



Open to All: Window and Door Considerations for Inclusive Design



In 2020, a luxury home development in North Carolina attracted national attention with its unique concept: All the houses in Riverstone Estates would be built with universal design applied throughout, meaning every area of the home could be accessible to all, regardless of age or disability.¹ The development received recognition when one of the houses was highlighted as a Southern Living 2021 Showcase Home, a designation that spotlights excellence in custom building.²

In 2021, a home in Washington became the first to earn a National Association of Home Builders (NAHB) 2020 ICC 700 National Green Building Standard®

(NGBS) UNIVERSAL DESIGN badge, which “provides an independent third-party verification that a home is designed and constructed for all.”³

These are two of many recent examples and statistics that prove inclusive design is in demand and on the rise.⁴ There’s no single reason for why inclusive design, also called universal design, has grown in importance and will continue to become more popular. This evolving trend is the result of a confluence of events, laws, and demographic shifts that are causing homeowners and builders alike to approach home design with a focus on accessibility and inclusion for all.

30-Plus Years of Disability Rights Progress

The history of standard accessibility building in the United States began in 1961 when the American National Standards Institute (ANSI) released its Accessible and Usable Buildings and Facilities design standard.⁵ This important step laid the foundation for the Architectural Barriers Act of 1968, the first such measure enacted by Congress.⁶

Legal protections and standards got stronger in the decades that followed. In 1988, the Fair Housing Amendments Act (FHA) established adaptability requirements for multifamily dwellings, and the historic Americans With Disabilities Act (ADA) of 1990 required structures such as hotels, commercial buildings, and government facilities to be made accessible. These guidelines continue to be amended and expanded to broaden the scope of protections for people with disabilities.⁵

One of the most significant updates came in the 2010 overhaul of the ADA Standard, when the U.S. Access Board, an accessibility-focused federal agency, incorporated many standards developed by the International Code Council's International Building Code (IBC),⁷ the most widely adopted building code in

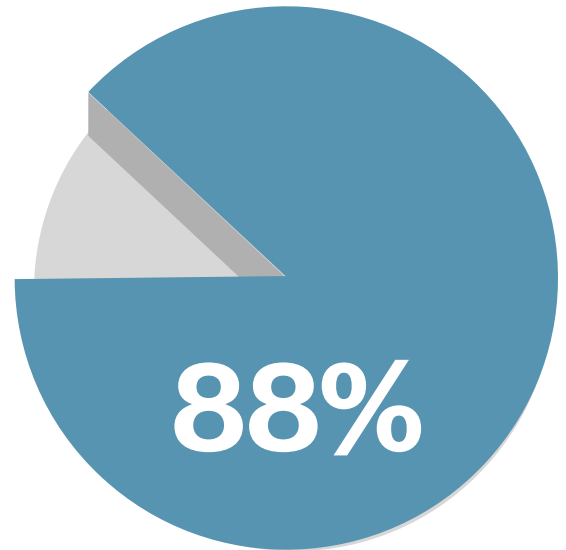
the U.S., which meets or exceeds ADA standards.⁸

While the ADA covers public accommodations and FHA multifamily residences, there are no legal requirements for single-family homes. But there are compelling reasons — and a fast-growing demand — to apply these standards to single-family homes as well.

An Aging Population That Wants to Stay Home

According to the Joint Center for Housing Studies at Harvard, the share of households headed by someone over 65 will likely jump from 26% in 2018 to 34% in 2034, and the percentage of over-80 heads of households will grow even faster than that.⁹ Since disability is more common in older populations, that also translates to a rise in the percentage of disabled Americans. The Centers for Disease Control and Prevention reports that 13.7% of adults in the U.S. have some sort of mobility-related disability.¹⁰

The vast majority — , according to a 2022 AARP-sponsored poll conducted by the University of Michigan.¹¹ Staying at home, whether it's their current house or a new accessible residence, can be more affordable than a nursing home and



OF AMERICANS AGES 50-80
WOULD PREFER TO AGE IN PLACE

helps maintain independence, preserve a sense of familiarity, and keep ties to communities.¹²

Despite this desire, the same poll indicated that only about 15% of respondents had given a lot of consideration to what it would take to age in place.¹³ This staggering disconnect shows a real need for knowledgeable builders and remodelers to educate homeowners on inclusive design and provide services to fulfill their aging-in-place needs.



52%

of U.S. adults lived in a multigenerational household, and 15% of households contained three generations.

Multigenerational Living: A Half Century of Growth

After declining for many years, the number of multigenerational households started increasing in the U.S. in the 1970s and has quadrupled since then, while other types of households have showed much slower growth.¹⁴ According to a 2021 survey, about 52% of U.S. adults lived in a multigenerational household, and 15% of households contained three generations.¹⁵

Combined with the data on Americans' desire to age in place, this speaks to the need for living spaces that work for people of all ages and abilities. While ADA compliance is meant to remove barriers for disabled people, inclusive or universal design proactively strives to make spaces usable for all people without the need for adaptation or adjustment.¹⁶ An example would be a no-step building entry versus modifying a building that was originally designed with stairs by adding a ramp to the front.¹⁷

The Aftermath of COVID-19

As with many lifestyle shifts and innovations, the trend toward wanting to age in place, and with extended family, exponentially accelerated during the pandemic. Lockdowns caused people to look more closely at their



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homes' function and purpose, and reevaluate their priorities. Additionally, the toll COVID-19 took on nursing homes — as well as the enforced separation from loved ones during the worst of the pandemic — highlighted even more drawbacks of not aging at home.¹⁸ Nursing home occupancy rates suffered¹⁹ and have been slow to rebound.²⁰

Interest in universal design has skyrocketed as a result: Josh Mauney of Paragon Building Group, a universal design custom builder, says he receives

an average of 15–20 leads per day from clients interested in his specialty, compared with about 16 in all of 2019.²¹

In addition to interest in new houses built using universal design principles, a growing number of Americans want to make alterations to their current residence so they can stay in their home.²²

Holland McGraw, product marketing manager for windows at JELD-WEN, has also seen increased interest on the pros side of the equation: "Builders are considering universal design a lot more on the front end. Historically, awareness was low, but today we're seeing people becoming more conscious of it." The need for inclusive design will continue to grow — as will awareness among homeowners, regardless of age or ability.



