



Housing For Everyone

Promoting Universal and Inclusive Design in Residential Environments

2016 AIMHO Annual Conference // Shifting Perspectives // Boulder, Colorado



Agenda

Introduction

Understanding
the Law

Concepts and
Strategies

Avoiding
Common Mistakes

Name That Barrier!

Lessons Learned

Questions



Presenters

Patrick "PC" Call **Executive Director**

Housing & Residential Education
University of Denver

**26 years of housing and
residence hall life experience**

Built over 3,500 beds on 3 campuses

Former experience:
University of Wyoming,
University of New Mexico,
University of Arizona

Kurt Haapala AIA LEED AP **Partner**

Mahlum Architects
Portland, Oregon & Seattle, Washington

22 years of architectural experience

**Developed over 15,000 beds on over 28 university &
college campuses**

**Frequent speaker and author on issues of student housing
design and student success**

**First LEED Platinum Residence Hall in the Nation
(Ackerman Hall at Western Oregon University)**



UNIVERSITY of
DENVER

**The oldest, independent
university in the Rocky
Mountain Region**

**Classified by the
Carnegie Foundation as
a research university**

**Rated 64th in the
country for best value
among private
universities (Kiplinger's
Personal Finance
magazine, 2015)**

11,796 students

**One faculty member to
every 11 students**

**701 full-time faculty
members (90% with
highest degree possible
in their field)**



mahlum

Founded in 1938

**Offices in Seattle
and Portland**

70 professional staff

**Leaders in sustainable
and environmental
responsive design**

**15,000+ student beds
on over 35 University
and College campuses**

**Industry leader in the
planning and design of
student housing
facilities**

**Committed to creating
healthy and enduring
communities to
support the lives of
future generations**



mahlum

University of North Dakota
 University of Wyoming
 University of Idaho
 University of San Diego
 San Diego State University
 University of California, Davis
 University of California, Merced
 University of Washington
 Washington State University

Central Washington University
 Eastern Washington University
 Western Washington University
 The Evergreen State College
 Seattle University
 University of Puget Sound
 Cornish College of Arts
 University of Oregon
 Oregon State University

Portland State University
 Western Oregon University
 Southern Oregon University
 Oregon Institute of Technology
 Pacific University
 Lewis & Clark College
 Linfield College
 Reed College
 Willamette University



Understanding the Law

Civil Rights, Codes & Regulations

**Uniform
Federal
Accessibility
Standards
(1968)**

**Title IX
(1972)

Section 504
of the
Rehabilitation
Act (1973)**

**Fair Housing
Act (1968)

Americans
with
Disabilities
Act (1990)**





Uniform Federal Accessibility Standards (1968)

Developed under the 1968 Architectural Barrier Act (ABA) for facilities designed, built or altered with federal funds.

Adopted by the GSA, DOD, USPS and HUD.

Sets accessibility standards for federal and federally funded housing facilities.

**"INJUSTICE ANYWHERE IS A THREAT
TO JUSTICE EVERYWHERE."**
Martin Luther King, Jr.





**"INJUSTICE ANYWHERE IS A THREAT
TO JUSTICE EVERYWHERE."**
Martin Luther King, Jr.

Section 504 of the Rehabilitation Act (1973)

Bans discrimination
on the basis of
disability by
recipients of
Federal funds.

Applies to any
institution, **private
or public**, that has
students and/or
receives any
federal funds.

This civil rights
statute is the
first time people
with disabilities
were seen as a
minority class.

**WE
DEMAND
DECENT
HOUSING
NOW!**

**WE
DEMAND
AN FEPC
LAW
NOW!**

**WOMEN'S DAY IN
WASHINGTON
MAY 1945
FOR WOMEN'S
EQUALITY**





Fair Housing Act (1968)

Outlawed refusal to sell or rent to any person because of race, color, religion, sex, national origin or disability.

Covers multi-family housing of four units or more (including university and collegiate housing).

Law is enforced through HUD.





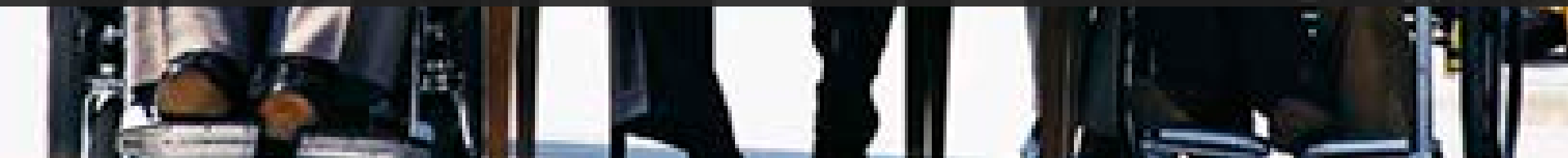


Americans with Disabilities Act – ADA (1990)

Prohibits discrimination and ensures equal opportunity for persons with disabilities in employment, state and local government services, public accommodations, commercial facilities, and transportation.

Mandates establishment of TDD/telephone relay services.

Law is enforced through the US Department of Justice.





Why Brandi Chastain and the U.S. Women's
Soccer Team Were Unbeatable

JULY 18, 1999
www.essl.com



Title IX (1972)

Prohibits discrimination on the basis of sex in education programs and activities.



All public and private elementary and secondary schools, school districts, **colleges and universities** receiving any federal funds must comply with Title IX.

Discrimination on the basis of sex can include: sexual harassment or sexual violence, such as rape, sexual assault, sexual battery and sexual coercion.



Why Brandi Chastain and the U.S. Women's Soccer Team Were Unbeatable



NOT ALONE

The First Report of the White House Task Force to
Protect Students From Sexual Assault

April 2014





Title IX (2014 Update)

B. Students Protected
by Title IX

B-1. Does Title IX
protect all students
from sexual violence?

Title IX protects **ALL STUDENTS** at recipient institutions from sex discrimination, including sexual violence. Any student can experience sexual violence: from elementary to professional school; male and female; straight, gay, lesbian, bisexual and transgender; part-time and full-time; with and without disabilities; and different races and national origins.

A wide, multi-level concrete staircase with a metal handrail, set against a backdrop of a building and greenery. The stairs are made of light-colored concrete and are arranged in a series of steps that lead up from a paved area at the bottom to a higher level. A black metal handrail runs along the right side of the stairs. In the background, there is a concrete wall and some green foliage on the left side.

