Life-Cycle Housing

Removing Barriers in a Home

STAYING PUT

You like your home and your neighborhood, plus your friends live nearby. But recently your house hasn't seemed to work for you.

Why not? Is it because you or a family member now use a walker or wheelchair and there is not enough room in the kitchen or bath? Is it because it is difficult to get into the house from the outside and the exterior spaces around your house are not usable? Or is it because you no longer want or have the strength to climb a flight of stairs to go to bed? If you really want to stay in your house, you may need to make some changes.

Remodeling can be complex and expensive. To remodel a house for an older person or someone with limited mobility (strength or reach), poor vision, or hearing problems, you may need to lower kitchen counters or install adjustable-height counters; expand doorways, bathrooms and kitchens; rebuild entryways; or even install stair lifts. Of course, many of these changes will help not only the elderly and disabled but also people of all ages.

Renovating a house requires a plan. Start at the street and work your way into the yard, garage or carport, house, and to outside living areas. Prioritize what is needed now, what may be needed in the future, and what is in your price range. Be flexible in your planning and take time to look for products or design ideas. Borrow a wheelchair or walker and go through a day's routine to help you identify problem areas. Talk about your daily routine with the builder or remodeler and identify things that need changing.

The major barriers to adapting an existing home are those related to:

- Accessibility: How easy is it to get into and out of the house?
- Function: How well do spaces work?
- Controls: How easy are controls to operate and reach?

The following charts and illustrations will help identify specific barriers, suggest ways to adapt or eliminate barriers, and provide estimates on costs. This is not an exhaustive list, but it should help guide you as you begin to consider adaptations. Cost estimates are given, but actual prices will vary depending on the difficulty of the job and whether you hire someone or do the work yourself.

ENTRYS AND DOORWAYS

The front entry of your house should be protected from the weather by a large roof overhang or porch. The entry area should have a slip-resistant surface and be at least 5 by 5 feet. Floors inside and outside the entry door should be on the same level, and door thresholds should be as flat as possible. Screen or storm doors can be difficult to open and should be removed whenever possible. You may have to adjust or change weather stripping if the door is hard to close.

Some modifications can be handled by you or another family member. Others may require professional assistance.

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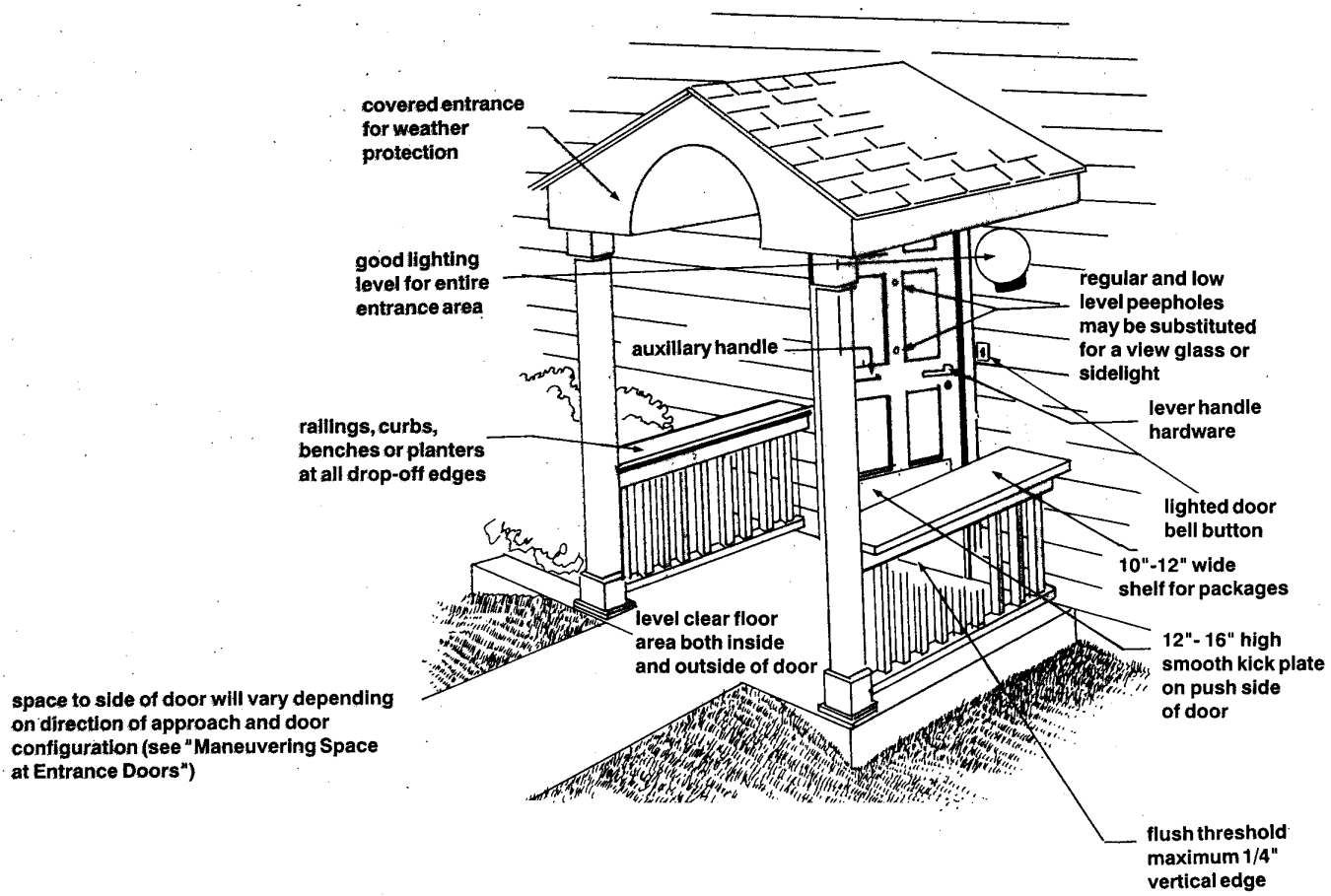


