

## **Preface**

On April 24, 1996, a Special Interest Forum (SIF) was held in Washington DC, on the topic of “Home Modifications and the Fair Housing Law.” Its purpose was to promote innovation in the design of home modifications and to examine related aspects of the Fair Housing Amendments Act of 1988. The Amendments move toward making housing more accessible and usable by a diverse population, including people with disabilities. This report captures the main points raised by the presenters and elaborates on many of the issues

The SIF was organized by the association of Safe and Accessible Products (ASAP). Funding was provided by the Center for Inclusive Design and Environmental Access (IDEA Center), State University of New York at Buffalo, as part of a grant from the U. S. Department of Housing and Urban Development entitled “Fair Housing Means Universal Design.”

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## **Introduction**

Ideally, meeting accessibility needs should be accomplished through universal design. Universally designed housing units meet the needs of all people through inherent features of the design or built-in adaptability. Universal design eliminates the need for extensive remodeling or special accommodations in order to meet the accessibility needs of individuals. This strategy works well for new housing, however over 90% of the 100 million housing units in the US are not accessible, nor are the majority of these housing units likely to be replaced in the near future (Duncan, 1996). Strategies for remodeling existing homes are also necessary in order to accommodate accessibility needs and enhance usability.

The need for such strategies is particularly relevant considering the changing demographics of our society. As the population ages, more people are staying in their homes longer. People resist moving, not only for financial reasons, but also due to the desire to keep social networks intact, expectations for continued independence and just plain inertia. However, as people age they almost always encounter a decrease in functional ability that requires some type of adaptation. Struyk and Katsura estimate that approximately 850,000 households occupied by older Americans with health problems need adaptations

(Pynoos, 1993). If older Americans wish to age in place, changes in the environment are often necessary. In addition to the aging of the population, more people with disabilities have entered the housing market as a result of deinstitutionalization and the Independent Living Movement. Because of the relatively low number of accessible housing units available, remodeling is often a necessary part of community living.

What actions can be taken to increase the number of accessibility modifications? There are already many activities underway, including legislation, organization for advocacy, research, innovative financing and education.

One goal of The Fair Housing Amendments Act of 1988 was to facilitate home modifications in rental housing. The Act, which guarantees nondiscrimination in housing for people with disabilities, has provisions to insure that tenants can make needed modifications to multi-family units for accessibility purposes. This rule has far reaching implications for both tenants and property owners. It provides a legal basis for tenants to improve dwellings and an obligation for property owners to facilitate their actions.

Although there clearly is a need for home modifications, there are many barriers to their implementation even with the Fair Housing Act in place. The National Home Modifications Policy Task force is a group of design professionals, policy analysts and consumers who are working to promote broader implementation of home modifications. The Task Force has identified several barriers related to consumer demand, service delivery and professional education.

Overall, it seems that there is a gap between the perceived need for more home modifications and consumer demand for them. This can be attributed to several factors. Consumers are not aware of how home modifications can help them or how to make modifications they feel they need. Furthermore, consumers often do not have the finances to implement changes that they may want to make. Little third party funding is available for doing home modifications, and those people that need them most are often in the worst economic position to finance them. Older people and those with disabilities often live on fixed incomes and have difficulty paying for needed modifications. They go without instead, adapting their lives to their environment.

This can result in safety problems or a severely restricted quality of life. Modifications can be costly and funding sources often use a medical model that does not fully consider the time and expense involved in construction projects or the benefits that result from interventions. Thus, third party funding is often needed for services that might be unnecessary if modifications were made to homes so that individuals could be more independent and service providers more productive.

Research indicates that consumers may be reluctant to make changes for a variety of reasons, including the personal stress involved (Steinfeld and Shea, 1995). Pynoos identified many problems in the delivery of services (Pynoos, 1993). Finding qualified professionals is usually difficult. Furthermore, service providers in the private sector are often uninterested in small projects such as grab bar installations. They view modifications like installation of ramps as small, unprofitable ventures. Small projects can sometimes be completed by consumers or their families, but many find this difficult. Even relatively simple grab bar installations require dexterity, endurance and the proper tools, which older people and some people with disabilities often do not have. Consumers usually have to rely on semi-skilled labor. This raises concerns about reliability and trust that reduce willingness to contract for services.

Public sources for home modification services exist and have demonstrated some success. There are however, many problems in public sector service delivery. Funding on a single home modification project may come from a variety of sources, including Community Development Block Grants, Older American Act grants, the Department of Energy programs, etc. Assembling these varied sources of funding is difficult. Each program has unique restrictions on the type of work that can be done with the funds. Basic structural repairs are often not even covered. Money may be available to add handrails to a stairway, for example, but the stairway may be in need of more basic repairs before it could be safe to use. The total cost of such repairs can exceed the maximum allowed per project. Of course, the need for modifications greatly outweighs the total amount of public funding.

Pynoos has argued for the implementation of a national policy on home accessibility (Pynoos, 1993). The National Home Modifications Policy Task Force recognized that a centrally

administered government program may be unrealistic in the current political climate. The Task Force, therefore has instead emphasized professional education and communication, as well as support for coalition building at the community level. Recognizing that there are many types of consumers in need of home modifications, the Task Force believes that effort should be expended on creating many points of entry to the “system.” The Federal government could provide funding sources for those with high priority needs, tax credits for accessibility modifications and support for developing the network of service providers. It could also consolidate existing programs to reduce fragmentation and increase flexibility in use of funds.

Education for the construction, design, and real estate professions on the benefits and desirability of universal housing design will eventually help alleviate the shortage of accessible housing for people with disabilities. In the meantime, laws such as the Fair Housing Amendments Act and advocacy are needed to improve the usability of the existing housing stock.

The remainder of this report will focus on the Fair Housing Law and the legal and design issues that arise from it. It will outline the rights and responsibilities of both tenants and owners under the Act and illustrate issues emerging from the case law. In addition, the report includes descriptions of common modifications that tenants need and how to make them. Finally it concludes with a discussion of education and advocacy to improve service availability and service delivery by the private sector.

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## **Disability and The Fair Housing Law**

The Fair Housing Amendments Act of 1988 was drafted in response to continued discrimination on the basis of disability in the design and construction of new housing and sales, rental and management practices in existing housing. The new construction provisions specify guidelines for the development of adaptable multi-family housing that can easily be made accessible with only minor changes. The Act also has provisions that guarantee the rights of tenants to make reasonable modifications to multi-family housing in order to meet their accessibility needs. While the accessibility requirements of the Fair Housing Amendments for new construction have certain restrictions

that exempt buildings with less than four rental units, the requirements for reasonable accommodations apply to all rental units regardless of number. It is important to recognize that the Fair Housing Amendments Act is not the only law that affects accessibility in housing. But, it is the only such law that applies to housing that is constructed and operated on a totally private basis. The Rehabilitation Act and the Americans with Disabilities Act both mandate certain levels of accessibility in housing that is constructed or managed with federal funds. In these cases, building owners must comply with the guidelines at their own expense. The Americans with Disabilities Act may also cover certain public accommodations such as rental offices and recreation areas. In addition, local codes may require certain levels of accessibility over and above federal guidelines. Housing owners and managers should take care to investigate what laws and restrictions apply to their properties.

The guarantee to allow reasonable home modifications in any inaccessible housing is an important step toward equal access. It means that landlords can no longer deny tenants permission to make needed modifications, a common occurrence in the past. It also recognizes that regulations that mandate design for the average user do not always provide access for all.

People with disabilities are, first and foremost, individuals. The Fair Housing Act recognizes that everyone has unique and individualized needs. Even environments that are “handicapped accessible” according to codes will not always meet the needs of every person with a disability. Furthermore, disability does not always mean use of a wheelchair. A person may have a hearing loss, be developmentally disabled, or have multiple chemical sensitivities. People with less obvious disabilities must also be able to adapt housing to meet their needs. The Fair Housing Law gives them the right to do this.

It is unfortunate that many building owners have demonstrated an ignorance of the law as well as misconceptions about disability and home modifications. Stereotypes abound, including that people with disabilities are malingerers living off welfare. It is not uncommon for tenants with disabilities to experience paternalistic attitudes from building owners, receiving assurances that the owner knows best how to solve their problems. Building owners often perceive tenants with disabilities to be

more disabled than they really are or fear that they will deteriorate in their abilities, wasting money spent on modifications. There is a misconception that the cost of removing barriers is too high, or that accessibility modifications will reduce the value or “curb appeal” of a rental property. With careful planning and good design both these situations can be avoided. Actually, having an accessible unit can potentially add value to properties, allowing owners to benefit because of the shortage of accessible housing.

