

PLOWSHARES #19

Breaking New Ground Technical Report

Making Your Farmhouse Accessible

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Introduction

Your home may be a major source of frustration—or offer comfort and security—after you experience a disability. Your outlook will depend on how well your home fits your needs. A home that is accessible and convenient can pay big dividends in terms of lifting your spirits, increasing your independence, and improving your productivity.

This publication will help you analyze your housing situation and offer solutions for making it more accessible. The ideas for change are most applicable to persons with mobility impairments—those using wheelchairs, walkers, braces or crutches. No-cost and low-cost ideas, along with more expensive alternatives, are included. Possible funding sources and additional resources are also identified.

Start with the Basics

If you must use a wheelchair to move around, it will be difficult, or impossible, to live in your home unless you can answer “yes” to three basic questions:

1. Can you get in the house?
2. Can you get through the doorways?
3. Can you use the bathroom?

If you have problems answering “yes” to any of these questions, you will need to do some serious soul-searching before deciding whether to remodel your present home or move to another location. Here are some additional questions to help you decide whether it is better to stay or move:

- Has your medical situation stabilized?
- Will you need more housing changes in the future if your abilities should decline?

- What are your goals for independent living?
- What housing modifications would be needed to accommodate your desired level of independence?
- Will you need assistance from a family member or outside caregiver? Does space need to be planned for these people to be able to work with you?
- Do you and your caregivers agree on the housing modifications that are needed? Do you need to postpone housing decisions until a caregiving routine has been established?
- What are your vocational goals? Are there better job opportunities in another community?
- What is the structural condition of your home? Does it warrant extensive remodeling?
- How important is the appearance of your home? Can modifications be made without destroying the architectural appearance or resale value of your home?
- What are your financial resources? Do you have enough money (personal, private, or public) to help pay for needed housing modifications and/or the services of a caregiver?

If you have carefully studied these questions and decide you want to proceed with remodeling plans, here are some ways to achieve the basics:

Accessible Entrance

You will need at least one entrance with no steps, or a way to get around existing steps. Consider these options for creating an accessible entrance:

- Use portable ramp as a temporary solution.
- Build ramp with no more than 1-inch rise for every 12 inches of length—a 1 to 12 ratio. (See “Guidelines for Construction of Ramps Used in Rural Settings,” listed in *Resources* section for detailed instructions.)
- Re-grade site to make ground level entrance without steps (*Fig. 1*).
- Build “bridge” to connect house and yard on sloping site (*Fig. 2*).
- Unload from wheelchair lift in van directly onto deck, porch, or landing pad.
- Install weather-resistant lift or elevator (or provide a protective structure over it).

Wide Doorways

You will need at least a 32-inch clear opening to

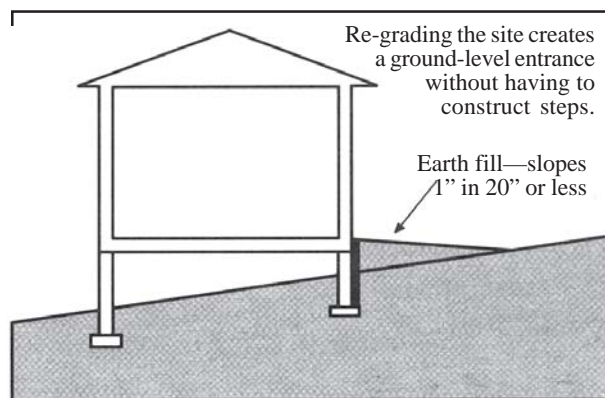


Figure 1. Earth Fill at House Entrance. (Adapted from “Accessible Housing Design File”)

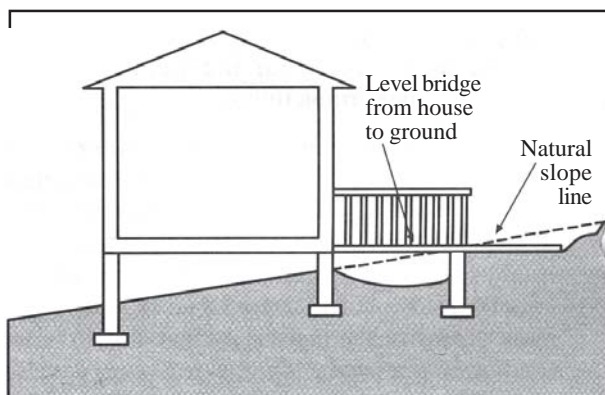


Figure 2. Bridge Used as Accessible Entrance on Sloping Site. (Adapted from Accessible Housing Design File”)

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roll a wheelchair through a doorway under your own power to avoid scraping your knuckles. Here are some ways to make an existing doorway wider:

- Remove door temporarily.
- Install swing-away hinges.
- Reverse swing of door to allow it to open wider.
- Remove some or all of woodwork around door.
- Replace existing door with wider one.

