



Age-Friendly Design for Small Dwellings

Notes and Design Guidance

version 1.7

Small dwellings such as Accessory Dwelling Units (ADUs) and other types that may fall under the umbrella of Missing Middle Housing (MMH), pose particular challenges that are unique to homes with small floor plans.

This document explains and expands on certain elements that are listed in the criteria document. You can also find here elements that are not listed in the criteria document.

Please use this document in combination with other resource materials to inform your work.

AROUND THE HOUSE

PATHS AND ENTRANCES

When the entrances to patios, porches, and decks are level with the main floor, it enables individuals with limited mobility and/or visual impairments to easily access them.

Appropriate lighting at entry doors include focused light on the lockset, general illumination for seeing visitors at night, and/or motion detector controls that turn on lights when someone approaches the door, thereby eliminating the problem of dark approaches to homes. These measures also add a sense of security.

- Slip resistant, firm, even, smooth exterior surfaces along path of travel (from parking or street access, as well) to step-free entry
- If access from the attached garage is step-free, it may count as the qualifying step-free entrance.
- Low threshold, no greater than one-half inch rise
- For some models of exterior sliding doors, a low-profile threshold can be achieved by dropping the door frame and threshold into the subfloor.

GARAGES

- Allow an aisle of 4ft on one side of one of the parking spaces for easy door opening and to provide enough space for one person to assist another. One way to achieve this is by having a split layout of 2ft aisle/10ft door/4ft aisle/10ft door/2ft aisle.
- If the attached garage is used as the step free entrance to the home, it can count as the qualifying step-free entrance. The main entrance must still include a covered porch at the same level as the first floor. This is required even if the main entrance has steps.

SAFETY AND SECURITY

- Motion Detecting, light-sensitive, or programmable illumination at step free entrance and primary entrance (if different)
- Lighted doorbell at a reachable height
- A way for visitors to communicate with residents AND a way for residents to safely view visitors
- Motion detecting lights illuminate pathway to stepless home entry
- Motion detecting lights illuminate pathway to all home entries
- Motion Detecting, light-sensitive, or programmable illumination along all pathways and stairs

INSIDE THE HOUSE

CIRCULATION

Dimensional requirements for doors, doorways, and hallways improve functionality and are shorthand ways of providing improved functionality when maneuvering in tight spaces for people who may be using equipment such as walkers, and lack the strength or agility to easily turn, or for those who are using large fixed size mobility devices like wheelchairs to get around. The attention paid to this in regulatory documents such as ICC A117.1 reveals a lot of complexity in this area including relationships between spaces adjacent to doorways, door swings, and door widths. In fact the wider a doorway is the smaller the hallway or adjacent space needs to be. In the same manner, a narrow doorway is made more usable if the approach and passage are unconstrained.

Minimize hallways when possible and opt for an open plan design. There are several reasons for this recommendation: it reduces narrow passage points, maximizes the efficient use of space, makes the home feel more spacious, and improves circulation, especially when there are many visitors or individuals using mobility equipment.

Where there are interior stairs, a rise/run ratio of 7/11 is recommended. When carpeting is desired on a stair, carpeted runners that are low nap and tightly wrapped are recommended.

DOORS

- Interior pocket doors should extend a minimum of 2 inches outside the door jamb and be equipped with open-loop handles for easy gripping or other easy-to use opener.
- Bypassing closet doors should allow a clear opening of at least 32 inches.
- Exterior sliding doors- choose door system with low profile tracks.

WINDOWS

- Window selection that allows for added motorized openers
- Casement, awning, tilt & turn, and hopper are all examples of easy to use windows

BATHROOM

- Offset controls in the tub/shower with adjacent clear floor space allows for easy access from outside the tub/shower with no inconvenience when inside.

