

NDSU NORTH DAKOTA
STATE UNIVERSITY

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WHAT IS YOUR BEST LIFE AT HOME?

CONSIDERATIONS FOR HOME
MODIFICATIONS TO SUPPORT
INDEPENDENT LIVING AND
ENHANCED WELL BEING.

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Presentation Overview

- How do we define Home Modifications?
- Statistics to Consider
- The Value of Home Modes
- Universal Design Principles
- Universal Design Principles to Enhance Well Being
- Examples of Home Modifications to Maximize Usability



How do we define Home Modification?

Making changes to the home environment to support a person's changing needs to promote:

- Health
- Safety
- Independence
- And support the work of caregivers.

How do we define Home Modification?

- Home modification refers to **converting or adapting the environment** in order to make performing **tasks easier, reduce accidents**, and **support independent living**.
- Home modification, ranging from low-cost to more expensive adaptations, includes **removing hazards** (e.g., clutter, throw rugs), **adding special features or assistive devices** (e.g., grab bars, ramps), **moving furnishings, changing where activities occur** (e.g., sleeping on the first instead of second floor) and **renovations** (e.g., installing a roll-in shower).
- In some cases, modifying the home may also require **repairs** such as improved wiring to eliminate the need for dangerous extension cords or fixing loose stair treads.

What Makes A Home Accessible?

Home modifications should consist of:

1. Accessibility
2. Adaptability
3. Universal design



What Makes A Home Accessible?

- An accessible home is a home designed or modified to enable independent living for people with disabilities and/or health issues.
- People living with a disability have different needs to ensure a home is accessible to them. Most homes require at least some modifications to achieve this.

Statistics to Consider

According to the CDC,

1 in 4 Americans

has a disability that affects how they interact with their environment to perform daily tasks.



Only

0.15%

of all homes in the U.S. are wheelchair accessible.



"The availability of accessible homes is critical to enable people with disabilities to live independent lives"

SOURCE: U.S. CENSUS BUREAU, AMERICAN COMMUNITY SURVEY, 5-YEAR ESTIMATES, 2021

Disability Impacts **ALL** of US

COMMUNITIES



HEALTH

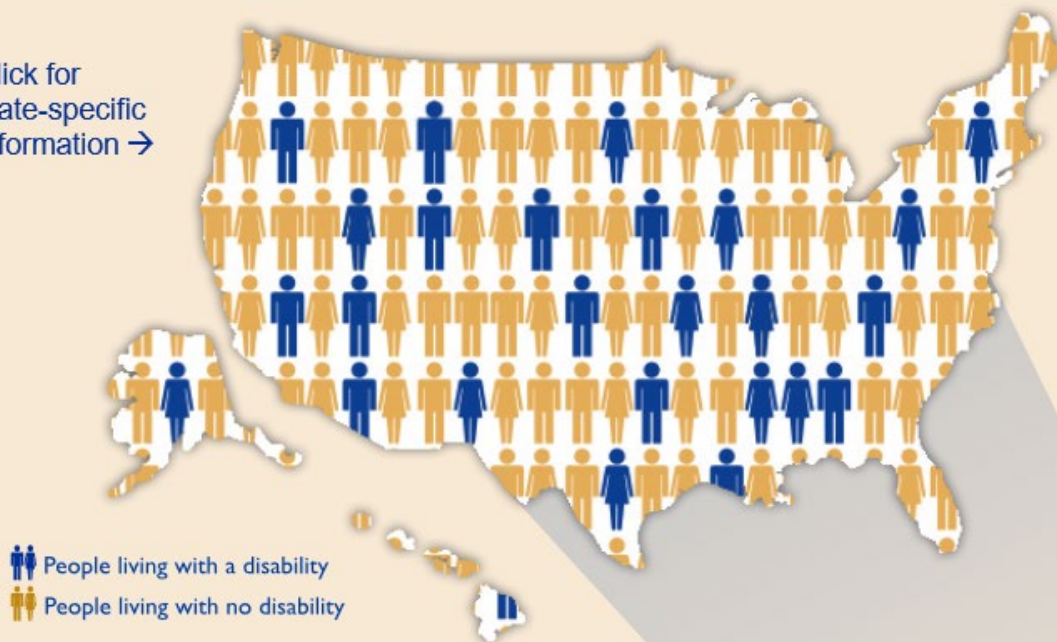




ACCESS



61 million adults in the United States live with a disability

Click for
state-specific
information →



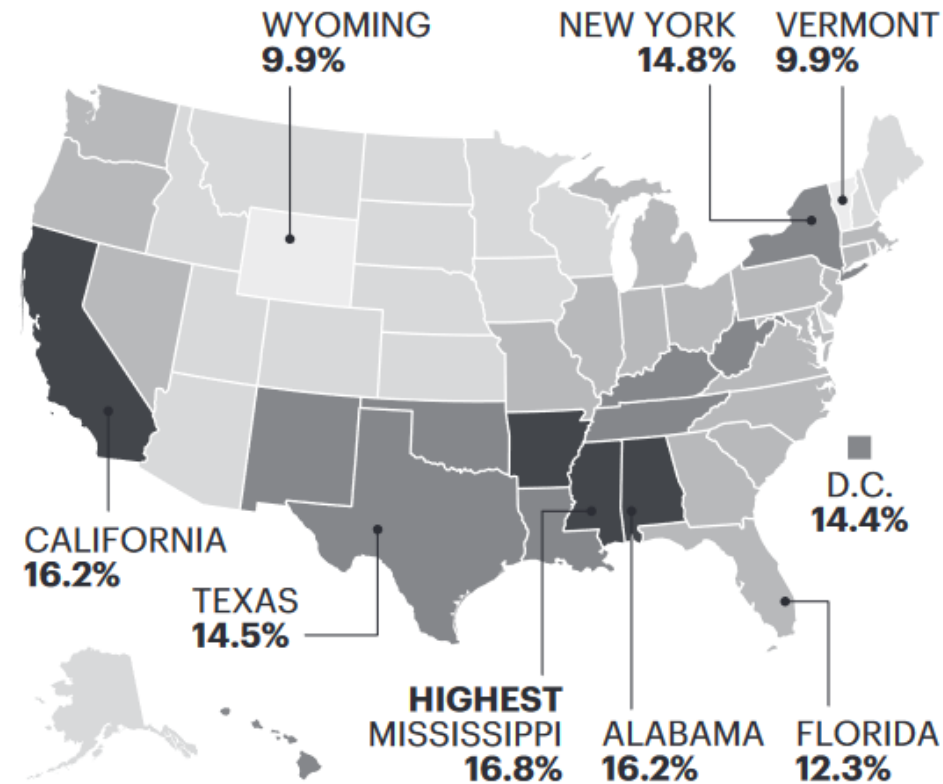
 People living with a disability
 People living with no disability

26% of adults in
the United States
have some type
of disability
(1 in 4)

