UNIVERSAL DESIGN

Accessibility and the Americans with Disabilities Act

Volume 2, No. 5: January 1996

$75 per year

One Step Forward, No Steps Back

Project Searches for Information Technology that Serves Everyone

If you've ever been inconvenienced because an automatic teller machine (ATM) wouldn't recognize your card or a postal machine with a "hi-tech" key pad made it impossible for you to retrieve stamps -- you're not alone. You've experienced the same frustration with electronic information and transaction technology that people with limited sight, hearing and mobility feel regularly. Technological breakthroughs that are supposed to make everyone's lives easier -- sometimes don't. It is becoming increasingly apparent that an "improved" technology doesn't always mean "more use by more people." Such strides forward can, albeit unintentionally, leave some people out in the cold.

But there is hope. As the technology train steams ahead there is an effort afoot to make existing and emerging information and telecommunications systems flexible enough to accommodate the broadest possible range of users, regardless of age or level of ability.

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The edge of this 'current pool' is raised above the floor to allow easy transfer from a wheelchair.
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Making State-of-the-Art Kitchens Accessible

New Industry Guidelines Bring Universal Design Home

by Mary Jo Peterson

State-of-the-art kitchens can now accommodate people of varying sizes, shapes and abilities thanks to changes in kitchen industry standards.

For years the "rules" for kitchen design have been set by the National Kitchen and Bath Association (NKBA). Intended to ensure that designers produce kitchens that are both beautiful and

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Evaluating Universal Design

As our society begins to appreciate the value of universal design, people at many levels of the design process are trying to define what is meant by "good" or universal design. Staff and consultants at the Center for Universal Design at North Carolina State University in Raleigh have been working for the last year on the development of a set of Principles of Universal Design. They are trying to establish a set of principles, guidelines and tests that will help a designer develop universal designs, and will help educators and owners evaluate whether or not a design is universal. A simplified version of their latest thinking is shown in the box at the right.

At the same time, the CABO/ANSI A117 and Americans with Disabilities Act Accessibility Guidelines Review Federal Advisory committees are trying to redefine the minimum criteria for accessible design that will hopefully be published as a single standard sometime within the next few years (see Fedwatch, page 3, for related article).

While both of these efforts are laudable and will undoubtedly help many people, the idea of trying to define a creative process is difficult and potentially dangerous. Placing definitions or boundaries around a creative process immediately places limitations on the outcome. Principles and guidelines by their very nature must be minimum requirements, but in reality they often become the maximums for many designers who try to be as efficient as possible with their designs, reducing the sizes and amounts of material used. Minimum guidelines help those who are new to the process, but may limit those who are experienced. The guidelines may raise the quality of the poorer efforts but in the process risk squelching the potential for innovative solutions.

The international symbol of accessibility is a good example of this problem. It has been around for many years and people have come to understand that it identifies facilities or products that are accessible to people with disabilities. However, it was never clearly defined. As a result, in many places, it has been abused to market products or used incorrectly, identifying spaces that are only partially accessible, or facilities that have only one accessible element.

The Universal Design Principles can be used to evaluate whether a product or facility limits certain known groups of people, but it's unlikely that we be sure that a product or facility meets the test of all the principles for all people. (See the October 1995, From the Publisher's Desk, "How High is Too High?") Like the wheelchair symbol, we need to be careful to avoid claiming that an item is "universal".

On the other hand, we may be able to say that a designer used the universal design process to come up with the final product. In other words, we could speak of universal designing instead of universal design. Perhaps by focusing on the process of designing for all people rather than focusing on the resulting product, we can encourage designers and building owners to continually strive to meet the changing needs of our society -- not just get by with the minimums.

John Salmen

Proposed Principles of Universal Design

- Simple and Intuitive Use
- Equitable Use
- Perceptible Information
- Tolerance for Error
- Flexibility in Use
- Low Physical Effort
- Size and Space for Approach and Use

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FEDWATCH

ANSI and ADAAG Agree to Reconcile Differences

During the revision processes over the past year, the governing bodies of the CABO/ANSI A117.1 Standard and the Americans with Disabilities Act Accessibility Guidelines (ADAAG) have recognized the similarities and acknowledged the differences between their respective accessibility standards. During this time the possibility of a close and lasting marriage has become evident.

