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## UNIVERSAL DESIGN in HOUSING

*Universal design* is the design of products and the built environment to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design  
— Ron Mace

### Description:

A home with *universal design*<sup>1</sup> features will have universal appeal for a wide range of individuals and families—whether young or old, tall or short, disabled or non-disabled. Sometimes called *inclusive design*, *universal design* creates homes that are convenient, comfortable, and attractive for everyone. Similar terms that may be used include *life-cycle design*, *trans-generational design*, and *design for all*.

*Universal design* should not be confused with legislative requirements for ADA (Americans with Disabilities Act) accessibility, which can stigmatize users as needing specialized products and equipment to accommodate a disability. Although a *universal design* home incorporates accessibility features, the items are carefully selected for universal appeal; for example, a gently sloped sidewalk, instead of a ramp, can be used to create a no-step entrance that is useful for every family member when carrying groceries or moving furniture, as well as providing easy access for wheelchair users.

A *universal design* home will include numerous features that make a home easily navigated and useable, accommodating:

- The typical variation in physical size and capability seen among family members of all ages;
- The temporary impairments people experience throughout their lifetimes and the permanent disabilities characterizing some residents; and
- The evolving physical and mental changes experienced by people as they go through the normal aging process.

For example, homes are typically designed for the "average" person; however, the standard-height bathroom sink does not work well for the family's three-year-old daughter, nor for the 6' 2" husband; the standard-height kitchen counter does not work well for a 5' housewife. A bathtub does not work as well as a walk-in shower for the teenager with a broken leg or the visiting aunt in a wheelchair. Door knobs do not work as well as lever handles for aging arthritic hands. For an elderly person who cannot stand for long periods, sit-to-work space in the kitchen lets her continue baking; and automatic shut-off features on stoves avoid tragedies for people experiencing forgetfulness. For an extensive list of universal design features, products, guidelines, and a list of resources, see *Universal Design In*

*Housing*,<sup>2</sup> a publication of North Carolina State University's Center for Universal Design.

While a *universal design* home can include a long list of products, features, and equipment—everything from lighted doorbells, to flush-to-the-floor thresholds, to hand rails on both sides of staircases—three priorities are essential:

- One no-step entrance—on an accessible path;
- Wider doorways on the main level—with at least a 32-inch clear opening;
- A bathroom on the main level—with enough space to accommodate a wheelchair.

In addition to making the home more useable by its residents, these essential features also create a *visitable*<sup>3</sup> home; that is, one that will be welcoming to visitors who have mobility limitations.

### References:

<sup>1</sup> Ron Mace, architect and educator at North Carolina State University, first coined the term universal design as "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."

<sup>2</sup> Center for Universal Design (January, 2006), *Universal Design In Housing*. Raleigh, NC: North Carolina State University, College of Design.  
[http://www.ncsu.edu/www/ncsu/design/sod5/cud/pubs\\_p/docs/UDinHousing.pdf](http://www.ncsu.edu/www/ncsu/design/sod5/cud/pubs_p/docs/UDinHousing.pdf).

<sup>3</sup> Eleanor Smith, a disability advocate in Atlanta, Georgia, founded the visitability movement that has been successful in establishing visitability laws at local and state levels across the nation.

### Benefits:

- *Universal design*—
  - Makes a home convenient, comfortable, and appealing for a wide variety of individuals and families:
    - Older people
    - People of all ages with disabilities
    - Families with young children
    - Caregivers
    - Everyone
  - Facilitates the ability of frail older people and younger-aged people with disabilities to live more independently and to age-in-place for much longer periods of time—thus, increasing a sense of confidence and competence, reducing vulnerability to depression, and delaying or eliminating relocation to institutional alternatives.
  - Reduces caregiver burden by easing the physical labor and emotional stress involved in caring for a family member with a physical or mental disability.
  - Incorporates *visitability* features that allow guests who use wheelchairs and other mobility aids to feel welcome and able to visit—thereby reducing social isolation.

- Helps individuals who have disabilities obtain employment or participate in community life, as a universal design home allows them to live independently and to come and go as they please.
- Reduces taxpayer burden by eliminating or postponing the need for costly in-home care or institutionalization.
- Incorporating *universal design* principles when the home is *initially* built—
  - Provides a lifetime of living for all residents without the need to make subsequent expensive modifications, additions, or remodeling to accommodate changes in health or abilities.
  - Is cost-efficient, as many universal design features are low-cost or no-cost when incorporated into initial construction.