The percentage of people
living with disabilities is
highest in the South

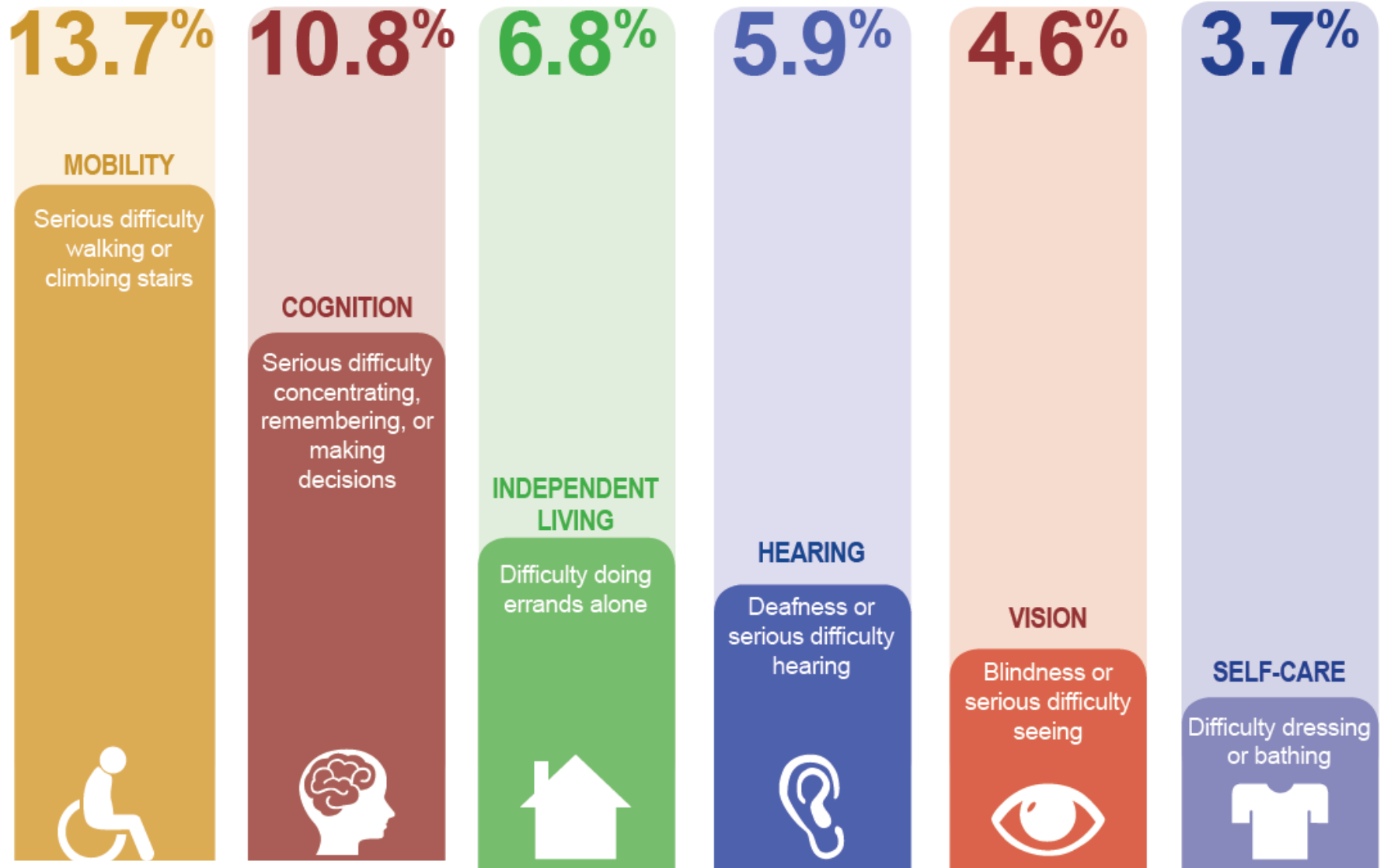


PERCENT OF THOSE 65 AND OLDER WHO HAVE AN INDEPENDENT LIVING DIFFICULTY



SOURCE: U.S. CENSUS BUREAU, AMERICAN COMMUNITY SURVEY, 5-YEAR ESTIMATES, 2021

Percentage of adults with functional disability types



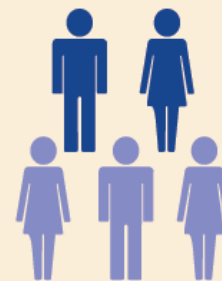
Disability and COMMUNITIES



Disability is especially common in these groups

2in**5**

adults age 65
years and older
have a disability



1in**4**

women have
a disability



2in**5**





Non-Hispanic
American Indians/
Alaska Natives
have a disability



Disability and HEALTH



Adults living with disabilities are more likely to

		With Disabilities	Without Disabilities
	HAVE OBESITY	38.2%	26.2%
	SMOKE	28.2%	13.4%
	HAVE HEART DISEASE	11.5%	3.8%
	HAVE DIABETES	16.3%	7.2%

Disability and Healthcare ACCESS



Healthcare access barriers for working-age adults

1 in 3

adults with disabilities
(18-44 years)

do not have a
**usual healthcare
provider**



1 in 3

adults with disabilities
(18-44 years)

have an **unmet
healthcare need
because of cost
in the past year**



1 in 4

adults with disabilities
(45-64 years)

did not have a
**routine check-up
in the past year**

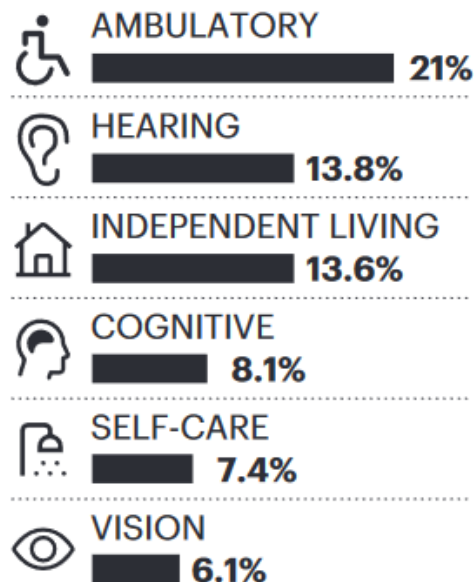




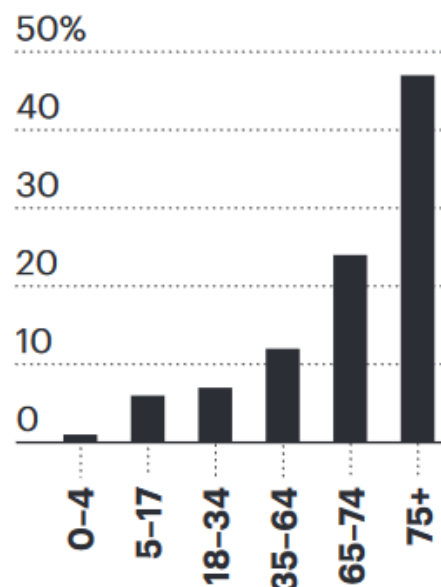
LIVING WITH DISABILITIES

A total of 41.1 million Americans—12.6 percent of the population—live with some sort of disability. They range from hearing and vision difficulties to difficulty in living independently. Disabilities increase by age, and nearly half of those 75 and above report having one of six disabilities measured by the U.S. Census Bureau.

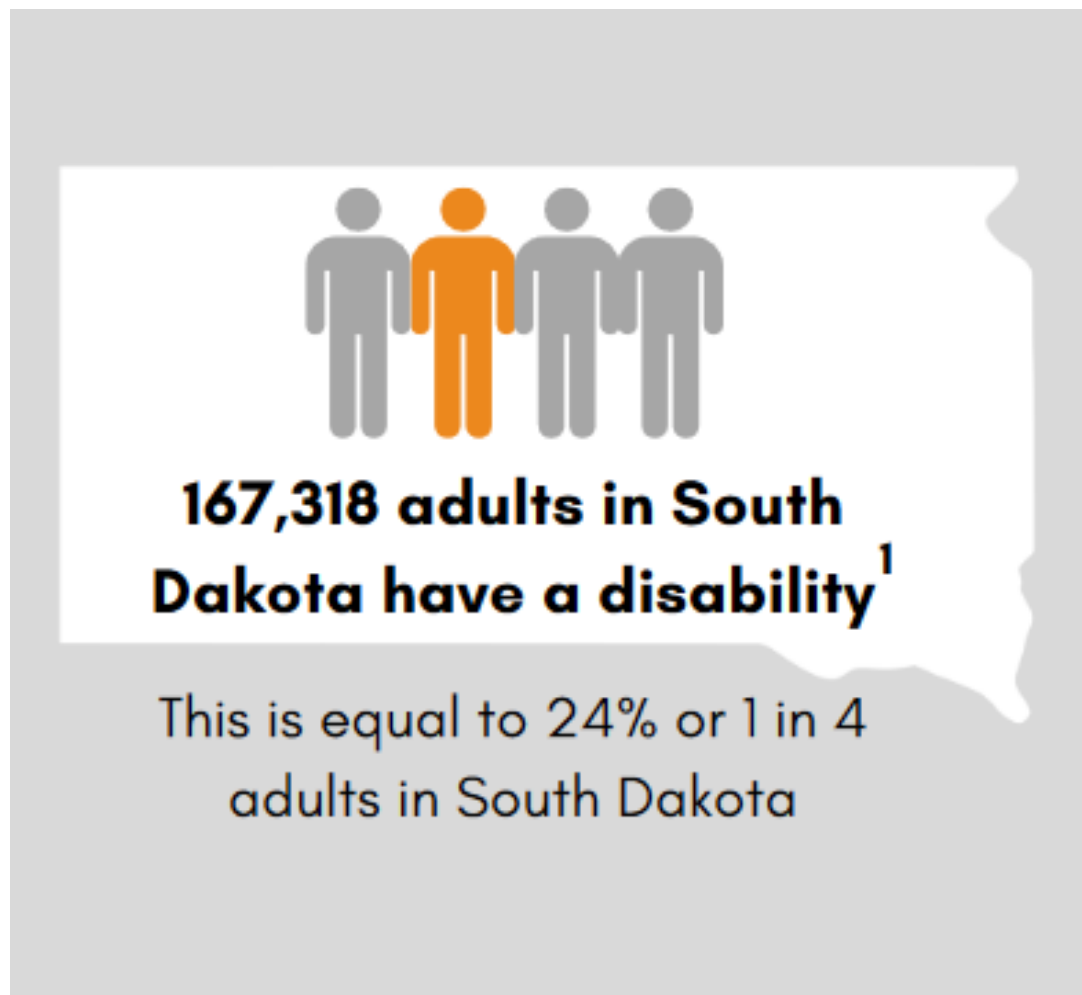
TYPE OF DISABILITY FOR THOSE 65 AND OLDER