Concepts and Strategies

...to implement equity and inclusion



Concepts and Strategies

...to Implement Equity and Inclusion

Overlapping Strategies

Gender Equity

Cultural Equity

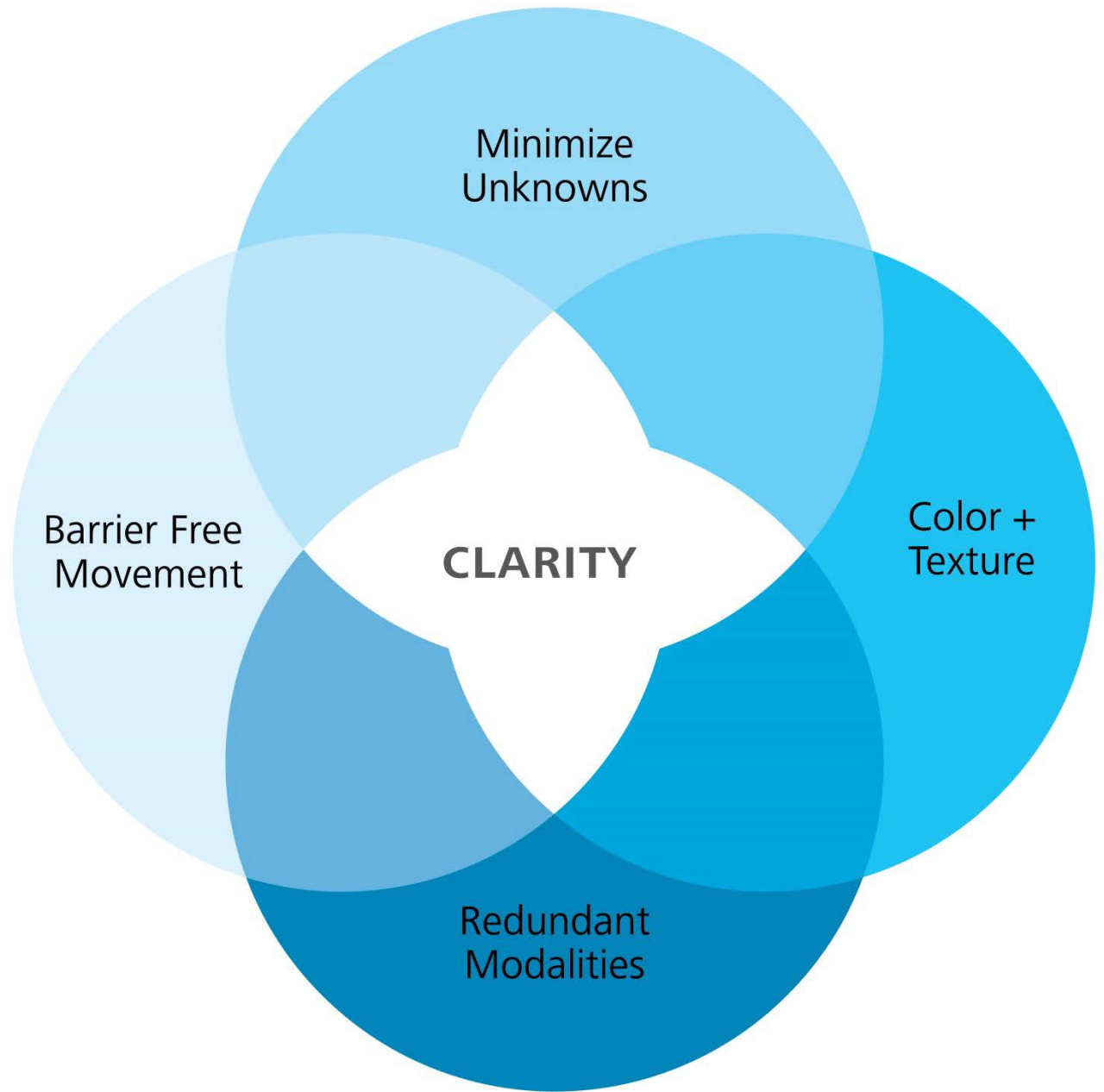
Universal Design

Deaf Space

Full Spectrum Housing

**OVERLAPPING
STRATEGIES**

Ambulatory
Visual
Hearing
Cognitive
Mental Health
Support Animals



**OVERLAPPING
STRATEGIES**

Ambulatory

Clearance / approach

Reach range

Travel distance

Clear, equitable
movement

Transitions &
crossing paths





**OVERLAPPING
STRATEGIES**

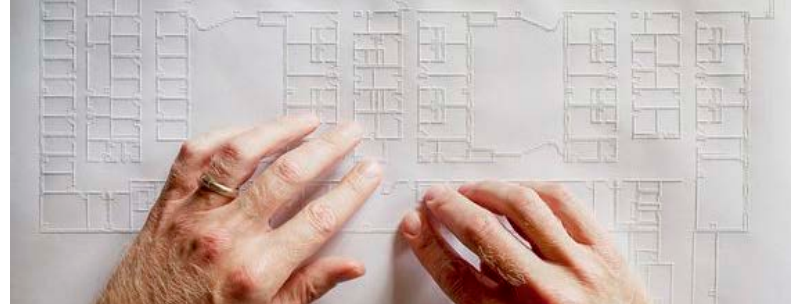
Visual

Textural cues

Auditory clarity

Reduced glare

Continuous
travel paths





OVERLAPPING STRATEGIES

Hearing

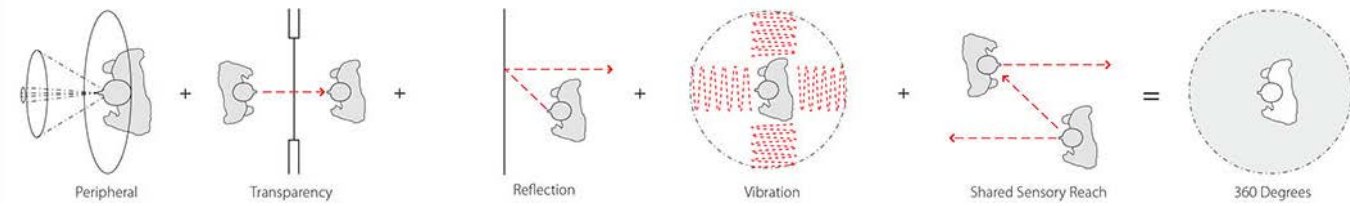
Transparency

Visual contrast

Reduce glare

Space for signing

Vibration generation



VISUAL RANGE



WALKWAYS



GROUP SPACE





**OVERLAPPING
STRATEGIES**

Cognitive Mental Health

Being away / unplug

Understandable flow

Fascinate / hold
attention

Compatibility of
function





**OVERLAPPING
STRATEGIES**

Autism Spectrum

Order and
predictability

Reduce visual clutter

Acoustic sensitivity

Material durability

Sensory sensitivity





**OVERLAPPING
STRATEGIES**

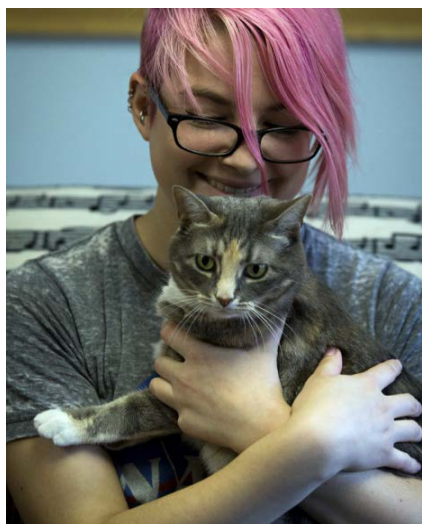
Support Animals

Access to outdoors

Wash stations

Ventilation/filtration

Appropriate finishes





Dont Let
Cat
OUT! 😊
thanks



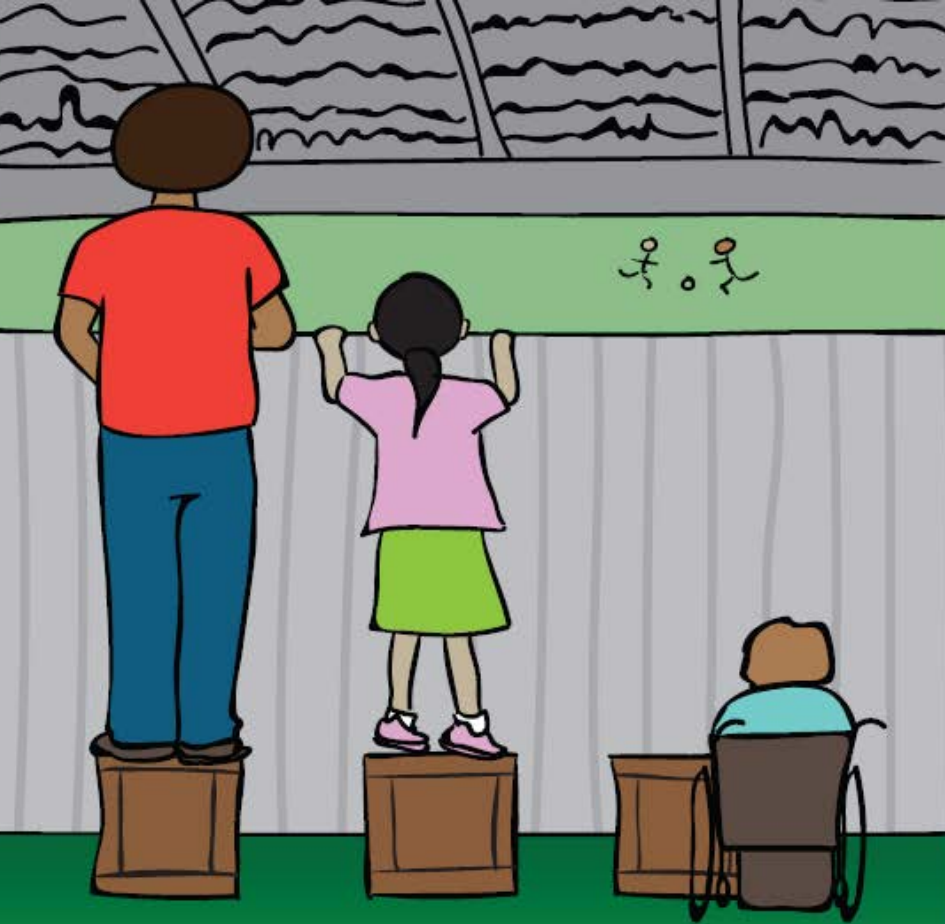
MISSING PET
SNAKE!!!!

****HUGE REWARD****

LAST SEEN SATURDAY
NOVEMBER 5th at 7pm in the co op
(please contact KLC Radio if you find the snake)