**Impediments or barriers to development or implementation:**

- *Consumer attitudes:* Most consumers prefer to stay in their own homes as long as possible; yet, few recognize the need to select *universal design* features that would accommodate their changing needs and abilities as they age. Thus, there may be lower consumer demand for homes with *universal design* products and equipment.
- *Builder perspectives:*
  - The National Association of Homebuilders is opposed to mandatory *visitability* laws. Their reasoning includes low consumer demand, increased construction costs, and concerns about adding regulations that some homeowners may not need.
  - If builders are not familiar with *universal design* construction methods, they may be reluctant to learn new building techniques.
- *Legislative barriers:* It takes strong advocates to get new legislation passed. Some states, such as New York, may have difficulty in adopting local *visitability* ordinances because they are restricted by law from exceeding state building construction codes.
- *Rural challenges:* While not true of New York State, many rural areas across the country have little or no inspection of home building or remodeling projects, and some do not require builders to be licensed. This removes professional oversight that might encourage consumers to include universal design features in their homes.

**Resource—examples:**

- *Demonstration Homes:*
  - Smart House, Goldstein Museum of Design, University of Minnesota, St. Paul, MN, 55108, (612) 624-7434; contact the Museum at [gmd@umn.edu](mailto:gmd@umn.edu).  
<http://smarthouse.design.umn.edu>.

- Home for All Ages, Universal Design Learning Laboratory, College of Human Sciences, Iowa State University, Ames, IA, 50011, (515) 294-6568.  
<http://www.hdfs.hs.iastate.edu/centers/udll/>.
  - 30 features of the Universal Design Learning Lab:  
<http://www.hdfs.hs.iastate.edu/centers/udll/livingroom.php>.
- The Universal Design Living Laboratory, a national demonstration home, Columbus, OH, 43230; Rosemarie Rossetti: <http://www.udll.com/about/the-team/profile/index.cfm?userID=F1CEBD56-C296-7651-25CAAA4902227726>; contact: Rosemarie Rossetti, Universal Design Living Laboratory, 6141 Clark State Road, Columbus, OH, 43230-1913; (614) 471-6100.  
<http://www.udll.com/>.
- Utah House, a sustainable building demonstration and education center, Utah Botanical Center, Utah State University, Kaysville, UT, 84037, (801) 544-3089; contact: Jayne Mulford, Coordinator, (801) 544-3089,  
[jayne.mulford@usu.edu](mailto:jayne.mulford@usu.edu). <http://theutahhouse.org/>.
- *New Homes:*
  - Homes Across America—A Showcase of Green Homes and Resources, MSU Extension Housing and Environmental Health, Montana State University, Bozeman, MT, 59717, (406) 994-3451, [information@homes-across-america.org](mailto:information@homes-across-america.org); an Internet site to search, by state, for resource-efficient homes across the country, organizations that support resource efficiency in your area, examples of resource-efficient construction processes, and local assistance for resource-efficient building.  
<http://www.homes-across-america.org/index.cfm>.
  - Römarchitecturestudio; contact: (206) 545-7336,  
[carol@romarchitecture.com](mailto:carol@romarchitecture.com). <http://www.romarchitecture.com/index2.php>.
    - Modern Folio: <http://www.romarchitecture.com/index2.php>; then click on Magnolia Mid-Mod and Pioneer Square.
- *Remodeled Homes:*
  - Design for Life—Build or Renovate Your Home For All Ages and Stages of Life, Montgomery County Executive's office, Rockville, MD, 20850, 240-777-0311.  
[www.montgomerycountymd.gov/hhstmpl.asp?url=/content/hhs/ads/DesignForLife/DesignForLifeMontgomery.asp](http://www.montgomerycountymd.gov/hhstmpl.asp?url=/content/hhs/ads/DesignForLife/DesignForLifeMontgomery.asp).
  - Home for the Next 50 Years, *UniversalDesign.com*, which is hosted by Universal Designers & Consultants, Inc. (founder: John P. S. Salmen), Takoma Park, MD; this site is a showcase for how universal design can be applied to an existing home to make it more livable.  
[http://www.universaldesign.com/index/php?option=com\\_content&view=article&catid=487&id=79](http://www.universaldesign.com/index/php?option=com_content&view=article&catid=487&id=79).

