REMODELING FOR ACCESSIBILITY

BY KENNETH HOFFMAN

I work on Cape Cod. The Cape is a magnet for the newly retired and so has a significant percentage of older residents. As they strive to live independently in their own homes, I am asked more and more to make modifications that allow for individual personal difficulties. I did not consciously seek this type of business, and at first I was unprepared, even reluctant. But eventually I found I had filled a niche and I built up my business with "regular" customers. This article is meant to share information gleaned by trial and error to assist you if you ever find yourself in a similar situation.

Planning The Project

I have discovered that many older folks have two major concerns: that the end result should not look "institutional" and that modifications should not cost too much. Since my policy is to include close family members in planning the project, I have observed that they share similar concerns: They generally request that alterations enhance the value and marketability of the property, and that the modifications are easily reversible when the loved one passes on or moves into nursing care. These are sensitive issues, but I have found it helps to discuss them early in the process — it makes for a satisfied customer long after the job is done.

Identify the problem. During the family conference, it is important to get the client to describe his or her physical limitations. Is it a relatively short-term condition that will improve? Will it remain the same for the rest of the client's life? Will it worsen? Are additional problems likely or foreseeable? This information should be factored into the design at the project planning stage. Often, a short-term plan will only meet a client's current needs, but a long-term multistage plan can accommodate new problems should they arise.

Candid discussions and an evaluation of *specific* physical limitations are essential to a successful project and a satisfied customer. If you work in private homes, as I do, you may not be bound by codes, so you can focus on helping your customers overcome personal barriers so they can enjoy as much independence as possible.

Observe your client. I believe the best thing you can do is listen to and closely observe your client. One of the tricks I use when the problem involves arm/hand mobility is to seat the person comfortably at a table, spread out an old newspaper, and have the client hold a marker and trace motions that are comfortable to make. A tape measure can then easily convert this exercise into working measurements.

Closed fist test. Another trick to use is the "closed fist" test. Simply stated, if a device is meant to be opened, can you do it with a closed fist? The answer should be "yes." Make a list of everything in the house that has to be opened. Cabinet doors, drawers, and pull boards all fall in this category.

Knobs can be replaced with loop hardware. Twist-action knobs should be replaced with lever-action hardware. One simple kitchen cabinet modification I have made many times is to replace the ubiquitous friction catch with a magnetic catch. This simple, inexpensive modification makes a big difference in the lives of some people. Closing can be made easier by adding push plates and kick plates. For homes that are being modified for wheelchair use, do not forget to suggest corner protectors and plates on door jambs to safeguard surfaces from scarring.

Entryway Access

Gaining access to the home is a problem faced by many of my customers. Access may require only a simple hardware change, from a standard-twist doorknob to a lever-action handle (for those with arthritic hands, who have difficulty grasping). An inexpensive way to make this modification is to use a HandiLever (Extend Inc., P.O. Box 864, Moorhead, MN 56560; 218/236-9686), which attaches to an existing doorknob (see Figure 1).

Ramps. When the problem is a step-up from outside grade to floor level, things may be simple or quite complicated. The condition may sometimes be correctable by simply regrading the soil from the driveway to the porch. More often, though, some type of ramp is required. I try to choose materials (concrete, pressure-treated lumber, brick pavers, etc.) that best fit the home visually, meet budget requirements, and provide safe footing in inclement weather.

In a recent project on a typical ranch-style home I built the ramp parallel to the front wall of the house, connecting the front door concrete stoop with the paved driveway. I moved the foundation plantings out 6 feet to allow for the ramp and to screen it from street view.

Ramps require railings to meet the usual code specs. By making the ramp 48 inches wide, an additional (low) handrail can be added to each side (see Figure 2). This allows those in wheelchairs to easily pull themselves up. The optimum slope of a ramp is 1-inch of rise for every 12 inches of run. Each end of the ramp must meet a level surface, with the handrail extending beyond the end of the ramp. The platform size at the entry door should also accommodate any outward door swing (such as a storm door), but in no case can you safely get by with less than a 4-foot-square platform.

