Accessible route

Wheelchair turning space

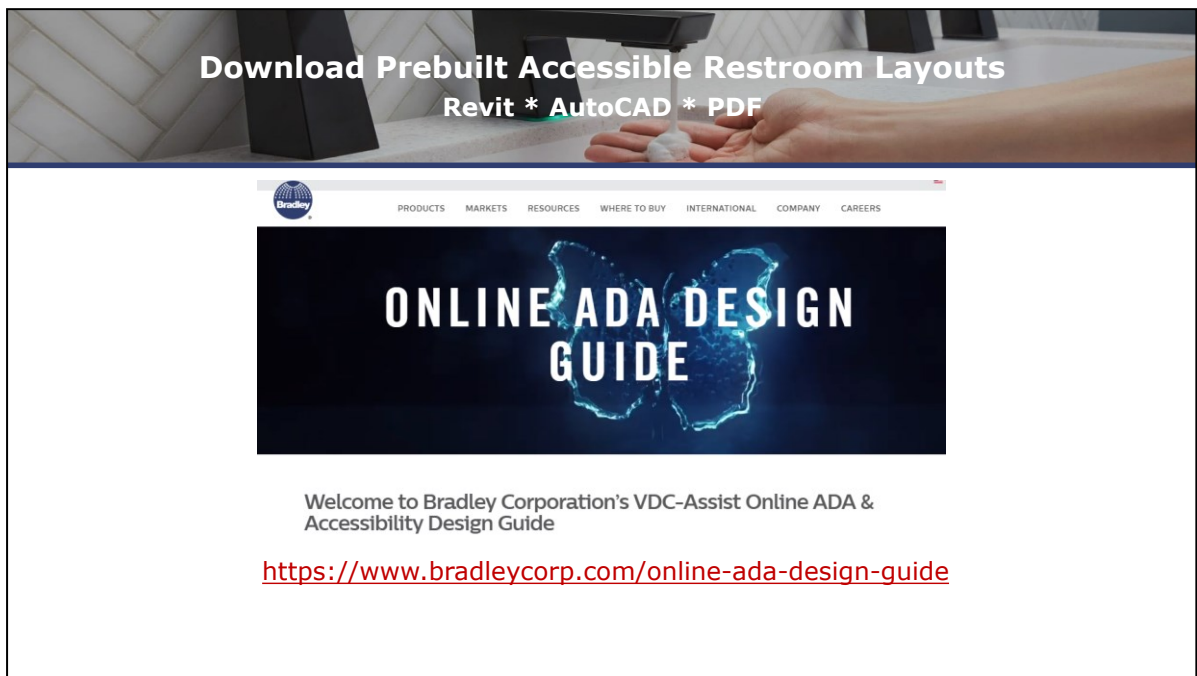
Clear floor space for wheelchairs

Reach ranges

Protruding objects



That concludes the end of our presentation lets take a few minutes to answer some questions.

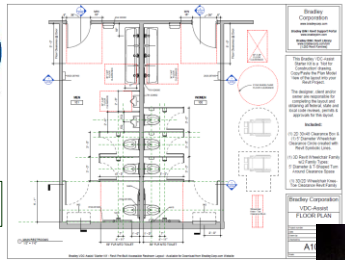


Bradley Corporation's VDC-Assist Online ADA & Accessibility Design Guide launched in May 2019.

30+ Prebuilt Accessible Restroom Layouts Revit\AutoCAD

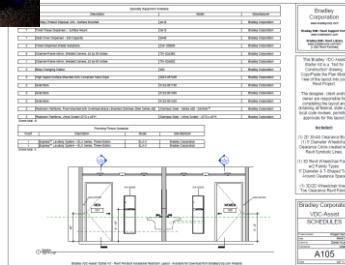
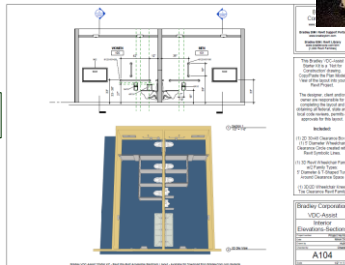


1



2

3



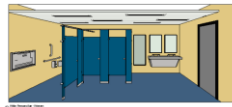
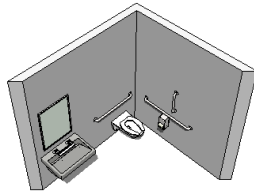
4

This is displaying the Revit Model and the PDF Preview that can be downloaded.

Plans, elevations, 3D Views and Revit Plumbing & Washroom Accessory Schedules.

ADA Clearances are displayed in RED dashed lines

4 Layout Configurations | Individual | Men\Women



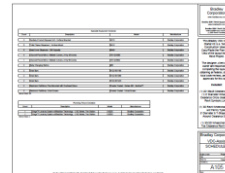
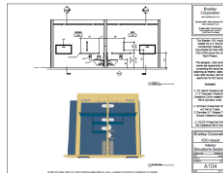
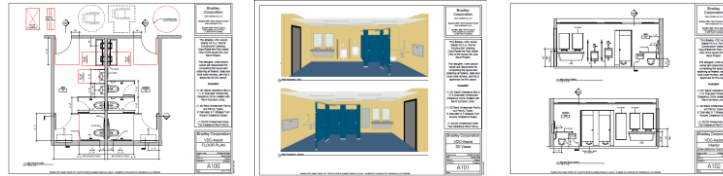
1 Individual Restroom and 3 Multi-Occupancy Men\Women Restrooms

The 4 Layout Configurations represent 1 Individual Restroom and 3 Multi-Occupancy Men\Women Restroom