Usable Bathroom

You will need a 60-inch-diameter circle of maneuvering space to be able to reach fixtures. There are several options to gain more usable floor space:

- Reverse the swing of the door to make it open out instead of into the bathroom.
- Replace existing door with pocket door.
- Remove door. Use curtain for privacy.
- Remove base cabinets or install a roll-under countertop to provide better access to and knee space under lavatory (*Fig. 3*).
- Relocate fixtures to create more floor space.
- Replace tub with shower unit.
- Remove tub and/or shower unit and bathe while seated on toilet.
- Move lavatory to another space where privacy is not needed.



Figure 3. A lowered roll-under countertop in the bathroom provides easy access to sink and mirror. Note faucet placement on side of sink. A roll-away cart could also be used under the counter for additional accessible storage for toiletries, make-up, towels, etc.

- Relocate toilet or shower to corner of bedroom. Take sponge baths instead of tub bath or shower and do bathing in bedroom.
- Borrow space from an adjacent room to make bathroom larger.
- Add a bathroom that's wheelchair accessible.

Relocate, Restructure, and Rearrange

Before you make plans for additional remodeling, consider no-cost or low-cost ways to relocate activities, restructure tasks, and rearrange furnishings.

Relocate Activities

If you live in a two-story home or split-level house, you may need to consider ways to relocate activities for eating, sleeping, bathing, and living on one floor. A family who lived in a tri-level farmhouse was almost ready to move when the husband came home from the hospital using a wheelchair. He was unable to perform daily activities independently until they made the following shifts: (1) the living room on the main floor was turned into the master bedroom (bi-fold doors were installed for privacy); (2) guests are now entertained in the lower level family room; (3) a children's TV room was created from the daughter's bedroom on the top floor, using the furniture from the vacated living room; and (4) the daughter's bedroom furniture, along with a piano from the former living room, was moved to the master bedroom that used to be on the lower level.

These shifts allowed the husband to function independently during the day when his family was not around. He now had access to kitchen, bathroom, bedroom, dining room, and office area on one level. During the evening he could move his wheelchair to the lower level, with family assistance, by going out the front door, around the house on a ramped sidewalk, and through the sliding glass doors to the family/living room.

Restructure Tasks

If some of the household tasks you used to do are no longer accessible, think about eliminating these

tasks or having someone else do them for you. For example, other members of the household could get the mail or do the laundry. In return, you could assume some of their responsibilities. In one family, the husband who was disabled as the result of an auto accident learned to prepare meals so his wife could drive the combine during harvest season.

Rearrange Furnishings

Less is more. You will need more space for traffic lanes to maneuver a wheelchair or walker. Large pieces of furniture may block access to rooms or make it difficult to get around. Rearrange furnishings in these rooms to create straight traffic lanes. It's difficult to turn sharp corners or zigzag around furniture in a wheelchair. Move large items to another location. Some pieces of furniture may need to be stored, given away, or sold.

Identify Accessibility Problems and Potential Solutions

Now take a detailed look at specific areas of your home where you may be having difficulties. Pay special attention to activities that you want to be able to do. The following checklist identifies potential problems in your housing environment and possible solutions for eliminating them. For a more comprehensive listing of problems and solutions, please contact the Breaking New Ground Resource Center. For more information about major remodeling or new construction, refer to the *Resources* section at the end of this publication.

Yard, Walkways, and Driveway

1. Rough terrain makes wheelchair, walker, cane, or crutches difficult to use.
 - Repair or replace broken sidewalks.
 - Sweep walks frequently to remove debris (e.g., twigs, nuts, loose gravel).
 - Use crushed limestone to make pathways smoother.
 - Pave walks and driveway with asphalt or concrete.

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2. Getting wet while loading or unloading vehicle in the rain.
 - Build covered walkway from parking area to the house.
 - Build open breezeway for overhead protection between house and garage.
 - Extend roofline of the house or porch to create overhead protection.
 - Build attached carport or garage. Plan adequate overhead door clearance for raised-roof van.
3. Takes too much energy to get the mail.
 - Move mailbox to more accessible location.
 - Pave path to mailbox.
 - Put mailbox on pulley system to transport mail between house and mailbox.

