

Universal Design

How to design a home that supports the people who live in it — now and as needs change over time.

A GUIDE FROM HARMONY HOUSE

The Harmony House Guide to Universal Design + Aging in Place

Universal design is the practice of creating spaces that work for people across the full range of human ability and life stage — not as a medical accommodation, but as thoughtful design. A universally designed home does not look different from a beautifully designed home. It simply works better for more people, for longer. This guide covers the principles and decisions that make that possible.

OUR APPROACH

Harmony House incorporates universal design thinking into every project we take on — even when the client has no current mobility needs. The reason is simple: structural decisions made during construction are inexpensive to get right and extremely expensive to retrofit. A shower built with blocking in the walls for future grab bars costs nothing extra. A shower that needs blocking added after the tile is set requires demolition. We build for the life of the home, not just the day of move-in.

01

What Universal Design Actually Means

Designing for ability, not disability.

The term "universal design" was coined by architect Ronald Mace to describe spaces and products that are usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. In residential interiors, this means thinking about how a space functions for a person who uses a wheelchair, a walker, or a cane — and also for a child, a person carrying groceries, someone recovering from surgery, or anyone whose mobility may temporarily or permanently change.

Universal design does not mean institutional design. The most successful universally designed spaces are indistinguishable from spaces designed without those considerations — they are simply more spacious, more thoughtfully detailed, and more durable. The grab bar that is also a beautiful piece of hardware. The curbless shower

that is also a design choice. The wide doorway that is also generous and welcoming.

- Equitable use: the design is useful to people with diverse abilities
- Flexibility in use: accommodates a wide range of individual preferences and abilities
- Simple and intuitive: easy to understand regardless of experience or cognitive ability
- Perceptible information: communicates necessary information effectively
- Tolerance for error: minimizes hazards and adverse consequences of accidental actions
- Low physical effort: can be used efficiently and comfortably with minimum fatigue
- Size and space for approach: appropriate space provided for use regardless of mobility aid

“The best universal design is invisible. It simply makes the space work better — for everyone, at every stage of life.”

02

The Shower: Future-Proofing from the Start

Why we build blocking into every shower we design.

The single most important universal design decision in a residential bathroom is one that costs almost nothing at the time of construction and a great deal to add later: structural blocking in the shower walls. Blocking is simply additional framing material installed between the studs during rough-in, behind the tile, that provides a solid substrate for grab bars to be anchored into at any future point.

Harmony House installs blocking in every shower we design — regardless of the client's current age or mobility status. The reason is straightforward: a grab bar anchored into blocking can be installed in an afternoon without touching the tile. A grab bar installed into an unblocked wall requires finding studs (which may not be in the right position), using toggle anchors that are less structurally sound, or opening the wall. None of these are acceptable in a space where the grab bar's function is safety-critical.

The blocking cost is absorbed into the rough framing stage, which is already underway. The decision to add it is made on a set of drawings, not on a finished wall. We consider it non-negotiable in any new construction or renovation project we take on.

- Blocking location: 33–36 inches AFF for horizontal grab bars; 6 inches from shower entry at transfer point
- Material: pressure-treated 2x10 blocking between studs, or plywood backing across the full shower wall
- Documentation: blocking locations noted on construction documents and photographs taken before tile
- Curbless shower entry: eliminates the trip hazard and allows wheelchair roll-in access if needed

- Linear drain: allows for single-direction floor slope without visible threshold
- Bench blocking: also install blocking at bench height (17–19 inches AFF) for future fold-down seat
- Cost premium: approximately \$200–400 at rough-in; \$2,000–5,000+ to retrofit after tile is set

“We build blocking into every shower we design. The cost at rough-in is negligible. The cost to retrofit after tile is substantial. This is a decision made on a drawing, not on a finished wall.”

03

Bathroom Layout for Wheelchair Accessibility

Clear floor space, transfer zones, and the geometry of safe mobility.