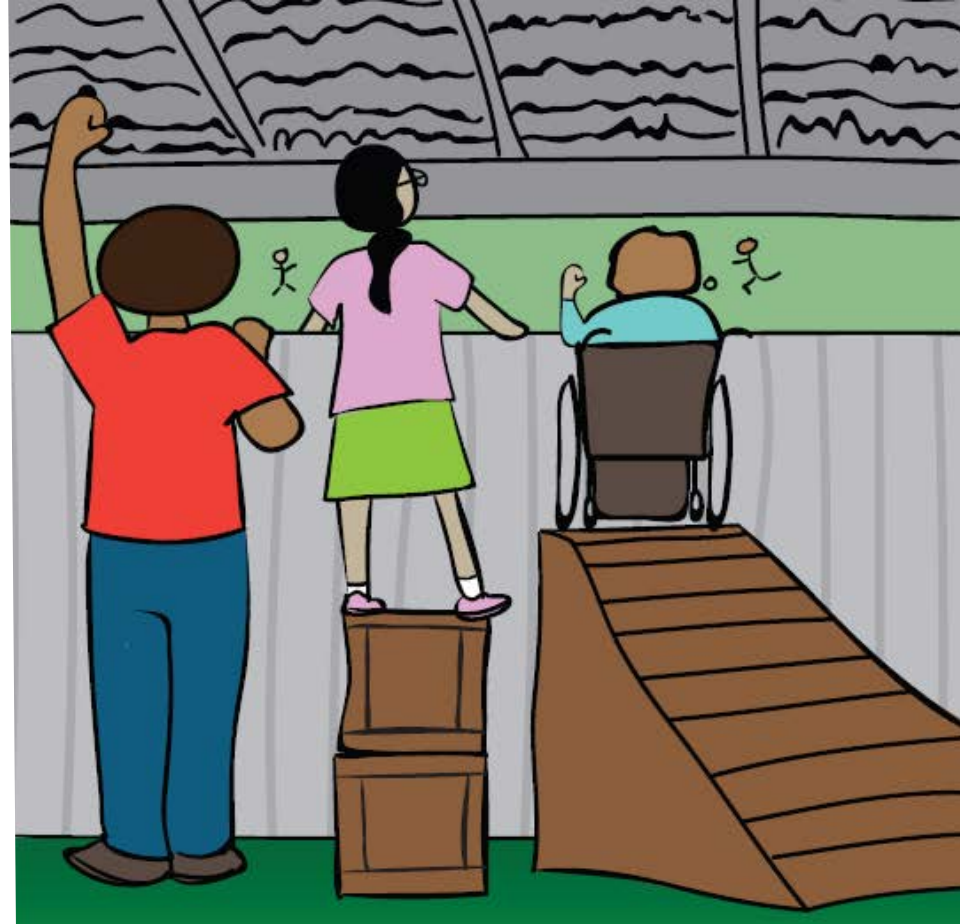


With
**CAUTION CROW / LORD
BROCKTREE / FAMSMARY**



Equality = Sameness

Giving everyone the same thing.
It only works if everyone starts
from the same place.



Equity = Fairness

We must ensure equity
before we can enjoy equality.



Gender Equity

The process of allocating resources, programs and decision-making fairly to both males and females without discrimination on the basis of sex... and addressing any imbalances in the benefits available to males and females.

Considerations:

Perceptions

Signage
conventions

Safety & security

Enhanced levels
of privacy

Hygiene

Acoustics

Plumbing code
implications

Accessibility (ADA) code
implications

University of Oregon

Residential Learning Center



University of Oregon

Residential Learning Center, Gender Inclusive Restroom



University of Oregon

Residential Learning Center, Gender Inclusive Restroom





Cultural Equity

To ensure that all people have the right to inherit and develop their intellectual, emotional, material and spiritual traditions.

Considerations:

English proficiencies

Culture shock /
depression

Religious support

Food culture

24/7 Technologies

Signage /
communication

Oregon State University

International Live-Learn (INTO)









Universal Design

Design standards that
“go beyond the minimums.”

Seven Principles:

Equitable use

Flexibility in use

Simple and intuitive use

Perceptible information

Tolerance for error

Low physical effort

Size and space for
approach and use

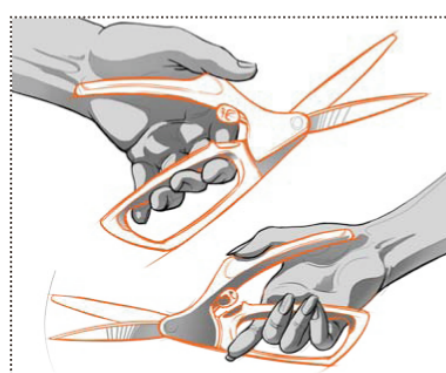
The Principles of Universal Design



Equitable Use

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

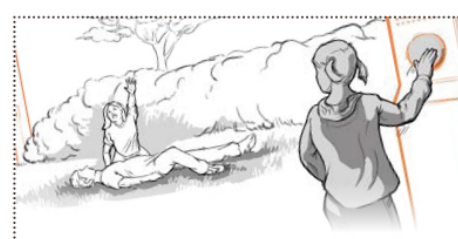
- 1a. Provide the same means of use for all users: identical whenever possible; equivalent when not.
- 1b. Avoid segregating or stigmatizing any users.
- 1c. Provisions for privacy, security, and safety should be equally available to all users.
- 1d. Make the design appealing to all users.



Flexibility in Use

The design accommodates a wide range of individual preferences and abilities.

- 2a. Provide choice in methods of use.
- 2b. Accommodate right- or left-handed access and use.
- 2c. Facilitate the user's accuracy and precision.
- 2d. Provide adaptability to the user's pace.



Simple and Intuitive Use

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

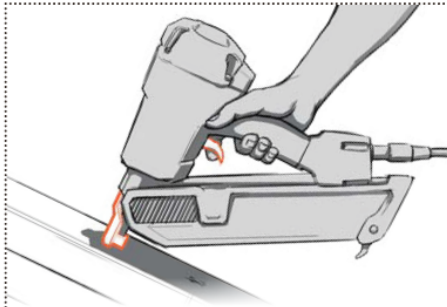
- 3a. Eliminate unnecessary complexity.
- 3b. Be consistent with user expectations and intuition.
- 3c. Accommodate a wide range of literacy and language skills.
- 3d. Arrange information consistent with its importance.
- 3e. Provide effective prompting and feedback during and after task completion.



Perceptible Information

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

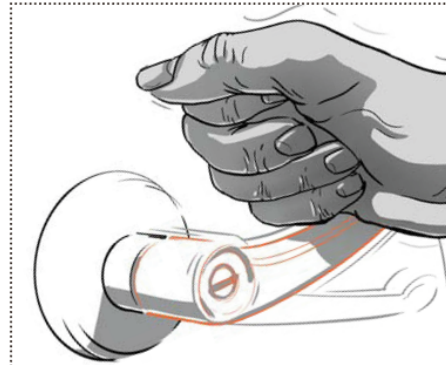
- 4a. Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
- 4b. Provide adequate contrast between essential information and its surroundings.
- 4c. Maximize "legibility" of essential information.
- 4d. Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).
- 4e. Provide compatibility with a variety of techniques or devices used by people with sensory limitations.



Tolerance for Error

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

- 5a. Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.
- 5b. Provide warnings of hazards and errors.
- 5c. Provide fail safe features.
- 5d. Discourage unconscious action in tasks that require vigilance.



Low Physical Effort

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

- 6a. Allow user to maintain a neutral body position.
- 6b. Use reasonable operating forces.
- 6c. Minimize repetitive actions.
- 6d. Minimize sustained physical effort.



Size and Space for Approach and Use

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

- 7a. Provide a clear line of sight to important elements for any seated or standing user.
- 7b. Make reach to all components comfortable for any seated or standing user.
- 7c. Accommodate variations in hand and grip size.
- 7d. Provide adequate space for the use of assistive devices or personal assistance.



Learn more: <http://romarchitecture.com/work/>



Learn more: <http://romarchitecture.com/work/>



Learn more: <http://romarchitecture.com/work/>





Deaf Space

To guide and inspire the design of environments that are completely responsive to, and expressive of, their unique ways of being.

Design Guidelines:

Space & proximity

Sensory reach

Mobility & proximity

Light & color

Acoustics &
Electromagnetic
Impulse (EMI)

Campus Design and Planning

- ▀ [Services](#)
- ▀ [DeafSpace](#)
- ▀ [Projects](#)
- ▀ [Construction Updates](#)
- ▀ [2012 Facilities Master Plan](#)
- ▀ [2022 Campus Plan](#)
- ▀ [Vendor Information](#)
- ▀ [Contact Us](#)



Article on
[Deaf Space](#)
Gallaudet
Today
Alumni
Magazine

Spring 2007

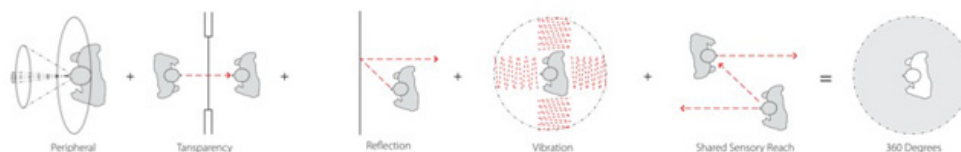
Contact Information

Director: Hansel Bauman
Contact: Derrick Behm
College Hall 303

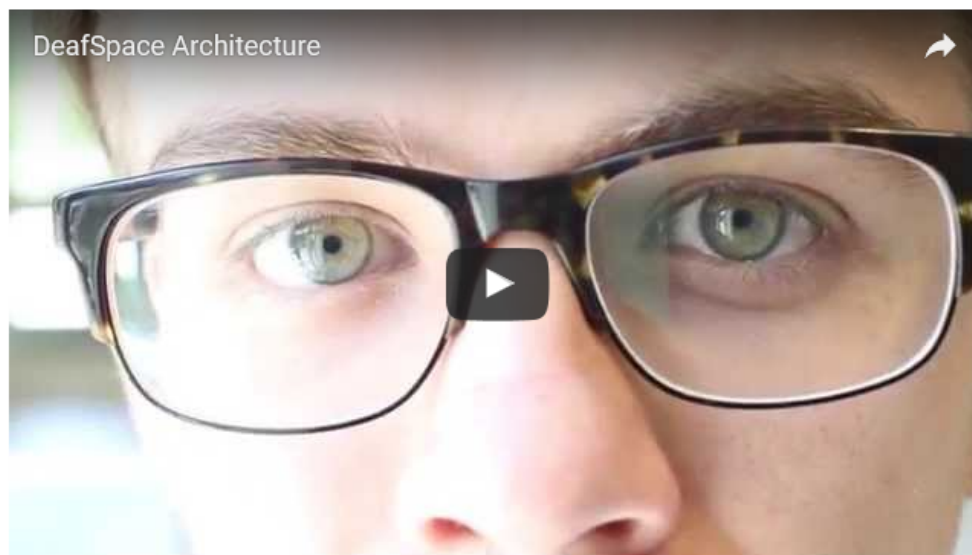
VP : 202-568-8760

[Email](#)

[Home](#) > [Campus Design](#) > [DeafSpace](#)



What is DeafSpace?