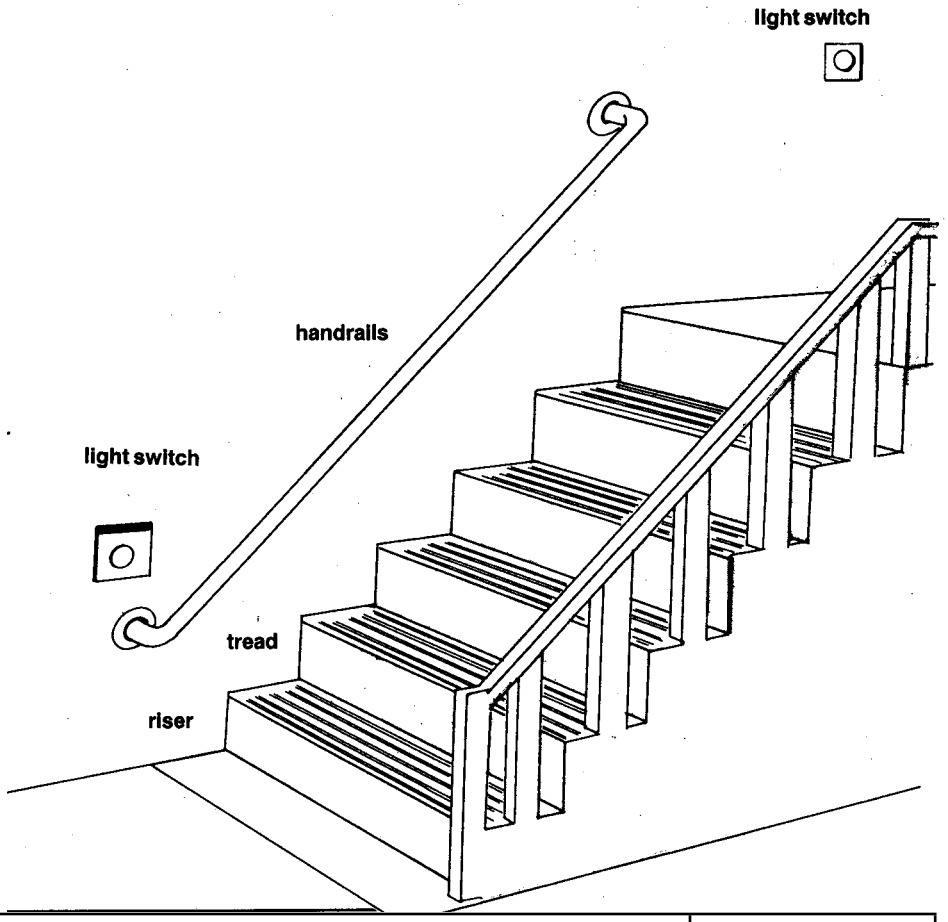
ENTRIES AND DOORWAYS

PROBLEM Exterior entry/doors:	WHAT TO DO/HOW TO FIX	COST ESTIMATE
Too narrow	Install special swing-away hinges. Remove frame; increase door width; install new door.	$51-200 $201-1,000
Have too high a threshold	Replace with lower. tapered threshold. Install ramp over threshold. Recess threshold.	$0-50 $0-200 $51-200
Need weather protection Are hard to open or close	Install covered entrance. Install power door opener. Replace handles with lever type. Install auxiliary handles.	$201-1,000 $201-1,000 $0-50 $0-50
Need safety features	Install or lower peephole. Add handle to key. Install push-button lock. Install light switch near door handle Install lighted door bell. Install motion-sensor lights. Add package shelf. Increase turn space to 5' x 5'. Install non-slip floor covering or tre1 floor surface to be non-slip.	$0-50 $0-50 $201-1,000 $51-200 $51-200 $51-1,000 $0-50 $51-1,000 $0-200
If the exterior doorway is: Too narrow	Remove door and hinges. Widen door opening. Reverse swing of door. Change handles. Install auxiliary handles.	$0-50 $51-200 $0-200 $0-50 $0-50

STEPS AND STAIRS