In 1994, the US Architectural & Transportation Barriers Compliance Board (Access Board) established a federal advisory committee to make recommendations on how to improve ADAAG and on how the ADAAG could be coordinated in the future with the other model building codes, most notably the ANSI standard. It is no coincidence that many members of the ADAAG review committee are also members of the ANSI committee which is simultaneously updating the A117.1 standard. It has been the (spoken or unspoken) goal of many people on the two committees to create one standard that would eliminate the confusion experienced by building owners, designers and contractors in their efforts to provide buildings that comply with both local building codes and the Americans with Disabilities Act (ADA). How that coordination would take place, however, has been a big question, as the two groups worked through their separate and distinct review processes.

In a joint meeting held on Oct. 30 in Washington, D.C., representatives of both groups identified a brief period of time in March of 1996, during which their processes would coincide and both draft documents would be at stages where they could be compared and differences identified. At that time, the ADAAG Review Federal Advisory Committee will have completed its substantive changes to the ADAAG, and the ANSI A117 Committee will have completed its second round of revisions for the 1997 standard. The two groups agreed to have a small reconciliation committee compare both documents and report on any substantive differences. Both groups will then review the report and attempt to adopt common language.

Both groups hope that this process will be relatively simple, since both have been working informally to coordinate the various drafts over the last year. For example, the ANSI task force recommendations for signage and automatic teller machines were adopted by both groups, and the ANSI Plumbing Task Force met with the ADAAG Plumbing Subcommittee to coordinate efforts.

While it will likely take at least another year after this reconciliation effort is completed for both standards to be finalized, the result could be a significant step in the direction of establishing a single national accessibility standard.

ADAAG Review Committee Proposes New Format

On Nov. 3, 1995 in an effort to streamline and simplify the Americans with Disabilities Act Accessibility Guidelines (ADAAG), the ADAAG Review Federal Advisory Committee adopted a recommendation of its Editorial and Format Subcommittee. The full committee approved the concept of a new Table of Contents (see box at right) along with metric dimension conversions, a new numbering system, a code-related language style, and a format for the display of figures, commentary and defined terms. One of the most important efforts of the ADAAG Review Committee has been to provide more complete explanations of the requirements. For instance, if given the rationale behind the requirement for 36-inch high checkout counters at points of sale or service, all ADAAG readers could understand how to deal with situations where there are multiple check out counters of slightly different design, but identical function. The present system of appendix material located at the end of ADAAG is often overlooked by the reader. Committee members want to ensure that the enforceable language of the guidelines is complete and clearly differentiated from the non-compulsory illustrations and text commentary. The newly adopted format will place the figures and commentary language in close proximity to, but clearly separated from, the corresponding technical or scoping provision.

Proposed ADAAG Table of Contents

Chapter 1 ***Administration and Application***

Will deal with the applicability of the guidelines and discuss dimensional tolerances, equivalent facilitation, definitions of terms and similar issues.

Chapter 2 ***Minimum Requirements***

Will include the scoping provisions for all of the technical sections of the standard. The present separate sections for site and buildings, new construction, alterations and historic preservation will be combined.

Chapter 3 ***Fundamental Elements***

Will include what the committee is calling "building blocks"and includes such items as clear floor space, protruding objects, and reach ranges.

Chapter 4 General Site and Building Features

Will present the technical criteria for such elements as parking spaces, doors, ramps, elevators and areas of refuge.

Chapter 5 Plumbing Features and Facilities

Will address sinks, drinking fountains, toilets, bathtubs, showers, and similar plumbing elements.

Chapter 6 Communications Features and Equipment

Will address fire alarm systems, signage, telephones, assistive listening systems, and similar elements.

Chapter 7 Built-In Furnishings and Equipment

Will address tables, counters, checkout aisles, automated teller machines and similar elements.

Chapter 8 Occupancy-Specific Rooms and Spaces

Will address those few unique elements that are not in chapters 4 through 7. It is anticipated that the majority of this chapter will be devoted to what is now Section 10 - Transportation.

A Home for All Seasons

Accessible House Design Blends Function and Form

When a retired lawyer decided to build a new home, accessibility was a foregone conclusion. The real challenges were to integrate an exercise pool into an environmentally sensitive design that minimized construction and operational costs.

The first challenge was to find an affordable waterfront lot that met her needs, including access to a body of water appropriate for scuba diving, space for an organic garden, and an orientation to maximize views, summer shading and winter solar heat gain. This narrowed her choices to relatively flat sites on the north sides of lakes near Washington, D.C. She searched south down through Virginia, and after several frustrating negotiations, finally found an adequate site on a lake in the sand hills of North Carolina.

Dual height counter provides surfaces at comfortable heights for standing or sitting.

"The pantry, like most elements in this home, serves multiple functions. It provides storage and has a window that provides natural light and cross ventilation, and allows the cook to watch for arriving guests."