Deaf people inhabit a rich sensory world where vision and touch are a primary means of spatial awareness and orientation. Many use sign language, a visual-kinetic mode of communication and maintain a strong cultural identity built around these sensibilities and shared life experiences. Our built environment, largely constructed by and for hearing individuals, presents a variety of surprising challenges to which deaf people have responded with a particular way of altering their surroundings to fit their unique ways-of-being. This approach is often referred to as DeafSpace.

Gallaudet University

Residence Hall





Images: Gallaudet University Residence Hall by LTL Architects

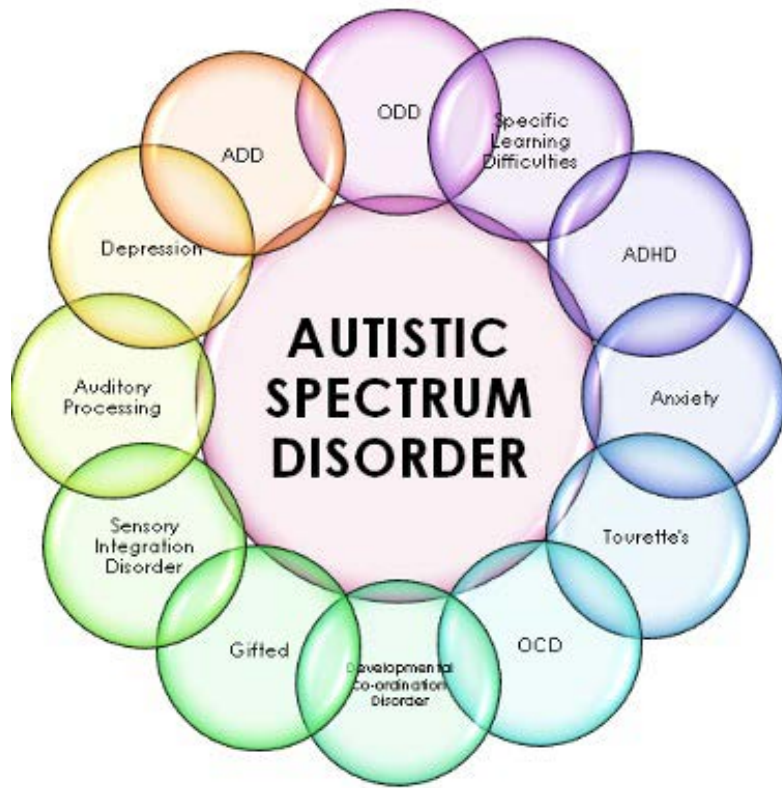


Image: Sweetwater Spectrum Housing by Leddy Maytum Stacy Architects

Full Spectrum Housing

Design standards that "go beyond the minimums"

Learn more:
<https://sustainability.asu.edu/stardust-new/project-archive/advancing-full-spectrum-housing/>

Eight Principles:

Ensure safety and security

Maximize familiarity, stability and clarity

Minimize sensory overload

Provide adequate choice and independence

Foster health & wellness

Enhance one's dignity

Allow opportunities for controlling social interaction & privacy

Ensure accessibility and support in the surrounding neighborhood

ADVANCING FULL SPECTRUM HOUSING

Designing for Adults with Autism Spectrum Disorders

BEDROOMS

Individual bedrooms with en-suite bathrooms, adequate storage, and a desk provide residents with privacy and dignity.



CHOICE & INDEPENDENCE

- Include a desk area with task lighting.
- Closets should be internally lit and outfitted with a built-in organization system to assist residents with their daily dressing and grooming tasks.



HEALTH & WELLNESS

- Each bedroom should have individual climate control and a ventilation fan.



DIGNITY

- Residents should have their own bedrooms with en-suite accessible bathrooms for privacy and dignity.



Bedroom storage

MATERIALS AND RESOURCES

See "Materials" and "Appliances & Fixtures" section for more information.

SENSORY ROOMS

Providing a separate room that allows residents to control the atmosphere leads to decreased stress and anxiety.



SENSORY SENSITIVITY

- A room that allows residents to modify the sensory inputs such as lighting and music helps people with autism relax, process the larger environment, and modify behaviors.
- Sensory rooms should be painted white or soft colors to produce a calming effect.
- Texture can be introduced for added sensory engagement.
- The room should have a defined sense of enclosure, to promote feelings of safety and security for the residents.
- The room should be designed to be acoustically contained: do not allow outside noises in and prevent noise from within from escaping.
- Snoezelen Rooms (Dutch for "sniff" and "doze") are an established sensory room model that can be referenced.



Snoezelen sensory room

MATERIALS AND RESOURCES

Snoezelen rooms: http://www.worldwidesnoezelen.com/component/option.com_frontpage/Itemid,1/
Image above is a file from the Wikimedia Commons, made available by Ciell at <http://en.wikipedia.org/wiki/File:Snoezelruimte.JPG>. This file is licensed under the Creative Commons Attribution ShareAlike 2.5, info at <http://creativecommons.org/licenses/by-sa/2.5/>.

ADVANCING FULL SPECTRUM HOUSING

Designing for Adults with Autism Spectrum Disorders

BATHROOMS

At least one bathroom per unit should be fully accessible to accommodate residents with varying levels of mobility.



SAFETY & SECURITY

- Install nonslip tile flooring.



HEALTH & WELLNESS

- In units with multiple residents, there should be one or more bathrooms for general use.
- In multistory units include a main floor bathroom for accessibility.
- Bathrooms should have ample room for staff to assist residents.
- Sinks should be wall hung for accessibility.
- Grab bars should be installed by the toilet and in the shower and bath.



DURABILITY

- Toilets should have concealed cisterns and use a push panel flush system for durability and ease of use.
- Install tile or waterproof panels on all walls to minimize possible water damage.



Wall-mounted sink

MATERIALS AND RESOURCES

See "Materials" and "Appliances & Fixtures" section for more information

LAUNDRY ROOM

Each unit should include a bright laundry room with a large folding area and accessible appliances.



FAMILIARITY & CLARITY

- Include ample counter space to accommodate sorting, stain prep, and folding.
- Provide storage for laundry supplies.



SENSORY SENSITIVITY

- Provide adequate ventilation through inclusion of operable windows and ducted fans.
- Provide adequate acoustic insulation to contain noise.



HEALTH & WELLNESS

- Include a laundry sink or commercial hopper to contend with heavily soiled items.
- Install frontload washers and dryers for ease of accessibility; if necessary, raise the appliances to accommodate wheelchair riders.



Laundry room with storage and folding area



DURABILITY

- Install a floor drain to accommodate spills.
- Flooring should be a continuous, durable surface.

MATERIALS AND RESOURCES

Information on accessible washers & dryers: <http://www.afb.org/afbpress/Pub.asp?DocID=aw080303>
Shake absorber pads for washing machines: http://www.kellettent.com/vib_isol.html



Images: Sweetwater Spectrum Housing by Leddy Maytum Stacy Architects

A photograph of a public restroom with three stalls. Each stall has a white urinal mounted on the wall and a white toilet. The stalls are separated by dark grey partitions. The floor is made of light-colored square tiles. The image is dimly lit, with the primary light source being the urinals, which have a small light on top. The text is overlaid on the center of the image.

Avoiding Common Mistakes

Top 10 Design and Operational Challenges

Avoiding Common Mistakes

Top 10 Design and Operational Challenges

Design Challenges

- Bathroom & Shower Configurations
- Entrances (Door & Thresholds)
- Slopes & Cross-slopes
- Reach Ranges
- Data & Electrical Outlets/Switches

Operational Challenges

- Floor Materials & Transitions
- Signage & Way finding
- Toilet Accessories (location & heights)
- Protruding Objects & Obstructions
- Maintaining Path of Travel, Including Furnishings



Avoiding Common Mistakes

Top 10 Design and Operational Challenges

Design Challenges

Bathroom & Shower
Configurations

Entrances (Door & Thresholds)