Even when owners understand the law, they may not understand their own responsibilities. Because they do not have procedures in place to deal with requests or because they are unfamiliar with the process of home modification they may not act quickly enough to meet tenant needs. Again, planning and forethought can alleviate this problem, and eliminate the “out of sight, out of mind” trap that results from long delays.

On the other hand, tenants need to understand that owner concerns with costs, curb appeal, and quality of work can be legitimate. Making changes in the physical environment is a costly and time consuming process. Expectations for instant results are often highly unrealistic. In addition, accessibility codes are not the only regulations that building owners must follow. Local building and fire codes, zoning ordinances and historic preservation guidelines must be taken into account. Furthermore, owners have a right to expect good quality work in any modification made to their properties to maintain the value of the unit.

The implications of the Fair Housing Amendments of 1988 are not fully understood; the first complaints are now being brought before the US Department of Justice and the courts are just beginning to establish precedent. Most cases are being settled out of court. Thus the case law is very much in its infancy. In general terms, there are three main points to the law:

- It is unlawful to discriminate in the sale or rental of housing to people with disabilities.
- It is also unlawful to discriminate in the provision of services, insurance, access to facilities, or in the terms and conditions of a lease based on a person’s disability.
- Landlords are required to allow reasonable modifications for accessibility at the tenants expense when they are necessary for full enjoyment of the premises.

The first point makes it clear that owners cannot deny rental to a person solely on the basis of their disability. There are several clarifications to this point. Current substance abuse is not considered a disability, thus a current substance abuser can be turned away from a rental unit. A *recovering* alcoholic or substance abuser however, cannot be refused rental. Similarly, a person with a disability that has a poor rental history, such as vandalism, persistent non payment of rent or other incidents not related to their disability can be refused rental based on this history.

The second point of the law pertains to provision of services, and the terms and conditions of rental. Landlords must make reasonable accommodations to insure that people with disabilities have full enjoyment of all services and facilities associated with their rental units. This may mean such things as waiving fees, provided that doing so does not produce an undue hardship. An example of this type of discrimination has already been addressed by the courts in *USA v. California Mobile Home Park Management Company*. A person with a disability who lived in a mobile home park required the care of a nurse in his home. The management of the park had a policy that required parking fees to be paid by guests of the park residents. The management considered the visiting nurse a guest and levied the fee every day the nurse visited. As costs climbed, the resident requested a waiver of the fee, which management refused. The courts eventually ruled that the visits by the nurse were required for the resident to have full enjoyment of the premises, and that the waiver of the fee for the nurse would not be an undue hardship for the park management. Other guests of the resident would still be required to pay the fee, however. Other prohibited practices under this section of the law would be actions like refusing a tenant privileges and access enjoyed by others, such as access to recreational facilities, or requiring special lease provisions such as higher security deposits.

The final provision of the law requires owners to allow reasonable modifications to dwelling units at the tenant's expense to allow full enjoyment of the premises. This means that any reasonable proposal must be allowed. Owners cannot refuse a tenant's proposal simply because they may prefer another one. To deny it, they must prove that the tenant's proposal is unreasonable and inflicts undue hardship upon them. For example, In *USA v. Freer*, a tenant in a mobile home park proposed a

ramp design that would provide access to her home. The ramp wrapped around the side of her trailer, and partially protruded into her driveway. The owners of the park maintained that her proposed design was unreasonable for two reasons: 1) it would impede trailer removal and 2) would shorten the resident's driveway so much that parked cars would block the flow of traffic on the adjoining road. They offered an alternate design that was unacceptable to the resident. She claimed it did not meet her needs because the start of the ramp was not at the drop off point in her driveway. The courts ruled that there was a question as to whether the tenant's proposed ramp would inflict the hardships claimed by the park management and that the resident should be allowed to build the ramp as she had proposed. Owners also cannot specify which contractor must be used to make the modifications. Owners are, however, entitled to receive assurances of the competence of the contractor and of the quality of the work.

Tenants also have responsibilities under the law. All modifications must be made at the tenants expense, and the owner can require the tenant to restore the modified portion of the apartment to its original condition, taking into account reasonable wear and tear. There are some restrictions on this, however. Owners can only require tenants to remove modifications to the interior of their apartment. Exterior modifications, such as ramps and lifts, as well as modifications made to public areas such as lobbies and laundry rooms do not have to be removed at the tenant's expense. Furthermore, owners cannot require tenants to restore interior modifications that do not interfere with the next tenant's use of the apartment. For example, a tenant would have to remove grab bars from a bathroom that had been modified for accessibility and restore the surface of the wall to its original condition. This tenant would *not* be required to narrow the door or remove the grab bar reinforcing from the wall, as these modifications have no impact on future tenants.

Because of the restriction against discrimination in rental terms and agreements, landlords cannot charge their tenants with disabilities higher security deposits. However, they can negotiate an agreement with a tenant that has made extensive modifications to secure funds in escrow for their removal. This leaves open the possibility that funds could be built up over time, reducing the financial burden on tenants. The owner cannot absolutely require this, only negotiate it when it is reasonable to

do so, such as when the tenant has a poor credit history or the modifications are extensive. Any interest from the account would accrue to the benefit of the tenant.

The Fair Housing Amendments may have broader implications than the rights and responsibilities of tenants and owners. The Department of Justice maintains that cities have a right to allow reasonable zoning variances to allow the construction of additions and ramps that may interfere with required setbacks and side yard clearances. A recent case involving this issue found in favor of the city which did not wish to grant a variance, however this issue is one that Fair Housing advocates and DOJ attorneys continue to pursue.

Non compliance with the Fair Housing Amendments can be a costly proposition for owners. Fines can be levied by the Department of Justice, relief paid to tenants that file complaints, and modifications can be required at the *owner's* expense. One case, *USA and Palasciano v. Country Club Garden Owners Association*, illustrates the potential liability of owners that are not aware of or refuse to acknowledge their responsibilities.

An older woman who had difficulty walking applied for permission to the owners' association of her cooperatively owned apartment complex to construct a set of steps off the rear deck of her rental unit. She wanted to do this to provide direct access to the parking adjacent to the rear of her unit. She also asked that a space be designated there for her use, so that she would not have to walk from the existing reserved parking spaces, which were more than five times further away. The tenant was willing to pay the \$200 dollars that would have be required for the modification and her husband, a skilled carpenter, would have provided the labor. Her request was denied by the association, which claimed that her proposed modification would destroy the character of the building facade. They offered to construct a ramp and a larger porch at her unit's front entrance. This would have still required her to use the existing reserved parking spaces, in addition to being far more costly. This counter proposal is a clear example of misconceptions that building owners may have about disability. Not only was the association ignorant of the tenant's rights, they also had no understanding of her needs. The tenant did not need a ramp, since she could walk steps. She needed a shorter distance from her parking space to an entrance to her unit.



Fig.1 Country Club Garden Apartments - existing (IDEA Center)



Fig.2 Country Club Garden Apartments - existing (IDEA Center)

When the association continued to refuse her requests, a complaint was filed, and they were sued by the US Department of Justice. Prior to trial, a settlement was reached in which the association agreed to pay \$90,000 to the tenant, as well as to construct the proposed stairway at the association's expense. The association also agreed to designate a parking space for the exclusive use of the tenant. The settlement stipulated that the association could not require the tenant to pay for the removal of these modifications, and that they must remain in place until notification was given by the tenant that they were no longer needed or until she left the unit. Furthermore, the association was required to notify the Department of Housing and Urban Development whenever it refused an accessibility modification request as unreasonable for a period of three years. Clearly the cost of discrimination far outweighs the cost of compliance.