Electrical panel mounted along an accessible route and at an accessible height.

To keep costs down, she hoped to use a prefabricated or factory built modular home whose design could be modified by her friends at Universal Designers & Consultants Inc. of Rockville, Md. Local zoning ordinances, however, required that all homes in this community be built on site. While this initially seemed to be a problem that would increase costs, the final custom designed home came in on budget as a result of the careful design of spaces and details and the careful selection of building materials.

The gently sloping sandy lot provided a perfect opportunity to create raised garden beds alongside a meandering path leading from the house to the lake. A system of storage compartments and transfer tier steps designed into the dock allows her to independently gain access to the lake water.

The house is all on one level except for an auxiliary second floor apartment that was built with an entry that can be either private or shared. This arrangement allows the second floor to be rented or used by visitors or hired help.

The main entry to the house is under a protective roof overhang and opens into a foyer that creates a sense of compression before opening into a great room with its expanse of south facing windows overlooking the lake. Tile flooring on a concrete slab provides a surface that is easy to roll on and its dark color and thermal mass absorbs the sun's heat during winter days helping to warm the home at night. The great room and its adjoining kitchen are the focus of this home where meals, entertaining and conversation flow back and forth over a two tier peninsula that serves as an accessible food preparation area and a serving/lunch counter. Wheelchair T turn space is provided by open areas under the sink and cook top unit, allowing a seated person to easily maneuver and still have utensils, supplies and preparation areas all within arm reach. The absence of base cabinet storage is more than offset by a nearby pantry with modular storage shelves. The pantry, like most elements in this home, serves multiple functions. It provides storage and has a window that provides natural light and cross ventilation and allows the cook to watch for arriving guests.

The great room also serves as the control center for the home, where all the mechanical, lighting and communication systems can be operated from a desk. The circuit breaker panel was placed at an accessible height so that in emergencies, the owner can control the situation herself. The house has a high efficiency- zoned gas heat pump system to augment the passive solar heat gain in the winter and natural ventilation in the other three seasons. The windows were selected to take advantage of the prevailing breezes and are operable from a seated position. A low cost exhaust fan located in the pool room provides ventilation for the whole house when there are no breezes and relief from heat build up and humid-

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Known as the Universal Access Project (UAP), the effort is a partnership among the University of Wisconsin Trace Research and Development Center, the Corporation for Public Broadcasting/WGBH National Center for Accessible Media, and the World Institute on Disability. This 18-month program has been funded by the National Telecommunications and Information Administration of the US Department of Commerce.

Program Basics

In their quest for developing universally usable information systems, project participants are focusing on three areas: the "developer," "pipeline" and "viewer." The developer is the beginning of the system where information and/or software is generated. The pipeline is the transmission vehicle, i.e., a telephone line, a cable TV line or radio waves. The pipeline may also act as a translator of the information sought by the user. For example, it may convert a fax into e-mail or English into Spanish. The viewer is the means by which information is presented to the user. Telephones, computers, televisions, fax machines and public information or electronic transaction kiosks are just a few examples of viewers. The UAP has found that advances in any one of the three areas can create or eliminate barriers for users with different abilities.

Challenges for the Developers

For developers, one of the greatest recent advances in software design and computer operations presents a major problem. The Graphic User Interface (GUI) uses pictures and icons instead of text to let the user operate programs and features on the screen. Its use in the Macintosh operating system and Microsoft Windows software for IBM compatible computers has been praised for its ease of use by sighted individuals, and those with learning disabilities. Users simply point and click on a selected item rather than typing out an arcane string of computer commands on a keyboard. For users with low vision, however GUI creates difficulties. For example, computers for people with visual limitations are often equipped with screen-reader programs which translate a screen of text into words that can be produced on a speaker. Screen readers, however are unable to recognize and translate icons, buttons and other graphic elements unless audible words or text are associated with each icon. This problem highlights the need for several layers of information. For example, closed captioning for television offers an additional layer of information for hearing impaired users. Similarly, audio descriptions of film sound tracks allow people with visual impairments to know what is happening between the dialogue.

Pipeline Problems

Deregulation of the telecommunications industry has raised some interesting issues concerning the transmission/translation of information. The UAP is working with advocates to ensure that new communication systems such as the Personal Communication System (PCS) will be compatible with text telephones and other assistive technology. Participants are examining the potential for pipelines to translate and take the place of a specialized viewer that a person with a disability might need. For example, people with low vision could receive their faxes as electronic files they can read on a talking computer. In another such scenario, people with hearing impairments could have their voice mail messages translated into faxes and sent to and printed out on their fax machines.