PERCENTAGE WITH DISABILITY, BY AGE

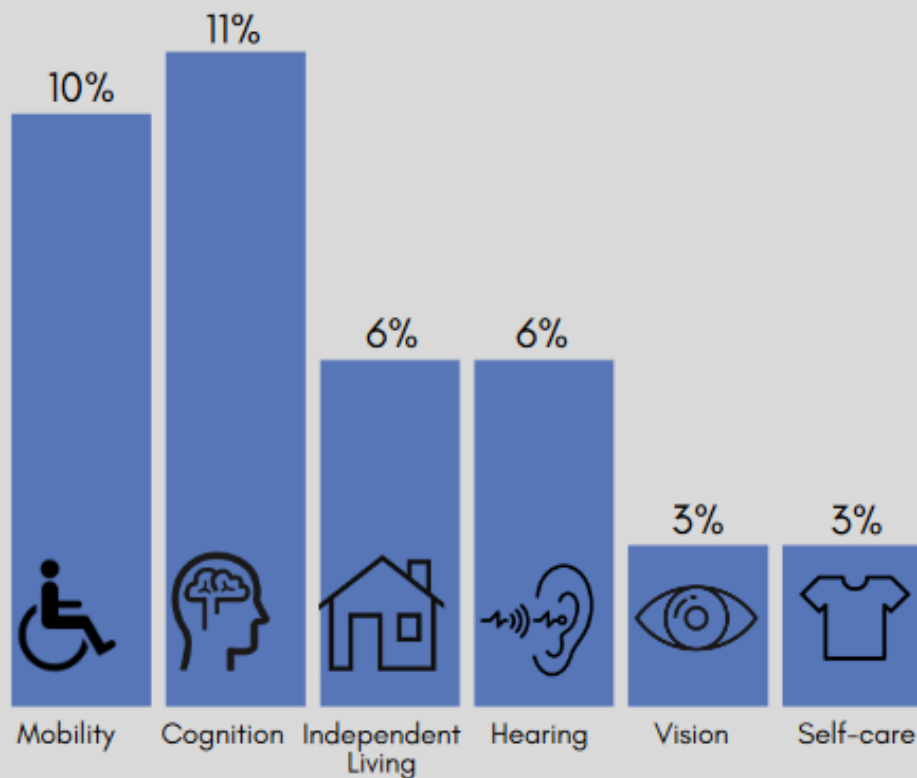


Disability Impacts | South Dakota



Disability Impacts | South Dakota

Percentage of adults in South Dakota with select functional disability types



Disability Types

Mobility: Serious difficulty walking or climbing stairs

Cognition: Serious difficulty concentrating, remembering, or making decisions

Independent living: Serious difficulty doing errands alone, such as visiting a doctor's office

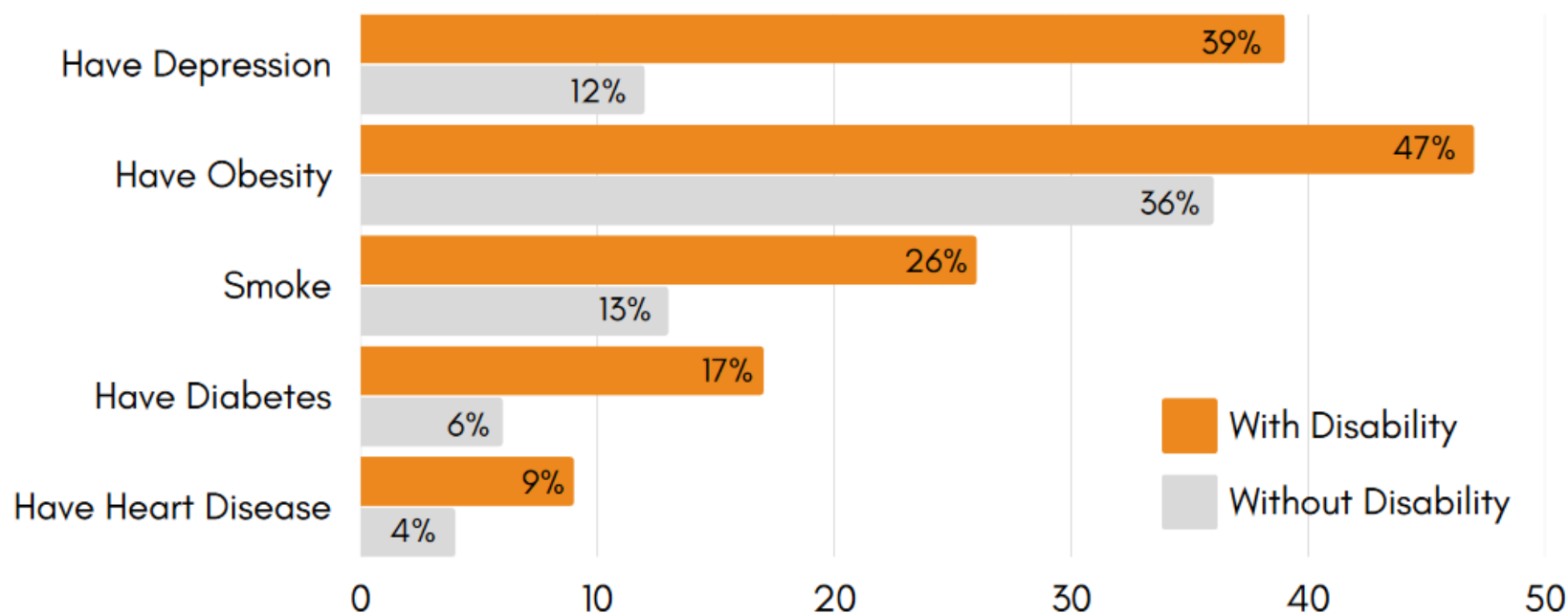
Hearing: Deafness or serious difficulty hearing

Vision: Blind or serious difficulty seeing, even when wearing glasses

Self-care: Difficulty dressing or bathing

Disability Impacts | South Dakota

Adults with disabilities in **South Dakota** experience health disparities and are more likely to... ¹





The Value of Home Modifications

- Preserving Independence
- Maintaining Community Connections
- Balancing Budgets
- Making Supportive Home Modifications



Image Source. Millerbernd, A. (2023, May 8) Modifications Grants and Loans to Help Make a Home More Accessible. Retrieved from <https://www.nerdwallet.com/article/loans/personal-loans/accessible-home-modification-grants#other-ways-to-finance-accessible-home-modifications>

Universal Design Principles



7 Principles of Universal Design



Diverse



Flexible



Intuitive



Perceptive



Minimal Hazard














Low Effort



Appropriate Space


Universal Design Principles to Enhance Wellbeing

Entrance/Circulation

1. Low/zero threshold   
2. Peephole or view panel in front door 
3. Handrails on both sides of staircases and outside steps 
4. Lever door handles that operate easily with a push  
5. No scatter rugs 
6. Open layout free of clutter   














7 Principles of Universal Design

- | | |
|---|-------------------|
|  | Diverse |
|  | Flexible |
|  | Intuitive |
|  | Perceptive |
|  | Minimal Hazard |
|  | Low Effort |
|  | Appropriate Space |


Universal Design Principles to Enhance Wellbeing

Lighting/Electrical

1. A night light in bedroom    
2. Brighter lighting levels; strong considerations at level changes (i.e., staircases & steps)   
3. Large rocker light switches that turn on/off with a push  
4. Electric outlets 27 inches above floor  


















7 Principles of Universal Design

-  Diverse
-  Flexible
-  Intuitive
-  Perceptive
-  Minimal Hazard
-  Low Effort
-  Appropriate Space

Universal Design Principles to Enhance Wellbeing

Kitchen

1. Lever faucet handles that operate easily with a push      
2. Adjustable countertops or lower counter for work space in kitchen   
3. Rounded kitchen counter tops  
4. Sliding shelves in cupboards, Lazy Susan in corner cabinet    



Kitchen Image.

<https://curemedical.com/rosemarie-rossettis-home-is-a-model-for-universal-design/>

7 Principles of Universal Design



Diverse



Flexible



Intuitive



Perceptive



Minimal Hazard



Low Effort



Appropriate Space

Universal Design Principles to Enhance Wellbeing

Bathroom/Bedroom

1. Walk-in shower with grab bars and portable or adjustable shower seat
2. Hand-held adjustable shower head
3. Non-skid surface for bathtub and shower floor
4. Grab bars by the toilet and tub
5. Tilting or full-length mirror in bathroom
6. First floor bedroom and bath to allow living entirely on one level if necessary
7. Adjustable closet rods