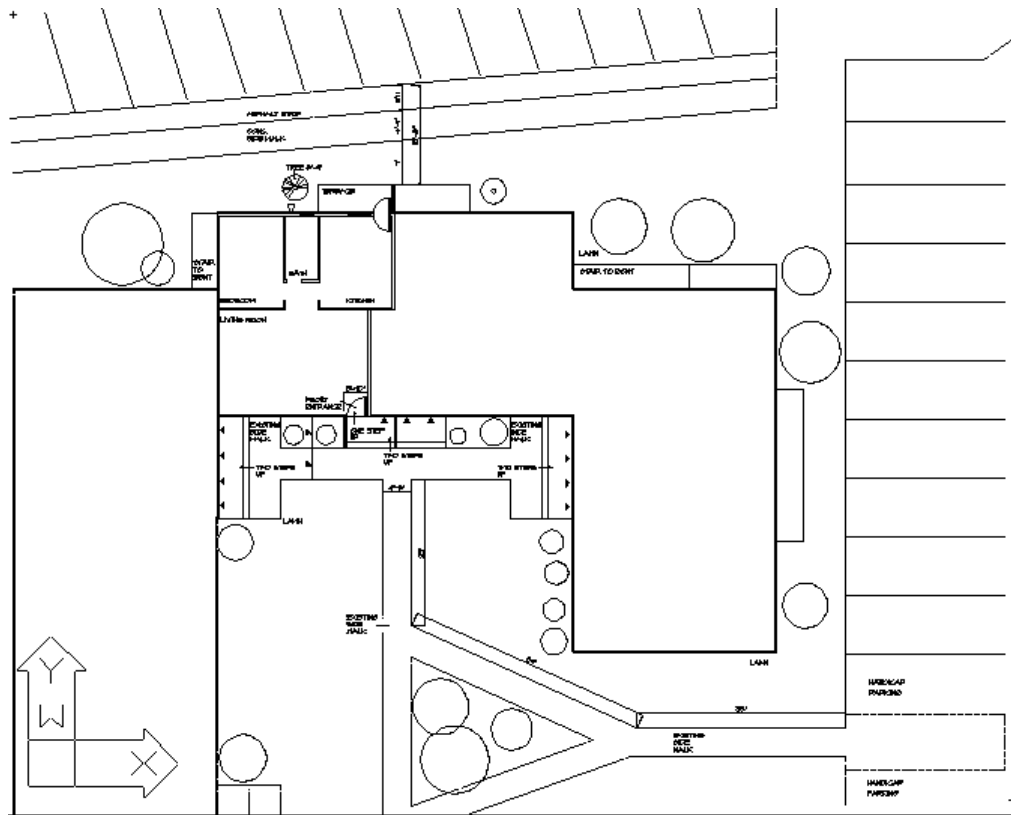


Fig.3 Plan of Country Club Garden Apartments - existing (IDEA Center)

Some building owners have a positive attitude and recognize the value of accessibility for their business. In contrast to the example above, another example demonstrates a pro-active stance. A developer built a project in a suburb of Buffalo that was envisioned as a “singles” community. It consisted of about 30 multi-story walk-up buildings, with twelve units each. Amenities, including recreation areas and a swimming pool were added in order to serve the intended market. Initial occupancy consisted mostly of single people, however this gradually changed.

Older parents found the apartments to be nice places to live, and moved in to be close to their children and grandchildren in the suburbs. Eventually the occupancy of the units was almost 50% senior citizens. Despite their initial goals, the management embraced the seniors since they were good tenants and began to market their project as a retirement housing center.

Because the original codes allowed only 2 1/2 stories to be built above grade, the ground had been bermed up around the first floors in order to allow construction of a third story below grade. The entrances were between the ground level and first floors and no units were accessible. Several years ago, a fire gutted one of the buildings. The local code officials treated the major rehabilitation as new construction.



Figs.4 and 5 Country Club Garden Apartments - resident's proposal (IDEA Center)

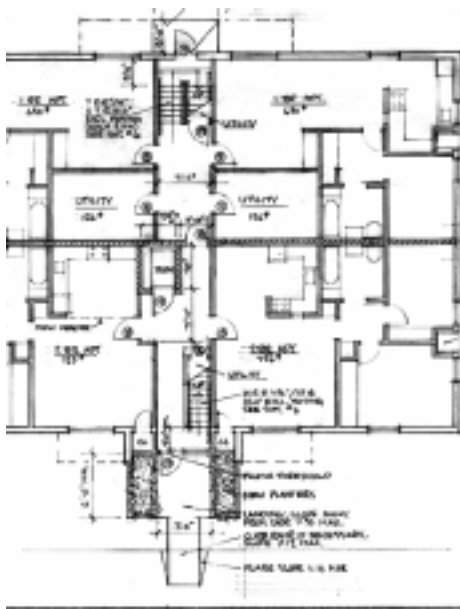


Fig.6 Plan of modifications to apartment building (IDEA Center)

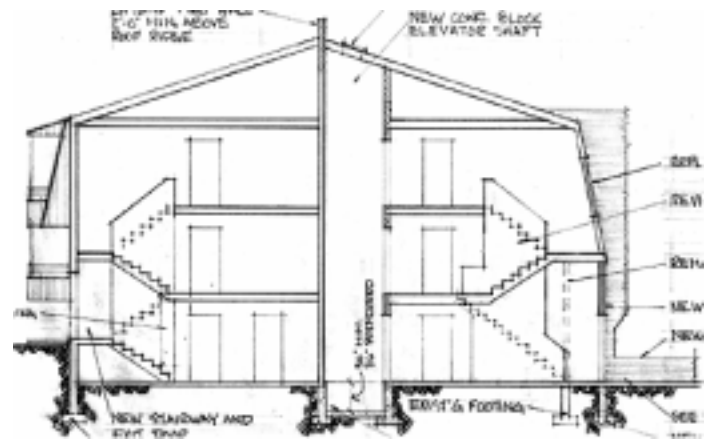


Fig.7 Section through apartment building (IDEA Center)

Because the project would have to conform to the State Building Code, accessibility was required in 25% of the units of the building. Rather than simply conforming to the code, management decided to serve their senior tenants by creating twelve completely accessible apartments. Accessibility features were added to the unit designs, and they were slightly altered to accommodate the clearances required. The berm at the entrance was cut and a ramp added to create an accessible entrance to the ground floor and an elevator was added to provide access to the upper stories.

By viewing the need for accessible housing as an *opportunity* rather than a *burden*, building management insured that existing tenants would not have to relocate if they had difficulty walking stairs. They turned a tragedy into an opportunity. Owners that assist tenants in making home modifications and respond to general accessibility needs can do the same.

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## Funding

While the Fair Housing Amendments Act guarantees a tenant's right to make home modifications, having the ability to pay for them is another issue. Research shows that the most common reason given by older people for not making modifications they feel they need is perceived cost (Steinfeld and Shea, 1995). Very often, tenants who need to make modifications are living on fixed incomes; they do not have large sums of money to alter their environment.

In only one case is the owner of a building required to cover the cost of needed modifications. Under Section 504 of the Rehab Act of 1973, housing providers that receive federal funds are required to pay for accessibility modifications. This includes providers that receive Section 8 subsidies, as established in *Stewart v S&H Associates*. When both the Fair Housing and Rehabilitation Acts laws apply, the more stringent of the two takes precedence. However, HUD estimates that only 5% of the housing where modifications are needed falls under Section 504. The multifamily housing in the remainder falls under the Fair Housing Act, which places the responsibility for funding on the tenant.

Possible sources of funding that tenants can tap for home

modifications include:

- Medicare
- Medicaid
- Community Development Block Grants
- Social Service Block Grants
- The Farmers Home Administration
- Older American Act grants
- Area Agencies on Aging/Elder Affairs
- State Vocational Rehabilitation
- Consumer Advocacy Organizations
- Civic or Charitable Organizations
- Income Tax deductions

Access to these funding sources can be difficult, and usually requires some type of social service intervention or case management. Several guides exist that can help tenants find and access sources of funding. These include:

- *National Directory of Home Modification/Repair Programs.* Jon Pynoos, et al. Long Term Care National Resource Center at UCLA/USC, 1991
- *Home Modifications Resource Guide.* Jon Pynoos, et al. Long Term Care National Resource Center at UCLA/USC, 1989
- *Financing Home Modifications.* Emil Mazalia, Richard Duncan and Jan Reagan. Center for Accessible Housing, North Carolina State University, 1993.

In the current political climate, the emphasis on providing funding for home modifications will continue to shift toward the local community and the individual. Local organizations such as church groups, service fraternities and groups like Habitat for Humanity may provide non financial assistance such as free labor or materials.

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## **Typical Modifications Needed by Tenants**

Despite problems in funding, the consumer demand for home modifications is growing. In fact, several remodeling and con-

struction companies around the country have started specializing in accessibility modifications. The Department of Housing and Urban Development receives requests every day for information on how to make basic modifications such as accessible parking, ramps, roll-in showers and electrical upgrades. Increasingly, building contractors will have to become more knowledgeable about how to provide high quality accessibility modification services to a growing market.

Contractors generally are not well informed about how to provide accessibility. There are many possible reasons for this, but one of the likeliest seems to be force of habit. Construction professionals prefer to do things in the same way because that is the way it has always been done. They are reluctant to try new products and methods because of the risk involved. Moreover, consumers have a well developed image of what housing is and should be. Yet, home modifications often require a different approach to construction, particularly in details that are usually taken for granted. Adjusting to the needs of a consumer with a disability can therefore be challenge to a building professional.