Viewers: One Size Doesn't Fit All

Because people have differing sensory abilities, UAP is examining how people select their information "viewer." It is looking at selection based on needs, abilities and preferences. The questions raised are similar to asking people why they use

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Reach Out and Touch

Making Touch-Screens Accessible

How do people with little or no eyesight operate touch terminal automated teller machines at their bank? The Universal Access Project and the Trace Research Center have recently developed the "Talking Fingertip." It is a universal design aimed at including people with visual, cognitive and learning disabilities.

The Talking Fingertip technique is activated by running your finger across the top of the touch screen. This activates the auditory output. It then uses four types of auditory information combined with kinesthetic feedback to allow users who are blind to sense and use the touch screens in the same manner and layout as their sighted counterparts. The auditory prompts eliminate the need for Braille. This also allows people with limited vision who do not know Braille to access the information provided on the kiosk. Because the screen is designed the same for all users the need to develop special screens and layouts as well as substantially different human interface is eliminated. This ensures that users who are blind or have low vision are provided access to the same amount of information as others.

Because the icons and text still appear on the screen, individuals who have partial sight, or those with successively decreasing visual acuity can still use their remaining sight while being reinforced with the auditory messages. The auditory nature of the design also facilitates use by individuals with cognitive, language and poorer spatial abilities. For more information, contact the Trace Research and Development Center at 608.262.6966 voice or 608.263.5408 tty.

Putting Detectable Warnings to the Test

Transit Authorities Evaluate Performance

by H. Norman Ketola

Federal law now requires the transit industry to install detectable warning materials along the edges of all new transit stations and certain existing "key stations."

There are occasional problems when materials such as polymer composites, polymer concrete, ceramic and porcelain tiles, and blended rubber compounds are applied to existing transit platform surfaces. Good installation practice generally requires that the top layer of the existing platform surface be physically removed and smoothed to make space for a flush installation and to provide a good bonding surface. This can be difficult, especially when platform surfaces are made of high strength concrete. There are also ongoing concerns such as the potential loss of adhesion between the material and the platform surface, the basic durability and wear characteristics of the materials, and the maintainability (i.e., cleaning and snow and ice removal) of the installation.

... performance is dependent not only on the physical characteristics of each material, but also on the mechanics and quality of the material bond to the platform substrate,...

To examine these issues, the Federal Transit Administration (FTA) sponsored performance test and evaluation research on detectable warnings through a contract with Technology & Management Systems Inc.The project included: laboratory testing of 18 detectable warning materials and in-service performance evaluation of eight detectable warning material installations at six transit stations located in three transit systems (Boston, Cleveland and Philadelphia).

Lab Tests

The laboratory testing included standard tests for wear, slip and impact resistance, and adhesion/bond strength for material samples applied to concrete. All materials were first subjected to a water soaking for 55 hours. Several material samples failed the soaking test due to material degradation or a complete failure of the bond and were eliminated from further testing. Eight of the 10 remaining material manufacturers agreed to participate in the field testing. All materials passed the slip resistance tests (wet and dry), and were then evaluated in the field for adhesion/bond strength, wear resistance and impact resistance.

Field Tests

The primary goal of the field testing was to document the performance of the selected materials when subjected to the rigors of passenger traffic. The field testing took place at both indoor and outdoor transit stations. Indoor sites were in corridors that had high pedestrian traffic.This helped to compensate for the compressed time frame of the field testing (approximately six months). The outdoor sites were selected to expose the materials to the effects of weather (particularly winter conditions) and the winter maintenance practices (snow and ice removal) of the transit systems.

Results

The results are shown in the accompanying table which compares the tested products for wear resistance, bonding with the surface, resistance to chipping and cracking, and maintenance of color. The complete field test results along with valuable information about the installation process and the experiences of several transit systems are contained in the official report on the project titled, "Detectable Warnings: Testing and Performance Evaluation at Transit Systems"(DOT-VNTSC-FTA-94-9). The report emphasizes the need to treat the material as part of a "detectable warning system" where performance is dependent not only on the physical characteristics of each material but also on the mechanics and quality of the material bond to the platform substrate, the surface preparation of the substrate, and the nature and quality of maintenance efforts to keep the surface clean and free of water, ice, or snow.