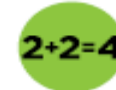
7 Principles of Universal Design



Diverse



Flexible



Intuitive



Perceptive



Minimal Hazard



Low Effort



Appropriate Space

10 Ways To Make Accessible Home Modifications

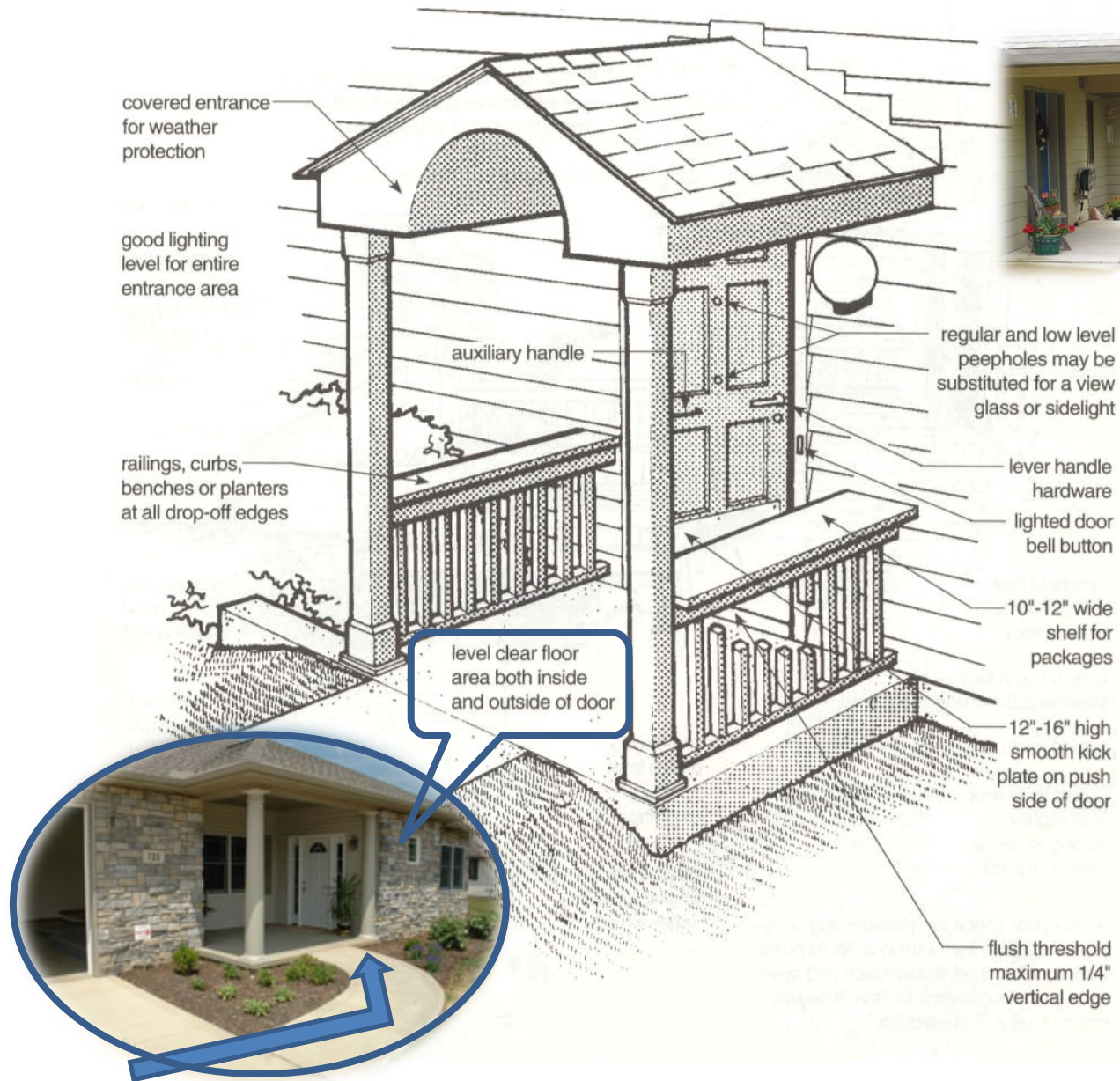
- Eliminating or modifying entryway steps, replacing steps with ramps OR install a stair lift
- Upgrading doorknobs with lever handles
- Add handrails & grab bars
- Rearrange furniture for ease of circulation
- Creating wider doorways and hallways
- Consider providing access to a bedroom and bathroom on the first floor
- Arranging the Kitchen for accessibility
- Upgrading the Bathroom and removing barriers
- Ensure adequate lighting
- Update flooring & removing rugs and liners



Zero Step Entrances, Circulation, and Hardware Considerations

WELCOME HOME

Features of an Accessible Entrance





Welcoming Zero Step Entrances

Zero Step Entrance



MOSBY
BUILDINGARTS



Image source. <https://mosbybuildingarts.com/make-it-easy-to-get-in-your-home-with-universal-design/>



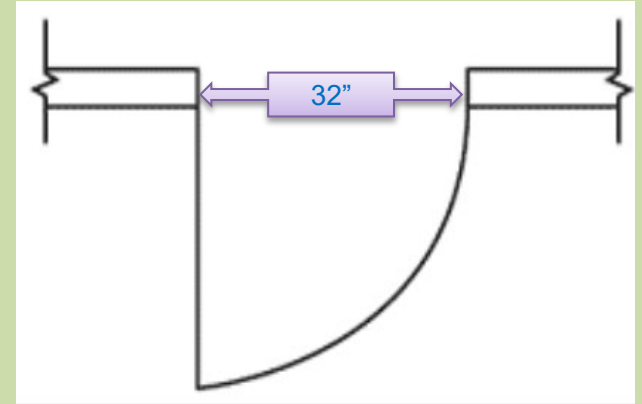
Modifications to Existing Steps

Build a Ramp

- A ramp to a doorway will not only help those in wheelchairs, but anyone with mobility difficulties.
- You will need a permit to build a ramp, so check local building codes before you begin construction.
- Building a ramp is one of the best ways to give a mobility-challenged individual more independence.
- Custom-built wheelchair ramps can be pricey



Wider Doorways for Clear Circulation



**Lever
Handle**

Wider Doorways for Clear Circulation

- Many wheelchairs and walkers are too wide to easily maneuver through doorways.
- Widening doorways can be a costly job (up to \$1,000 in some cases), but you can use some **offset door hinges** to help swing the door clear of the opening to inexpensively add a couple inches of space.

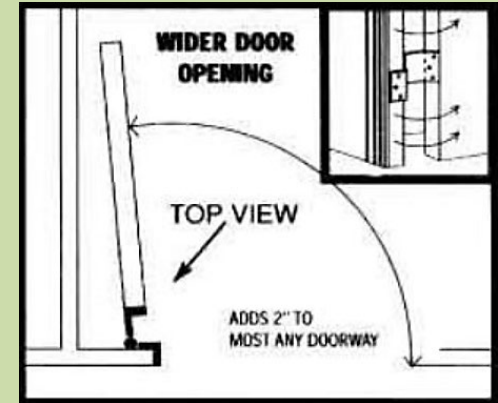


Wider Doorways for Clear Circulation

In new construction, a 3'0" entry door is standard. In older homes a 3'0" entry should be considered when remodeling, and door sizes should be increased at any opportunity.

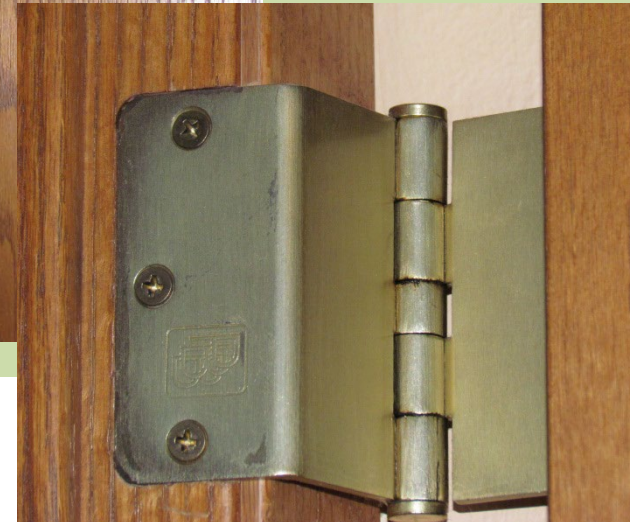


expandable offset door hinge

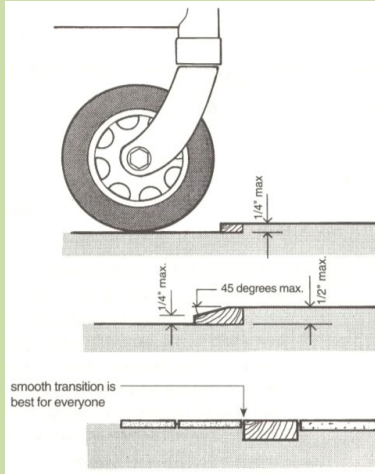


Wider Doorways for Clear Circulation

- **Expandable offset door hinges** are designed to swing the door clear of the opening, adding about 2" additional clearance for wheelchairs and walkers.



Wider Doorways & No-Step Thresholds

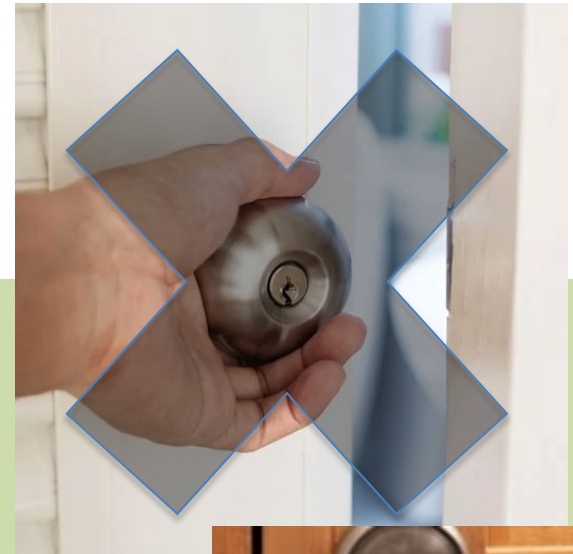


Using a pocket door to divide areas of the master bedroom, note smooth transition between the bathroom tile and bedroom carpet.



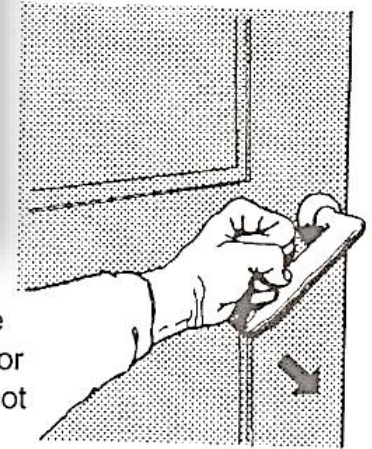
Door Hardware for Accessibility

- A doorknob can be a barrier for those who have trouble grasping and turning the knob.
- Replacing doorknobs with **door levers** makes it easier for many to enter and exit a room.
- A remodeler can **install automatic doors openers** that open at the touch of a button, making it easy to go from room to room or indoors and out.