Another problem is the reliance upon codes as guides. While projects must comply with codes, they represent *minimum* guidelines to insure basic accessibility. Designs should be based on the needs of the consumer, which can require exceeding the codes. Unfortunately, many contractors and design professionals usually think that simple code compliance will solve the problem.

Participants at the Special Interest Forum identified several common accessibility modifications and discussed the best ways to make to them. The short guide included here is intended to help educate building professionals and consumers about the issues and details surrounding accessibility modifications. While the following guidelines comply with the CABO/ANSI A117.1 Standard and the Americans With Disabilities Act Accessibility Guidelines, they also demonstrate the level of investigation and knowledge necessary to interpret and move beyond the codes to meet individual needs.

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## **Parking and Accessible Routes**

Parking spaces along accessible routes are an important component of access to housing. In general, parking should be lo-

cated so that it provides the shortest possible path of travel to the building's accessible entrance or individual's dwelling. Most accessibility codes require that parking spaces must be:

- demarcated with a sign
- a minimum of 96 inches wide, and
- adjacent to a clearly marked access aisle that is a minimum of 60 inches wide.

While these criteria are adequate for most cars, a 60 inch wide access aisle is not sufficient for van lifts. Van accessible spaces must have an access aisle that is 96 inches wide. The typical van lift projects perpendicular to the vehicle. The extra width provides enough space for the user to exit the lift and maneuver up the aisle. Some codes require a minimum number of accessible parking spaces, with at least one of these a van accessible space, based on the number of spaces in the lot. In an individual accommodation, van spaces should be provided for everyone who needs one. Residential accessible public parking should be provided for guests, at rental offices and other public spaces, but, in general, reserved tenant parking can be assigned according to resident need. The exception to this is housing that is built or operated with Federal funds which must comply with Federal requirements. Such housing should already have enough accessible spaces. It should be noted that not everyone needs an "accessible space." Some people simply need a space reserved for their use.



Fig.8 Van accessible parking space with reserved parking sign (photo by Crow River)



Fig.9 Photo of reserved parking spaces and signs (IDEA Center)

Access aisles, where provided, should:

- slope no more than 1:50 along their length,
- be surfaced with a smooth and continuous material such as asphalt or concrete, and
- connect directly to an accessible route.

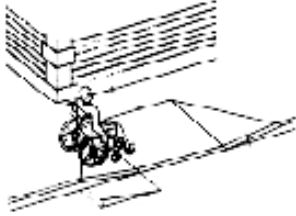


Fig.10 Curb cut with flared sides  
(photo from ADAAG)

If a curb is crossed, a curb cut should be installed. Curb cuts should have:

- a slope no greater than 1:12 ( a 1:8 slope could be used only if the rise of the curb cut is less than 6 inches),
- flared sides with slopes no greater than 1:10,
- a flush transition from curb cut to road. The maximum vertical drop for this transition should be 1/4 inch.

These guidelines result in a curb cut that is safe and usable for everyone. The smooth transition provides easy access for people who use wheelchairs and the flared sides reduce the danger of tripping by people walking across the curb cut. Curb cuts without flared sides should be protected with plantings or other site features to prevent tripping. However, this type of curb cut should be avoided whenever protection is not provided. Another feature to be avoided are ramps that project out into the access aisle. They can interfere with transferring out of a car. In general, handrails are not necessary at curb ramps. It is important to note that lower slopes are preferable to the maximums allowed by code when they can be provided.

Another possibility for providing access to the accessible route is to lower the sidewalk to the level of the accessible parking area. This eliminates the need for curb cuts. This type of design has a potential problem however. Because there is no curb, it is possible for cars to pull too far ahead and interfere with the clear space in the accessible route. Bollards or wheelstops should be used to insure a minimum clear width along the accessible route in this case.

The accessible route to the entry itself should be as level as possible. If there is a grade change, consider a gradual slope, no greater than 1:20. The entire path can be sloped, spreading out the climb over a longer distance and eliminating the need for a ramp that requires handrails. It is important that the start

and end of the path be level. Any slope steeper than 1:20 is a ramp. The accessible route should be at least 36 inches wide, and have a 60 inch wide area or an intersection to provide passing space where two way traffic will be common.

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## Entries

Remodeling the entry of the building is one of the most common accessibility modifications, particularly because the vast majority of homes are raised up from the ground. People who use wheelchairs are not the only ones who have a problem with stairs. Frail elderly people, those with low endurance, and others who have joint or muscle problems can all find negotiating stairs difficult and dangerous. An accessible entry into the building can be provided using a ramp or a lift.

Ramps come in a variety of types and designs, and can be built on site or pre-manufactured. In general all ramps should have:

- The lowest slope possible, not exceeding 1:12. Research shows that many people who use wheelchairs find a 1:16 slope to be the steepest they can climb.
- A width of at least 36 inches clear
- A non-slip surface that will allow proper water drainage. Textured concrete that has a cross slope no greater than 1:50 or wooden decking with 1/4 spacing are both good options for drainage. Adhesive textured strips can help ramp traction. Despite its low cost, plywood decking should not be used. It can be very slippery and deteriorates rapidly.
- Handrails that are 1 1/4 to 1 1/2 inch in diameter mounted on both sides, between 34 and 38 inches from the top of the rail to the wall surface. Handrails should also be 1 1/2 inches from adjoining walls. They should be continuous along the length of the ramp, and extend for at least 12 inches at the top and bottom, perpendicular to the floor. The ends of the extensions should not “float,” but rather should return to a wall, the floor, or a support column. Include a rail about halfway up the height of the handrail or guard rails to prevent people from falling off the ramp. Curbs and closely spaced balusters can also be used to provide protection.
- Level landings at both the top and the bottom as well as at every 30 feet of run. Landings should be at least as wide as the ramp and 60 inches long. If a landing coincides with a change



Fig. 11 Ramp with non skid surface (photo by Deckgrates)

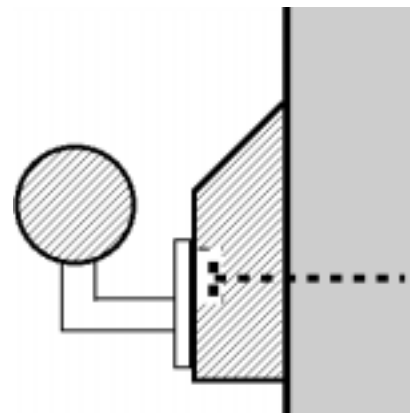


Fig.12 Hand rail detail (IDEA Center)

of direction then the landing should be at least 60 inches by 60 inches. If a landing occurs where a door swings into it, such as a front door to the home, then a 60 by 60 inch landing is almost always a necessity.



Fig. 13 The LivingRamp aluminum modular ramp (photo by JH Industries, Inc.)



Fig. 14 The LivingRamp can be a single piece or combination of ramps and platforms (photo by JH Industries, Inc.)

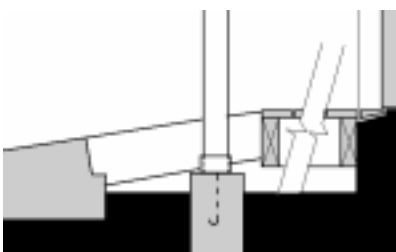


Fig. 15 Ramp detail with concrete pier foundation (IDEA Center)

The easiest and generally the most attractive way to build a ramp is to start it as close as possible to the entrance that it serves. This also helps to reduce the length of the ramp. This generally means at least one change of direction will be necessary to make either an “L” or “U” shaped ramp. Consider building stairs along with the ramp to accommodate those who do not need to use it. Ramp runs also do not need to be the same length, but it is a good idea to minimize the length of each run between landings whenever possible. Upper landings, adjacent to the entry should never be centered on the door since this wastes space. Offset the landing to maximize the clearance at the latch side of the door and minimize the area that the door swings through. This may require reversing the door swing. When it is desirable to center the landing, provide a 60 by 60 inch clear area from the hinge side of the door. These steps will insure adequate space for opening the door and maneuvering to the ramp. Another useful feature at top landings is a shelf on which to set packages when opening the door.

It is generally better to use concrete pier foundations for wooden or metal ramps and footings for concrete ramps. This will help maintain the integrity of the ramp’s slope over time. Wooden or metal columns should be anchored to the top of the foundation, not set inside of them. This prevents water and ice from cracking the foundation, and makes columns easier to replace. Transitions at the top and bottom of the ramp are very important. Metal or concrete edge details can be used to provide a smooth transition from the path to the run of the ramp. Landings at the top should be built flush with the interior floor surface. Consider weather protection, both to keep ice and snow off the ramp and to keep water away from the interior of the building. Large porches can sometimes be adapted to provide weather protected ramps and other porches can sometimes be extended.