Often you will find that the preferred entry door is located inside the garage, closest to the family car and sheltered during

In an accessible kitchen, an opening below the sink allows space for a wheelchair.

HANDICAPPED ACCESS DOESN'T HAVE TO BE EXPENSIVE OR LOOK INSTITUTIONAL. KNOWING YOUR CLIENT'S SPECIFIC NEEDS IS THE KEY.

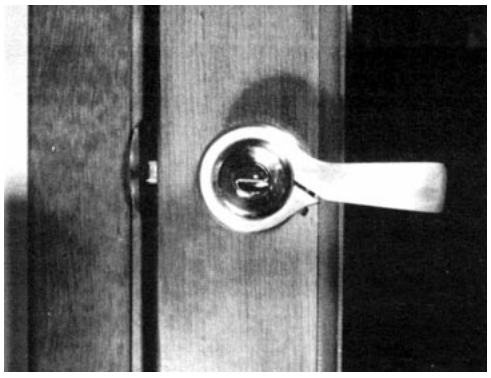


Figure 1. *For clients who have trouble grasping, HandiLever by Extend Inc. is an inexpensive way to convert a doorknob to a lever-action handle. It comes in a variety of finishes in sizes to fit standard doorknobs.*

Figure 2. *A second handrail installed at a lower height makes it easier for those in wheelchairs to pull themselves up an access ramp. For wheelchair use, the slope of a ramp should not exceed one in twelve.*

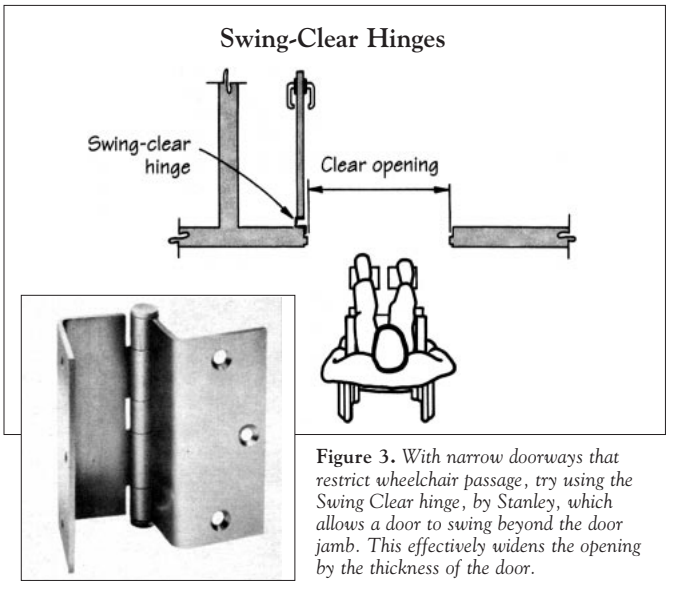


Figure 3. *With narrow doorways that restrict wheelchair passage, try using the Swing Clear hinge, by Stanley, which allows a door to swing beyond the door jamb. This effectively widens the opening by the thickness of the door.*

inclement weather. This usually requires, because of the 1:12 rule, a ramp that reverses at a platform midway in the vertical rise. Often there will not be enough space available for safe ramping in the garage. In that case you may have to "get by" with modifying the stairs as best you can, unless the customer's budget will allow for a lift.

Lifts. There are two types of lifts available: the vertical lift and the inclined lift. Installations vary from site to site and require a visit from a product rep. You will usually be expected to do the prep work for the lift installation.

If your customer uses a wheelchair, you will also need to know the following: Is the wheelchair a manual or a powered chair? Powered chairs make three-point turns while manual chairs make pivoting turns, so space requirements for even simple turns can be quite different depending on wheelchair type. No matter what type of chair your client uses, when you build a ramp try to use straight runs and minimize the number of turns, especially at doorways.