Door Hardware for Accessibility

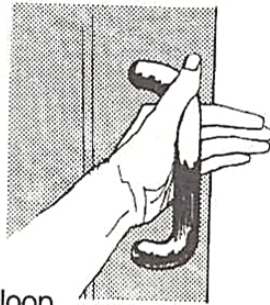
- Lever handles are easy to operate for people who cannot grasp or twist.
- Loop handles have a space to slide the hand behind.



lever handles are easy to operate for people who cannot grasp or twist

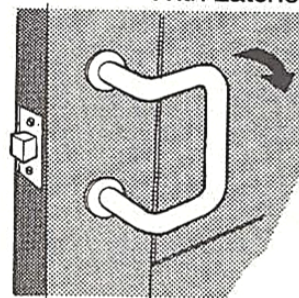


Fixed Handles Without Latches

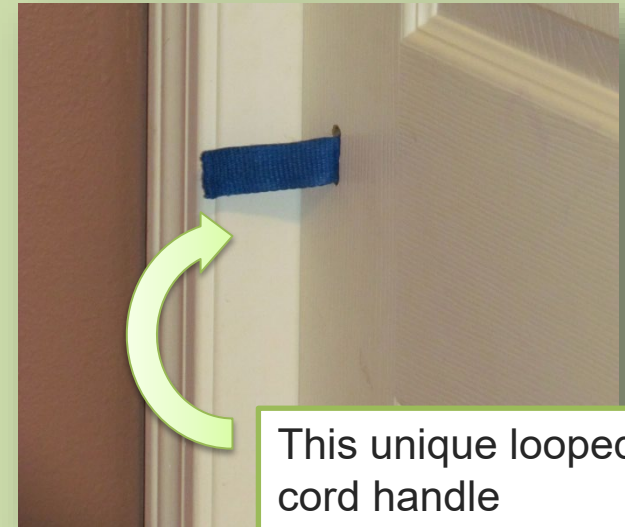


fixed loop handles have space to slide hand behind

Moveable Handles With Latches



moveable loops are easy to operate

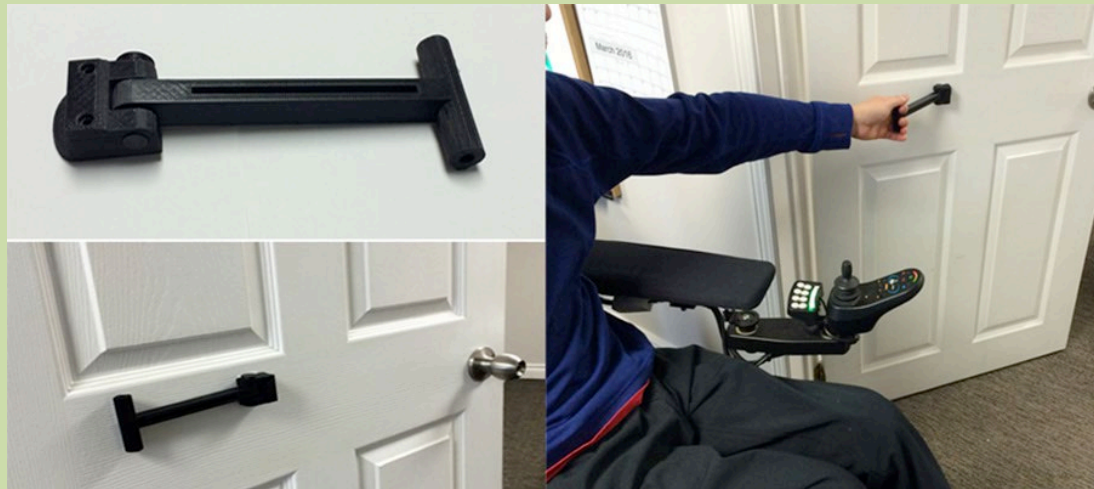


This unique looped cord handle provides easy opening of a sliding pocket door.

Door Hardware for Accessibility

T-Pull

- Makes Closing Doors Easier for People Using Wheelchairs, Crutches or Canes



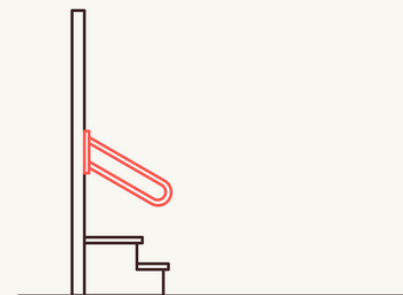
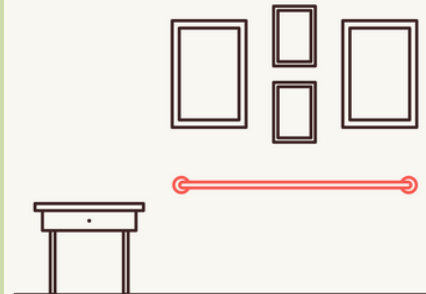
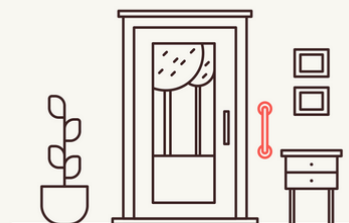
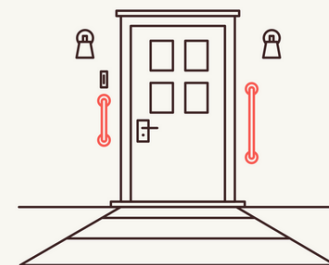
Grab Bars

- Grab bars will help with stability in the bathroom—especially around the shower and toilet. A standard 1-1/2-inch diameter bar works for most people's grip.



Grab Bars

- Grab bars can be installed at other critical points to ensure the safety and stability in the places where someone needs it the most:
 - ✓ Front Door (exterior)
 - ✓ Interior Doorways
 - ✓ Hallways
 - ✓ Kitchen
 - ✓ Garage



Position Poles for Stability

- Adding a floor-to-ceiling pole near the bed, a favorite chair, the toilet or by the tub offers added stability for getting up and down.
- This type of pole works on the same principle as a tension shower curtain rod—it's positioned and then expanded to create pressure between the floor and the ceiling. The pressure keeps it in place without the need to drill into floor or ceiling joists.

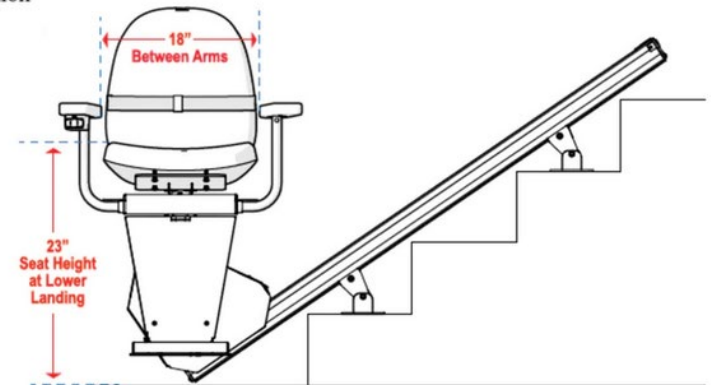


- This vertical bar is a relatively inexpensive way to enhance mobility and reduce the risk of falls.

Incorporate a Stair Lift

- Houses with more than a single story can prove frustrating for those with limited mobility.
- Installing a stair lift allows a mobility-challenged individual to travel between floors rather than be limited to living on a single floor.
- This is one of the pricier upgrades, running an average of \$2,000 to \$5,000, depending on quality and stairway configuration. But this goes a long way toward allowing a disabled individual to live at home and remain independent.

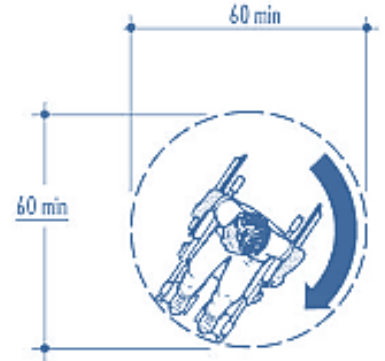
Technical Information



Open Floor Plans & Furniture Placement

- Open space is important for those using mobility aids such as wheelchairs and walkers.
- In most areas, you'll want to ensure a minimum of a 5-foot turn radius so a mobility aid user can make a 360-degree turn without running into obstacles like walls and doorways.

Wheelchair Turning Spaces.



60 inch Diameter Turning Space.

Open Floor Plans & Furniture Placement

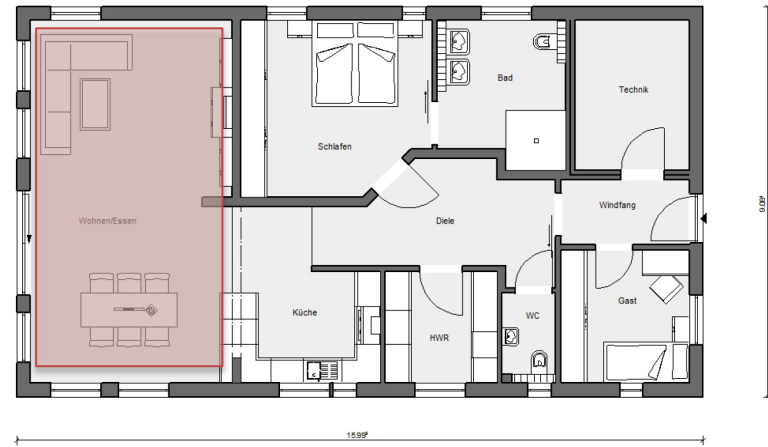
Consider Furniture Placement

- To allow ease of movement, make a path of at least **32 inches between furniture pieces.**
- You may also need to raise furniture to help some people sit comfortably. You can achieve this with **furniture risers** or small blocks of wood that are secured to the legs of the furniture.