The Garage/Carport

1. Steps prevent wheelchair access from garage/carport to house.
 - Build new drop-off parking area outside garage that is accessible to house at ground level.
 - Build ramp inside garage.
 - Add lift or elevator inside garage.
 - Slope floor of garage so steps or ramp is not needed (i.e., front end near house is high, back end near overhead door is at ground level).
2. Garage too narrow to get in and out of vehicles.
 - Remove part of the garage wall to gain maneuvering space for wheelchair or walker. Create new path to this “entrance.”

Outdoor Entrances

1. Steps difficult to climb.
 - Add sturdy handrails on both sides. Extend them beyond both top and bottom steps.
 - Repair broken or loose steps.
 - Enclose risers.
 - Add non-slip surfaces.
 - Rebuild or replace steps that are too narrow or too steep.

- Build ramp to create alternate route.
2. Door hard to open and close.
 - Replace doorknobs with lever handles or push plates.
 - Modify doorknobs with add-on lever handle.
 3. Door gets damaged when wheelchair bumps it.
 - Tack carpet remnant to bottom of door.
 - Install kick panel to protect door (*Fig. 4*).
 4. Raised threshold blocks wheelchair access and poses tripping hazard.
 - Replace raised threshold with one that has tapered lip.
 - Install wedge-shaped piece of lumber to bridge gap between threshold and floor.
 - Install new threshold that is flush with floor.



Figure 4. Installing kick panels on both sides of doors protects them from wheelchair damage.

(Doors also have to be modified or replaced.)

Ramps

1. Ramp detracts from appearance of the house and alerts outsiders that a person with disability lives there.
 - Replace ramp with earth berm or “bridge” to connect house and yard (*Figs. 1 and 2*).
 - Unload from wheelchair lift in van directly onto deck or porch.
 - Hide ramp with shrubbery, plantings, retaining wall, or fencing.
 - Locate ramp on side of house away from road.

2. Ramp slippery, especially in rainy or snowy weather.
 - Add non-slip surface, such as silica sand, self-adhesive grit strips, or indoor-outdoor carpet.
 - Add wood strips, placed horizontally on ramp at 2-foot intervals to provide traction for person pushing wheelchair.
 - Replace wooden flooring with metal gridwork that allows water/snow to fall through holes.
 - Extend roof or porch over ramp to provide weather protection.
 - Install plastic sheeting on sides of ramp during winter to provide wind and snow protection.
3. Ramp dangerous to use.
 - Reduce slope of ramp.
 - Add level platforms for landing spots at top and bottom of ramp.
 - Add level platform for resting spot on long ramp.
 - Add edge protection to keep wheelchair, cane, crutches, or walker from slipping off edge.
 - Install handrails on both sides.
 - Provide alternative route for people who use crutches, canes, and walkers.

Entry Space

1. Entry space too small for wheelchair use.
 - Remove interior door.
 - Replace interior door with sliding or pocket door.

The Mud Room

1. Wheelchair brings mud, dirt, and/or livestock odors into house.
 - Use separate wheelchairs for inside and outside work, and transfer from one chair to the other in mud room.
 - During summer, hose down wheelchair outside before entering house. Dry chair by rolling it over newspaper or washable throw rugs.
 - Install roll-in shower area where both person and wheelchair can be cleaned.

2. Faucets and sink difficult to reach from seated position.
 - Remove base cabinet or install a roll-under countertop to provide better access to sink (*Fig. 3*). Relocate pipes to back for extra leg room. Insulate pipes to prevent burns.
 - Remove floor of sink cabinet and center door stop to create knee access. Attach doorstop to back side of door so cabinet appearance is not changed.
 - Replace old sink with wheelchair-accessible lavatory.

The Kitchen

1. Counters too high to be able to work comfortably from seated position.
 - Remove base cabinet(s) and install lower counter or table for seated work area. Lower upper cabinet(s) above work area to create reachable storage.
 - Use pull-out cutting board as lowered work surface.
 - Place board across top of open drawer.
 - Use lap tray for food preparation area.
 - Pull kitchen table/card table near existing kitchen to create seated work area.
 - Use hollow-core door across sawhorses, cabinets, or shelf units to provide leg room for new work area.
2. Sink faucets hard to reach from wheelchair.
 - Remove floor of sink cabinet and center doorstop to create knee access. (Attaching doorstop to back side of door to keep cabinet appearance.) Insulate pipe to prevent burns.
 - Replace separate hot and cold faucets with single-lever control.
 - Add extension arm to single-lever faucet.
3. Can't reach items stored in refrigerator or freezer.
 - Use lazy Susan to make items accessible.
 - Purchase side-by-side refrigerator/freezer for easier access.