Slopes & Cross-slopes

Reach Ranges

Data & Electrical Outlets/Switches

**DESIGN
CHALLENGE**

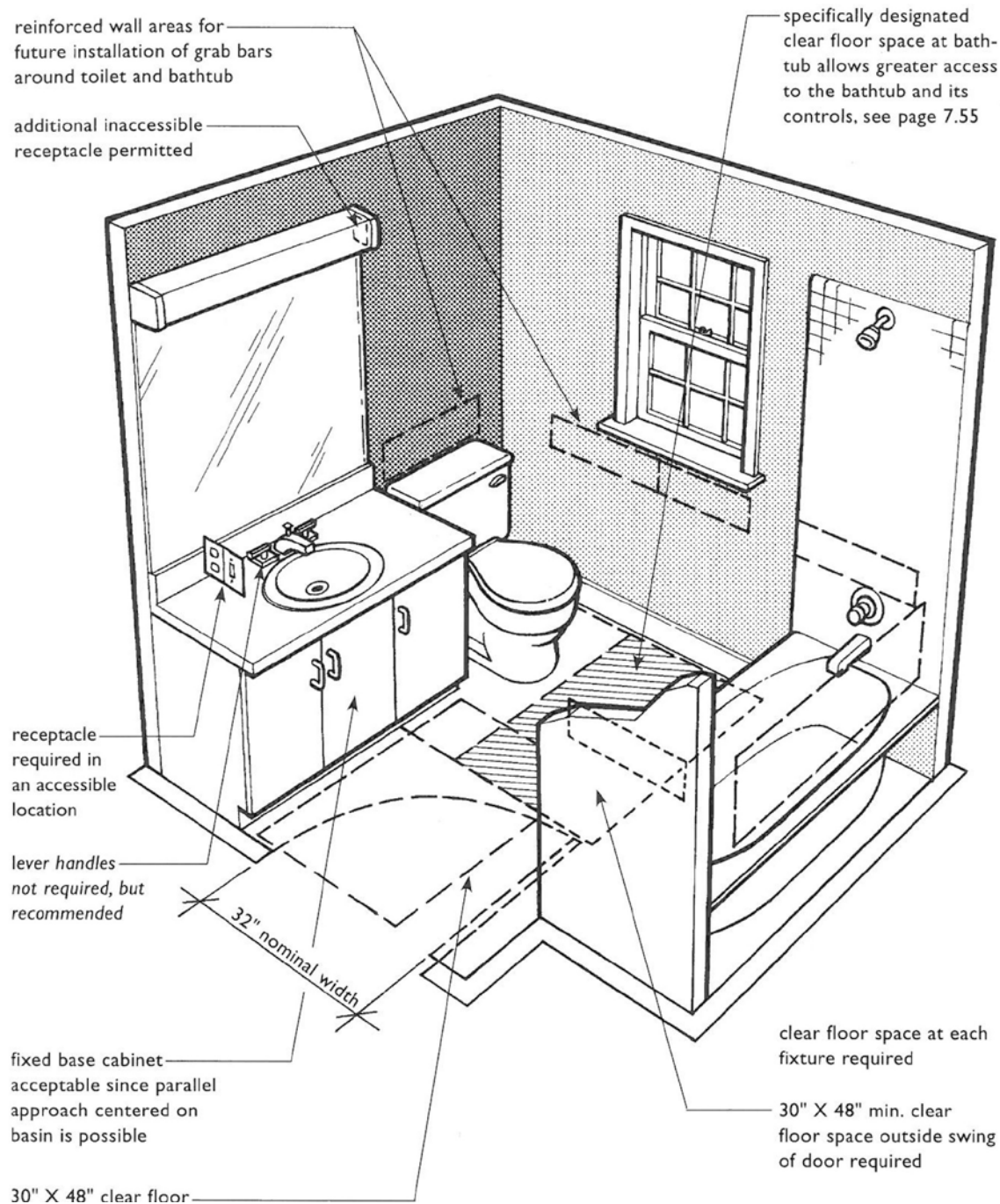
Bathroom and Shower Configurations

Accessible baths require
60" clear turning space.

Type B baths require
30" x 48" clear floor space
beyond door swing.

Accessible toilet and bathing
rooms must have clear
maneuvering space at doors.

Particular care should be
taken at in-swinging doors
to provide both 18" on the
pull side but depth of
maneuvering clearance
as well.



**DESIGN
CHALLENGE**

Entrances (Doors and Thresholds)

Door Opening and Opening Force

All public exterior door
forces shall meet
8-½ lbs of force or less.

Interior door forces shall
meet 5 lbs or less.

Interior door hardware in
all but Type B dwelling
units shall be easily usable
with one hand and not
require tight gripping or
twisting.

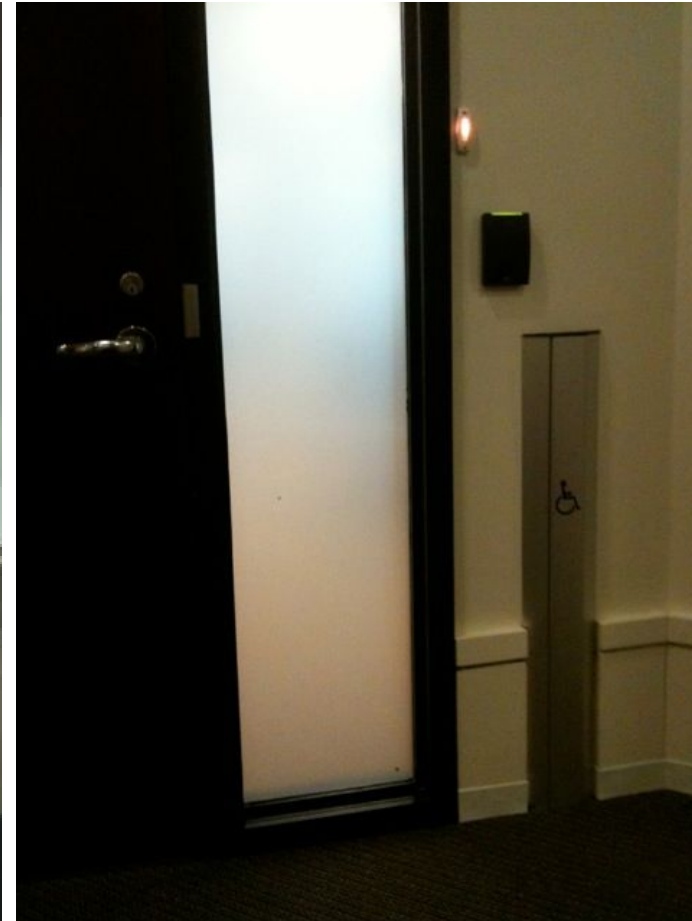


Image: taylorldashell.blogspot.com/2011/10/wheelchair-adventure.html

**DESIGN
CHALLENGE**

Entrances (Doors and Thresholds)

Door Thresholds at Units

Exterior door thresholds in both Accessible and Type B units shall be accessible up to a max of $\frac{1}{2}$ " for swing doors and up to $\frac{3}{4}$ " for sliding doors.

Type B unit decks and balconies with impervious surfaces may have a transition of up to 4" drop from the interior unit level to the deck and be designed to allow a raised platform to be installed in the future.



Image: www.greenbuildingadvisor

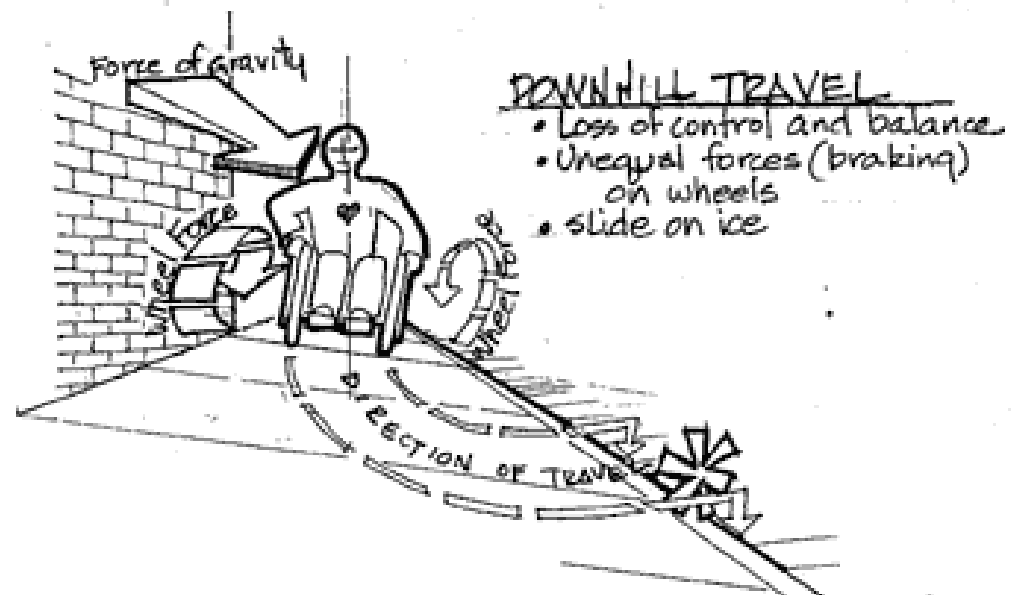
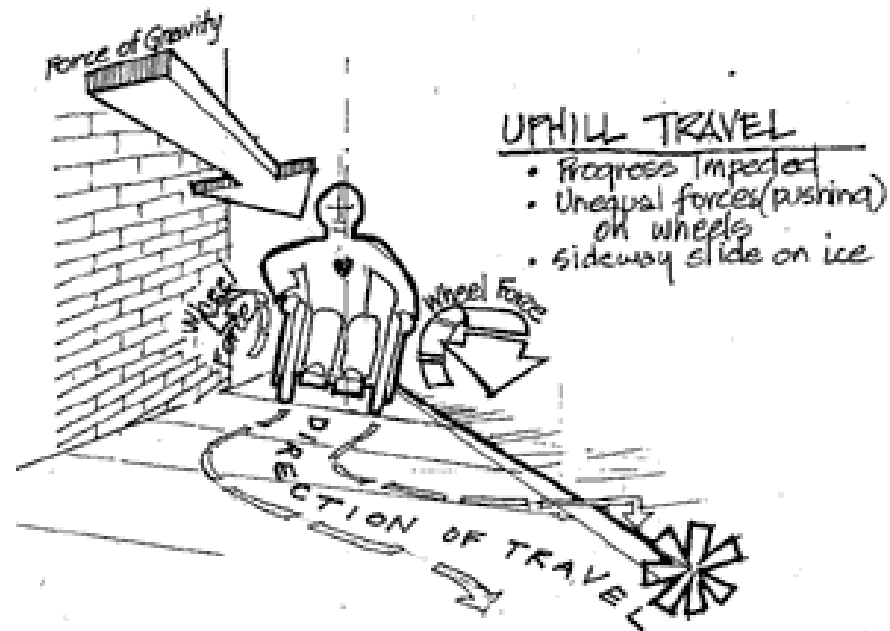
**DESIGN
CHALLENGE**

Slopes and Cross Slopes

Cross slope 2%
(1:48) maximum.