A wheelchair-accessible bathroom requires a specific geometry: clear floor space for approach and transfer at every fixture, turning radius for the chair, and hardware positioned for one-handed operation. These requirements are well-codified in the ADA Standards for Accessible Design and the Fair Housing Act accessibility guidelines, but applying them in a residential context — particularly in a space with existing structural constraints — requires design judgment, not just code compliance.

The vanity is the fixture most often poorly resolved in accessible bathrooms. A standard vanity with cabinet doors below cannot accommodate a wheelchair; the knee clearance required (at least 27 inches high, 30 inches wide, 19 inches deep) must be built in. A wall-mounted vanity at the correct height, with open knee space below, serves both wheelchair users and standing users. A tilting or pivoting mirror serves both as well.

The toilet transfer zone requires a minimum 60-inch clear floor space beside the toilet to allow side transfer from a wheelchair. The grab bar configuration at the toilet — one fixed bar on the wall side, one swing-down bar on the transfer side — is a safety and functional requirement, not an aesthetic choice.

- Clear floor space at toilet: 60 inches wide minimum, 56 inches deep minimum
- Toilet height: 17–19 inches AFF (standard is 15 inches — "comfort height" is universal-design appropriate)
- Grab bars at toilet: 42-inch side wall bar at 33–36 inches AFF; swing-down bar at transfer side
- Vanity: wall-mounted at 34 inches AFF maximum; 27-inch knee clearance minimum
- Mirror: bottom edge at 40 inches AFF maximum; tilting mirror preferred
- Turning radius: 60-inch clear circle or T-shaped turning space in the room
- Door width: 32-inch clear minimum; 36-inch preferred for comfortable wheelchair passage
- Lever hardware throughout: knobs are unusable with limited hand strength

Lighting for Safety and Nighttime Navigation

How a thoughtful lighting plan prevents falls.

Falls are the leading cause of injury among older adults, and the majority of residential falls happen at night, on the way to or from the bathroom. A lighting plan designed with this in mind is one of the highest-impact safety interventions available in a home — and one that can be designed to be beautiful rather than clinical.

The key principle is wayfinding: a continuous path of low-level illumination that guides from the bed to the bathroom without requiring overhead lights to be switched on. This can be achieved with motion-activated LED strip lighting at baseboard height, step lighting, or smart switches that trigger a low-level circuit automatically after a certain hour.

Dimmable task lighting in the bathroom is equally important: a caretaker assisting at bedside should be able to provide enough light to work safely without flooding the room with full overhead illumination. Layered circuits — one for wayfinding, one for task, one for ambient — give residents and caretakers the control they need at every hour.

- Wayfinding lighting: motion-activated, at baseboard or floor level, from bedside to bathroom
- Nightlights: plug-in or hardwired, with motion sensor or dusk-to-dawn activation
- Bathroom task lighting: dimmable, positioned to illuminate the user at the vanity without glare
- Switch placement: light switches at 42–48 inches AFF for wheelchair-accessible reach range
- Smart switches: programmable for nighttime low-level activation without manual operation
- Caretaker lighting: separate dim circuit for bedside care without disturbing the resident
- No-slip flooring: matte or textured surfaces where wet; avoid high-gloss floors

“A lighting plan designed for nighttime navigation is one of the most effective fall-prevention measures available. It is also, designed well, invisible as a safety measure and beautiful as a design choice.”

The Living Environment: Furniture and Floor Coverings

Design choices that support mobility without sacrificing beauty.

Furniture selection in a universally designed space requires the same thinking as any residential commission — proportion, material, composition — with additional consideration for function and mobility. Seating that is too low is difficult to rise from without assistance; seating with arms provides the leverage needed for independent transfer. Power reclining sofas and chairs offer adjustability that manual seating cannot, and the best of them are indistinguishable from high-quality residential upholstery.

Floor coverings are the element most often overlooked in accessible design. Traditional area rugs create a significant trip hazard and are extremely difficult to navigate in a wheelchair — the leading edge catches under the wheels, creating resistance and instability. Solutions include low-pile carpet, hard flooring with no threshold transitions, or modular carpet tile with rubber backing that lies completely flat and allows wheels to move freely. The latter can be specified in residential colorways and patterns that read as designed choices rather than accommodations.