Several prefabricated ramp systems are available that include all the components necessary to build a ramp. The RAMP project at the Minnesota Center for Independent Living publishes plans for prefabricated wooden ramps. Prefabricated systems have

the advantage of being easy to construct and portable when a tenant moves. This protects the value of the tenant's investment. Many prefabricated systems rely on pad foundations that do not require excavation. This may not be permitted in some building code jurisdictions. Local code officials should always be consulted when an aspect of the design is in question.

Ramps are not always the best way to accommodate level changes at an entrance. If there is enough space, the least expensive and often most aesthetically pleasing way to provide access is to re-grade the ground up to the entrance. If a slope is 1:20 or lower, handrails are not required, although curbs or low walls should be provided if the ground drops off sharply on either side of the path. Textured concrete that is contiguous with the adjoining path is a good surface option, however many good "landscape ramps" have made use of interlocking paving blocks. These provide a highly attractive as well as high traction surface. While handrails are not required on a 1:20 slope, they may be a good idea for some clients.

Ramps and re-grading have several advantages over mechanical lifts, the most obvious being that they never break down, require little maintenance, and have no associated energy costs. Large level changes or cramped spaces, however, often require that a lift be used. Exceptionally long ramps can be quite expensive. In some cases, lifts are even cost effective. Most lifts have similar features, however there are several important design considerations to keep in mind. Lifts should include:

- A barrier to keep wheelchairs from rolling off the lift platform. Usually this feature is combined with a short drop-down ramp to allow smooth transition to the path, another important consideration.
- Keyed call buttons at every landing, and in the lift itself. Keys are necessary for security and to prevent children from damaging the lift or injuring themselves by playing with it. Call buttons on every landing are essential for fire safety and personal security.
- Contact switches to stop the lift operation if something or someone is underneath.
- Weather protection to prevent snow and debris from accumulating underneath the lift. Shrouds around the outside of the lift also help to keep people and animals from underneath.



Fig.16 "Landscape ramp" eliminates the needs for steps (photo from HUD)



Fig.17 Compact, low-rise lift (photo by Porch-Lift)

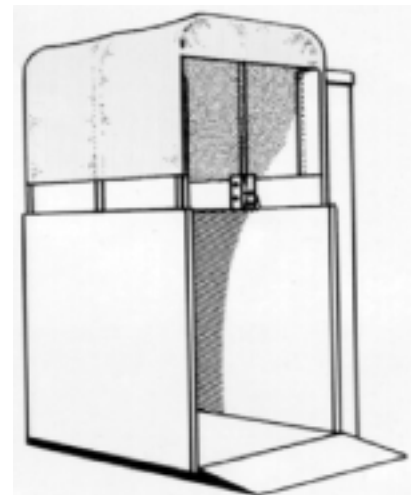


Fig.18 Porch lift with integral canopy for weather protection (photo by American Stair Glide)



Fig.19 Lift platform with barrier  
(photo by Porch-Lift)

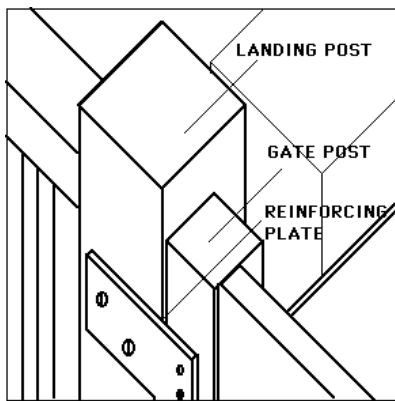


Fig.20 Lift detail  
(IDEA Center)



Fig.21 Portable lift unit for temporary accommodations  
(photo by Porch-Lift)

- Upper landing gates to prevent falls.
- A backup power source or batteries to allow operation during a power outage. An alternative is a feature that allows the lift to be lowered manually with a hand crank when power fails.

Lifts should always be placed on concrete pads that are 4-6 inches thick. If the lift has a drop-down ramp, these pads should be level and continuous with the accessible route to the lift. If not, the pad should be recessed from the adjoining walk or landing so that there is level access to the lift platform. When constructing upper gates, it is important to be sure that the latch post of the gate is secured firmly in place. Many of these posts anchor to the surrounding landing only at the bottom. This can create a potentially serious problem. Lifts will operate only if the lift gate is securely locked in the closed position. There is a disconnect circuit that prevents the lift mechanism from working when the door is open. If the latch post becomes loose, either from normal wear and tear or faulty connections to the landing, the door may not close properly and the disconnect circuit could either not operate at all, not re-engage properly or operate continuously, burning out electronics and shutting down operation of the lift entirely. Loose latch posts also can cause the lift to cease operation in the middle of use. These situations can be highly inconvenient and potentially life threatening. Latch posts should be firmly secured to railing posts on the landing. This will insure working connections. Many jurisdictions require special permits and electrical connections for lifts. Consult with local building code officials before installation of any lift.

Several convenience and safety accessories are available for lifts. Overhead canopies or full height shrouds provide weather protection and insure more comfortable operation. They also help prevent ice buildup in key-operated controls. Manual override cranks, while generally difficult to use, provide some convenience in case of a power outage. Some lifts are mounted on wheels so that they can be easily moved to new locations. This type of portable lift is useful for temporary accommodations. Local disability advocacy groups and home modification service providers could lease or loan these lifts on a temporary basis.

## Grab Bars

Once access is provided to the building itself, bathrooms are usually the next focus of home modifications. The bathroom is a difficult and dangerous space for many people with disabilities. Grab bars are the most basic modifications, yet they are not always as simple to install as they may seem.

There are many types of bars and there are many ways that they can be installed. These guidelines apply to all grab bars:

- Install bars at a height and a position that best supports the type of transfer the user makes.
- Bars should have non-slip surfaces and be 1 1/4 to 1 1/2 inches in diameter in order to facilitate gripping. There should be 1 1/2 inches of space between the bar and the wall to provide room for a secure grip but not so much that arms can get wedged in between.
- Bars should be mounted securely to the wall according to manufacturers' instructions. This generally means that they must be attached to secure reinforced areas in the wall.

There are several ways to provide reinforcing for grab bars. The three most common are:

- blocking installed between wall studs,
- plywood sheathing underneath the wall surface, securely attached to studs
- wood plates on top of the wall surface anchored to studs.

Blocking between wall studs should be 2x6's or 2x8's nailed or screwed to the inside of the stud. This provides a secure surface to screw the grab bar to the wall. Plywood sheathing is an inexpensive and easy alternative to blocking that provides more flexibility in positioning of the grab bars. Both of these approaches require removing the wall surface. Generally, the best way to do this is to completely re-tile or resurface the entire wall in which reinforcing is installed, not just a section where the blocking was placed. An alternative to removing the wall and installing reinforcing under the surface is to install wood plates on the surface of the wall. This is generally less expensive and easier to do, however it is not always as secure. The screws that secure the plates must be firmly anchored in the studs. To insure an attractive installation, plates should be made



Fig.22 Pivoting bars offer a wide range of accessibility options (photo by Linido USA)



Fig. 23 Adjustable grab bars and mirrors (photo by HEWI Inc.)



Fig.24 Adjustable grab bars and toilet accommodate a broad range of user abilities (photo by Linido USA)

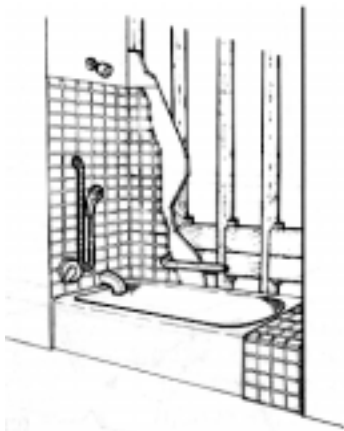


Fig.25 Solid wood reinforcing for grab bars on wood stud walls (photo from HUD)



Fig.26 Grab bars installed in the bathtub area (photo by HEWI)

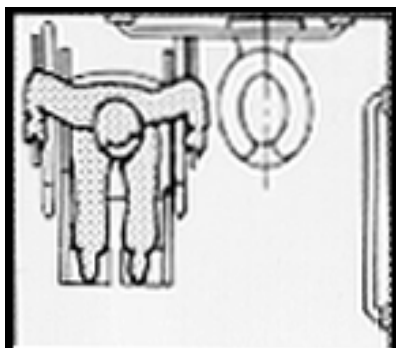


Fig.27 Grab bars and clear space around toilet allow for easy transfer (photo from ADA)

from finish quality materials. Decorative trim or edging can be used as well.