- IDEA Center Home Modifications, Center for Inclusive Design and Environmental Access (IDEA), School of Architecture and Planning, University at Buffalo, Buffalo, New York; descriptions of six home-modification projects. [www.ap.buffalo.edu/idea/special\\_interest/special.html#IDEAPortfolio](http://www.ap.buffalo.edu/idea/special_interest/special.html#IDEAPortfolio).
- (January, 2003), "An On-The-Job Fall Changed Jyl Waters' Life," *AgriAbility Quarterly*, Vol. 3, No. 3; description of the modification of a rural home—a no-step entry on the front porch created by raising the driveway. <http://fyi.uwex.edu/agrability/files/2010/02/SlipsFalls.pdf>.

### Resource—written and web:

- Rosemary Bakker (September, 2010), *Beautiful Living for the Second Half of Life: AARP Guide to Revitalizing Your Home*. New York, NY: Lark Books. [www.aarp.org/entertainment/books/info-08-2010/independent\\_livinginbeautifulstyle.html?CMP=KNC-360I-GOOGLE-ENT-BKS&HBX\\_PK=aarp\\_guide\\_to\\_revitalizing\\_your\\_home&utm\\_source=Google&utm\\_medium=cpc&utm\\_term=aarp%2Bguide%2Bto%2Brevitalizing%2Bbyour%2Bhome&utm\\_campaign=G\\_Entertainment&360cid=SI\\_166879307\\_6659200621\\_1](http://www.aarp.org/entertainment/books/info-08-2010/independent_livinginbeautifulstyle.html?CMP=KNC-360I-GOOGLE-ENT-BKS&HBX_PK=aarp_guide_to_revitalizing_your_home&utm_source=Google&utm_medium=cpc&utm_term=aarp%2Bguide%2Bto%2Brevitalizing%2Bbyour%2Bhome&utm_campaign=G_Entertainment&360cid=SI_166879307_6659200621_1)
- "Visitability," *Concrete Change*:  
<http://concretechange.org/visitability/>.  
<http://concretechange.org/>.
  - "Policy Strategies," including sample U.S. State and Local Ordinances—links to laws and ordinances on visitability in 12 locations across the country, plus the U. S. Conference of Mayors.  
<http://concretechange.org/policy-strategies/>.  
<http://concretechange.org/policy-strategies/state-level-strategies/>.
- Prince William Aging-In-Place Committee (nd), *Easy Living with Universal Design*—information on universal design, including extensive listing of features and principles, photos, examples, and list of resources. Manassas, VA: Prince William County Area Agency on Aging.  
<http://www.pwcgov.org/docLibrary/PDF/003529.pdf>.
- "Visitability Costs Affirmed," *Concrete Change*, Decatur, GA:  
<http://concretechange.org/construction/visitability-costs-affirmed/>.
- (June 25, 2012), "Home Modifications Every Caregiver Should Know"; (July 29, 2011), "FAQs for Kitchen Design": AARP Webinars. Washington, DC: AARP.  
<http://search.aarp.org/browse?Ntt=universal%20design%20webinar>.
- "Welcome to Homemods.org," *Fall Prevention Center of Excellence*—a project of the National Resource Center on Supportive Housing and Home Modification, Andrus Gerontology Center, University of Southern California.  
<http://www.homemods.org/index.shtml>.