Summary of Performance Rankings

	wear	bonding	chipping, cracking	color
ADA Consultants - Alert Mat	◒	●	◒	●
Carsonite International - Pathfinder	⊙	◒	⊙	⊙
Crossville Ceramics - Tac-Tile	○	○	○	○
Engineered Plastics - Armor-Tile	◒	○	⊙	○
Hastings Pavement - ADA Paver	○	○	⊙	◒
Rehau - Access Tactile Tile	⊙	●	○	⊙
Summitville Tiles - Tactile Tread	○	○	○	○
Transpo Industries - Step-Safe	⊙	⊙	◒	◒

○ Best performance; little or no problem
⊙ Small flaws in performance
◒ Significant flaw at one site and/or consistent flaw at several sites
● Poor performance

H. Norman Ketola is vice president of Technology & Management Systems Inc. in Burlington, Mass. The firm specializes in engineering evaluations of Americans with Disabilities Act (ADA) equipment, products, and services for the transit industry. He is currently conducting a national assessment of ADA technology problems and innovations developed by small and large transit systems in all regions of the country.

NEW MEDIA

ADA Software

ADAHelp 2.1

ADA Help 2.1 is a Microsoft Windows-based version of the Americans with Disabilities Act (ADA). It contains more than 700 pages of the ADA Handbook and encompasses the text and graphics in the *Americans with Disabilities Act Accessibility Guidelines (ADAAG)*. Designed to help computer users and designers save time, the software provides easy access to regulatory information. The Windows format utilizes "hypertext linking" so that the user can have instant access to pertinent information. It allows questions to be answered before drawings are complete, thus saving time and money later in the project. The software can be used as a stand-alone program or from within other Windows applications such as word processing or CAD drawing programs. It also includes an ADAAG graphics symbols library. It is clear and easy to use with concise instructions and it provides the simplest access to pertinent information.

For more information, contact: **Kelly Computer Software,** 1701 Broadway, Suite 348, Vancouver, WA 98663. Telephone 360.696.2690

autoBook: ADA Software

This software package allows users of PC DOS environments to conduct critical searches for obscure and hard to find information regarding the Americans with Disabilities Act (ADA). It allows searches of the text of the regulations, commentary, *Americans with Disabilities Act Accessibility Guidelines (ADAAG)*, and technical assistance manuals. Users can access text on the screen for reference purposes or copy it to a diskette for wordprocessing or faxing. To provide the most comprehensive answer to questions, the key-word search allows for cross referencing. Accessibility advocates, expert witnesses, plan reviewers, designers, lawyers and others will find the information helpful when facing the challenge of a complex ADA question. This package offers reference materials, but is not designed for interactive use. For more information contact: **Universal Designers & Consultants Inc.**, 1700 Rockville Pike, Rockville, MD 20852. Telephone 301.770.7890 (v/tty).

Accessibility Guidelines Manager

Designed for use with Windows 3.1 and DOS applications, the Accessibility Guidelines Manager (AGM) is a new system for searching and annotating the accessibility guidelines under the Americans with Disabilities Act. It allows users to quickly and easily find guidelines and illustrations. The software features an annotation capability that allows storage and retrieval of guideline interpretations for anyone needing an in depth explanation of the regulations. An important concern with this package is that it requires as much as 11.1 megabytes of hard drive space which may slow down the capability of some personal computers. For more information, contact **DocuDisc Inc.** 631 South 11th Street, Suite One, Lincoln, NE 68508. Telephone 402. 435.5566.

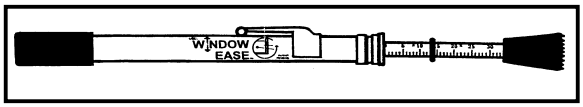
PROBLEM: Small containers, such as plastic medicine bottles, are hard for people with poor hand dexterity or arthritis to open.

TIP:The maker of Motrin (a medication for the treatment of arthritis pain and inflammation) has created a universally designed bottle that is not only easy to open, but creates a unique and recognizable product image while allowing the bottle to be displayed on standard retail display hooks. The square bottle is easy to grip (approximately 1 ¼ inch) and the flat flange on top provides the user with excellent leverage for turning the cap.

Universal Design Newsletter provides a one-year free subscription for any Tip which we publish. We look forward to receiving and publishing your tips.

PROBLEM: When conducting an Americans with Disabilities Act facility evaluation, how do you measure the opening pressure on an interior door to determine if it complies with the 5 pound maximum requirement of *Americans with Disabilities Act Accessibility Guidelines*?

TIP: **Solution Inc. markets a handy pressure gauge, called the Window Ease Window and Door Force Gauge that fits in your pocket like a pencil. The surveyors at Universal Designers & Consultants Inc. have used many different measuring devices but**



report that the Window Ease gauge is much easier to use than most and gives dependable and accurate readings. For more information, call 505.296.0115.