Narrow doors. One common problem is that doors are too narrow — not only entry doors, but doors within the house, too. For most wheelchairs a 2'-8" door is the minimum you can use; in most cases a 3'-0" door is preferable.

Stanley Hardware (480 Myrtle St., New Britain, CT 06053; 800/622-4393) makes some neat offset hinges, called "Swing Clear" hinges, that allow the existing door to swing completely free of the opening to 95 degrees (see Figure 3). By installing these hinges, you will gain about an additional 1 1/2 inches in the doorway with a minimum of labor and cost. Unfortunately, if you need more space than that, the only solution is to rip out the old door framing and reframe for a new, larger door.

Safe stairs. Clients who are not confined to wheelchairs, but who have mobility problems, are often forced to enter the house using stairs. If the stairs don't have a landing, they may be difficult to use. In such cases, you can install grab bars at an appropriate height. Be aware that leg braces, not uncommon, often immobilize the leg or ankle. The loss of flexibility in the ankle can make even the most carefully designed stairs either unsafe or difficult to use. To improve stair safety, open risers should be closed, and protruding tread nosings should be eliminated, either by removal or by making them flush with a filler strip (see Figure 4). Otherwise toes can catch, potentially resulting in a nasty fall.

Thresholds. Thresholds seem innocent enough at a glance, but for those with impaired mobility they can be toe grabbers, and for people in wheelchairs they can seem like hills to climb. I try to remove thresholds whenever possible. If for some reason I can't remove a threshold, I devise a wedge that tapers to the floor on both sides of the threshold. On a recent job, I lifted the carpeting, glued down squared wood shingles, and then put the carpeting back in place.

Any change in floor surface elevation that cannot be eliminated (such as a sunken living room or dining room) needs to be marked with a visual clue, such as balusters or a railing.

Grab Bars

Probably the most helpful and cost-effective product for elderly customers is a securely attached, appropriately placed grab bar (see Figure 5). Properly chosen and installed, grab bars enhance the value of a home and help prevent the most common household accident by people of all ages — falling. I often encourage people living independently to even put them in long hallways, just for reassurance.

Yet grab bars are often a source of vehement customer objection. The first objection is usually that they look institutional. Use some persuasion and try to educate your clients otherwise. Tubular Specialties Manufacturing Inc. (13011 So. Spring St., Los Angeles, CA 90061; 800/421-2961) has an attractive catalog that I bring along to back me up. It has a wonderful assortment of grab bars for every need, in different styles and colors.

The next objection is usually something like: "I don't need a grab bar; I've been using the...fill in the blank...and it works fine." Where there's no grab bar present, people use towel bars, toothbrush holders, mirrors, doorknobs, soap dishes, bureau drawers — any number of items not intended for such use.

A word of caution on installing grab bars: Make sure you have them well anchored. Do not be charmed, coerced, or bullied into shortcutting. They *must* be fastened into solid blocking or studs. No mollies, sleeves, or even toggle bolts. The minimum test, according to *ANSI A117.1*, is that they should be able to support 250 pounds in shear or pull-out. You could find yourself with major liability if a grab bar fails from customer use.

Most of the guidelines for railings apply to grab bars. They should be 1 1/4 inches in diameter, with a profile the hand can easily grasp (no sharp edges), and they should be no further than 1 1/2 inches away from the wall. Aside from the obvious, the dangerous thing about using a towel bar as a grab bar is that the arm can slip between the bar and the wall and twist or break under the weight of the body.

The biggest difficulty I have encountered with grab bars is properly installing them in older bathtub/shower areas. Sometimes it is impossible to find anything to secure them to. In such cases, I refuse to do second-rate work. I encourage the customer to either remove the wall surfaces so that proper blocking can be installed or invest in a new tub or shower unit that has built-in safety and accessibility features.

Accessible Kitchens

After access difficulties have been remedied, I think you will find that the kitchen poses the most obstacles for independent living. Most existing kitchens have problems that could have been solved at the drawing board, if only we were starting from scratch. But with some understanding of your client's difficulties and a little imagination, there are modifications you can make that allow you a profit but are not budget busters. Keep in mind that changes should either enhance the value or be easily reversible when no longer needed.

