



## **UNIVERSAL DESIGN FEATURES For Aging in Place**

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Independent living should be a choice not governed by restrictions in the home. If we plan ahead for an accessible home, then the choice becomes ours. Accessibility should be a consideration whether you're facing an extensive remodel of space or simply choosing furnishings.

Universal designed homes can look attractive while allowing for accessible living. This type of design considers everyone whether you are young or old, short or tall, healthy or ill. People live longer than they used to and will most likely have some type of disability during their lifetime. The ultimate objective is to have a home that will accommodate our physical needs and will grow old with us.

A group of Universal Design advocates from the Center for Universal Design at North Carolina State University developed seven principles of Universal Design. These principles can be applied to evaluate existing environments or products, serve as guidelines in the development or renovation of existing environments, and serve to educate consumers and professionals wanting to understand the characteristics of this design approach.

### **Principle 1: *Equitable Use***

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

### **Principle 2: *Flexibility in Use***

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

**Principle 3: *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.

**Principle 4: *Perceptible Information***

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

**Principle 5: *Tolerance for Error***

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

**Principle 6: *Low Physical Effort***

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

**Principle 7: *Size and Space for Approach and Use***

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

What can you do to make your home more comfortable and add features that will serve you in future years? A one-story home or one-story living in your multi-level home is a good start. Places to eat, use the bathroom and sleep should be located on one level which can be made barrier-free for yourselves or for your guests with special needs.

Use the check list below for your home. How does it rate?

- No steps
  - Eliminate stairs at the entrance to your home – ramps are a logical replacement
  - Also level the floors of the homes main rooms such as filling in a sunken living room
  - If all bedrooms are upstairs, then is a stair lift feasible or identify a future location for an internal or external elevator?
  
- Wide doorways
  - Doorways that are 32-36 inches wide let wheelchairs pass through
  - They also make it easy to move big things in and out of the house
  
- Wide hallways
  - Hallways should be 36-42 inches wide so that everyone and everything moves more easily from room to room
  
- Extra floor space
  - Everyone feels less cramped and people in wheelchairs have more space to turn
  - All passageways and access around furniture such as beds should be a minimum of 36"

- Hard flooring
  - Or select hard commercial padding for under low pile or tight loop, high-traction rugs and carpets
  - Thresholds that are flush with the floor make it easy for a wheelchair to get through a doorway
  - Flush or beveled thresholds no higher than ½” also keep others from tripping
  
- Lever door handles
  - Door knobs have been replaced with levers in commercial and multi-housing building codes
  - Great for people with poor hand strength
  - Easier to use for every age and condition, especially when your hands are full and you need to open a door with your elbow!
  
- Electrical outlets
  - Install junction boxes no less than 15” above finished floor to the bottom of the junction box – 18” is even better
  
- Rocker light switches
  - These are so much easier to use and they are available with lighted rockers and dimmers
  - Install switches no more than 48” to the top of the junction box above finished floor
  
- Good lighting
  - Helps people with poor vision and helps everyone else see better
  - Provide good light in task areas for reading, bathing, activity and preparation areas, hallways, etc.
  - Light colored matte finishes on surfaces to reduce glare and increase foot lamberts (reflection of light off of the walls)
  - Rocker switches and/or remote controls are desirable
  - Use motion sensors in closets, exterior doors and security areas
  - Install window treatments that diffuse glare and reduce ultraviolet transmission
  
- Furniture
  - Furniture should be easy to move
  - Eased versus sharp corners are easy to get around
  - Seats should be 17” – 18” off the floor
  - Wide arms that extend to the front of the seat make it easier to get in and out of
  - Supportive backs and seats reduce fatigue
  - Color contrast aids in visual acuity
  
- Closets
  - Install adjustable shelf/rod units at children’s heights that can be raised for adults and lowered as we age and our reach is limited

Kitchen

- Include storage aides such as turn tables, slide-out shelves, glass doors, etc. to remove clutter and improve accessibility
- Finish the floor under sink base cabinet for accessibility conversion option
- Use under wall cabinet lighting over countertops to help vision
- Include an option of a sit-down preparation space with wheelchair clearance if possible
- Appliance controls should be located in front
- Choose appliances with redundant cueing and large print controls
- Choose appliances that are easy to clean and maintain
- Compact kitchen appliances that are more light weight and easy to grasp
- Consider accessibility in placement of appliances