Water infiltration can cause problems when grab bars are installed in the bathtub or shower area. It is possible for water to seep into walls through the screw holes of grab bars. Silicon sealant on the screws or in the holes can help to prevent this. In the case of surface plates, the upper edge of the plate should be beveled away from the wall to prevent water pooling behind it. Some plates are installed by removing a section of tile and recessing the blocking against the studs. This assures a solid connection to the studs but makes water infiltration more likely. If the plate is recessed below the tile, sealant should be used on the edges to prevent water from penetrating into the wall. Regular inspection and maintenance of these installations is critical.

There are many types of grab bars and each has different benefits and uses. The traditional horizontal grab bar is generally useful to almost everyone, however it must be positioned correctly. Grab bars should be long enough so that they can be gripped before a person has transferred to the fixture. Thus, grab bars to the side of the toilet should extend beyond the toilet by about 20 inches. This bar should be continuous to at least 12 inches from the back wall. Similarly, horizontal grab bars in the shower should wrap around all three walls to provide maximum protection. Grab bars that are intended to help people stand up and sit down, as opposed to transferring from a wheelchair are often placed diagonally. This provides the strongest grip and maximum leverage. Vertical grab bars can be useful for helping ambulant people use the tub, but it is easier for people with wet hands to lose their grip on such bars. Looped type bars and short handholds can help prevent slipping while still providing a vertical grip orientation.

Grab bars are also available that pivot at the wall. They can be raised out of the way and lowered when needed. This type of bar provides choice on how it is used. A user can lower a bar to transfer on to a fixture and raise it to aid in the exit transfer. Pivoting bars positioned between fixtures can be used in different positions depending on which fixture is being used. For example, a lowered bar could help at the toilet, while the same bar in the raised position could help in using the shower or tub. Since pivoting bars can be moved out of the way they can be installed on both sides of toilets and folded against the wall

when people do not need them. At toilets, these bars should be located lower and closer to the seat than wall mounted bars because they are used to push off rather than pull up. These bars should come equipped with locking devices for use in the vertical position. It is important to note that some people with disabilities may have difficulty moving bars out of the way without help.

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## Accessible Showers

Even the low walls of a tub are too great an obstacle for many people with disabilities. A shower stall is better for these individuals. It is also easier for caregivers. Adding a shower is a common modification for people who use wheelchairs; yet, it is one that is often poorly designed. There are two ways to make shower stalls: prefabricated and custom built-in units. Prefabricated units are less expensive and easy to install, however they often have curbs to prevent water from escaping and to provide structural support. This curb is a barrier for people who cannot transfer to a seat inside the shower. Prefabricated shower stalls with short ramps from the floor to the top of the curb are now available, however this does not eliminate the curb on the inside of the shower.

Shower stalls should be sized so that they meet the needs of the intended user. Generally, the minimum space needed for a transfer shower stall is 36 by 36 inches. Roll in showers need a minimum of 30 by 48 inches; 30 by 60 inches is preferred and a 60 by 60 inch shower is ideal. Grab bars should be placed as appropriate for the individual and controls located where they can be most easily reached. While codes generally require controls to be placed on the front wall, near the outside of the shower so that they can be reached before entering, this is sometimes not the best place for them. Many people find that it is easier to reach controls if they are placed on the side wall and activated after transferring into the shower. This location allows them to adjust controls while seated in the shower. If such controls are used, a flexible shower spray must be provided to control the water stream and prevent scalds. Flexible shower sprays are generally useful for a variety of tasks and should always be considered, particularly when a caregiver will provide assistance. The shower spray allow caregivers to avoid getting wet themselves. For caregivers, extra long hoses are recommended.

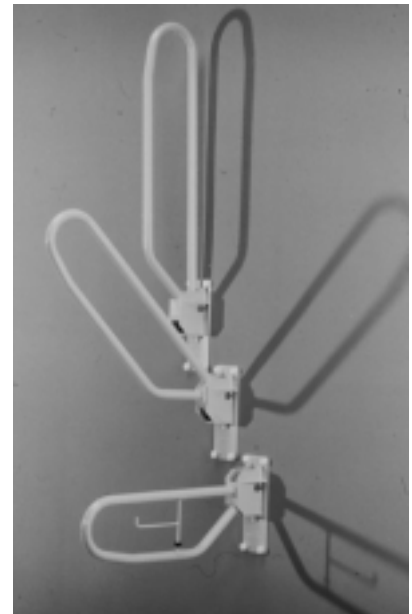


Fig.28 Linido's pivoting grab bar (photo by Linido USA)



Fig.29 Prefabricated shower unit with a low-threshold entry (photo by AquaGlass)



Fig.30 Roll in shower with Linido accessories (photo by Linido USA)



Fig.31 Acrylic roll-in shower (photo by AquaGlass)



Fig.32 Multiple counter heights (photo by MJ Peterson)

When a person receives assistance in bathing, controls can be placed close to the outside so that the caregiver can easily reach them. Prefabricated shower stalls often come with grab bars and controls already placed. Find a unit that best fits the individual household's needs. Some companies will make custom shower stalls to order. This option should be explored if the standard unit does not meet required needs.

Shower stalls without curbs must be designed to prevent flooding of the bathroom floor. Small gutters can be installed that direct water to the drain. It is also a good idea to slope the entire floor of the bathroom slightly toward the shower drain. This will help prevent water damage to the floor and surrounding apartments. Flexible shower dams are available that bend easily when a wheelchair wheel rolls over them. Another approach is to make the whole bathroom or a section of it a "wet room." The floor is sloped toward a main drain, and all the walls tiled to prevent water damage. Toilets are often included in this area, since they can be used as shower seats. If space is available, wet rooms can be added on to existing bathrooms, providing a large and accessible shower area. A slope of 1/4 inch in 1 foot (1:50) is recommended for adequate drainage in a shower. Lower slopes down to 1/8 inch in 1 foot (1:100) can be used in the area outside the shower itself.

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## Accessible Kitchens

The kitchen has become one of the most important rooms in the house. It is not only a place used for cooking and eating, but is also a place for working and socializing. Yet, over the last 40 years, the design of most kitchens has remained relatively constant. Generally, the average kitchen is unresponsive to individual needs over time and modifications are often necessary to make it accessible.

A primary consideration in modifying kitchens for access is providing usable counter space. Counters are often too high; there is often too little space; and, they do not provide clearance for seated access. Standard 36" high base cabinets, in particular, do not provide comfortable work surfaces for everyone. Also, a lack of adjacent counter space can limit the use of fixtures and appliances, such as the sink or refrigerator.

There should be accessible counter work surfaces to accommodate people with differing abilities and support different

tasks. The provision of one or more lowered sections of counter is a common accommodation. Lowered counter sections are easier for a seated person or a person in a wheelchair to use. Sections of counter at regular heights, supplemented with lower height sections, serve a range of people with varying abilities and also provide options for completing different tasks. Some guidelines for counter modification include the following:

- 28”- 32” height for seated users and tasks such as chopping and baking
- 36” height for general use by standing users
- 42” - 45” height for counters raised over appliances and for completing tasks requiring fine motor coordination
- Minimum dimensions for knee spaces at 30” wide by 27” high

One innovation in counters is an adjustable height countertop to accommodate both standing and seated users. This device provides flexibility, accessibility and ease of use. It supports different preferences and abilities and allows for the user to adjust the environment, instead of adjusting to it. An adjustable countertop can be made in three different ways. The best approach is a motor driven system, adjustable by the push of a button. A second is a manual jack system. It is adjusted by turning a crank handle located on a front panel or fascia. This system requires a certain level of strength and dexterity to operate. Last is an adjustable fastening system like a counter mounted on heavy-duty shelf brackets. The brackets are locked into a track system mounted to studs or a reinforced wall. Without high modification costs, this system can satisfy the changing needs of kitchen users over time but is not adjustable for the situation.