Open Floor Plans and Furniture Placement

- Design the space for a range of activities, such as watching television, reading, entertaining, playing table games and dining.
- Allow for flexible furniture layouts.
- Make the most of natural light and outdoor views.



Flooring Considerations

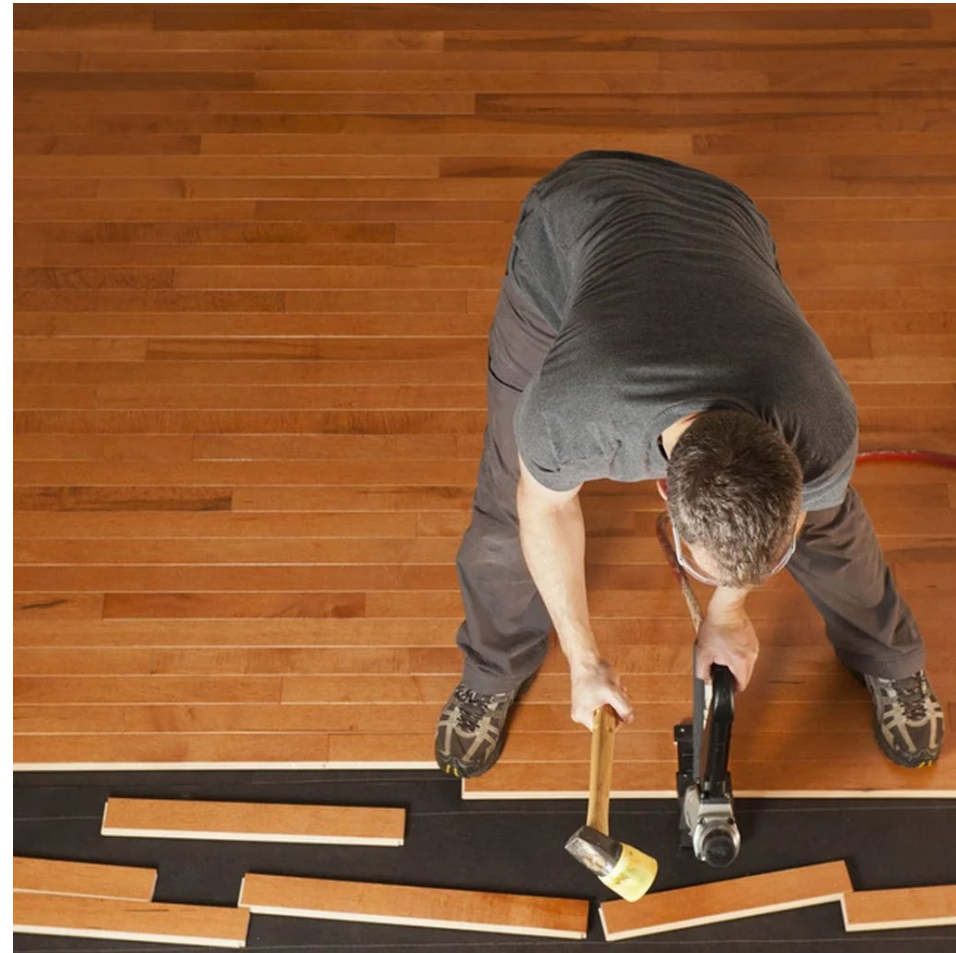
- Removing rugs and liners



Flooring Considerations

Rethink Flooring

- Rugs and thick carpeting can not only make it difficult for those in wheelchairs and with walkers, but they can be a tripping hazard for everyone.
- Consider hardwood flooring, vinyl or ceramic tile.
- Hardwood floors are easier for wheelchair users to navigate and create less of a tripping hazard for those using other mobility aids.
- Hardwood floors can be expensive \$\$, but other options, like **lamin**ate or tile could also be installed.





CONSIDERATIONS FOR THE KITCHEN

Arrange Your Kitchen for Accessibility

- Those looking to make handicap accessible homes may have to make some changes to their kitchen.
- Try arranging appliances near the sink and counters to make tasks easier to perform. Move everyday items into lower cabinets for easy access.



Arrange Your Kitchen for Accessibility

Purchase ADA-compliant appliances

What does that mean??

- Controls and operating mechanisms must be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist. The force required to activate controls shall be no more than 5 lbs.
- Example of an ADA -compliant range features, **oven and stove controls on the front of the appliance**, so a person using a mobility aid does not have to reach over a hot stovetop.
- Click the **GE link** below for more details.



Image source: <https://pure-construction.co.uk/planning-a-wheelchair-accessible-kitchen/>



GE APPLIANCES

Arrange Your Kitchen Accessibility

- **Lower countertops:** Counters designed for those who can stand present a challenge to many people with disabilities. Wheelchair users often cannot reach the surface or sit level with the counter. Consider lowering the countertop height in the kitchen
- **Keep open space underneath sinks:** With open space, wheelchair users can roll up to and underneath sinks. Having space underneath sinks should be considered for kitchens



Provide a clear floor space of 30x48 inches either parallel or perpendicular to the front of the sink, dishwasher, cooktop, oven, and refrigerator. These spaces should be centered on the fixture or appliance and may overlap. The clear spaces can include toe-kick space (minimum 9 inches high to accommodate most wheelchair footrests) or up to 19 inches deep of knee space.

SOURCE: Adapted with permission of John Wiley & Sons, from *Essential Kitchen Design Guide*, by the National Kitchen & Bath Association, © 1996 NKBA.

Arrange Your Kitchen for Accessibility

- Cabinetry hardware and some faucets can be a challenge for those with dexterity and hand coordination issues.
- Replace those cabinet knobs and faucet handles with lever or U-shaped handles.



Cooking,
Cleaning,
Storage, and
Keeping Cool!

KITCHEN



Kitchen Easy Access to Sink

- Easy access at the sink → Lower countertops to 34" or less.
- Leave space under the sink for wheelchair access. Install single lever or touch faucets.
- Touchless faucet



Kitchen

Open Access to Cooktop

- Consider leaving the area below the cooktop open and providing enough knee space for the cook to sit.
- Plan for under-the-counter cabinets to make the cooktop wheelchair accessible in the future



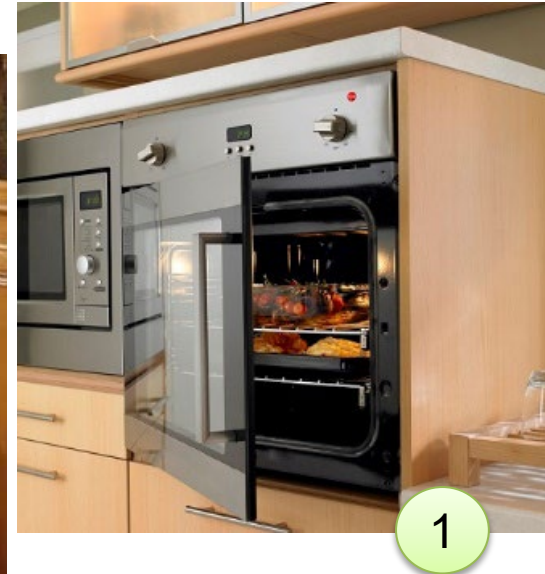
Kitchen Accessible Microwave

- Built-in to be easily accessible from a seated position and easily transferred to the counter above
- Maximum high forward reach for controls and operating mechanisms is 48"; maximum low forward reach is 15"



Kitchen Cooking

- A **wall-mounted oven with a side-swing door (1)** will make it easier for someone with a disability or a wheelchair to use it safely and comfortably.
- A **convenient pull-out counter (2)** beneath a built-in oven allows for easy transfer of dishes.
- Replace the standard range with a **cooktop and wall-mounted oven and install both of them at accessible heights (3)**.



Kitchen Accessible Refrigerator

- **Side by side** freezer and refrigerator space is accessible to all users, even those who are short, use a wheelchair, or have limited reach.
- An **automatic ice dispenser** eliminates the need for homeowners to carry trays of water to the freezer or struggle while removing ice from trays. Both these tasks can present problems for those with poor balance or weak hands.
- Be sure to specify **a frost-free design** as well as **slide-out shelving**.



Some refrigerators, such as this one at a retail appliance store in Orlando, are specially designed with removable freezer drawers that slide out, which gives Rossetti full reach; the refrigerator shelves do the same and have adjustable heights. Doors that swing far back are also helpful, Rossetti says.

Kitchen Pullout Prep Area

- It is idea to have several work areas that can be accessed from a single position.
- A pull out cutting board adjacent to the cooktop is an excellent example.



Kitchen

Easy Access to Upper Cabinets

- Keep dishes and other frequently used cookware in lower cabinets.
- Pull-down organizers provide easy access to dishes and pantry items.
- Pull-down organizers allow everything to move toward you so you don't have to reach into the back of the cabinet.



Kitchen Pull Out Dishwasher Drawer

- A drawer-style dishwasher that can be installed in a regular kitchen cabinet drawer.
- Drawer-style dishwashers can be stacked on top of one another so a two-drawer unit equals the traditional dishwasher space.



Kitchen

Accessible Dishwasher Options

- A 9" wooded kickplate elevates the dishwasher to reduce bending and improve access for the mobility-challenged.