Online ADA Design Guide

<https://www.bradleycorp.com/online-ada-design-guide>

All Layouts have a PDF Preview Document Set; that provides
Plans, Sections, Elevations, 3D Views, Plumbing & Accessory Schedules



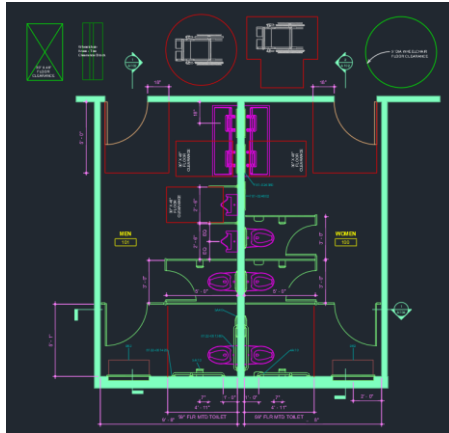
**Fully Dimensioned Plan View, 3D Sections of Men & Women Restroom,
Sections with dimensioned installed heights, 3D Birdseye View of
Restroom and Accessory & Plumbing Fixture Schedule.**

Online ADA Design Guide

<https://www.bradleycorp.com/online-ada-design-guide>



Bradley Lavatory Sinks: LVQ2, LD5010-2, AV-60, LVL2, LVA2, LVG2, LVR2, LVS2, ELX2



All Layouts are provided in AutoCAD file format with clearance dimensions for an easy copy/paste into designers' AutoCAD Projects.

Download Plan & Interior Elevation Views for both Men\Women Restrooms as separate drawing files.



All Layouts are provided in AutoCAD file format with clearance dimensions for insertion into designers' AutoCAD Projects.

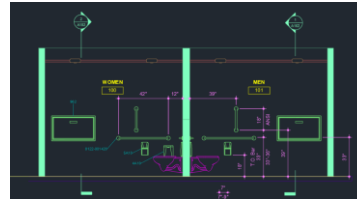
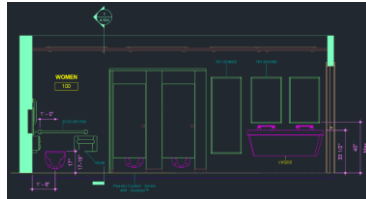
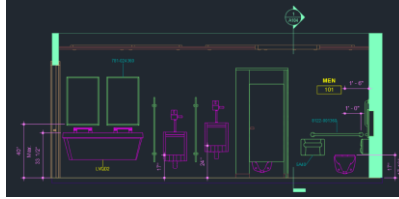
Download Plan & Interior Elevation Views for both Men\Women Restrooms as separate drawing files.

Online ADA Design Guide

<https://www.bradleycorp.com/online-ada-design-guide>



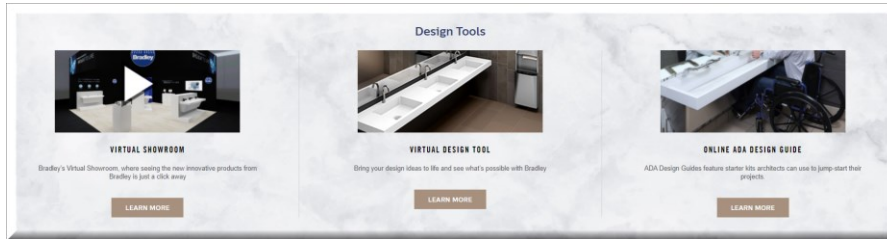
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Bradley VDC-Assist Virtual Design & Construction Assistance



- <https://www.bradleycorp.com/virtual-showroom>
- <https://www.bradleycorp.com/virtual-design-tool>
- <https://www.bradleycorp.com/online-ada-design-guide>

Bradley VDC-Assist Virtual Design & Construction Assistance



Bradley AR Experience

<https://www.bradleycorp.com/bradley-ar-experience>

Bradley's AR Experience is your way to visualize innovative faucet/soap combinations within your existing spaces. See how WashBar Technology or the New Verge Soap and Faucet Combinations will look in within your next project.

Features include:

- Visualize Bradley products within your space
- Choose between deck-mounted faucet/soap or a full handwashing system
- Choose your favorite faucet/soap combination and finish
- Capture a photo of your space and share via email



Bradley for Universal Design Guidance

- Merge the needs of ADA and Bariatric into one Universal Design
- Bradley offers a Bariatric line of Shower Seats and Grab Bars
- Bariatric Product Page for more design information:
<https://www.bradleycorp.com/steadycare-solutions>
- Literature on Bariatric Products:
https://www.bradleycorp.com/mediamanager/view/21383/4288_SteadyCare_Brochure.pdf



Shower Seat 9591
Shower Seat 9562



Grab Bar 852/857 *
Grab Bar 832/837 *



Grab Bar 812
Grab Bar 817



Shower Seat 957/9571
Shower Seat 958



Grab Bar 8320-106360 *
Grab Bar 8320-106420 *

Specifiers, designers and owners are working hard to make people of size feel welcome and safe in their surrounding, not only in the healthcare industry but in many other applications with a variety of user needs.

Using heavy-duty, third-party rated products will bring peace of mind and user satisfaction.

The Benefits of Bradley's Bariatric Products are as follows:

1. Best in class bariatric program.
2. Grab bars and shower seats with industry leading load rating.
3. Save time by specifying one grab bar or shower seat for all needs.
4. Provide stability in the restroom with coordinating products.
5. Eliminate job site confusion as to which products get installed where.
6. Wide selection of configurations available.

Bradley VDC-Assist Virtual Design & Construction Assistance



<https://www.bradleycorp.com/online-ada-design-guide>