Layout

- Toilet located in 54" wide space
- A 60" diameter turning space (or T turn) in the room and 30" x 48" clear floor spaces at each fixture provides adequate maneuvering room. Spaces may overlap
- External mechanical ventilation
- Continue flooring under cabinets

Comfort

- Humidistats on bathroom fans and timed fans
- Alternate or additional heat source in bathroom

Safety

- Adjustable height, movable hand-held showerhead or a 60–72 inch flexible hose
- Sturdy grab bars for hand-held shower vertical adjustment
- Raised toilets with a height of 17–19 inches might be appropriate for some users

When customizing for some seated users

- Wall-hung lavatories acceptable with appropriate pipe protection
- Drop-in and undermount lavatories preferred with the bowl mounted close to the front edge

KITCHEN

Incorporating different countertop heights into kitchen designs can cater to the diverse needs of users. For individuals who struggle with standing for extended periods or older individuals, 32" high countertops provide the convenience of sitting while preparing food. Lower countertops with ample space beneath the sink offer practicality for short people or wheelchair users, enabling easy access. Conversely, taller individuals may find 42" high countertops more comfortable. By accommodating these varying countertop heights, kitchen designs can effectively meet the requirements of a wide range of users. Lowered 32" H work surface can be fixed or by means of pull out or fold up work surfaces.

The items below may be added as possible.

Cabinets/Shelving/Drawers

- Pantry storage is an example of storage that maximizes the 18"–54" reach range
- Pull out shelves on door base cabinets
- Full extension drawers in base cabinets
- Soft close drawers

Additional lowered storage option:

- Wall cabinets descending to the counter

Hardware/Fixtures

- Easy to use cabinet hardware
- Lever sink controls
- Light-touch or sensor faucet
- Hot water dispenser
- Pot filler over range

- Rear-mounted disposal and drain.

LAUNDRY

For an accessible kitchen, adaptations could include

- Rear drain sink and waste line.

The items below may be added as possible.

- Washer/dryer units with reachable controls, front-loading, and raised on a base
- Single combined units and stacked units are good options, especially in smaller spaces, as long as controls are easy to use, read, and within easy reach.

INDOOR AIR QUALITY (IAQ)

An **ERV, or Energy Recovery Ventilator**, is a technology used in buildings to save energy and improve indoor air quality. It works with the HVAC system. When fresh air is brought in from outside, the ERV system captures the heat or coolness from the outgoing air inside the building and transfers it to the incoming air. It also exchanges moisture, which helps control humidity levels. By doing this, the ERV system reduces the amount of energy needed to heat or cool the fresh air, making the building more efficient. It also filters out pollutants, ensuring cleaner air for occupants. In simple terms, an ERV helps buildings save energy, maintain a comfortable environment, and keep the air healthy.

The items below may be added as possible.

- Installation of an ERV
- Induction or electric cooktops w/externally vented range hood
- If fireplace, electric unit, or direct vent unit

LIGHTING

- LEDs last longer and require less frequent changing than other alternatives.

Layered Lighting refers to a combination of general and task lighting: This may include under cabinet lighting, uplighting over cabinets, pendant lighting, recessed cans, surface mounted ceiling light fixtures, lighting within cabinets and drawers, lighting over sinks and work surfaces.

The items below may be added as possible.

- Increased lighting levels suitable for aging eyes, coupled with dimmer
- Motion or occupant detecting night light in bedroom and bathroom
- In kitchen, under cabinet lighting located at front edge of bottom of wall cabinet, pointing down

FLOORING

Slip Resistant Flooring refers to floor finishes that minimize glare, are slip resistant, and offer low resistance to walking or rolling. Check on the floor material's Dynamic Coefficient of Friction (DCOF) for a rating of a minimum threshold of 0.42 DCOF, as measured by the DCOF AcuTest.

ICC 302.1 commentary - Slip resistance is based on the frictional force necessary to keep a shoe or crutch tip from slipping on a walking surface under the conditions of use likely for that surface. For example, outside surfaces or entryways may be wet from rain or snow, or bathroom floors may be wet and should be evaluated under those conditions; however, the tile on the upstairs hallway would typically not be influenced by outside weather and should be evaluated in a dry condition. Although it is known that the static coefficient of friction is one basis of slip resistance, there is not as yet a generally accepted method to evaluate the slip resistance of walking surfaces for all use conditions.