A furniture-grade bench at the foot of the bed — as opposed to a coffee table — serves multiple functions: guest seating, a surface for therapy exercises, and a visual anchor for the sleeping zone. This kind of thinking — where a design decision serves multiple purposes simultaneously — is the essence of universal design done well.

- Seating height: 17–19 inches for easy transfer; avoid low lounge seating without arm support
- Power reclining: offers adjustability and comfort for users with limited mobility
- No threshold transitions: level flooring throughout eliminates all trip hazards
- Area rugs: avoid traditional rugs; use rubber-backed modular tile or low-pile carpet
- Furniture arrangement: clear 36-inch pathways between all furniture for wheelchair passage
- Bed height: adjustable base or platform at 18–20 inches for ease of transfer
- Bedside grab bar: freestanding or wall-mounted, assists with transfer to and from bed
- Open storage: accessible from seated position; avoid high shelves as primary storage

06

The Whole-Home Approach: Designing for a Life

Universal design as a long-term investment in the home.

The most powerful universal design interventions are the ones made at the beginning of a project, before walls are closed and floors are set. A doorway widened during a renovation costs a fraction of what it costs to widen after completion. Blocking installed at rough-in costs almost nothing. A level threshold between spaces planned from the start requires no structural compensation later.

Harmony House thinks about universal design in every project we take on, whether or not the client has current mobility needs. We ask: if this client or their family member needed a wheelchair in ten years, what would need to change? If the answer is "the entire bathroom," that is a design failure that could have been avoided at modest cost during construction.

This is not pessimism about the future. It is respect for the investment our clients are making in their homes — and a commitment to designing spaces that will serve them well across the full arc of a life lived in them.

- Zero-step entry: no threshold at the main entry, garage, and primary exterior doors
- Wide doorways: 32-inch clear minimum throughout; 36-inch on primary circulation routes
- First-floor bedroom + bath: allows single-floor living if stairs become difficult
- Blocking in all bathrooms: not just the primary bath — every wet room in the house
- Lever hardware throughout: on all doors, faucets, and cabinetry
- Kitchen: pull-out shelves, varied counter heights, knee clearance at one work zone
- Outdoor: graded or ramped entry, slip-resistant hardscape, lighting at all changes of level
- Future flexibility: design the space so modifications can be made without demolition

“We ask in every project: if this client or their family member needed a wheelchair in ten years, what would need to change? We design the answer to that question into the construction documents from the start.”

OUR WORK

Universal Design in Practice

Universal design thinking is present in every project Harmony House takes on. The following project represents our most comprehensive application of these principles — a full living suite conversion designed specifically for wheelchair accessibility, without sacrificing an ounce of residential quality.

Buckskin Lane Residence — Accessible Living Suite

Bainbridge Island, Washington

A former garage converted into a full-floor living suite for a client who is wheelchair-bound. The project involved raising the entire floor 12 inches to eliminate a step-down threshold, restructuring the ceiling profile around existing structural beams, and designing a sophisticated suite — entry, living, sleeping, and bathing zones — within a tight footprint. The centerpiece is a custom walnut-veneered demising wall with a double-sided electric fireplace and a rotating TV mechanism. The bathroom is fully wheelchair accessible: roll-in shower with folding seat and double shower wands, grab bars throughout, wheelchair-accessible vanity and tilting mirror, wayfinding path lighting, and bedside grab bar for transfers. The space reads as a luxury residential environment, not a medical accommodation.

READY TO PLAN?

Designing a Home That Works for a Lifetime

Whether you are planning a full accessibility conversion, thinking about aging in place, or simply want to build a home that will serve your family well across decades of change — Harmony House brings the same design precision to universal design as to every other project we take on. We would be glad to discuss yours.

Website	harmony-house.com
Email	hello@harmony-house.com
Phone	206.207.2889
Location	Bainbridge Island, Washington