Slopes between
5% and 8.33% are
considered ramps and
must have handrails and
edge protection.

8.33% slope is the
maximum, requires effort
by mobility device user.



EFFECT OF EXCESSIVE CROSS SLOPE

**DESIGN
CHALLENGE**

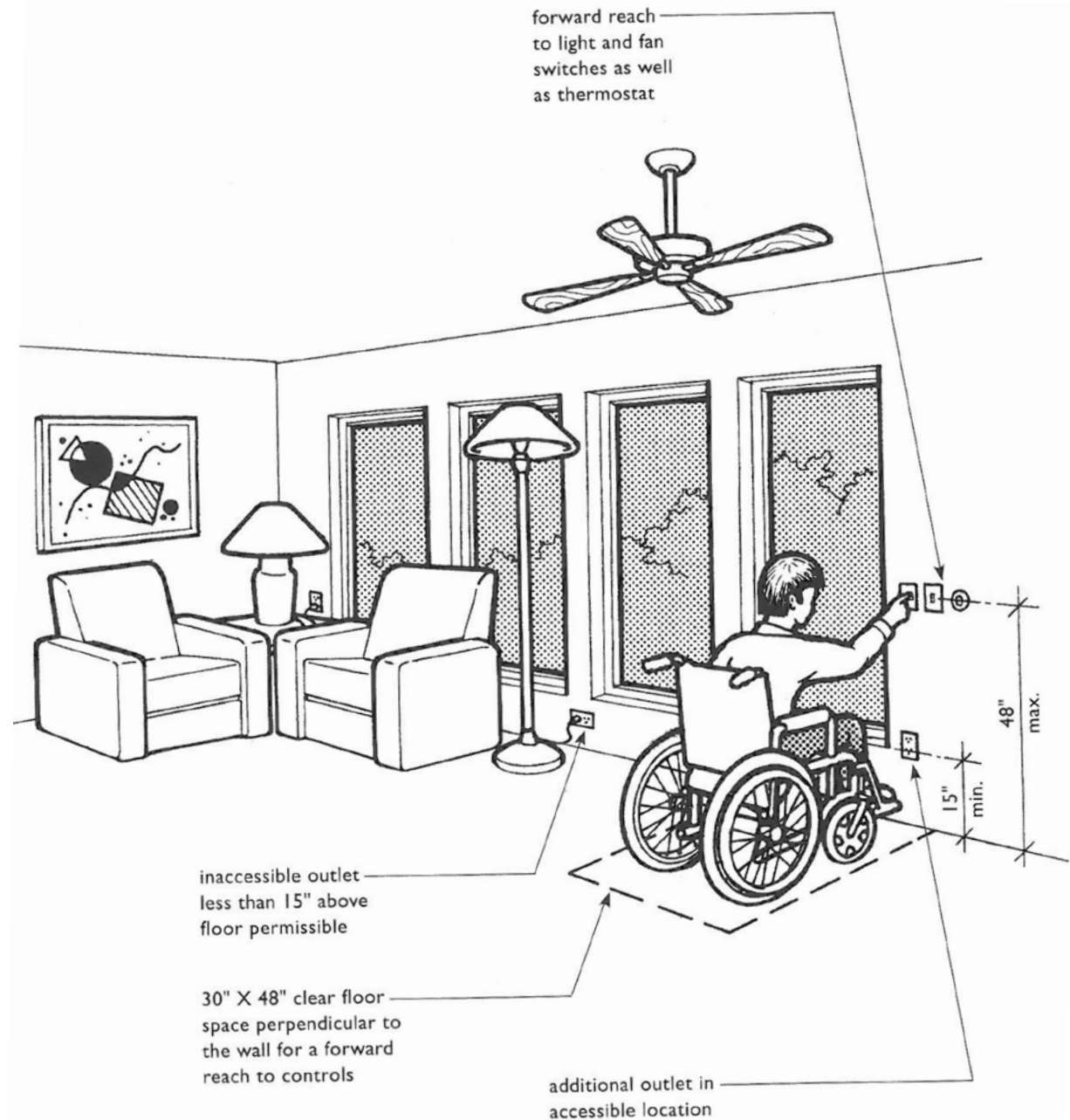
Reach Ranges

User operated controls in all units are covered including panel box.

Appliance controls are covered in Accessible units.

Outlets and switches shall be placed with the top of the box at 48" and the bottom of the lowest box at 15" to ensure all outlets and controls are within the reach range.

Clear floor space for approach and use.



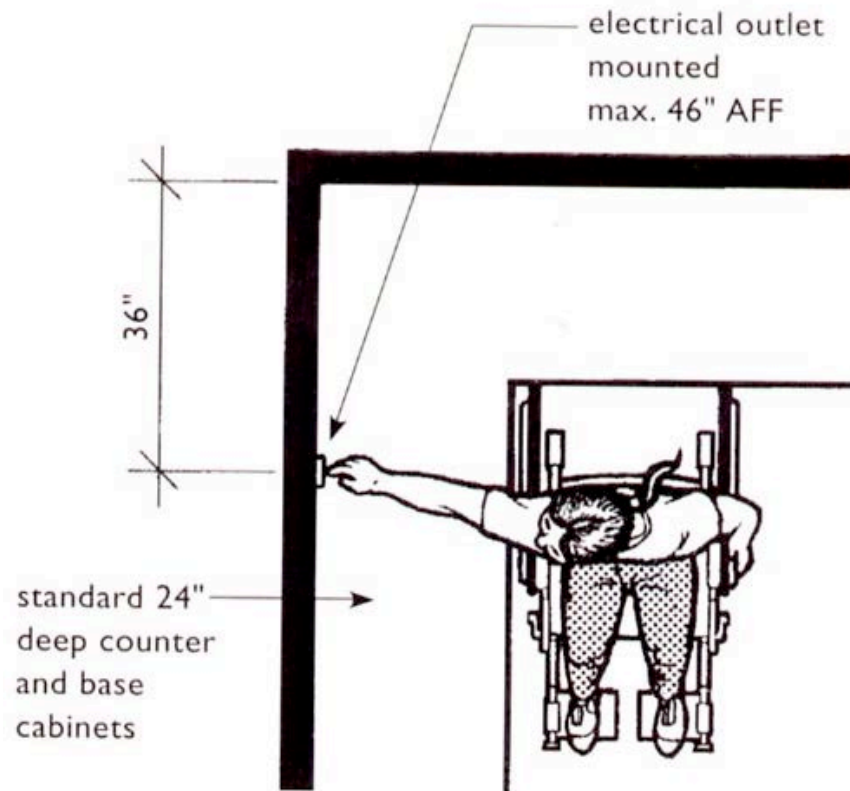
**DESIGN
CHALLENGE**

Data and Electrical Outlets/Switches

Electrical outlets in Accessible and Type B kitchens and baths shall have clear floor space for either forward or parallel approach.

General rule of thumb is to place outlets no closer than 36" from interior corners of kitchens.

Outlets over counters shall be 44" maximum AFF.



**Electrical Outlets on Walls
Over Cabinets Must be a
Minimum of 36" from a Corner**

A grayscale photograph of a public restroom with several stalls. The stalls have white urinals and toilet seats. The floor is made of dark tiles. The text is overlaid on the image.