Kitchen Image. <https://curemedical.com/rosemarie-rossettis-home-is-a-model-for-universal-design/>



9" wooden kick plate

Open area below sink area; pipes are enclosed for safety

Kitchen Rollout Spice Rack Storage Unit

- ✓ Organization and easy access is a must.
- ✓ The design of this **Rollout Spice Rack** storage unit provides easy access from both sides



Kitchen Storage

General considerations:

- ✓ Install removable lower cupboards.
- ✓ Use adjustable-height counters with rounded corners.
- ✓ Create adjustable storage and place short-term storage between knee and shoulder heights.
- ✓ Use color contrast on outlets, cabinets and counters.



Kitchen Storage

Accessible Bottom Storage

- ✓ Most everyday items should be placed between knee and shoulder level.
- ✓ For storage below knee level, use a drawer or pull-out shelf.
- ✓ This eliminates the need to bend down or reach for items in the back of the cabinet.





Universally design kitchen. Elevating sink (will raise or lower depending on needs of user) with lever faucet, dishwasher drawer, accessible microwave, easy reach electrical outlets, lowered counter surfaces and eating area with open space below to the right.

*A hands-free faucet by Hastings Tile & Bath is sleek and modern.
(Photo: courtesy manufacturer)*



*A fold-up shower seat by Moen shows that universal design
can appeal to all.
(Photo: courtesy manufacturer)*



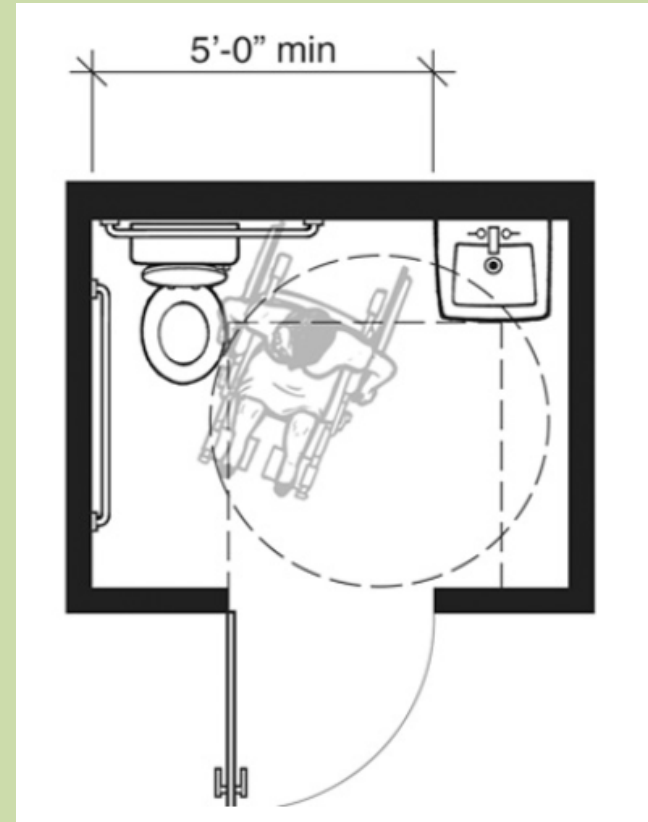
BATHROOM CONSIDERATIONS

Accessible Bathroom Considerations

- **Accessible showers:** Roll-in and curb-less showers provide safe, step-free access to those using mobility aids.
- **Grab Bars:** Grab bars with wall reinforcements should be installed in key locations like around a toilet or shower. Be sure to install grab bars properly. An improperly installed grab bar is just as dangerous as no grab bar at all.
- **Shower chairs and shower benches:** A shower chair or shower bench may be needed for handicap accessible showers. Temporary, semi-permanent, and permanent options are available to meet a variety of needs.



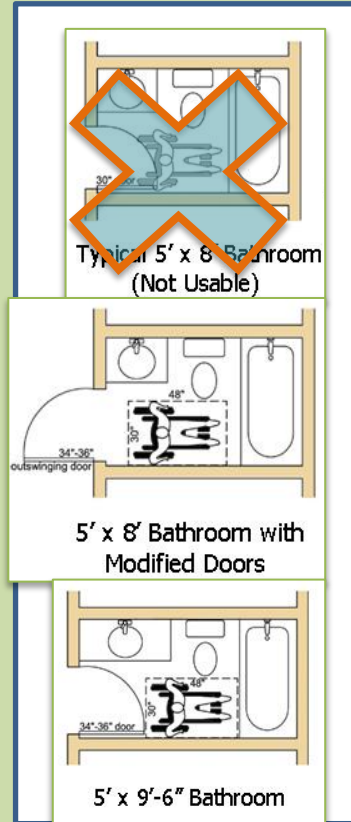
Accessible Bathroom Entry Level



Accessible Bathroom



Smart Accessible Living. (2020). Accessible bathroom with a wheel in shower. Retrieved from <http://www.smart-accessible-living.com/portfolio-category/mikes-accessible-bathroom-remodel-2/#lightbox/gallery5578j/0>

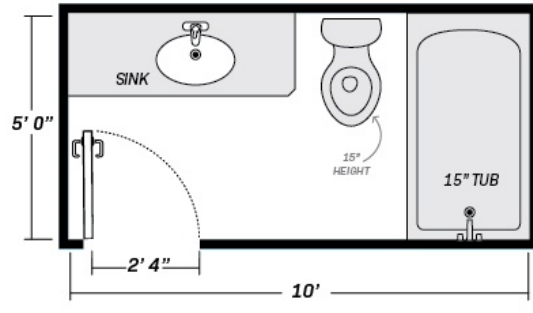


Offset
door
hinge

Accessible Bathroom

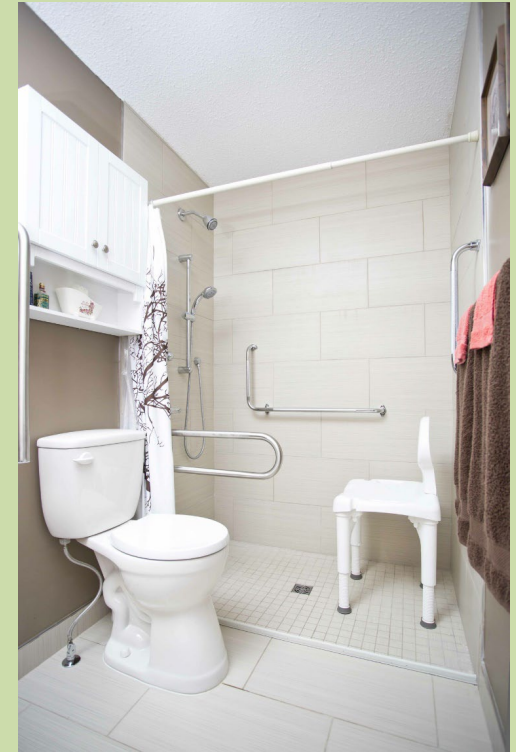
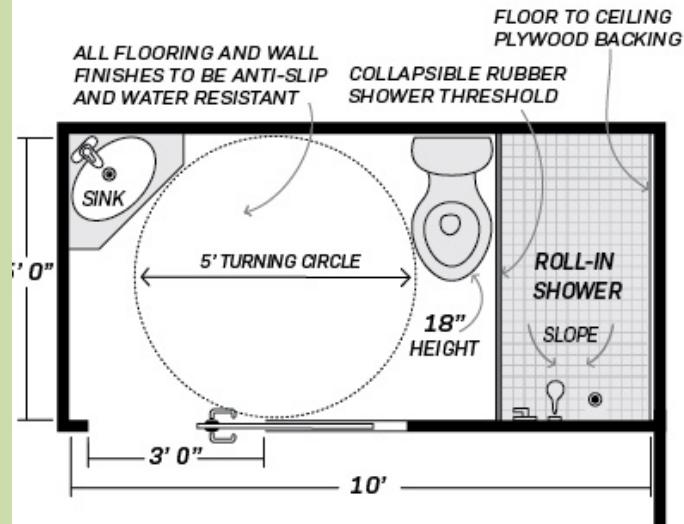
BEFORE

INACCESSIBLE BATHROOM WITH TUB



AFTER

ACCESSIBLE WET ROOM WITH ROLL-IN SHOWER



Accessible Bathroom

- **Walk-in or roll-in showers** are ideal. These showers provide gentle, easily crossed thresholds that keep water in the shower area but allow the an individual to walk in without having to step over a high tub wall.
- **Fold-down** shower seats are devices that attach to the wall of the shower and allow the user to be seated while bathing. Because they are permanently attached to the wall, these seats are extremely sturdy.
- Because they fold up when not in use, they aren't in the way of a family member who prefers to stand while showering. Fold-down shower seats are often used in combination with a **hand-held shower unit**.



Accessible Bathroom Toilet Area

- *A wall-hung toilet by Toto can be mounted at standard or universal height. (Photo: courtesy manufacturer)*



Accessible Bathroom

- Rethinking universal design as “design for all” has prompted new terms, such as resilient, inclusive, and ageless, and resulted in design that’s both practical and pleasing, like this Kohler bath



Accessible Bathroom Sink Area

- The sink should be located at a comfortable height for the user, whether seated or standing.
- A 30-inch high lavatory top is easily accessible from a seated position, but if the lavatory is shared by other members of the household a compromise of 34 inches in height should be acceptable.



Accessible Bathroom Sink Area

- Lever faucets are easily manipulated by a closed fist.
- In addition, most single-lever faucets on the market provide a visual indicator of the water temperature and provide for a mixed water temperature with minimal movement.