When there are too many steps to climb or steps are too high, you may want to add a portable or permanent ramp. Ramps must be shallow in slope (1 inch rise for every 20 inches of length is preferred; 1 inch rise for every 12 inches is the steepest acceptable). They should have handrails, slip-proof surfaces, and edge protection at the sides.

All steps in a series should have the same tread width and riser height. Single steps and open risers can be safety hazards. Close off open risers with strips or pieces of wood. Surfaces of all treads should be non-slip, and the color of the stairs should contrast the color of any pavement or floor around the stairs. Handrails and lighting can make stairs safer.



STEPS AND STAIRS

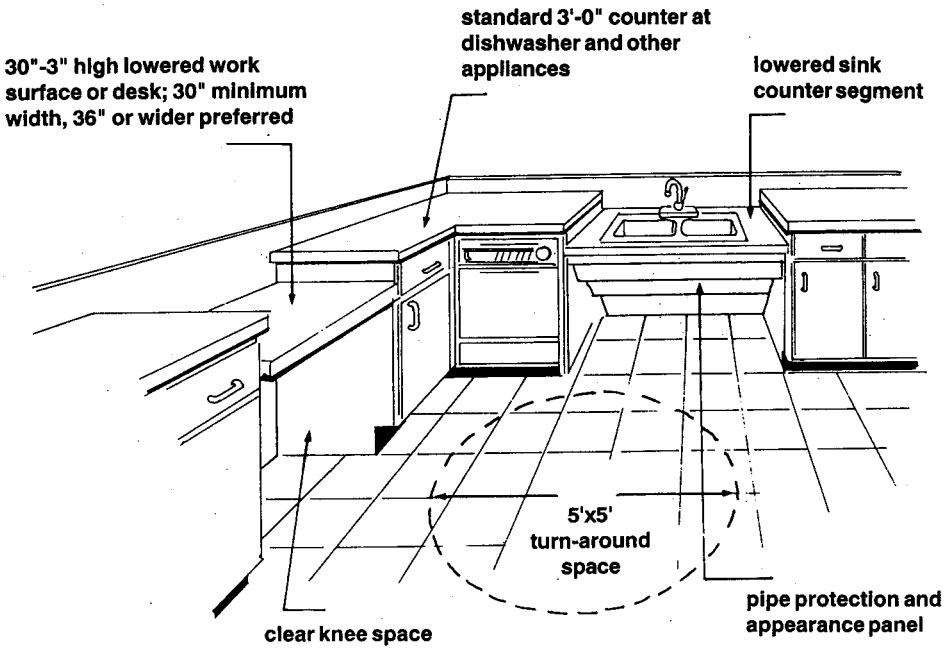
PROBLEM Exterior steps	WHAT TO DO/HOW TO FIX	COST ESTIMATE
Exterior steps: Too high	Install ramp.	$51-1,000
Too many	Install ramp; if direction change is needed, add 5' x 5' platform(s).	Over $1,000
Lack railing	Add handrails on both sides; extend beyond bottom step.	$51-200
Not lighted	Install lights at top and bottom.	$51-200
Slippery	Add non-slip strips. Add texture to paint. Cover with non-slip covering.	$0-50 $0-50 $51-200
Open risers	Close off with wood.	$0-200
Tread depth too short	Install 1" rounded or beveled strips of wood of contrasting color.	$0-50
Interior steps: Too many or too high	Install automatic chair lift. Install elevator.	Over $1,000 Over $1,000

