

Universal Design - The Influence of Design on Function

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Aging should not mean having to sacrifice where you live in order to maintain your independence. The vast majority of older adults want to stay in their own home for as long as possible, even if age-related changes, illness or disability make it difficult for them to do so. (Isn't it interesting how we talk about people being disabled by age, illness or impairment without considering that it might actually be the spaces or objects they interact with that are disabling??) The reality is that most single family homes are not designed – nor purchased – with the needs of aging homeowners in mind. And alternatives such as retirement communities and assisted living facilities are unaffordable for many. One solution to promote aging-in-place is to incorporate *universal design* features into home renovation and new construction projects. In fact, such features make everyday activities easier for everyone, regardless of age or ability. That's because good design is functional design for all.

I recommend thinking about five primary areas of your home and how each one currently works to enhance or restrict independent living. Then, work with a knowledgeable designer, architect, contractor and/or occupational therapist who can help you make your house a functional, attractive, universally-designed home. The following list of features, while not exhaustive, is a good starting point for planning ahead.

1. Universal Entrances

- A level entrance is easier for everyone – whether you're pushing a baby stroller, carrying groceries or golf clubs, or using a cane, walker or wheelchair. Avoid the need for stairs by using gently-sloped landscaping between the driveway and front or side doors. And ensure that zero-step entrances include a beveled threshold of half an inch or less to minimize the risk of tripping.
- Wider doorways (i.e., at least 36-inches) allow freedom of movement between the interior and exterior of your home, which provides greater access to your garage, yard and neighbourhood.
- Doors with lever handles are easier to open for people with limited hand function – whether that's due to a physical impairment or because you're holding a cell phone in one hand and a coffee in the other. Installing a power door opener, or at least pre-wiring for future installation, offers even greater flexibility in terms of functional design.
- Motion-sensor lights, sidelight windows (beside the door) as well as a visual doorbell or intercom increases safety and security.

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2. Universal Interiors

- An open floor plan and/or hallways that are a minimum of 36-inches wide make it easier to move around, especially for people who use mobility devices.
- One-level designs are desirable, although not always possible. In multi-level homes, consider locating a bedroom and washroom with a roll-in shower on the main floor. Otherwise, provide an alternative to stairs such as a residential elevator, incline platform lift, or stair lift. (A neat *adaptable design* technique is to stack closets, one above the other, on each floor. This creates a ready-made elevator shaft, for future installation.)
- Increase stair safety by installing sturdy, ergonomic handrails on both sides of the stairs and ensuring stairs are well-lit with controls at the top and bottom.

3. Universal Bathrooms

- As with interior doors throughout your home, bathrooms should have a clear opening width of at least 32-inches. Ideally, this door would swing outwards or slide to close so that if someone falls against the door, it's easier to get in and help.
- A minimum 5-foot turning circle provides easy access to the toilet, sink and bathtub/shower. Spacious bathrooms not only create a sense of luxury, they also provide more room if help with personal care is needed.
- 'Comfort height toilets' that are a little taller make it easier for people with strength or balance impairments to get on and off the toilet.
- Curbless, roll-in showers are preferable to bathtubs because they accommodate the greatest range of abilities. When designed with both accessibility and aesthetics in mind, these need not be institutional-looking.
- Grab bars can be installed during construction or added later, provided that the walls are reinforced. Flip-down bars or a floor-to-ceiling pole are alternatives if there are no surrounding walls beside the toilet. In the shower area, it's recommended that you install a minimum of three grab bars - one vertically on the transfer edge and another on the back wall, with a third bar installed horizontally on the back wall.
- Regulated temperature controls in the shower and at the sink reduce the risk of burns for people with sensory impairments. Pipes should also be insulated at an open vanity, which has clear knee space under the sink for wheelchair users.

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4. Universal Bedrooms

- You'll want generous circulation space around the bed and in front of closets, dressers and windows. Typically, a minimum 5-foot turning circle and/or 36-inches between the walls and furniture is ideal.
- Access to storage can be achieved through a combination of pull-out drawers, shallow shelves and easy-to-reach hanging rods. Maximizing storage between 15-inches and 48-inches above the floor minimizes the need for bending and reaching.
- Make sure there are plenty of outlets, a phone jack and light controls within reach of the bed. In addition to having enough places to plug in your portable electronic devices, you may need power for a motorized bed, specialty mattress with air compressor, or a patient lift system that operates on rechargeable batteries.
- Choose firm, slip-resistant flooring that is not going to interfere with a walker or a wheelchair. Wood is preferred to carpeting both in terms of function and durability. For those who prefer the warmth of carpet, opt for carpet tiles rather than area rugs which are a tripping hazard.

5. Universal Kitchens

- Many of the same features noted above should also be incorporated into a universally-designed kitchen – e.g., plenty of circulation space, accessible storage, task lighting, non-slip floors, and a shallow sink and counters with open legroom. Storage carts that roll from beneath the sink/counters and sturdy pull-out shelves at counter height create adaptable spaces for those who sit to work.
- If you have trouble bending or reaching, you'll benefit from raising the height of the dishwasher and oven by a few inches and having the microwave at countertop height. Installing pull-down and/or remote-controlled upper cabinets increases the amount of usable storage without having to climb on a step-stool.
- For those with limited hand function, consider the design and placement of controls throughout your kitchen. Touch-pads on the dishwasher, stove/oven and microwave will be easier to manipulate than dials and knobs. Same with single-lever or touchless faucets, and with D-shaped door handles and drawer pulls or push-to-open hinges.
- Colour contrasting helps people with visual impairment locate outlets, switches, door/drawer handles, countertop edges and potentially hot surfaces. Non-glare surfaces and lighting are also recommended.

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