K-15000
Kohler Trocadero®
Lavatory Faucet with
Lever Handle

Easy to Use Fixtures



Accessible Bathroom Grab Bars

- Falls are the most common household accident, and the bathroom—with its wet, soapy tile, marble, or porcelain surfaces—can be an extremely dangerous place.



Accessible Bathroom Grab Bars

- Position a grab bar within reach of the strongest side of the body. If the grab bar user has limited mobility in the left arm, a grab bar within reach of the right arm is preferred.
- Grab bars help people of all ages steady themselves on these slippery surfaces—or any place they may feel they need additional support.



Accessible Bathroom

Grab Bars at the Toilet



Accessible Bathroom Risers

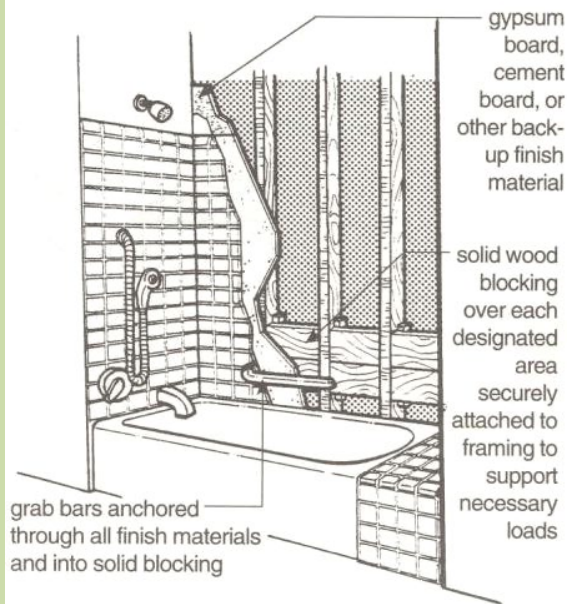
- A toilet riser can make it easier for those who have trouble bending over or standing up and sitting down.
- Risers can be purchased at home improvement and many drug stores.



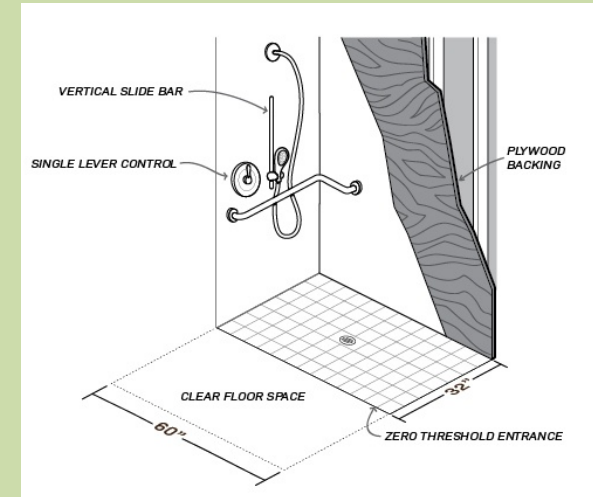
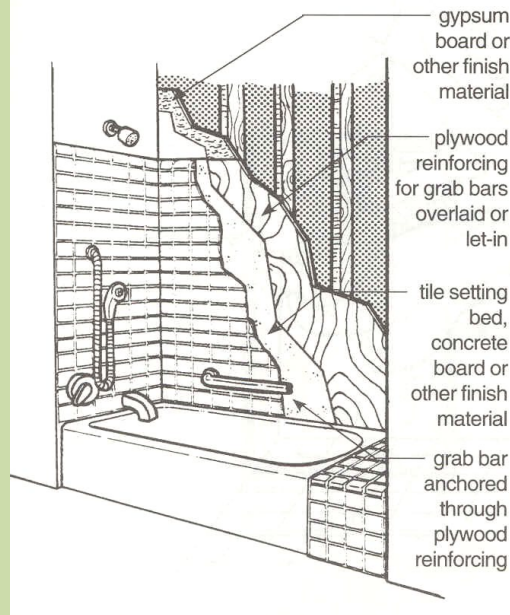
Accessible Bathroom

Grab Bar – Behind the Walls

Solid Wood Reinforcing for Grab Bars on Wood Stud Walls



Whole Wall Plywood Reinforcing for Grab Bars on Stud Walls



Using plywood backing enables the addition of grab bars throughout the room.





Circulation, Furniture Dimensions & Lighting

BEDROOM CONSIDERATIONS

Bedroom Design

- There should be a at **least 3 feet around** the bed for comfortable maneuver of wheelchair to and away from the bed
- Limit the amount of furniture in the space to **avoid clutter/obstruction**
- **Dressers should be lower, and longer**, with drawers that are easy to open.
- The **height of the bed** should be what is comfortable for the disabled individual (19" is the standard wheelchair seat height)
- **Consider adjustable beds** that can be set in a flat position or other alternative positions. For those with limited mobility, an adjustable bed can help individuals get comfortable in different body positions with minimal effort.



Image source:
<https://www.mattressadvisor.com/how-to-make-a-bedroom-accessible-for-disabilities/>

Bedroom Design

- **Bed rails or grab bars** can be used for a variety of purposes. They can be used as a support system while climbing in and out of bed, adjusting positions in bed, or used to prevent rolling and falling out of bed.
- Make sure the room has one more **windows for natural light**
- **Smooth Flooring Material** (Wood, Laminate or Tile)
- **Direct access or be close to a bathroom**



Image source:
<https://www.mattressadvisor.com/how-to-make-a-bedroom-accessible-for-disabilities/>

Lighting for the Bedroom

- The right lighting for the bedroom provides for safety and health benefits (and for aesthetics)
- Primary considerations:
 - Increase Ambient and Task Light Levels
 - Minimize Glare
 - Balance Illumination Levels
 - Increase Contrast and Improve Color Perception



Consider touch-activated lamps, motion-activated lights, night lights, and toggle or rocker-style light switches that glow in the dark



Lighting for the Bedroom

Increase Contrast and Improve Color Perception

- Individuals with disabilities have an increased need for lighting to compensate for poor vision and possible spatial navigation difficulties (IES).
- Color perception and discrimination may be difficult, high illumination levels provided by LED lights (as opposed the traditional incandescent lights) can help individuals with disabilities see and distinguish colors better.
- In a bedroom or hallway to the bathroom it would be critical to provide base lighting/nightlights to insure spatial navigation.



Bedroom Storage

General Considerations

- Well lit
- Lower the shelves so items can be reached without struggle or the need to risk a tumble from a step stool.
- Doorway to the walk-in closet is wide enough to accommodate any type of mobility assistance device
- Ample room to maneuver a wheelchair or other device inside.
- Sliding doors or foldout
- Lever style knobs/pulls



Closet Storage

Lower Closet Rods

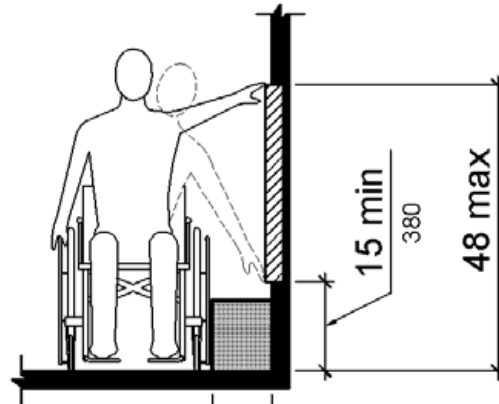
- Consider lowering closet rods to make it easier to reach clothing.
- A height of about 2 feet from the floor will help those in wheelchairs



Closet Storage

Consider accessibility features such as

- ✓ adjustable height closet rods,
- ✓ closet organizing devices, and
- ✓ moveable rod systems that can be placed at a reachable height for all users.



Wheelchair Accessible Closet



Note lower closet rod heights and various storage options

Outdoors



Image source: <https://www.hgtv.com/design/remodel/interior-remodel/tips-for-accessible-ada-home-design-pictures>



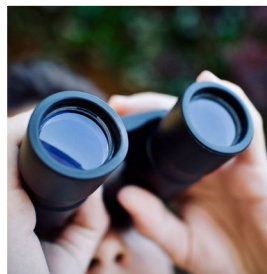
Thank You!





Mission: Increase knowledge and awareness about the role home design plays in quality of life for people with mobility limitations.

Vision: Every home is constructed to enhance quality of life for all people.



Contributors

- AARP
- Advocates
- Architects
- Business Owners
- Government Agencies
- Great Plains QIN
- Health care
- Home modification Providers
- Independent Living Centers
- Interior Designers
- NDSU Extension
- Physical and Occupational Therapists
- Rapid City Fire Department
- SDSU Extension

Learn More: <https://extension.sdstate.edu/voices-home-modification-dakotas>

Project Goals

Development and marketing of a home modification toolkit.

Education and outreach activities to promote toolkit resources.

Research to explore opportunities and challenges related to home modification.



**SOUTH DAKOTA STATE
UNIVERSITY EXTENSION**

NDSU

EXTENSION

Toolkit

Testimonials from People in ND & SD

- Videos
- Articles

Social Media Materials

- Consumers
- Providers

Educational Content

- Community Leaders
- Homeowners
- Real Estate Agents
- Home Builders

Consumer Resources

- Providers
- Funding Options

Education and Outreach Efforts

Professionals

NDSU

EXTENSION

Consumers

Housing-related
Events