- Select refrigerator that has water and ice dispenser in door.
- Purchase small refrigerator for supplementary storage next to seated work area.
- Have someone else transfer items from chest freezer to freezer section of refrigerator weekly.
- Use a “reacher” to get high-stored items (*Fig. 5*).

4. Kitchen too large for wheelchair use.

- Create a mini-kitchen (with microwave oven, portable appliances, essential supplies/utensils) that is reachable from one spot. Store small items on countertop shelf unit or rolling cart.

Living Areas

1. Windows and window coverings hard to open and operate.



Figure 5. Using a reacher may be all that's needed for improved accessibility around the home.

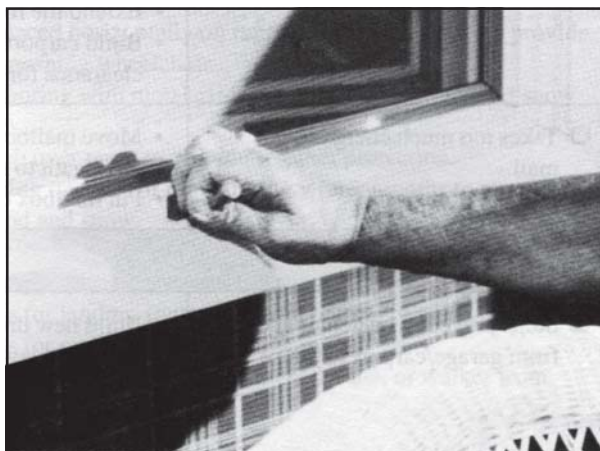


Figure 6. Hand-cranked casement-style windows may be easier to open than double-hung windows.

- Install auxiliary handle on bottom sash of double-hung windows.
- Replace double-hung windows with hand-cranked casement-style windows (*Fig. 6*).
- Clear floor space in front of window so controls are easy to reach.
- Select mini-blinds that come with long wands.
- Install power-operated windows and drapes.

2. Have trouble getting out of chair or sofa.

- Place pneumatic seat lifter in chair.
- Use chair that has sturdy arms.
- Raise chair or sofa on wood blocks.

3. Furniture, doors, walls, and woodwork get damaged by wheelchair.

- Move fragile or valuable furniture to protected locations.
- Staple carpet remnants around door frames.
- Install kick panels on doors (*Fig. 4*).
- Make “sleeves” from carpet remnants to protect chair legs.
- Select durable furniture.
- Use corner guards and plexiglas sheets to protect walls.

Bedrooms

1. Bedroom on upper floor not accessible

- Relocate bedroom on accessible floor.
- Place bed in one end of large room on accessible floor. Use bookcases or screens to create privacy walls.
- Use daybed in living room to create sofa by day and bed at night.
- Install stair-lift to another floor. (Requires transfer to and from lift.)
- Install chair-lift to another floor. (Lifts both person and wheelchair.)
- Install residential elevator. (Elevator shaft can be located outside house by converting windows to access doors.)

2. Feel “stranded” after getting in bed.
 - Install intercom system.
 - Use baby monitor as intercom.
 - Create “control center” near bed, with phone, light switches, remote controls for TV and radio, and emergency call button within reach.
 - Program automatic dialer phone with emergency numbers.
3. Bedroom too small for maneuvering wheelchair.
 - Use a smaller bed.
 - Push bed against a wall to create access route.
 - Relocate furniture to another room.

Bathrooms

1. Worried about falling in bathroom, especially when taking bath or shower.
 - Install grab bars near tub and shower. (Be sure grab bars securely fastened into wall studs.)
 - Replace existing shower head with hand-held one to be able to bathe while seated.
 - Purchase bath bench that straddles tub (i.e., two legs inside, two legs outside).
 - Use hydraulic seat or boom-lift to transfer in and out of tub.
 - Install transfer shower with built-in seat.
 - Install roll-in shower. (Requires transfer to shower chair).
 - Build combination shower-toilet compartment so toilet can be used as shower seat. (Useful for someone with high spinal cord injury.)

The Office

1. Can’t get knees under desk.
 - Put desk on blocks to make knee space higher.
 - Use wheelchair that has cut-away arms to fit under desk.
 - Transfer to secretarial chair to do desk work.
 - Purchase hollow-core door or laminated counter to use as a desk top. Support with two-drawer file cabinets, short bookcases, saw-horses, or blocks.