Most modifications in the kitchen

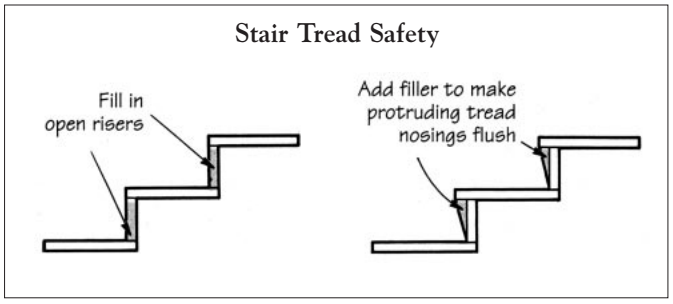


Figure 4. *To make stairs safer, close up open risers (left) and either remove protruding tread nosings or add fillers to make them flush (right).*

are for wheelchair access or to accommodate reaching and bending difficulties. For example, the standard 36-inch-high counter may be too high. I have solved this with the least expense in two ways. The first is to remove a base cabinet, carefully cut out that section of countertop, and reset it so it's adjusted between the two remaining side cabinets.

Another method, when there is a blank cabinet end or peninsula, is to hinge a new surface at the correct height off the vertical cabinet end, using card-table hinges. This new counter can be raised for use, then folded down for floor space as needed. Also, depending upon existing cabinet design, pull-out boards can sometimes be added to provide work surfaces at the desired height.

Most wheelchairs require a 29-inch minimum clearance under counter surfaces, but this is another case of paying attention to your client's specific needs. You can gain access to the sink by removing the base cabinet and rehanging the sink at the proper height, but it is always necessary to pad the exposed plumbing. Sometimes the drain can be relocated further to the rear. False panels or fabric skirts can be added to conceal the plumbing and still allow for access.

Again, some of the simplest things can go overlooked. On my initial customer call, I often take the time (no charge) to remove the food from the refrigerator and adjust the shelving to meet the customer's "reach" needs. Changing the kitchen sink faucet to a long-lever, single-action type is another easy change that can make all the difference in the day-to-day life of an older independent adult. You can remove upper cabinets from the wall and rehang them 4, 5, or 6 inches lower. Lazy susans can be added for access to base cabinets, and large drawers can be fit into unreachable lower cabinets, using existing cabinet doors as the new drawer fronts. Shallow, pantrylike shelving can be added in appropriate places to assist people with reaching difficulties.

Sometimes changing the direction of the refrigerator door swing will allow it to open 180 degrees. That may not sound helpful to you, but if you were in a wheelchair you would now be able to pull up sideways to reach even the deepest shelf with greater ease. If it's not possible to rehinge the door in the refrigerator's present location, it may be useful to the customer to swap around some cabinets and relocate it.