Avoiding Common Mistakes

Top 10 Design and Operational Challenges

Operational Challenges

Floor Materials & Transitions

Signage & Way finding

Toilet Accessories (location & heights)

Protruding Objects & Obstructions

Maintaining Path of Travel,
Including Furnishings

**OPERATIONAL
CHALLENGE**

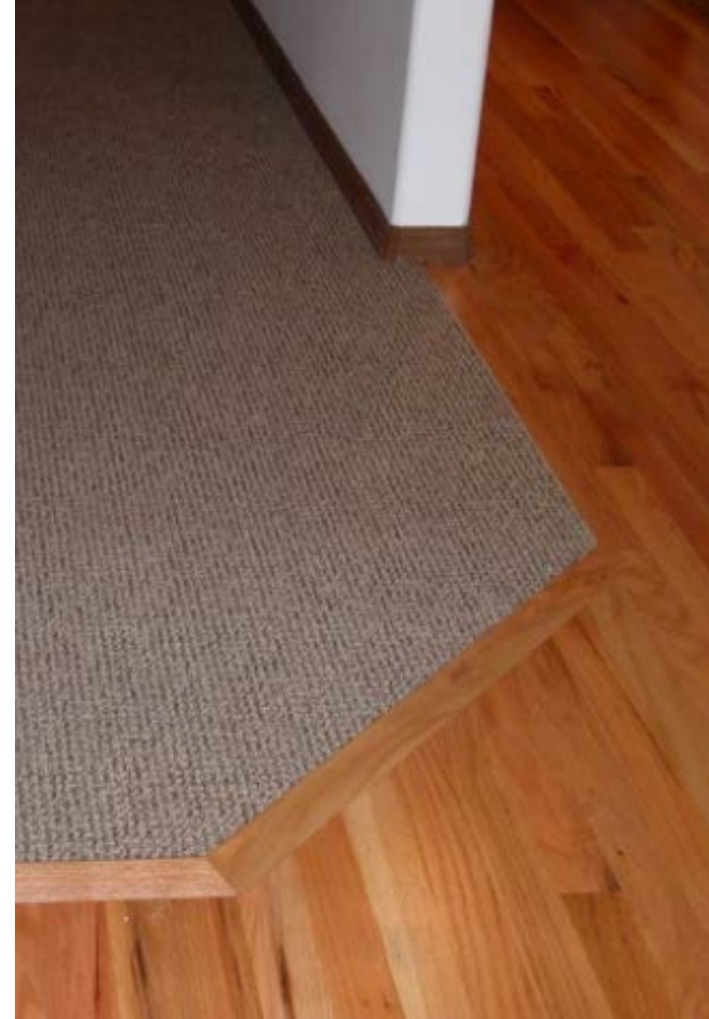
Floor Materials and Transitions

Floor textures in public areas and Type A dwelling units must be firm, stable and slip-resistant.

Pay careful attention to walk-off mats.

Joints between exterior materials and openings in floor surfaces shall not allow a $\frac{1}{2}$ " sphere to enter (comply with 2003 ICC/ANSI A117.1 Section 302).

Transitions between floor materials shall be level, vertical up to $\frac{1}{4}$ " or beveled 1:2 up to $\frac{1}{2}$ ".

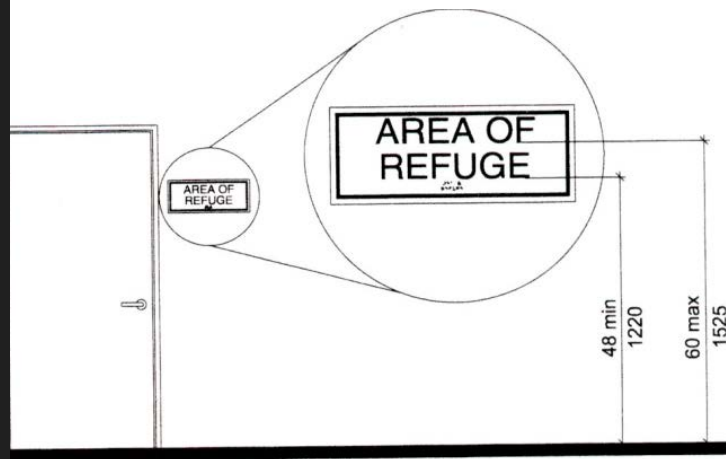


OPERATIONAL CHALLENGE

Signage and Wayfinding

Signs that identify permanent rooms and spaces shall have tactile, raised and Braille characters and pictograms.

These signs shall be mounted 48" to 60" AFF to the bottom of the tactile lettering on the latch side of the door, approximately 9" from the jamb.



**Height of Tactile Characters
Above Floor or Ground**



**OPERATIONAL
CHALLENGE**

Toilet Accessories (Location & Heights)

Even if installed originally, new vendor products can cause once-compliant space to become non-compliant.

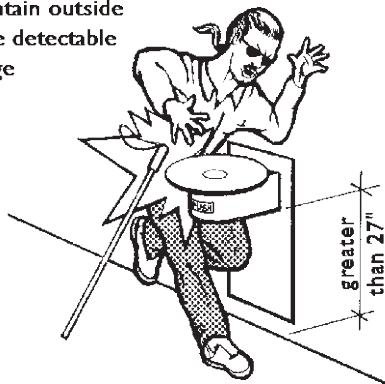


**OPERATIONAL
CHALLENGE**

Protruding Objects and Obstructions

Objects protruding into the accessible route, greater than 4" in the zone of 27" to 84" AFF.

bottom edge of
fountain outside
cane detectable
range

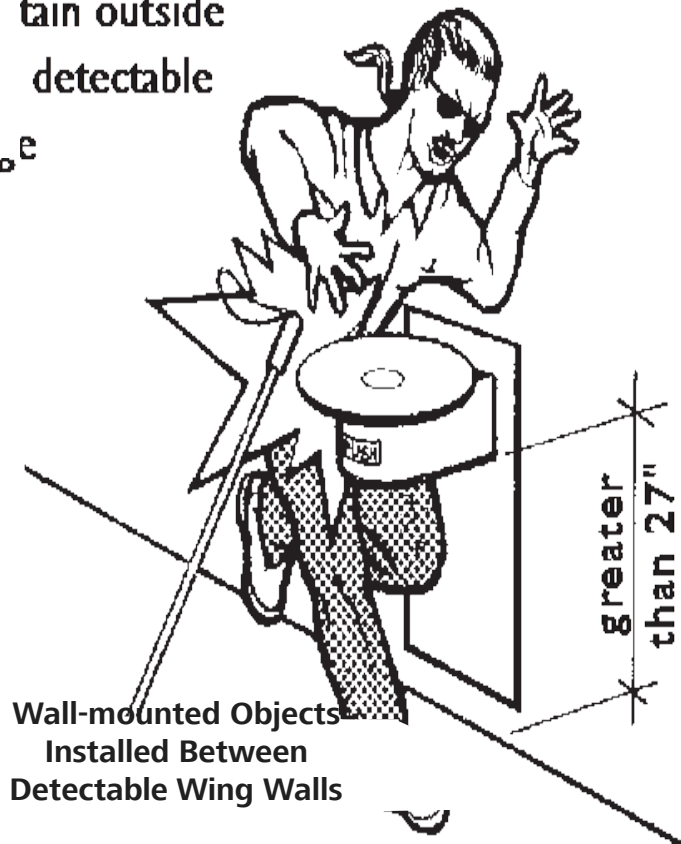


**Hazardous,
Protruding Objects**



om edge of
tain outside
detectable

--- o e



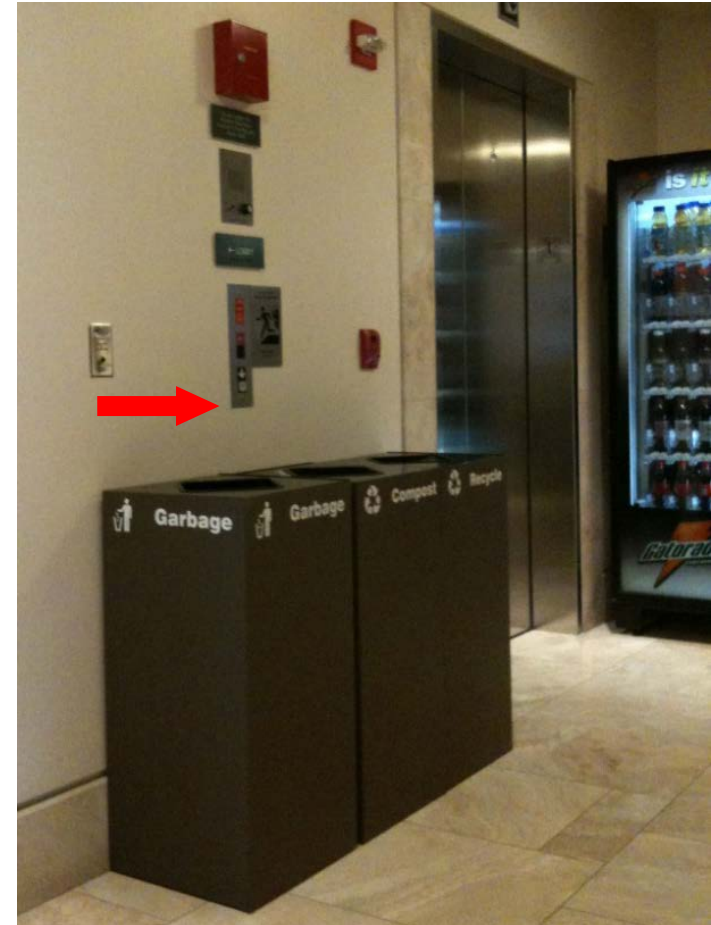
**Wall-mounted Objects
Installed Between
Detectable Wing Walls**

**OPERATIONAL
CHALLENGE**

Maintaining Path of Travel

Avoid adding furnishings that obstruct features that must be accessible.

Plan ahead for movable items such as furnishings to maintain accessible route.



OPERATIONAL CHALLENGE

Furniture

Plan to provide seating for wheelchair users in fixed and movable furnishings.