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ity from the pool area.

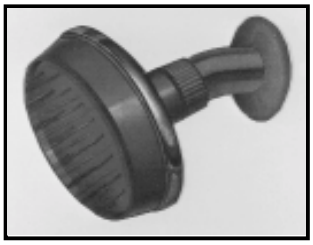
The pool area serves as a greenhouse, passive solar heat sink, and exercise/entertainment area with its sliding glass doors to the protected south facing patio. The pool was installed at seat height to allow wheelchair users to easily transfer to and from their chairs and anyone to sit comfortably on the pool edge while others are swimming or working out. The pool has an adjustable speed current that allows swimming to occur at whatever pace is comfortable, without the need to make turns.

A nearby bathroom is provided for guests to change into their swim suits. It also serves the guest bedroom and as the laundry area where the washer and dryer are tucked behind sliding doors under the stairs to the second floor. A roll-in shower allows for rinsing off scuba equipment, hanging drip-dry clothes, or taking a relaxing shower.

Finding a contractor to build the house was also a challenge. It took several attempts to find someone who understood the importance of accessibility details, passive solar design, and sophisticated mechanical/electrical system installation. Upon completion, however, the contractor stated that he now realized how the little details, such as door thresholds and light switch locations made this house a place where people could live throughout their entire life. He now likes to show the house to his potential customers and describes it as "a home for all seasons."

Showerhead Prevents Scalding

The Shower Sentry showerhead is designed to reduce water consumption and the danger of scalding. This showerhead is designed to automatically shut off when water temperature reaches 115 degrees Fahrenheit. (Water heaters are typically set at about 140 degrees.) The unique design of the Shower Sentry allows it to use only 2.4 gallons of water per minute under 90 pounds of pressure to produce a wide, soft spray emanating from 57 tapered aerators. The unit can replace a standard screw-on shower head without the need for a plumber.



Induction Counter Loop System

The Audex Induction Counter Loop System offers a solution to the difficulties of communicating across counters and at teller windows with customers who have hearing disabilities. The Counter Loop is comprised of a goose neck microphone, an amplifier, a 15-inch writing pad with imbedded induction loop, a wireless telephone handset, and a charger with a cradle. The system eliminates background noise by sending the signal from the teller microphone directly to the T-Coil found in most hearing aids. For those without T-Coils in their hearing aids, a wireless telephone handset is available. The system can also be reversed to allow customers to converse with a teller who has a hearing disability. Alternate input devices are also available.

Room Valet

The Harc™ Room Valet is a permanently installed, hardwired hotel alerting system designed to comply with the Americans with Disabilities Act requirements for guest rooms. The computer based system interfaces directly with hotel central alarm systems and in-room smoke detectors to provide visual (strobe or flashing light) and tactile (bed shaking) warnings in the event of a fire or other emergency. It can also alert a guest to telephone rings and door knocks. Room Valet also offers an alarm clock function. The system operates on main building power and features battery back-up and self-maintenance capability which alerts the user to malfunctions. The user-friendly system also features one-touch activation, user brochures, and reminder tent-cards.

Accessible Kitchens Series

Dwyer Accessible Kitchens are available in unit and custom compact models. All accessible kitchens feature optional removable under-counter cabinets to allow conversion into a standard compact kitchen without the need for addtional plumbing or base cabinet modification. The AH Series Kitchens also feature adjustable height countertops in 36, 34, 32, 30, or 28 inch heights to meet individual needs. Units are available with or without upper cabinets, in gas or electric cooking units with easy-turn knobs and no-duct exhaust hoods with lights, and with under-counter refrigerators. Porcelain counter tops with integral sinks and embossed drain boards and single-lever faucets are standard. Options include a microwave oven, a combination microwave/convection oven, an ice-maker, a stainless steel sink top, a laminate counter top without burners, electric or gas two-burner drop-ins, a garbage disposal, a hot water dispenser, and an automatic coffee maker. Kitchens are offered with wood, textured steel, stainless steel, contemporary laminate, or high-pressure laminate cabinetry in a variety of colors and finishes.

The New Products column was provided by the ABLEDATA project, a computerized database of information on assistive equipment which is funded by the National Institute on Disability and Rehabilitation Research and is administered by Macro International, Inc., Silver Spring, MD.