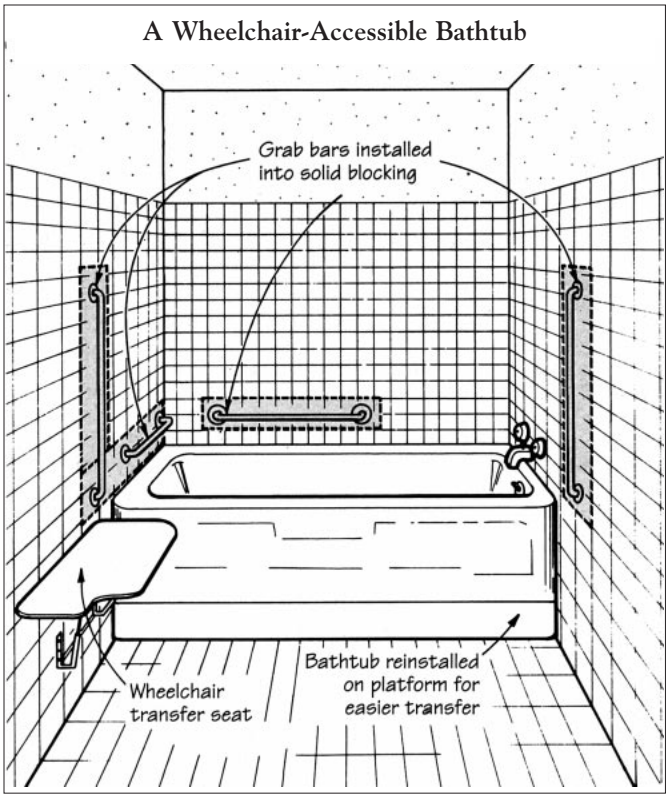
In terms of customer relations, the kitchen poses the potential for the greatest number of difficulties. You are invading a very personal space, one that is used at least three times a day and almost certainly has an almost ritual routine associated with its use. Based on my experience, it is worth taking the time to learn that routine and plan ahead with the customer so as not to disturb them while the work is in progress. I try to break the job into manageable chunks that can be started and completed in the same day. And always, *always*, clean up the job daily: Use drop cloths, sweep, dust, and vacuum. Older adults are sometimes the least tolerant of disruptions to their personal schedules, but *most* appreciative of your caring and consideration.

Barrier-Free Baths

Another area of the home that often requires modification, but also holds potential for customer relations difficulty, is the bathroom. Now you are not only in the personal space, but in the *private* space. Careful planning and discussion should take place ahead of time. All the rules for the kitchen apply here. Like the kitchen, the bath has great potential for needing to be gutted and completely remodeled. But again, there are some useful minor modifications that I have made many times.

Lowering the bathroom mirror is required if there is a wheelchair. That means either rehanging the mirror or tilting the top forward and slightly downward to allow for full viewing for grooming.

Showerheads can be replaced with flexible hose. But if a wheelchair customer lives alone, the best suggestion is to build an entirely new bathroom with either a no-lip shower unit so it can be wheeled directly into (see Figure 6) or a molded unit with a bench seat that the client can get to and from without assistance. There are devices that can be used in a standard tub to lift a client in and out, but I usually suggest a new accessible unit if I feel money is not a driving consideration.



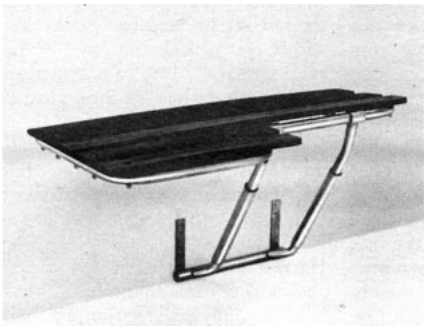


Figure 5. *Grab bars are one of the easiest and most economical ways to make a home safer, but they must be installed into proper blocking, not with toggles. A wheelchair transfer seat (left), such as this one from Tubular Specialties, can be added near the bathtub to assist your client in moving from wheelchair to tub and back. When not in use, the seat can fold against the wall.*

Toileting is another problem area that can be made easier with the proper grab bars. If a new toilet is to be part of the remodeling work, I usually recommend a wall-hung unit. Not only can it be mounted at a convenient height, but it also simplifies the ordinary chore of cleaning the bathroom floor — it can be easily mopped under from a standing position. Bathroom sinks can also be wall-mounted to a desirable height and are obstruction-free underneath.

Bathrooms often have limited floor space. This can be a problem for the wheelchair-bound older adult trying to live independently. Wheelchairs require turning space, as previously discussed, and space for transferring to the bath/shower or to the toilet. On older open-at-one-end bath tubs, a tiled platform can be built at the same height as the open end. The person can then transfer from the chair to the platform bench seat, swing the legs up and into the tub, and, using grab bars, slide forward and down into a seated position. In some cases a wheelchair transfer seat may serve the same purpose.