KITCHEN

Altering a kitchen for a hearing-impaired person is largely a matter of replacing audible signals like buzzers with visual signals like flashing lights.

A kitchen used by a visually impaired person may require changes such as replacing control knobs on appliances with Braille knobs; replacing small, round cabinet pulls; using hard surfaces to aid in sound detection; using high-contrast colors; and increasing the size of type on printed material. Gas ranges are often recommended for the visually impaired because the cook can smell when they are turned on or are malfunctioning.

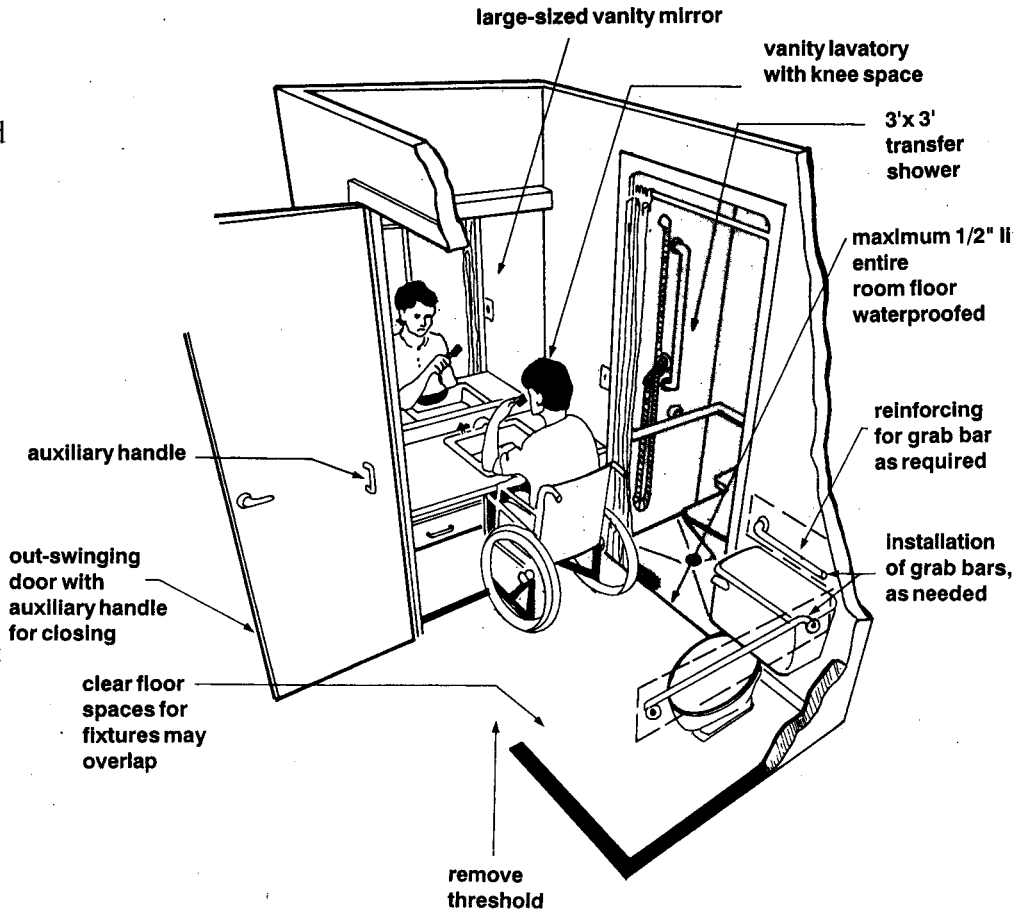
It is more difficult to make a kitchen work for a cook who must sit a lot or use a wheelchair.



