

THE RATIONALE AND APPROACH FOR THE INTEGRATION OF THE PRINCIPLES OF UNIVERSAL DESIGN IN ALL HOUSING

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Let me begin by stating that Universal Design (UD) is not a prescriptive set of features but rather a set of seven “principles” that, according to the North Carolina State University, Center for Universal Design serves to result in; “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.”¹

One might ask if the Americans with Disabilities Act Accessibility Guidelines (ADAAG) or the Fair Housing Accessibility Guidelines (FHAG), and the Fair Housing Act Design and Construction Requirements² thereunder, would suffice as a set of prescriptive features. ADAAG does not apply to housing but it and FHAG only address the specific issues of accessibility for persons with disabilities. While UD does have some design factors in common with these Guidelines, a designer or builder must not hold to this limited set of features because UD applies to everyone. Who then is the arbiter of what design features in a home is UD or not? The answer is no one because there is no organization or group of individuals who dictate what features shall be included or certify whether a home can carry the title or imprimatur of being UD. Even if there was a set of standard features, would the homebuyer understand and see value in them? My guess is that they would first ask: what is UD? How would one respond to this question? Is there another concept that a homebuyer would initially perceive as having some value in the absence of knowing what features it includes? The title I prefer and use is Life Span Design.

I believe that the title of Life Span Design is intuitive because it implies that the home in some manner provides design features that will be beneficial to the homeowner during their lifetime. This sets the stage to develop a prescriptive set of design features that will give the prospective homebuyer a rational response to that intuitive perception. The principles of Universal Design make sense. The challenge, and therefore the difficulty, is divining how to design and incorporate features into a home that will not only cater to the principles of UD but also be cost-effective, esthetically acceptable, and be perceived as having value that equivalent to any added cost.

Life Span Design that incorporates the Principles of Universal Design has no downside. There are number of driving issues that should raise an awareness of builders as to the need for a change in how they design homes.

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² 24 CFR 100.205

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1. The aging of the population.
2. The expansion of the population.
3. The advancement of medical technology increasing the capability of recovery following traumatic injury or disease which also increases the potential for disabilities.
4. The current (2010) economic condition of the nation.
5. There is ample evidence to forecast a potential for an increase in the rate of disabilities based on obesity, which is the nation's number one healthcare issue, and low birth weight infants.
6. There is a rise in the rate of parents living with their children; i.e., known as the Sandwich Generation, because of the cost of alternative housing or long-term care facilities.
7. Adult children losing jobs and moving back to live with parents; i.e., the Boomerang Generation.

The building boom, primarily fueled by the competition in the mortgage industry which eased credit requisites, increased the housing inventory. The cost of fuel drove up the cost of building materials which, in turn, kept pumping up the cost of housing. It wasn't long before the critical mass of excess inventory and rising cost blew the new housing market up. It wasn't long before unemployment in the construction industry reached out to affect other sectors. Upside down mortgages and loss of jobs led to foreclosures which increased the inventory even more. Moreover, the homes that were built maintained the same design parameters for the bathrooms, other than the Master Bath, that have seemingly been held for a very long time in that they are defined by the width of a 5'-0" tub made it next to impossible to modify them to accommodate the needs of aging-in-place and disabling conditions. As a Medicaid Waiver provider doing home accessibility assessments, I am constantly challenged to figure out a way to create an accessible bathroom within the small confines of these bathrooms. These and other modifications are paid for by tax dollars as attested to in a study done by the State of Indiana showed that 81% of modifications to achieve accessibility in homes were funded by sources other than the homeowner. This cost, to say nothing of the inconvenience and dust that must be suffered by the homeowner, could be totally avoided if all housing incorporated Life Span Design features that allow a home to be adapted to any circumstance, whether it be temporary or permanent, that may arise during one's lifetime. Additionally, homes with more than one story had no provision for future vertical access. A home having these features also expands the market for its resale.