Unfortunately, not all customers' needs can be met in the space available in some bathrooms. In those cases it becomes necessary to move walls and "steal" space from an adjoining room — costly, but sometimes necessary. If possible, I try to expand into a closet and then construct a new closet elsewhere in that room, but sometimes a large part of a room has to be sacrificed to accomplish the goal. This is a case where the family conference goal-setting eases the way into the project.

Bedrooms

Bedrooms should also be modified, keeping in mind the special needs of each customer. Doors should be measured to ensure they are wide enough for easy entrance and exit, and grab bars should be installed adjacent to the bed and along the route to the bathroom. I discovered another useful product when one client of mine, an 88-year-old gentleman, began finding it difficult to get out of bed. I lagged a trapeze into a ceiling joist

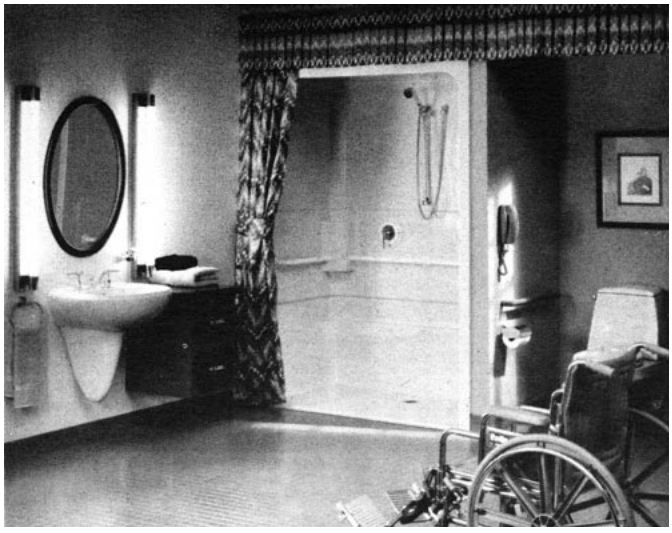


Figure 6. *For a wheelchair-bound client, installing a no-lip shower unit, like this one by Kohler, may be the best option for safe bathing if the budget allows.*

above the bed and suspended it at an appropriate height so he could pull himself up.

Bedroom closets also often have to be remodeled to improve accessibility, beginning with door width and swing difficulties. Other modifications to closets are driven by personal dressing habits and physical limitations. The easiest and most common solution for closet accessibility is to simply lower the pole and shelves. Some customers have had me change to a two-pole system — a low pole for the most commonly worn items, a high pole for clothing not frequently worn.

Closet design can be as simple or as complex as the customer wants. The current availability of "California Closet" style systems of wire racks, baskets, shelves, hooks, etc. holds much promise for reducing the costs of such changes, while at the same time increasing flexibility.

Business Rewards

Accessibility is more in demand as people live longer and remain independent. For successful projects, I cannot emphasize enough the importance of the initial interview, family conference, and overall development of a multistage concept with clear budgetary guidelines and expectations. Listening and planning are your best tools in this trade.

Every now and then you will encounter a new barrier for which there seems to be no available reference. One such case involved an 82-year-old gentleman who had had two hip replacements. His passion was gardening. Mobility was not a problem, but he was unsteady on his feet while climbing stairs and carrying items in one hand. His tool storage was in the basement with bulkhead accessibility to the rear garden. He needed handrails on both sides of the bulkhead to steady himself. No problem, pretty standard. But, when transitioning from the top stair, over the concrete raised lip of the bulkhead to the lawn, he became very wobbly and worried.

Solution? It might not pass code, but it worked. Using standard brackets and wooden handrails, I affixed rails to the inside of the Bilco steel doors so they were at a comfortable height and angle for the customer when the doors were in the open position. That job was in the summer of 1988. I passed by in August of '91 and was delighted to see Mr. "Smith" just coming out of his basement carrying his rack of gardening tools. Another satisfied customer. There are many other such one-of-a-kind, easy changes that have made all the difference in customer lifestyle.