KITCHEN	PROBLEM	WHAT TO DO/HOW TO FIX	COST ESTIMATE
	Space too small; need 5' x 5' turn-around area	Remove some cabinets and counters; reorganize kitchen.	$51-1,000
	Counters too high	Remove base cabinets and lower counters.	$51-200
	Wall cabinets too high	Lower to surface of counters.	$51-1,000
	Counters too deep	Use auxiliary grouping tools.	$0-50
	Base cabinets too deep	Cut out space in counter. Install roll-out shelves.	$51-200 $0-200
	Pull knobs too small or lack contrast	Replace with larger knobs in contrasting color, or loop handles	$0-50
	Controls of appliances and sink not easy to reach	Use long-handled grasping tools. Replace appliances with front-control model. Install faucet to side of sink.	$0-50 $200-1,000 $51-1,000
	Exposed hot water pipes under sink	Insulate. Mount slated covering over pipes.	$0-50 $0-200
	Floor slick or reflects light	Install non-slip, low-reflectant covering.	$51-1,000

BATHROOMS

Changing a bathroom to allow more space for people who have trouble getting around or need help bathing can be a real challenge. The average size of a full bathroom (tub, lavatory, and toilet) is 7 by 5 feet. While this may work for a mobile older person, it is not large enough to maneuver with a walker, for two people, and certainly not for a wheelchair. When possible, provide open, unobstructed floor space 5 by 5 feet in diameter. Use adjacent closet space or bump out a wall to the outside or another room. The cost will depend on the extent of construction. Often walls where grab bars need to be attached will need reinforcing. Some common bathroom problems include:



BATHROOMS

PROBLEM	WHAT TO DO/HOW TO FIX	COST ESTIMATE
Doorway too narrow	Remove door; replace with curtain. Use swing-away or reversible hinges. Remove doorway; widen; install new door.	$0-50 $0-200 $51-1,000
Nothing to hold on to	Install grab bars. Reinforce walls; install grab bars.	$0-200 $51-1,000
Space too small	Remodel and expand.	Over $1,000
Lavatory too high	Lower lavatory.	$51-1,000
Controls hard to turn	Replace with lever-type controls.	$51-200
Toilet seat too low	Install portable lift seat. Replace toilet with higher model.	$0-50 $201-1,000
Tub/shower hard to get in/out	Use transfer seat. Replace tub/shower.	$51-200 Over $1,000
Floor slippery	Install non-slip surface.	$51-1,000
Lighting poor	Add strip lighting over sink/tub. Install side lights at mirror.	$51-200 $51-200
Outlets too few or hard to reach	Relocate outlets to 15” above floor. Install additional outlets.	$51-200 $51-200
Threshold too high	Remove threshold. Install ramp.	$0-50 $0-200

CONTROLS

Each house has various controls that may be difficult to reach, see, or operate, including outlets for portable lights and appliances, switches for lights or motors, and dials for the heating and cooling system(s). Some common problems with controls include:

CONTROLS

PROBLEM	WHAT TO DO/HOW TO FIX	COST ESTIMATE
Outlets too low	Add additional outlets at 15" above floor.	$51-200
Switches too high	Add additional switches at 36-39" above floor.	$51-200
Heating/air conditioning controls too high, difficult, difficult to read or operate	Lower thermostat control unit. Replace with unit having larger, lighted dial, or use digital unit.	$0-200 $51-200
Light switch too small	Replace with rocker switch.	$51-200

SUMMARY

As you begin to think of removing the barriers in a house, remember to:

- eliminate vertical barriers, such as steps.
- use open f1oor planning and keep traffic lanes clear.
- select safety features (non-slip flooring, lever-type door knobs).
- plan for low-maintenance inside and outside.
- look for low-cost, easy-to-do changes or adaptations first before you invest a lot of time and money.

Existing houses can be modified to provide comfort, convenience, safety, and an attractive living environment for persons with limited mobility, poor vision, or hearing problems. The keys to success in making the house user-friendly are careful planning and creative design features. Changes made to the house should increase property value while making the house more accessible. Select similar design features and materials so that the renovation blends with and enhances the existing architecture.

For additional help in adapting or remodeling your home, ask your county Extension Center for North Carolina Cooperative Extension Service publications *Life-Cycle Housing: Evaluate Before Your Buy, Build or Remodel,* HE-386, and *Life-Cycle Housing: Furnishing a User-Friendly Home,* HE 391.

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