The items below may be added as possible.

- Color contrast between floor surfaces and trim/wall. Avoid glossy surfaces

SWITCHES AND CONTROLS

The items below may be added as possible.

- Rocker panel or hands free switches
- Sliding dimmer switches for overhead lighting
- High visibility, easy to read IEQ devices

- Monitoring of IEQ via Remote access — bluetooth or wifi enabled

- Added outlet over entry door allows for future installation of power operated door

WHOLE HOUSE FUNCTIONALITY

MAINTENANCE

Low Maintenance Material refers to a construction material that requires minimal effort, time, and resources to maintain its appearance, functionality, and durability over an extended period. These materials are designed to withstand various environmental conditions, resist damage or deterioration, and often require less frequent cleaning, repairs, or replacements compared to other options. The use of low maintenance building materials can contribute to reduced costs and efforts associated with building maintenance and can be beneficial for long-term sustainability and ease of ownership. Some examples are fiber cement, metal, brick, engineered wood, acetylated wood, and thermally modified wood.

The items below may be added as possible.

- If applicable, locate HVAC filter access between 18"–48" aff, in reachable location
- Easy to clean flooring, countertops, refrigerators, stoves

POWER AND HOME TECH

Whole House-Integrated Home Automation refers to a comprehensive system that allows for the centralized control and automation of various devices and systems within a home. It involves the integration of multiple smart technologies, such as lighting, heating and cooling, security systems, audiovisual equipment, appliances, and more, into a single cohesive network. Through this system, homeowners can remotely manage and automate various aspects of their home, including controlling lights, adjusting temperature, monitoring security cameras, managing entertainment systems, and even accessing and controlling these features through mobile devices or voice commands. The goal is to enhance convenience, energy efficiency, comfort, and security by bringing together all the smart devices and systems under one unified platform.

The items below may be added as possible.

- Backup Power Source
- Solar PV system with battery backup
- Generator



Age-Friendly Design for Small Dwellings

Design Criteria for ADUs and Other Forms of Missing Middle Housing (MMH)

This age-friendly design criteria is derived from the Better Living Design Institute's (BLD) Better Living Design features, which have their origins in Universal Design concepts. Residential environments have unique needs compared to public spaces. BLD specifically tailors Universal Design principles to the home setting, creating safer, more convenient, and user-friendly living spaces. This document focuses on essential design criteria for small dwellings. These features address common areas and promote aging-in-place by supporting most older adults as they mature. While elements like stairs and second levels may be present, focusing on a primary level that follows these guidelines can significantly improve functionality.

The age-friendly criteria outlines essential features for creating safe and livable homes that empower older adults to maintain their independence. This functional criteria is a subset of a more comprehensive guidance document.

Mainstreamed Appearance

The design criteria reveals a critical aspect of BLD (and universal design)—aesthetics, which helps to differentiate Better Living Design from design solutions that are just functional. With a BLD approach, usability characteristics are built-in and integrated into the overall scheme, and therefore mainstreamed—not separate and distinct. A BLD solution has to work well, look good and be marketable to a broad audience.

Over the course of its useful life, an age-friendly home might be occupied by individuals or couples across the age spectrum, young to old, and with varying ability levels. As such, these dwellings need to have improved functionality but need to appeal to a broad audience. While these criteria focus on the particular needs of older adults, no one wants to live in a home that has stereotypical or stigmatizing features. A successful design will demonstrate that they don't have to.

A successful home will have a mainstreamed appearance, inside and out. Incorporating the BLD guidance into your design will insure housing that is usable and easily adaptable.

Long-Term Flexibility

While featuring far more utility than a standard home, a BLD home is not expected to eliminate the need for households to customize their home over time. Everyone customizes their home over time in a variety of ways, but BLD features will help to avoid the most costly and extensive remodeling that is most often associated with long-term livability.