- Jordana Maisel, Eleanor Smith, and Edward Steinfeld (2008), *Increasing Home Access: Designing for Visitability*. Washington, DC: AARP, Public Policy Institute. [http://assets.aarp.org/rgcenter/il/2008\\_14\\_access.pdf](http://assets.aarp.org/rgcenter/il/2008_14_access.pdf).
- Wilder Research Center (June, 2002), *Practical Guide to Universal Home Design: Convenience, Ease, and Livability*. St. Paul, MN: East Metro Seniors Agenda for Independent Living. [www.wilder.org/download.0.html?report=949](http://www.wilder.org/download.0.html?report=949).
- Drue Lawlor (2008), *Residential Design for Aging in Place*. Hoboken, NJ: John Wiley & Sons. <http://www.amazon.com/Residential-Design-Aging-Place-Lawlor/dp/0470056142>.
- Barbara Krueger and Nika Stewart (2010), *Universal Design: A Step-by-Step Guide to Modifying Your Home for Comfortable, Accessible Living*. Gilbert, AZ: Knack Publishing LLC. [www.amazon.com/Knack-Universal-Design-Step-Step/dp/1599216132](http://www.amazon.com/Knack-Universal-Design-Step-Step/dp/1599216132).
- (2001), *Universal Design Handbook*, Wolfgang F. E. Preiser and Elaine Ostroff (Eds.). New York, NY: McGraw-Hill. [www.amazon.com/Universal-Design-Handbook-Wolfgang-Preiser/dp/0071376054](http://www.amazon.com/Universal-Design-Handbook-Wolfgang-Preiser/dp/0071376054).
- *Universal Design and Home Accessibility*—principles, features, examples, and information. Iowa State University Extension: <http://www.extension.iastate.edu/pages/housing/uni-design.html>.
- Mary Yearns (May, 2004), *Universal Design for Better Living—Better Tools for Everyday Tasks*. Ames, IA: Iowa State University. <http://www.extension.iastate.edu/NR/rdonlyres/D1D8781D-0EA2-46D0-81D6-DE90DBCAD237/96870/HandoutBetter1.pdf>
- Wendy A. Jordan (2008), *Universal Design for the Home: Great-looking, Great-living Design for All Ages, Abilities, and Circumstances*. Beverly, MA: Quarry Books. [www.amazon.com/Universal-Design-Home-Abilities-Circumstances/dp/1592533817](http://www.amazon.com/Universal-Design-Home-Abilities-Circumstances/dp/1592533817).
- Center for Universal Design (2006), *Universal Design IN Housing*. Raleigh, NC: North Carolina State University. [http://www.ncsu.edu/www/ncsu/design/sod5/cud/pubs\\_p/docs/UDinHousing.pdf](http://www.ncsu.edu/www/ncsu/design/sod5/cud/pubs_p/docs/UDinHousing.pdf)
- (December, 2007), *Universal Design Ideas for Style, Comfort & Safety*; Norwell, MA: R. S. Means, Reed Construction Data. [http://www.amazon.com/Universal-Design-Ideas-Comfort-Safety/dp/0876290918/ref=sr\\_1\\_1?ie=UTF8&qid=1309371683&sr=8-1](http://www.amazon.com/Universal-Design-Ideas-Comfort-Safety/dp/0876290918/ref=sr_1_1?ie=UTF8&qid=1309371683&sr=8-1).

- Mary Yearns (2001), *Update Your Home for a Lifetime of Living*. Ames, IA: Iowa State University Extension.  
[www.extension.iastate.edu/Publications/PM1824.pdf](http://www.extension.iastate.edu/Publications/PM1824.pdf).
- Steven Truesdale, Edward Steinfeld, et al. (nd), *Visit-ability: An Approach to Universal Design in Housing*—extensive information, case studies, cost analysis, and resources. Rehabilitation Engineering Research Center on Universal Design, School of Architecture, University at Buffalo, Buffalo, NY.  
[www.ap.buffalo.edu/idea/Visitability/Booklet/VisBk%20Ver3-7-03.pdf](http://www.ap.buffalo.edu/idea/Visitability/Booklet/VisBk%20Ver3-7-03.pdf).
- Mary Yearns (2000), *The Welcoming Home*. Ames, IA: Iowa State University Extension. [www.extension.iastate.edu/Publications/PM1804.pdf](http://www.extension.iastate.edu/Publications/PM1804.pdf).

**Resource (free or fee-based)—technical assistance contact names:**

- Center for Universal Design  
North Carolina State University  
Campus Box 8613  
Raleigh, NC 27695  
(919) 515-3082  
[cud@ncsu.edu](mailto:cud@ncsu.edu)  
<http://www.design.ncsu.edu/cud/>
- Center for Inclusive Design and Environmental Access (IDEA Center)  
School of Architecture and Planning  
University at Buffalo  
378 Hayes Hall  
3435 Main Street  
Buffalo, New York 14214-3087  
(716) 829-5902  
[idea@ap.buffalo.edu](mailto:idea@ap.buffalo.edu)  
[www.ap.buffalo.edu/idea/](http://www.ap.buffalo.edu/idea/)
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<http://adaptiveenvironments.org/index.php?option=Home>  
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Blog: "Aging in Place Guide": <http://www.louistenenbaum.com/category/blog/>.

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