Layout furnishings to maintain 36" minimum aisle between tables/chairs.



Name that Barrier!

Come on down!



879

1300

500

880



Name that Barrier!

Come on down!

Contestants:

You will NOT get ostracized if you get the answer wrong.

You will NOT receive the home version, but perhaps a small token of our appreciation

You will very likely get applause for “giving it a go.”

Containers
block
access to
elevator
controls





**No clear
floor area
under sink**



Position
of soap
dispenser

Drinking fountain is a protruding object

It's also located in the path of travel





Product displays
block accessible
transaction counters

Whoops,
here too !



**Where is the clear
wayfinding signage for
the visually impaired?**

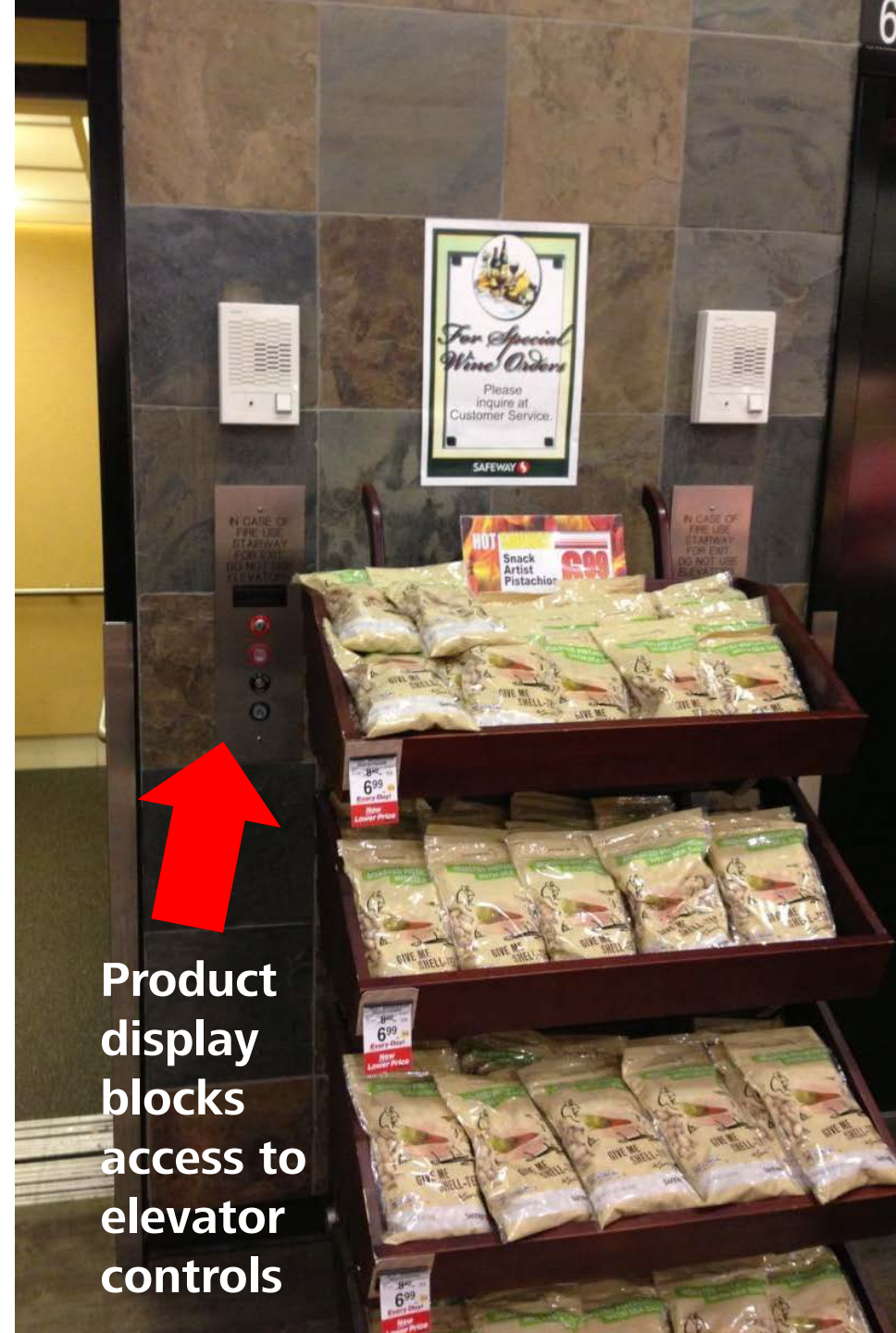


**Nice try but table
leg in clear floor
area/approach**



**Too much
visual and
audible
stimulus!**

One month later ...



Meanwhile
upstairs in
the parking
garage . . .

Geez, they really
don't want you
to shop here!

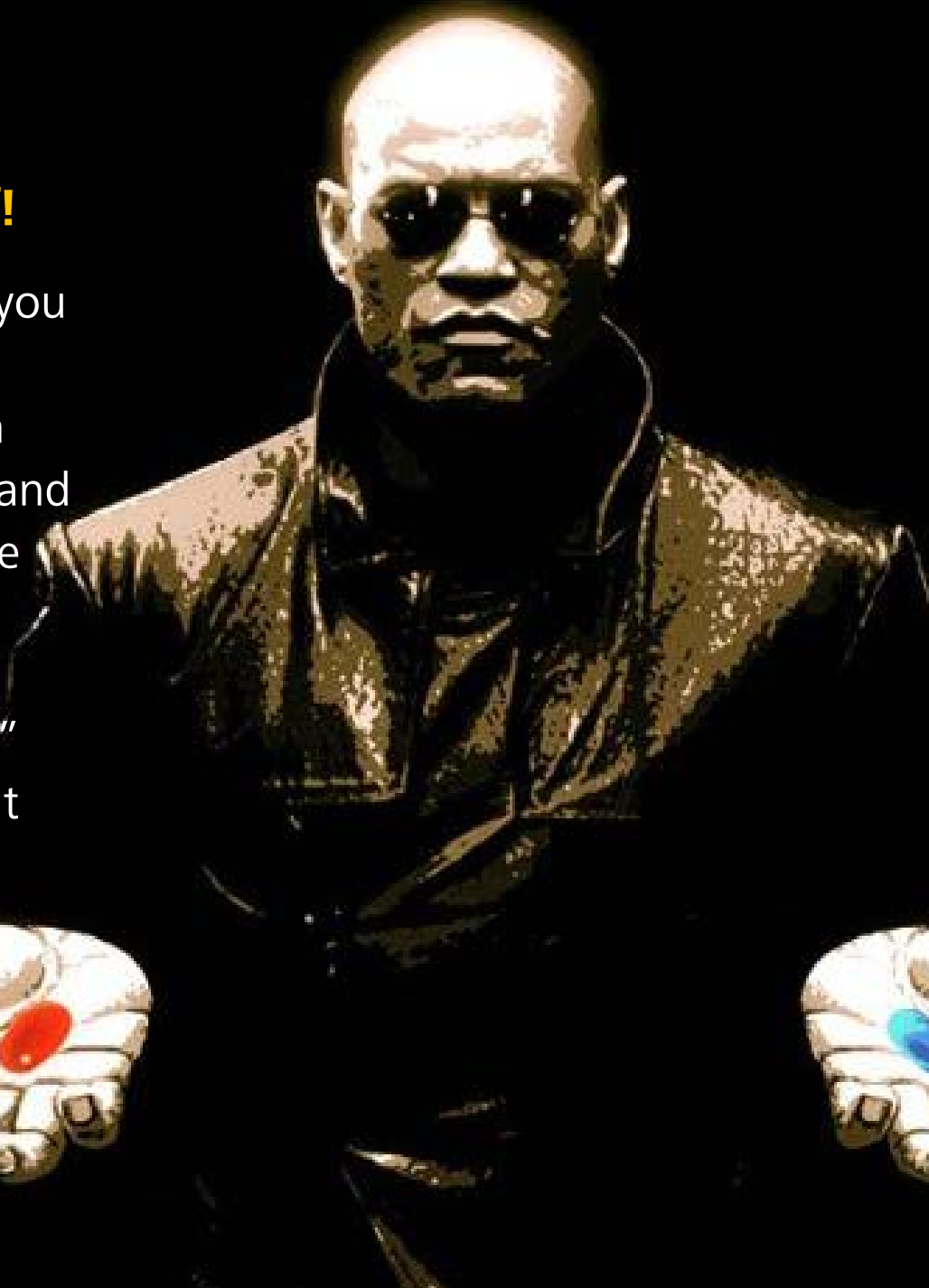


Lessons Learned

...to promote universal design in residential facilities

Take the Blinders Off!

What if I told you
that if you are
living equity in
your daily life and
understand the
barriers to
promoting
“access for all,”
you WILL see it
everywhere.



Lessons Learned

...to promote universal design in residential facilities

Understanding the Law

Local building codes

and Federal standards apply to **you** (and your campus).

Make sure there is a 'best practices' policy that addresses design compliance and barrier removal.

Design & Operational

Design with tolerances in mind.
(Do not design to minimum compliance.)

Review campus purchasing policies for compliant products

Consider peer review to ensure compliance

Watch out for common mistakes

Ensuring equity and compliance is **everyone's** responsibility

Questions

Contact



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