Bathroom

- Slip resistant flooring and slip resistant bath tubs - slipping is the major cause of accidents in the home
- Cabinet heights are best at 34" to 36" – undercounter appliances usually require a finished countertop of 36"
- Consider pocket doors on 30" wide lavatory base cabinetry with a finished floor inside for wheelchair access
- Use ergonomic pulls versus knobs on cabinet doors and drawers
- Install medicine cabinets located to side of vanity or full height in stud bay of wall
- Improve vision with swing-out mirror with X and 3X magnification opposite the vanity for close viewing (make-up) and to work in tandem with the full wall mirrors over the vanity for grooming hair
- Lower thresholds in doorways and showers for safer entrance
- Roll-in or "drive-in" showers are best for everyone – slope must be ¼" per foot to the drain
- Permanent or drop-down shower seat should be at least 15" deep and 18" above finished floor to the top of the seat
- Recess stud bay storage shelves in shower to eliminate protrusions
- Install or reinforce for safety/grab bars – designer series enhance the décor
- Mount hand-held shower head and slide bars for everyone's convenience
- Select 17" high or comfort height water closet
- Include recessed stud toilet tissue holder and shelf with optional magazine rack
- "Hot stop" features on faucets to limit the swing into a full hot position
- Thermostatic or pressure balanced tub/shower valves prevent burning for the very young and the elderly's sensitive skin
- Mount towel bars at accessible heights
- Select exhaust fans to minimize noise, odors and steam (windows are not always convenient or year-round ventilation)
- Include ambient, task and night lighting

Laundry

- Locate washer and dryer on the main floor

- Raise front loaders to a convenient height (drawer bases are available from most manufacturers) – be sure to raise plumbing valves and electrical outlets on wall for easy access

It is important to maintain aesthetics in Universal Design. The space should be visually pleasing while accessible to everyone. To accomplish functionality, you need not sacrifice beauty. As a result, universally designed homes and public buildings can be just as attractive and welcoming as any other design approach. Experts are referring to the concept of Universal Design as the "wave of the future." It is the hope of Universal Design advocates that eventually all buildings, homes, and products will be designed to meet the needs of everyone.

## FOR MORE INFORMATION

Contact the [American Association of Retired Persons](#) (AARP) for publications on how to modify your home. Some examples of helpful publications available from the AARP free of charge include:

- *Home Solutions: Options to Meet Changing Needs* (D17044)
- *The Do Able Renewable Home: Making Your Home Fit Your Needs* (D12470)
- *Universal Design and Home Modification* (D16691)
- *How Well Does Your Home Meet Your Needs?* (D16427)

### Usable Technology for Human Needs

In this interview, Dr. Ben Shneiderman discusses how his message of universal usability goes straight to the heart of AARP's interest in promoting a better experience for older users on the Web.

Contact AARP at: [member@aarp.org](mailto:member@aarp.org) or 1-800-424-3410 or mail your request to **AARP**, 601 E St., NW, Washington, DC 20049

## Other Resources

### Meet a Universal Design Architect

Because of a genetic disorder, Architect Karen L. Braitmayer uses a wheelchair. Her disability has shaped her career.

### Baby Boomers and Universal Design

This article, published by Realty Times, suggests that demand from Baby Boomers is making Universal Design more popular.

## Books

Find this book online at [www.barnesandnoble.com](http://www.barnesandnoble.com):

The Accessible Home: Updating Your Home for Changing Physical Needs, Bryan Trandem (Editor), Creative Publishing International, Inc., January 2003.

## References

AARP Universal Design Home Modification: [www.aarp.org/universalhome/](http://www.aarp.org/universalhome/)

Adaptive Environments Center, Inc. Universal Design: <http://www.adaptenv.org/universal/>

Center for Universal Design at North Carolina State University: [www.design.ncsu.edu/cud](http://www.design.ncsu.edu/cud)