Thermal Sentry Inc.
P.O. Box 752
Mamaroneck, NY
10543
800.247.3463

Audex Assistive Listening Systems
713 North Fourth
P.O. Box 3263
Longview, TX 75606
800.237.0716 (USA)

Harc Mercantile Ltd.
P.O. Box 3055
Kalamazoo, MI 49003
800.GET.HARC (voice/tty) or 616.324.1615

Dwyer Products Corp.
418 North Calumet Ave.
Michigan City, IN
4630-5019
800.348.8508 or
219.874.5236

Making State-of-the-Art Kitchens Accessible from page 1

functional, the rules also covered such issues as clearances between cabinets, and storage and safety provisions at appliance work centers. In addition, they were used to set benchmarks to score entries in the annual NKBA design competition.

Over the past two years, an NKBA committee has updated and expanded these guidelines to more fully incorporate universal design, so that beautiful kitchens would work for a greater number and variety of people. The committee, made up of certified kitchen designers and universal design experts, reorganized the old rules into the new 40 Guidelines of Kitchen Design.

The committee changed the title from "rules" to "guidelines" recognizing that in the end, the designer and the client must determine the program, criteria and compromises for each job.

The new format for the guidelines includes sections on traffic and work flow, cabinets and storage, appliance placement and use/clearance space, counter surface and landing space, and room, appliance and equipment controls. Throughout the guidelines, six main themes prevail relating to universal design: clear floor spaces, reach ranges, knee spaces, flexibility, lighting and color contrast, and safety. Because kitchen designers have always attended to individual client needs, these particular changes to the guidelines, which basically involve recognizing user needs and capabilities, have been more easily accepted than in other segments of the design community.

"For kitchen designers in the next decade close attention to universal design may not just be an option, but a necessary prerequisite to their survival."

Photo: **GE**

Pull down cabinet shelves

Clear floor space guidelines include the space requirements at appliances and work centers for a person using a wheelchair. Guidelines for doorway and walkway clearances have been expanded to include information on turning requirements for a person using a wheelchair. For built-in eating areas or snack bars at a 30-inch height, clearances have been expanded to allow a person using a wheelchair to enter a seating area and to allow a person using a mobility aid, such as crutches or a walking stick, to pass behind a seated diner.

Cabinetry and storage guidelines emphasize useability for all through the use of shallow depth cabinets, or accessories such as roll-out shelves or drawers on full extension slides, to improve access to the entire storage area. In addition, a universal reach range of 15 to 48 inches above the floor was established for general use as the goal for most kitchen storage. To facilitate storage in this range, the guidelines illustrate some non-traditional options such as wall cabinets lowered to counter height or below. The guidelines mention accessories that lend themselves to use by people with physical constraints, including those who are shorter, who sit to work, or who have limited strength or stamina.

Photo: **General Electric**

Counters at varying heights accommodate almost everyone.

New guidelines have been established to address knee spaces. While knee spaces are not required, suggested dimensions and locations can make cooking easier for anyone involved in a tedious task such as peeling potatoes.

Flexibility in the kitchen plan is addressed in a new guideline which recommends at least two counter heights to provide a comfortable height for everyone. Also, guidelines regarding counter space adjacent to appliances have been expanded to include minimums for a counter surface at the same height as the appliance. For example, if a sink is set in a counter at a 30-inch height, at least 24 inches of counter adjacent to that sink should also be at the 30-inch height. The new guidelines also encourage flexibility through suggestions of some non-traditional placements of storage, counters and appliances.

Safety guidelines have been revised to promote safe access by a greater variety of users. Guidelines concerning room controls, outlets, and switches recommend placing these within the universal reach range. All electrical outlets should be ground-fault interrupt type and a fire extinguisher should be visible in the kitchen, away from cooking equipment and within the universal reach range. A guideline has been added recommending clipped, radiused, or eased edges on counters to eliminate sharp edges.

For the complete text of the guidelines, people may contact the National Kitchen and Bath Association in Hackettstown, N.J. at 908.852.0033. Its new publication, Universal Kitchen Planning, includes diagrams and text for the guidelines as well as additional chapters on how to plan spaces and choose materials based on the guidelines.

Mary Jo Peterson, CKD, CBD, a kitchen and bath designer with a specialty in universal design, served on the NKBA committee which revised the 40 Guidelines of Kitchen Design in 1995. Mary Jo Peterson, Design Consult. is located in Brookfield, CT.

One Step Forward, No Steps Back from Page 5

one type of computer over another. For example, why do some people use desktop computers with huge hard drives, while others use portable notebook computers, and still others use hand held computers that they can stick in a pocket?

To provide guidance for developers of viewers and to help assess the universal appeal of such viewers, UAP has employed the seven Universal Design Principles. (See editorial on page 2.) These principles are not meant to limit designers, but to help in providing an instrument with which to determine the universality of future technological developments.