Fig.33 Lowered sections of counter space accommodate different needs (photo by Granberg)



Fig.34 Motorized adjustable counter with sink (photo by GE Appliance)

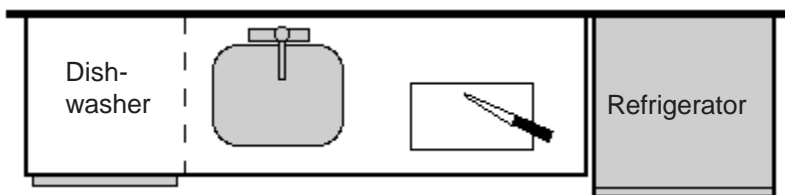


Fig.35 Lack of adjacent counter space can make sink use difficult (IDEA Center)

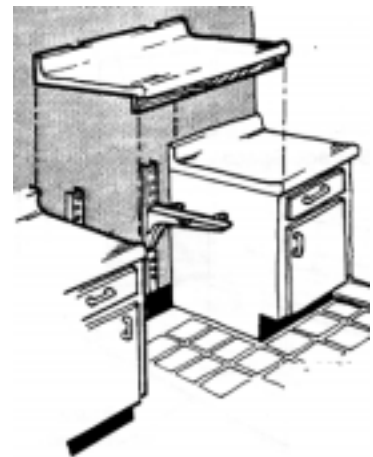


Fig.36 Wall mounted adjustable support brackets (photo from HUD)



Fig.37 Sink with side drain and retractable hose spray (photo by Kohler)



Fig.38 Side mounted faucet design (photo by GE Appliance)



Fig.39 Faucet with handles that are operable with a push or pull of the hand (photo by Kohler)

The appeal of an adjustable design is increased further if sinks or cooktops can be mounted in them. In this case, very careful thought has to be given to the installation. There needs to be ample space for the vertical movement of the counter, so adjacent counter overhangs must be avoided. For range tops, wiring should be protected in a flexible conduit. For sinks, durable connectors and flexible or slip-joint plumbing must be installed to accommodate the full range of heights. Flexible extension tubes can be added to convert fixed installations into drain lines that are adjustable. The line from the drain to the trap has to be flexible. And in order to accommodate the full range of movement, the trap will have to be installed with the counter in its lowest position.

Innovative sink design can also make tasks around the sink work area much easier. Use of the sink should be as effortless as possible. Shallow sinks minimize bending. The sink should be no more than 6 1/2" deep. Locating the drain at the side or the rear of the sink will increase knee clearance for a seated person or a person using a wheelchair. There should not be any protruding objects under the sink and the drain pipes and plumbing should be set back as far as possible. Pipes should be padded or a protective panel installed to prevent injury.

In some cases, poor faucet design can severely limit the usability of a sink. Generally, faucets with two handles are more difficult to operate for someone who has limited use of their hands or restrictions in reach. The operation of a faucet with two handles, however is more readily understood. For older people, a single lever design may require a learning period before the benefits of increased usability are realized. Faucets that are mounted to the side of the sink will require less stretching and reaching. A retractable hose spray is another feature that reduces stretching and bending. Such devices also can reduce lifting if they are long enough to fill a pot on the stove.

Storage is a key issue in the modification of the kitchen. Storage should be plentiful and easy to access. Traditional cabinets with fixed shelving make access to storage difficult. Improved access to storage units can be accomplished in many ways. First, provide optional ways for approaching cabinets. Second, plan storage to reduce the need for reaching, bending and carrying. Provide clear space around cabinets to allow access from a standing or seated position, and keep storage within the comfortable

reach range of 24" - 48" above the finished floor. Employ a mechanical system to lower wall cabinet storage if necessary. Third, provide units with drawers and pullout shelves, and install swing-out shelf units or Lazy Susans in corner cabinets. Fourth, increase visibility with glass doors and open shelves when possible. Fifth, integrate rolling server-carts to provide flexible temporary storage and reduce the amount of incidental lifting. Also, controls, handles and drawers should be easy to grasp and require a minimal amount of strength or effort to operate.

Careful attention should be given to selection and location of appliances in the kitchen. Many of the same accessibility issues that apply to cabinetry units also apply to refrigerators. Insufficient maneuvering clearances and door swings can make refrigerators very hard to approach. Upper freezer compartments are sometimes inaccessible. Side-by-side refrigerator/freezers are recommended because they are easier to use. Storage is within reach by children or people in wheelchairs and narrow doors make it easier to maneuver for access. A water and ice dispenser in the door provides access without having to open the unit. Clear, sliding glass shelves will improve access, visibility and also make cleaning easier. Refrigerator controls should be easy to reach. As with range controls, front access to temperature controls and light bulbs enhance independence.

Location, maneuvering clearances, use of controls and access to the interior are all important concerns in dishwasher selection. A dishwasher should be placed near the sink so that carrying items from the sink to the dishwasher is kept to a minimum. Dishwashers that are raised off the floor provide easier access to dishes without much bending. Adjacent knee spaces



Fig.42 Varying the heights of cabinets makes storage more accessible  
(photo by GE Appliances)



Fig.40 Lazy Susan cabinets help to maximize space  
(photo by Hafele America)



Fig.41 Through-the-door ice and water dispensers eliminate the need to open the doors.  
(photo by Whirlpool)



Fig.43 Pull out shelves make using appliances easier and safer  
(photo by GE Appliance)

should be provided to allow people in wheelchairs to get close to the appliance. Controls should be easy to read (touchpad controls are preferable), and the door should open and close easily.

The range and the oven are the two most dangerous appliances in the kitchen. Control type and location are important concerns. Controls that are hard to read or that force a user to reach over the burners create the potential for accidents. Range hood controls are often impossible to reach for shorter people and those who use wheelchairs. Standard ranges and ovens are difficult in general for people who use wheelchairs. They prevent the user from getting close to the work surface.



Fig.44 Wheelchair accessible cooktop with front controls (photo from HUD)

Adjacent knee spaces make access to the range and oven easier and safer. "Smart controls" that save steps and provide feedback enhance safety and convenience. Controls should be easy to reach, use, and understand. Self cleaning ovens and ranges with smooth cooking surfaces make maintenance easy. Range hoods can be wired to a switch on the counter.

Cooktops are gaining popularity in the kitchen because they are more versatile than ranges and can have knee space under them to allow a front approach for a person in a wheelchair. They can also be set at the ideal cooking height. Smooth surface burners facilitate transfer of pots and pans. Controls should be easy to operate and read. A minimum edge between counter and cooktop enhances transfer of pots and pans. Burners should be staggered to reduce the risk of burn injuries.



Fig.45 Side swing microwave oven doors make cooking easier (photo by Whirlpool)

Microwave ovens are one of the most useful appliances for people who have low strength or stamina. However, poor location can make them difficult to use. Microwaves provide great flexibility because they can be placed where it is easiest to reach them. They should be located to minimize lifting and carrying. An adjacent heat resistant surface for transferring hot dishes is desirable. The bottom of the oven should be between 24" and 48" above the floor. Controls are often difficult to grasp and hard to understand. Microwaves with touchpad controls are easier to operate than dials and make cleaning easier. Darker colored units are easier to see, and units with audible use indications are helpful. "Masks" can be fabricated or raised symbols applied to make controls perceptible to visually impaired people.

Good illumination is important in the kitchen. Increasing illumination beyond conventional levels may be necessary. The installation of flexible task lighting like under cabinet fixtures allows users to adjust the illumination to suit their particular needs. Switches and outlets placed on the wall to the rear of the countertop may be out of reach for some. They should be located toward the front of the counter, on the front panel of base cabinets, or at unobstructed wall locations. Routine maintenance like changing lightbulbs can be extremely difficult for many people unable to reach fixtures. The use of retractable fixtures is recommended for easy access. Also, the use of long lasting bulbs reduces the frequency of changing bulbs.

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## Resources

There are suggested modifications for a wide range of accessibility problems, and much has been written about them. Several of the best resources are:

- *Building for a Lifetime: the design and construction of fully accessible homes.* Margaret Wylde, Adrian Barron-Robbins and Sam Clark, The Taunton Press: Newton, CT. 1994
- *The Accessible Housing Design File.* Ronald Mace, FAIA, et. al. Van Nostrand Reinhold: New York. 1991
- *Beautiful Barrier Free: a visual guide to accessibility.* Cynthia Leibrock. Van Nostrand Reinhold: New York 1993.
- *Universal Kitchen Planning and Universal Bathroom Planning.* Mary Jo Peterson. National Kitchen and Bath Association. 1995
- *Residential Remodeling and Universal Design.* NAHB Research Center and Barrier Free Environments. US Department of Housing and Urban Development. 1996
- *How to Build Ramps.* The RAMP project. Metropolitan Center for Independent Living: Saint Paul MN. 1994

All of these books contain strategies for design, construction details and products to help provide accessible environments. In addition to these books, there are some excellent sources for products:

- *HyperAbleData.* The Trace Center at the University of Wisconsin- Madison. CO-NET. Updated twice yearly.

(CD ROM for Macintosh and Windows)

- *The 1995 Accessible Building Product Guide*. John P.S. Salmen, AIA and Julee Quarve-Peterson. John Wiley and Sons: New York.