Doors and Windows in Inclusive Design

As the access points in and out of structures and between rooms, and sources of light and fresh air, exterior and interior doors and windows are crucial factors in whether a home is accessible to all. Whether working on a multifamily residence that must comply with standards, applying universal design to a new single-family home, or adapting an existing home for aging in place, some fundamental necessities and best practices always apply.

Doors

Size and clearance. To be wheelchair-accessible, door openings should have clear width of a minimum of 32 inches. Since nothing can protrude into the space, this often requires doors to be greater than 32 inches wide (36 inches is a frequent recommendation). To make sure a wheelchair can move all the way through, doors should be able to open to 90 degrees.²³

Threshold. Ideally, a threshold will be flush, meaning the floor is level between rooms (or the interior and exterior) with no barrier. This makes it easier for wheelchairs and remove a tripping hazard as well.²⁴ If a nonflush threshold already exists or some height is necessary, say to keep water out, it should be no more than a half inch and have a beveled slope so wheelchairs can get over it.²⁵

Handles. To accommodate those who have difficulty holding objects, an important part of inclusive design is that anything hand-operated shouldn't require gripping or twisting motions — door handles included. Doors should be equipped with levers, handles, or pulls that are easy to grasp with one hand.²⁶

Push force. To ensure they can be opened by someone with limited upper-body strength, interior doors should require no more than 5 pounds of force



to open. Door-force gauges can help determine whether a door is compliant.²⁷ Although opening-force limits for exterior doors aren't specified in ADA regulations, local requirements can range from 5 to 15 pounds. Ball bearing hinges can help make heavy exterior doors easier to open.²⁸

Flush bottom rail. To prevent wheels, canes, or crutches from catching while entering, the bottom of the door on the push side should be smooth. Most standards require at least a 10-inch-high flush surface, which can be achieved by adding a bottom rail.²⁹



Windows

Height. To ensure residents of all abilities can enjoy views, it's important to consider the placement of windows in new construction. The sill should be low enough that a person in a wheelchair can look out.³⁰

easy to operate with one hand.³³ Remote control blinds are another option that can make windows more usable for all.³⁴

Operating force. Casement windows are typically much easier to open than double-hung windows, so they're often

the ideal type for universal design.³⁵ As with doors, it's recommended that window hardware takes a maximum 5 pounds of force to operate. (This applies to the opening device as well as the lock.)

Reach. For windows to be accessible, any hardware such as handles and latches, and treatments like blinds and curtains, must be reachable without standing or stretching. To ensure it can be accessed by a wheelchair user, the handle should be between 15 and 48 inches from the ground.³¹ Additionally, any obstruction in front of the window, such as a table or radiator, needs to be factored into whether window hardware can be reached from a wheelchair.³²

Hardware. One vital aspect of accessible windows is making sure they can be opened and closed by people with disabilities. Similar to doors, any handles or latches should be able to be operated without having to pinch, grasp, or twist. An electric window opener operated by remote control could be ideal, but barring that, a lever handle or easy-to-operate crank handle is a good option. Window locks should also be



Training and Education

Builders who want to appeal to the growing inclusive design market can earn a Certified Aging-in-Place Specialist designation from the NAHB.³⁶ The organization also has several courses on universal design.³⁷

Even builders who work solely on homes that don't need to adhere to ADA or FHA requirements or local accessibility codes can benefit from training or education in this area. The U.S. Department of Housing and Urban Development offers a training curriculum on fair housing issues and technical information.³⁸ And the U.S. Green Building Council provides a course for architects about integrating accessibility into projects.³⁹

Inclusive Design Help From JELD-WEN

JELD-WEN offers ADA-compliant products in many lines of exterior and interior doors and windows. For exterior doors, JELD-WEN provides an ADA Compliant Catalog that offers a variety of accessible options. "We want to give



builders peace of mind that they're specifying everything needed for universal design," says Christina Wolff, product marketing manager for exterior doors.

For homeowners looking to make only part of their home accessible, such as the first floor, builders can assure them they don't need to sacrifice consistency in the aesthetics of their interior doors. Several JELD-WEN interior door collections contain both ADA and non-ADA options in the same style. "You can get wider doors with smooth bottom panels in some of our most popular designs," says Lindsay Tinnell, product marketing manager for interior doors. "And looking forward, all designs will take ADA considerations into account. We know this need is only going to get bigger, so JELD-WEN is always looking to expand inclusive design options for builders and remodelers."

Universal Design Creates Possibilities

The continued growth of homeowners aging in place, multigenerational households, and disability awareness means inclusive design will keep growing in importance as well.⁴⁰ Far from being an aesthetic impediment or an inconvenient requirement, universal design can inspire the creation of beautiful spaces that homeowners can enjoy for life.⁴¹



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