One of the biggest questions that the UAP is trying to address is when a viewer should have all the assistive devices to make it accessible to anyone, and when a manufacturer can depend on the user to supply his or her own special interface. For example, a person with a visual impairment may have screen reader software on his or her home computer. This software, however, is not available when he or she stops at an ATM to get cash to pay for lunch. Should every newly manufactured cellular phone have a TTY for those people who need text output?

The UAP is searching for, and hoping to promote, a low cost versatile input/output method that would work with anyone's "universal translator." Two-way infra-red technology, similar to hand held television remote controls, has been suggested. This technology is already being used by wireless computers to connect to networks and printers.

UAP and Universal Accessibility

The UAP is assessing many innovative ideas that might help those in the business of information access and retrieval understand the importance of including people with disabilities.

"The most important part of this project is to bring together new audiences with designers and developers of new technology. We need to introduce them to a new way of thinking of an expanded audience that they have not yet thought of," said Larry Goldberg, director of media access at the WGBH Educational Foundation and partner of the UAP project.

Funding for the UAP is provided, in part, by grants from the Telecommunications and Information Infrastructure Assistance Program, the National Telecommunications and Information Administration, the US Department of Commerce and the California Consumer Protection Foundation. For more information about the project, contact the UAP via e-mail at univaccess@trace.wisc.edu or by calling the Trace Research and Development Center at 608.262.6966 voice or 608.263.5408 tty.

"The most important part of this project is to bring together new audiences with designers and developers of new technology. We need to introduce them to a new way of thinking of an expanded audience that they have not yet thought of."

Larry Goldberg
WGBH-Boston

CALENDAR

Events to be placed in the UDN Calendar must be submitted to the Editor two months before the next publication date.

Jan. 8-12: Comprehensive Accessibility Planning for Park, Recreation & Tourism Professionals will be conducted by the National Center on Accessibility (NCA) in San Diego. This course will give participants a foundation in the full implementation of programs, services and facilities that are accessible to individuals of all abilities. For more information, call NCA at 800.424.1877.

Jan. 9-10: US Architectural & Transportation Barriers Compliance Board will meet to discuss and review its research and regulatory activities. The meeting will be held in Washington, DC. For more information, contact 202.272.5434.

Feb. 8: Adding Vision to Universal Design is a half day seminar conducted by the Lighthouse Inc. and the American Institute of Architects, New York State Chapter in New York City. This continuing education seminar will provide case examples, discussions with people with impaired vision and simulation of common vision impairments. For more information, contact 212.821.9470.

Feb. 14-16: CABO/ANSI A117 Committee Meeting in Washington, D.C. to evaluate comments/challenges submitted in response to 1995 public comment draft. This meeting is open to the public. For more information contact, Bob Brown of CABO at 703.931.4533.

March 11-15: Accessible Interpretation: Methods & Techniques to Include People with Disabilities in Interpretive Programs & Facilities will be conducted by the National Center on Accessibility (NCA) in Washington, DC. This course will help museum, nature center and historic site designers, and professionals with innovative methods for designing interpretive programs that are accessible to visitors with disabilities. For more information, call NCA at 800.424.1877.

March 14-15: US Architectural & Transportation Barriers Compliance Board will meet to discuss and review its research and regulatory activities. The meeting will be held in Washington, D.C. For more information, contact 202.272.5434.

March 16-19: New Products for Mature Markets Design Competition awards will be made at the annual meeting of the American Society on Aging in Anaheim, CA. For more information, contact ProMatura 601.234.0158.

March 22-24: Partnerships in Travel '96 Conference will be held in Toronto, Canada sponsored by the Ontario March of Dimes and many Canadian travel and tourism organizations. This conference is intended to bring together persons with disabilities, mature travellers and the travel industry to develop a truly "accessible" world. For more information, call 416.425.3463 ext. 255, 288 or 249.

April 21-24: Assisted Living Facilities Association of America National Conference: Moving Beyond the Basics Toward the Next Millennium will be held at the Broadmoor Hotel, Colorado Springs, CO. Sessions will include discussions of the latest design ideas for assisted living. For more information, contact ALFAA at 703.691.8100.

May 12-15: ErgoCon '96 is a conference and exhibition held in Palo Alto, CA by the Silicon Valley Ergonomics Institutes. It is an interdisciplinary event that allows attendees to examine and discuss state-of-the-art ergonomic technologies and workplace innovations. For more information, contact Abbas Moallem at 408.924.4132

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