Scale

Age-friendly (or Universal, or Better Living Design) is realized at both large and small scales. At the level of foundation type and grading, as well as door width. Bathroom size and fixture location matters, but so does door and window operability. Each element listed below might not be fully achieved, and may not even apply to your situation (i.e. garages), but addressing all that apply will result in a successful design

- While the inclusion of each element in this list will make a positive difference in the lives of those who live in these homes, some elements clearly make the biggest difference: exterior and entry, interior circulation, and bathroom.
- Designs should meet or exceed state building code, and municipal zoning ordinances.

AROUND THE HOUSE

Paths

| | |
|--|--|
| | 1:20 max slope |
| | Min 42" wide surface |
| | If present: step free route to gardens, remote patios, at-grade cooking eating areas |

Entrances (See Notes and Guidance document for important information about entrances and garages)

| | |
|--|--|
| | One zero-step entrance with minimum 60"x72" covering |
| | Level (2%) landing at entry |
| | 36" wide entry door |

INSIDE THE HOUSE

Doors/Cased openings

Width

| | |
|--|---|
| | At least 32" wide net hinged door |
| | Sliding, pocket, barn doors at least 32" wide net clear opening |
| | At least 36" wide cased openings |

Clearances

| | |
|--|--|
| | 18"-24" clear floor space beside door on pull side at latch jamb |
|--|--|

Windows

| | |
|--|---|
| | 48" Maximum hardware height for window controls |
| | Easily operable windows |

Hallways/Passages/Thresholds

| | |
|--|---|
| | 42" Wide minimum hallways (note: minimize hallways) |
|--|---|

Bathroom

General

| | |
|--|---|
| | Adequate maneuvering space provided at lavatory, toilet and bathing fixture |
|--|---|

Components of Bathroom

| | |
|--|---|
| | Clear space (36") in front of toilet |
| | Toilet centered 18" from any side wall, cabinet, or tub |
| | Minimum 48" x 36" (60" preferred), curbless shower, or tub |

Controls

| | |
|--|---|
| | Offset controls in tubs and showers for easy reach |
| | Controls unobstructed by other fixtures and cabinetry |

Kitchen

Circulation

| | |
|--|---|
| | Kitchen layout with 42" between cabinet faces |
|--|---|

| | |
|---|---|
| Cabinets/Shelving/Drawers | |
| | Drawer base cabinets |
| | Cabinets with loop or touch latches |
| Appliances | |
| | Range with front or side controls |
| | If wall mounted oven, controls no more than 48"H |
| | Locate microwave within easy reach range – i.e not over stove |
| Work Surfaces | |
| | Continuous countertop between stove and sink |
| | One lowered, 32" H, work surface with knee space (could be eat-in kitchen table) |
| Laundry | |
| | Washer/Dryer unit(s) have controls on front </= 54" aff |
| | Front loading washer and dryer |
| Living Room/Flex Space | |
| | Allow a 24" clear passage to maneuver between couch and coffee table |
| | Allow a min. 36" clear passage to maneuver to seating |
| Bedroom(s) | |
| | Allow for 36" clear aisle on one side of the bed and between bed and furniture |
| | Maximized storage in 18"–54" reach zone |
| Indoor Environmental Quality (IEQ) | |
| | Low VOC sheet products, cabinet materials, and floor and wall finishes |
| | Thermostats at 42"–48" aff |
| | Layered lighting |
| Switches and Controls | |
| Lighting | |
| | Light switches 42"–48" above floor |
| | All light switches are easy to operate (rocker, motion control) |
| Electrical Panel | |
| | Locate 24"–54" aff with a minimum 30" x 48" clear floor space in front |
| Outlets | |
| | Outlets over counters and tables are within reachable range (18"–24") |
| | Added electrical outlets at beds and desks, 4-plex boxes each side and outlet near toilet in bathroom |

WHOLE HOUSE FUNCTIONALITY

Maintenance

| | |
|--|--|
| | Low maintenance exterior siding |
| | If applicable, low maintenance decking |