2. Work area not very efficient.
 - Create L-shaped work area with two surfaces at right angles to each other. Use a secretarial chair to pivot from one counter to the other.

The Laundry Area

1. Can’t use stairs to reach basement laundry area.
 - Move existing laundry equipment to accessible floor.
 - Replace existing equipment with stacked washer-dryer unit located on accessible floor.
2. Can’t reach controls on laundry equipment.
 - Use “reacher “ to operate controls.
 - Purchase laundry equipment that has touch controls or front controls.
 - Purchase front-loading washer and dryer for easier access.

Funding

The following list identifies potential funding sources for making needed modifications. Contact these organizations to determine their eligibility criteria and process for obtaining financial assistance.

- Independent living funds through State Department of Vocational Rehabilitation
- Catastrophic case management programs through some health insurance companies
- Worker’s compensation insurance benefits
- Veterans Administration
- Public and private social service agencies
- Local church groups
- Community organizations, such as Farm Bureau, Shriners, Lions, Optimists
- Centers for Independent Living
- Area Agencies on Aging
- Federal income tax (deduct medically necessary equipment and structural modifications as medical expenses)
- Community fund raising events for individuals or families

Resources

The following list of resources includes publications that are free or low-cost, as well as major reference books. You may be able to borrow some of them from a public library or Cooperative Extension Office.

Free Publications

Abledata. A computerized data base of commercially available assistive devices, such as fold-away door hinges, roll-in showers, and accessible sinks. Contact your state program for assistive technology or call toll-free 1-800-227-0216.

Designs for Independent Living, Form No. 1B310 Rev. A., 1986, and *Tools for Independent Living*, Form No. 1B314 Rev. A., 1986. Appliance Information Service, Whirlpool Corporation, Benton Harbor, MI 49022.

The DoAble, Renewable Home: Making Your Home Fit Your Needs, 1991. John P.S. Salmen, Consumer Affairs Program Department, American Association of Retired Persons (AARP), 1909 K Street, NW, Washington, DC 20049.

Housing Information Packet. Paralyzed Veterans of America, 3636 16th Street, NW, Washington, DC 20010.

The Hartford House: How to Modify a Home to Accommodate the Needs of Older Adults, 1990. The Hartford House, c/o Hartford Insurance Group, Hartford Plaza, Hartford, CT 06115.

Home Safety Checklist for Older Consumers, 1986. U.S. Consumer Product Safety Commission, Washington, DC. Call 1-800-638-2772; dial 229 for publications ordering #701 (Spanish edition #701S).

Modest Home Makeovers: Making More of the Space You've Got, 1987. Mary H. Yearns, Lois N. Warne, and Debra A. Steilen, North Central Regional Extension Publication No. 328, Iowa State University, Ames, IA 50011.

Low-Cost Publications

A Consumer's Guide to Home Adaptation, 1989. The Adaptive Environments Center, 374 Congress St., Suite 301, Boston, MA 02210. \$9.50.

The Gadget Book: Ingenious Devices for Easier Living, 1985. Dennis R. LaBuda, American Association of Retired Persons, 1909 K Street, NW, Washington, DC 20049. \$10.95.

Guide to Independent Living for People with Arthritis, Catalog No. 4081. Arthritis Foundation, 1314 Spring St., NW, Atlanta, GA 30309. \$4.50.

Guidelines for Construction of Ramps Used in Rural Settings, Plowshares #11, Special Breaking New Ground Technical Report, 1991. Dean A. Brusnighan and William E. Field, Breaking New Ground Resource Center, Purdue University, Agricultural Engineering Building, 225 S. University Street, West Lafayette IN 47907-2064. \$2.50

House Planning Handbook, 1988. Midwest Plan Service, Iowa State Univ., Ames, IA 50011. \$6.

How to Build Ramps: Reusable, Economical, Safe, 1993. Metropolitan Center for Independent Living, Inc., 1600 University Avenue West, St. Paul, MN 55104-3825. \$10.

Books

The Accessible Housing Design File, 1991. Barrier Free Environments, Inc., Van Nostrand Reinhold, New York, NY. Paperback.

The Complete Guide to Barrier-Free Housing, 1991. Betterway Publications, White Hall, VA. Paperback.

Housing Interiors for the Disabled and Elderly, 1991. Betty Ann Boetticher Raschko, Van Nostrand Reinhold Company, New York, NY.

Video

Building and Remodeling for Accessibility, 1993. Hometime, 4275 Norex Drive, Chaska, MN 55318. Order for \$11.95 + \$3.00 shipping at 1-800-489-9955. (Approximately 25 minutes.)

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