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The current housing market demands that builders differentiate themselves in order to survive. Production builders tenaciously resist any suggestion to redesign on the basis of the cost of redesigning the homes as well as any motivation to build more new homes in the face of a market glut. Developers began dumping property and downsizing staff. I would submit that the cost of redesigning is far less than the potential losses in today's market under a "business as usual" marketing plan.

Life Span Design requires a subtle marketing strategy and it should never use the word "accessible". The word "accessible" immediately conjures up the vision of an environment akin to hospitals or other institutions. It is associated with grab bars and other elements that they feel detract from the esthetics of a home. Once prospective buyers visit the home they will notice something different but not quite be able to put their finger on it. Wider hallways and doors make it much easier to move furniture. The absence of steps makes it easier for mothers with young children using baby strollers. The esthetics of the home are not altered.

There is another matter of curiosity to me. People spend large sums of money to purchase insurance related to an event they hope will never happen and the actuarial evidence indicates the likelihood of these events occur at a very low rate. This is how insurance companies make money. However, when it comes to considering an investment in a home that offers features that will be useful to them and potentially save them a great deal of money, to say nothing of the inconvenience, consumers choose to ignore the actuarial evidence that predicts a higher likelihood of disability, whether it be temporary or permanent, because they are more infatuated with "curb appeal" and other interior elements of "bling".

Is Life Span Design marketable? This requires a comparison of the cost of a Life Span Design home versus typically designed homes in the same target market. What else should be considered in designing a marketable home? The following information should be considered in differentiating the Life Span home design from the other "me too" production builders. An article in the August 27, 2007 edition of the Blue Ridge Business Journal entitled "Women In Charge" by Michelle Long states that; "Women make 80 to 85 percent of the buying decisions for families, represent roughly half of the population and comprise nearly half of the working population." Given the significance of this statistic, the designer should be aware of what features are priorities of women. In the Home & Garden section of the September 8, 2007 edition of The News & Observer in an article entitled "What Women Want in a House" by Marni Jameson the following items were listed:

- ◆ Bigger kitchens
- ◆ More bathrooms

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- ◆ Closets, closets, and more closets
- ◆ Smaller living room

While these design features are important marketing considerations, they aren't actually considerations under Principle One because one cannot separate "marketable" from "people with diverse abilities."

Access to, and the reputation of, schools have a significant influence on families with children. For the retirement group and Baby Boomers, "Aging In Place" is another focus of consumer education. These issues make it obvious that a marketing strategy of consumer education as to the advantages of Life Span Design is an imperative.

LIFE SPAN DESIGN FEATURES

There is no established set of features for Life Span Design. When it comes to developing this set of features and integrating the principles of Universal Design, the process is entirely subjective. The scope can be simple and broad swept or complex and filled with minute details. In order to entice a builder, the focus is on added cost. Keeping this in mind, I developed the following set of features which are noted after the guidelines for each Universal Design Principle.

UNIVERSAL DESIGN DEFINITION:

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. ³

PRINCIPLE ONE: Equitable Use

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

Guidelines:

- 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.

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Life Span Design Features

- Accessible 4'-0" wide ADAAG* compliant walkway from sidewalk or driveway
- No-step entries
- ADAAG* compliant thresholds
- 36" doors throughout
- Min. 44" hallways
- Electrical outlets and telephone jacks 18" from floor
- Switches 42" from floor
- Environmental controls 48" from floor
- Mobility device access to circuit breaker panel. Topmost breaker at max. reach of 48"
- Accessible traffic pattern to all rooms and activity areas

PRINCIPLE TWO: Flexibility in Use

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

Guidelines:

- 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.