At this point, you may be having some thoughts about maintaining "the bottom line." Not to be concerned. We maintain the same profit margin on adaptations for accessibility as for the more traditional jobs. There is a charge for consultation/planning services after the initial no-charge visit to see if the customer is comfortable with what we have to offer. A consultation charge shows that your expertise has a value; it also helps get the discussion down to specifics very quickly. Through this session, you will get a sense of a customer's expectations and just how much lifestyle disruption can be tolerated at one time.

We began confronting accessibility issues with some apprehension and not much knowledge. Over the years, however, helping folks remove or work around architectural barriers has become the most personally rewarding aspect of our work. Helping older adults remain alone in their homes, preserving their dignity and maintaining their personal lifestyle, has added an entirely new component to our "bottom line." ■

Kenneth Hoffman is a remodeler in So. Yarmouth, Mass.

Accessibility Resources

Rather than fumble around as I did when first confronted with accessibility issues, you should first read some of the guides available that deal with *public* access for the handicapped. Your state building code is an excellent starting point. Another is *ANSI A117.1: Providing Accessibility and Usability for Physically Handicapped People*, and from the U.S. Government, the *Uniform Federal Accessibility Standards* (see below).

Other readily available sources include rehabilitation hospitals or local Council on Aging staff, who can provide valuable insight. You might also look in the Yellow Pages under "Hospial Equipment and Supplies."

In researching for this article, I came across what seems to be a treasure chest of information. Funded by the U.S. Department of Education, ABLEDATA has a file of over 17,000 individual products from over 2,000 companies. You can call or write, but try to be specific about the type of product you are seeking and your end goal. They will forward up to 20 entries at no charge; from 21 to 100 entries, the charge is $5.

If you are building or designing for accessibility on a regular basis, you may want to buy one of the comprehensive sourcebooks listed here. The *Remodeling and Building for Accessibility Sourcebook*, by the Housing Resource Center, brings together information on design, codes and standards, financing, products, and sources into one large three-ring binder. The Barrier-Free Design Center's *Sourcebook* is intended for use by architects and designers. It provides a clearly organized and well-illustrated approach to accessible design, beginning with site considerations and exterior entrances and moving room-by-room through the house. A case study provides a useful introduction, and a chapter on developing a client profile includes a very thorough nine-page checklist.

— K. H.

ABLEDATA
National Rehabilitation Information Center
8455 Colesville Rd., Suite 935
Silver Springs, MD 20910
800/346-2742
First 20 entries, no charge; 21 to 100 entries, $5.

The Accessible Bathroom
Design Coalition Inc.
2088 Atwood Ave.
Madison, WI 53704
608/246-8846
$7 (including shipping)

Adaptable Housing
Department of Housing and Urban Development
HUD User
P.O. Box 6091
Rockville, MD 20850
800/245-2691
$4 (including shipping)

ANSI A117.1: Providing Accessibility and Usability for Physically Handicapped People
American National Standards Institute
11 West 42nd St., 13th Floor
New York, NY 10036
212/642-4900
$24 (including shipping)

Designs For Independent Living
Tools For Independent Living
Whirlpool Appliance Information Service
Administrative Center
Benton Harbor, MI 49022
800/253-1301
No charge

Directory of Accessible Building Products
National Assoc. of Home Builders Research Center
414 No. Peters Rd.
Knoxville, TN 37922
800/638-8556
No charge

Remodeling and Building for Accessibility Sourcebook
Housing Resources Center
1820 West 48th St.
Cleveland, OH 44102
216/281-4663
$48 (including shipping)

The Sourcebook
The Barrier-Free Design Center
2075 Bayview Ave.
Toronto, Ontario M4N 3M5
Canada
416/480-6000
$45 (including shipping)

Uniform Federal Accessibility Standards
Standardization Documents Order Desk
Bldg. 4D, Attn: NPODS
700 Robbins Ave.
Philadelphia, PA 19111-5094
Fax: 215-697-2978