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## Education and Advocacy

Many experts have argued that education of both the consumer and the professional is the key to improving the number and quality of home modifications. Consumers are often not aware of the options available. Consultations with professionals can help people with disabilities decide on options to increase the accessibility of their homes. Occupational therapists are helpful in assessment of needs and identifying assistive technology, but generally are not knowledgeable about construction issues. Architects can advise on environmental design issues, but often have limited ability to analyze accessibility problems of individuals. They are used to designing to minimal standards, and may not be willing or able to design to a person's individual needs. Home improvement contractors are usually the first people that the consumer contacts. They often don't know which questions to ask or which issues must be addressed. They have the perception that accessibility automatically means higher costs and expensive equipment and thus charge accordingly. It is clear that all professionals need to educate themselves.

Continuing education classes, seminars at conferences as well as resources like books and video programs are all traditional ways that research knowledge is disseminated. These approaches have been used to teach people about accessibility modifications. However, they are not reaching the most needy audiences, and not on a large enough scale. Mass media programs and consumer oriented books are available. They may be helpful in changing attitudes and raising awareness; however, they have had limited success in teaching the specifics of home modifications. Further educational resources need to be developed.

One of the most promising educational approaches is the use of a community demonstration center. Access Unlimited is one example. Rick Zwellig originated the concept of Access Unlimited while a sales representative for Lewis Plumbing Supply, a family owned plumbing distributor in the Richmond area.

“Yo Rick, I got this handicapped job, what do I need?” was a common question from contractors, who relied on him to prescribe formula solutions for their clients who needed accessibility. He saw that little attention was being paid to individual needs. In seeking to serve both the contractors and their clients better, Rick approached Barry Ackinan, the president of Lewis, with an idea for a center that would showcase accessible products, as well as provide design services for consumers and contractors needing advice on home modifications. With Barry’s support, Rick assembled a team that includes a rehabilitation professional, architects and designers as well as contractors and lawyers to serve as an advisory council to the new company. Community involvement was strong from the start, incorporating student design ideas and public discussion sessions with consumers and professionals in the area. Within a year, a final design was developed and the showroom was built.

Access Unlimited is a profit-making venture. They believe that educating both consumers and contractors is the best way to sell their products. They also believe that marketing to professionals by educating them about their services lays the groundwork for future sales. The showroom incorporates general information about disability as well as opportunities for contractors to try out wheelchairs, putting themselves in the place of their clients. Features such as accessible cabinetry, kitchen and bath fixtures and a five foot turning radius on the floor all help the consumer and the contractors understand the issues they face in their own projects. These features also help the design process by giving insight into what products and strategies are available. Products are available for demonstration. The displays include cut-away construction models of installation details. This helps inform contractors about the correct installation methods. Staff with design training are available to help offer alternatives, to correct misconceptions, and provide design services. Access Unlimited will also visit a prospective client’s home and assess their needs before designing a home modifications package. “Package” modifications are available that combine several products to address a range of accessibility needs.

Consumers who visit the showroom often come away convinced they need the advice of a designer, which Access Unlimited can provide. Contractors can discuss installation with knowledgeable sales representatives, who suggest low cost solutions that do not sacrifice accessibility. Access Unlimited has also

moved into more traditional educational roles, conducting seminars for design professionals, building managers and rehabilitation professionals. This is a new model of service delivery, “commercial advocacy.”

In general, Access Unlimited has enhanced the provision of home modification services in their area by serving as a central communication and education point for contractors, suppliers and consumers. While they have been successful, there are still problems. Many contractors believe the showroom approach complicates their work, refusing to acknowledge the need for education. Contractors who are unfamiliar with Access Unlimited or are from other areas are reluctant to switch from their standard suppliers because they have already established accounts and credit. Other professionals often do not take the time to see the showroom and participate in the educational process.

Another commercial model for delivery of services is being pursued by The Accessibility Alliance. This company was formed by Robert Del Collo, Jeffery Kline, A. Laurence Field and Gary Place. Each found that they could provide excellent services in their own area of expertise (design, construction and code enforcement), but they were unable to respond adequately to the broad range of customer requests. As their paths crossed in various projects, they realized the benefits of a partnership and formed the Alliance. They focus on providing one stop shopping for the “elderly” and “disability” markets by providing products, assistance, and skilled installation. The focus of their marketing is not strictly accessibility. Rather, they promote products and services that make homes easier to use by everyone.



Fig.46 Touchscreen example  
(photo by The  
Accessibility Center)

The Alliance markets its services by partnering with large home improvement, home health care and medical equipment chains. They pursue a “store within a store” concept. The idea is to place an Accessibility Center into “host” chain stores. The services of the centers include:

- an interactive kiosk that uses touch screen technology to help consumers identify products to fit their needs.
- trained consultants to assist consumers in designing modifications,
- qualified contractors to provide product installations.

The Accessibility Alliance has demonstrated the merit of their one-stop shopping idea in stand-alone retail store in Wilmington, Delaware. They are currently in the process of placing staffed Accessibility Center kiosks within large chains such as Hechingers and Health 'n' Home superstores. Future plans include broader distribution of the Accessibility Centers, unmanned satellite kiosks, and an Internet presence. This marketing approach has great potential to close the knowledge gap among consumers and professionals as well as provide greater access to services.

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## Conclusion

Accessible housing continues to be a growing need in the US, and home modifications will play a vital role in meeting the demand. The Fair Housing Act Amendments of 1988 have started the ball rolling toward more acceptance and implementation of home modifications. Consumers now have the teeth to demand access to accessible housing. Legislation alone is not enough however. The National Home Modifications Policy Task Force's most recent conference identified four major action steps to increase home modifications:

- Consumer education.
- Enhance capacity to deliver home modification services.
- Develop a national resource and referral network.
- Work for systems change in funding.

Consumer's need better information about their rights and the options available to meet their needs. Private companies like Access Unlimited and the Accessibility Alliance are providing unique approaches to educating consumers, but they cannot do it alone. Consumer and professional education go hand in hand. Professionals need to learn how to better serve their clients by becoming more familiar with disability and home modification. They also need to guide their clients to the right resources, so they can make informed decisions. Margaret Wylde cites the need to change the language and attitude of the rehabilitation professional community. A more universal design attitude is needed to make it clear that home modifications are good for everyone (Wylde, 1996). Excellent resources already exist, but to truly reach a broad number of consumers, home modifica-



Fig. 47 Interactive kiosk  
(illustration by The  
Accessibility Center)

tions must be presented in the popular media. *Hometime*, a “do-it-yourself” home improvement show, recently devoted an entire segment to accessibility. More exposure of this type is needed. Multimedia and the Internet also have possibilities for educating consumers and professionals. For example, Lowes home improvement stores has “how-to” information about common projects on their World Wide Web site. Home Modification information could be added to sites such as this, and new sites specifically devoted to accessibility could be created.

Enhancing the capacity for delivering home modification services will involve many actions. More accessible housing needs to be built and will be as the market and laws demands it. This housing will be easier to adapt to individual needs. Access Unlimited’s success in marketing accessibility to contractors suggests there is opportunity for the construction industry to better serve their clients and generate profits as well. Home improvement companies that specialize in accessibility will find a growing market for their services. The health care delivery community must also embrace home modifications as part of the rehabilitation process. Incorporating home assessments into discharge procedures and including funding as part of managed care are two important action steps. Professional education will also generate increased capacity to deliver services.

Development of a national referral network has already started. The members of the National Home Modifications Policy Task Force are the core. An Internet "listserv" is in place for professionals to communicate with each other, and a World Wide Web page will soon follow. More work is needed at the community level to give people many points of access to resources. The lack of centralized government coordination will make it necessary for this network to grow out of the grass roots. Another alternative is for a consumer oriented organization such as AARP to assume more of a leadership role in establishing the network. *Modern Maturity* magazine and the AARP World Wide Web site already provide consumers with advice about financing home modification. Coordinating a listing of regional resources for financing and delivering services would make it easier for consumers to tap into them.

Systems change in funding will grow, in part, out of an acceptance by the health care community that home modifications are a necessary part of rehabilitation. This acceptance will grow out professional education and an increased demand for accessible housing. Medicare waiver programs and insurance settlements for making modifications are early examples of changes in policy. More coordination will be required at the state and local level in order to identify funding sources that can be tapped. Limited resources can be used more effectively as part of a coordinated home modification program. Such programs could become depositories of knowledge and referral to available resources. Social action will also be required to build acceptance of home modifications as a viable outlet for community development and construction grants. Continued action of groups like Habitat for Humanity will also play a part.

The *Blueprint for Action* report on the second conference on National Home Modifications Policy elaborates on these issues and sets an agenda for improving the delivery of services. Ultimately, universal design will become the norm in housing and home modifications are one vehicle for achieving it. Presenting home modifications as a step toward improving living for everyone is a powerful way to drive the housing market toward increased accessibility.

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