Life Span Design Features

- Blocking for grab bar and shower seat installations
- Roll-in showers offering adequate maneuvering room for wheelchairs
- Shower system including temperature set / pressure balance single handle control, diverter valve and hand held shower
- Side and front transfer access space to commodes
- Single lever kitchen and bathroom sink faucets
- Adaptable bathroom vanities with separate sub-base that can be removed for clear access underneath
- Telephone jacks placed for convenience and ease of access
- CAT 5e wiring to provide for technology requirements
- Wiring available for future outlet at top of hinge side of exterior front and interior garage entry for installation of door operator

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PRINCIPLE THREE: Simple and Intuitive Use

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

Guidelines:

- 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.

| Life Span Design Features |
|---|
| ■ Thermostat with intuitive features and directive notations or symbols large enough to read and with sufficient color contrast |

PRINCIPLE FOUR: Perceptible Information

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

Guidelines:

- 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.

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| Life Span Design Features |
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| <ul style="list-style-type: none">■ Contrasting colors of floor materials delineating traffic passages.■ Energy saving illumination with the following levels of minimum foot-candles (fc) for specific areas:<ul style="list-style-type: none">◆ Task surfaces: 50fc◆ Passageways: 15fc◆ Kitchen (counter, sink, range): 30fc◆ Bathrooms at vanity tops: 30fc◆ Showers and bathtubs: 15fc■ Various floor materials, all of which comply with FHADG, to differentiate areas |

PRINCIPLE FIVE: Tolerance for Error

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

Guidelines:

- 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.

| Life Span Design Features |
|---|
| <ul style="list-style-type: none">■ Smoke/Fire/Carbon Dioxide Alarms■ Low/no VOC materials and finishes■ Fire extinguisher mounted on base cabinet wall next to range/cooktop |

PRINCIPLE SIX: Low Physical Effort

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

Guidelines:

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

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Life Span Design Features

- Lever handles on all swinging doors
- Handles that accommodate grasp on all sliding or bi-fold doors
- Kitchen, Bathroom and other cabinet doors fitted with D-shape or other style of handle that facilitates grasp and are ergonomic
- Garage door opener

PRINCIPLE SEVEN: 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.

Guidelines:

- 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.

Life Span Design Features

- 60" turning radius in bathrooms and Kitchen
- Lazy Susan corner cabinets in Kitchen where indicated
- Pull-out shelves in Kitchen base cabinets
- Dishwasher raised 4 inches
- Front control electric range
- Switches for disposal installed in the front apron of the sink base and range/cooktop exhaust fan/light switch installed in the base cabinet next to the range

Please note:

These Principles of Universal Design:

- address only universally usable design, while the practice of design involves more than consideration for usability. Designers must also incorporate other considerations such as economic, engineering, cultural, gender, and environmental concerns in their design processes.

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- offer designers guidance to better integrate features that meet the needs of as many users as possible.⁴
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The cost of a Life Span Design home will be 2%to 5% more than a typical home. That then brings us to issue of “value” as perceived by the customer. The builder can point out the features that set the design apart from others which hopefully establishes actual and perceived value. Cosmetic manufacturers practice this marketing approach religiously. There is an argument that I use that involves insurance to illustrate this differentiation. We buy all sorts of insurance in anticipation of an event that we hope will never happen and the likelihood of it happening is actuarially minuscule. I often wonder why we buy life Insurance when it certainly won’t benefit us. Considering the fact that the likelihood of an outcome of an event would adversely affect us is greater than those events for which we buy insurance, why would anyone balk at buying something that obviously holds some value. Therefore, it is an imperative that an optimal approach in designing homes should incorporate the development and implementation of a creative marketing strategy and plans that will address the advantages and value of Life Span Design.

Let me close by directing attention to the enormous savings that can be achieved by using Life Span Design.

1. The home is adaptable and therefore no structural modifications will be necessary. A study done by Iowa showed that 81% of modifications were funded by sources other than the homeowner. This not only reduces the funding but also the associated administrative costs.
2. The home that is adaptable will facilitate aging-in-place and accommodate the increase in lifespan. This allows the savings of tax dollars expended on institutionalization.
3. It will diminish the premiums for workers compensation by the reduction of funding modifications required by employment related disability.
4. It will allow the delivery of community based supports and services versus the cost of institutionalization.

⁴ Ibid.