



A House That Grows With You

When it comes to purchasing a home, many of today's aging population are looking beyond traditional residential structures. Not only do they want a home that will meet their immediate needs, but one that also will meet their needs as they age.

LifeStages '99, a 3,175-square-foot, one-story home, is the prototype of a home that allows owners to age in place. It is part of a growing universal design trend that is being marketed to the aging Baby Boomer population.

"We thought it significant to show builders the importance of incorporating universal design at the building stage. It's a lot more expensive when homeowners need to modify their existing homes later on," said Sandy Fennell, of Devereaux & Associates (the McLean, Va. architects who created LifeStages).



LifeStages '99 is being marketed toward the aging Baby Boomer population.

Let's Take a Tour

To show people that universal design doesn't have to look and feel institutional, Fennell, senior designer for LifeStages, gave *Universal Design Newsletter* a tour of this universally designed home.

Entrance. Instead of steps, a sidewalk leads to the front of the house. The double doorway's beveled half-inch threshold makes stepping or rolling a wheelchair into the house easy. The main rooms of the house can be entered from a gallery that extends for the length of the house.

A skylight, glass cupola and two sets of remote-controlled side-lights provide natural light. When natural light isn't available, motion-sensored fixtures illuminate the gallery. Glass doors opening from the living room onto a deck also provide natural light.

The house plan provides generous room entrances and extra-wide corridors. The gallery, for example, is 4 feet wide, with clear door

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International Codes: Do They Serve Universal Design?

Guest Editorial by Jake Pauls, CPE

Between 1995 and 1999, historic meetings were held to develop, for the first time in the United States, a unified system of model codes that can be adopted as part of state and local regulations. Called the International Codes, they include the International Building Code (IBC) and the International Residential Code (IRC) for one- and two-family dwellings, as well as several other codes.

See International Codes, page 14

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Defining the Universe

At the close of the 20th Century, universal design is becoming amazingly popular and is expanding beyond the fields of architecture, accessibility and disability rights. Universal design is now found in the literature of information networks, urban planning, consumer product design, aging, environmental consciousness, travel and tourism...the list goes on and on.

As part of the 1992 copyright search for the first issue of *Universal Design Newsletter*, we conducted an Internet search for the term "universal design." There were no occurrences. Today, seven years later, a similar search results in a list of more than 5,000 websites that mention the term!

People everywhere are now using the term, though often in slightly different ways. In the growing number of conferences on universal design, people often have to define the particular realm of universal design, or the range of users that have been involved and/or considered in the design.

Governmental and corporate efforts to bring universal design into the Japanese "welfare society" sharply contrast with the grass roots "independent liv-

ing" movement in the United States. The shop mobility movement in the United Kingdom, addressing the retail realm, is totally different, yet related to the efforts to design accessible Internet websites.

This expansiveness can be both frightening and encouraging. Uncovering new applications can lead to discovery about the variety of people in our world and the different ways in which they perceive, interpret and use our designed environments. This learning process can lead us to recognize the limitations of our previous thinking, better define the problems and design more universally in the future.

To help our readers keep up with universal design activities outside of the United States, *Universal Design Newsletter* is very pleased to announce that Elaine Ostroff, founding director of the Adaptive Environments Center, has written our new World Update column that appears for the first time in this issue (*see Page 7*). Stay with us as we cover design developments, educational and advocacy efforts, products and projects around the globe.

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The Need for Human Measures Research

by David Yanchulis

Long-standing human measures of adults using wheelchairs are fundamental to many accessibility guidelines and standards for building design. They define the requirements for space allowances and reach ranges that form the basis of specifications for a range of building elements and fixtures, including light switches, pay phones, drinking fountains and sinks. The problem is that these criteria derive from research that was conducted in the 1960s and 1970s and the mobility devices commonly used at that time.

New research on the human measures of people with disabilities is long overdue. The population of people with disabilities has changed considerably over the past several decades, due in large part to advancements that have been made in medicine and in the design of mobility aids. As a result, the research of the past is of questionable use. For example, earlier studies

typically involved subjects using standard manual wheelchairs. However, since then, the design of mobility aids has become increasingly varied, with a growing use of powered scooters, and lighter, sportier and more easily maneuverable wheelchairs.

As a first step in furthering research in this area, the U.S. Access Board has conducted a comprehensive review of existing human measures' data on persons with disabilities. This one-year study focused on the seated reach of people using wheeled mobility aids. The Anthropology Research Project Inc. of Yellow Springs, Ohio—the contractor for this project—reviewed and assessed anthropometric studies on people with disabilities. This review, which provides an annotated bibliography on more than 100 studies, covers a large body of anthropometric data on more than 11,000 people of every age and a wide variety of disabilities.

See Human Measures, page 13



Court Rules Against DOJ

The U.S. Court of Appeals for the Third Circuit has ruled that Blockbuster-Sony Entertainment Center did not violate the Americans with Disabilities Act (ADA) by failing to provide wheelchair users with sight lines over standing patrons.



In the case of *Caruso vs. Blockbuster-Sony Music Entertainment Centre*, which was appealed by the Paralyzed Veterans of America, the appeals court ruled that the Department of Justice (DOJ) did not follow the proper notice and public comment procedures in enacting its rule about wheelchair users' lines of sight. Therefore, Blockbuster could not be held to be in violation of this rule.

According to the court, "If DOJ believes that the ADA should be interpreted to require that wheelchair users be given lines of sight equivalent to standing patrons—and such a rule certainly has much to recommend it—the DOJ can accomplish this end through notice-and-comment rulemaking. Indeed, the DOJ probably could have achieved this end already had it followed that course initially."

Access Board Approves Proposed ADAAG Rule

The U.S. Access Board plans to completely revise and update its 1991 Americans with Disabilities Act Accessibility Guidelines (ADAAG). To that end, the Board has adopted a proposed rule that includes updated scoping and technical requirements, new illustrations and advisory materials. It also includes a preamble with a section-by-section description of the proposed changes.

The rule also will provide updated guidelines for federally funded facilities under the Architectural Barriers Act (ABA). ABA guidelines will be modeled after the new ADAAG so that a consistent level of access is required for federal and private facilities.

Once published, the proposed rule will be available for a 120-day public comment period. The proposed rule is expected to reflect recommendations from the ADAAG Review Advisory Committee, which completed its work in 1996. The committee's report is available from the Board (publication S29) at: 800.872.2253 (800.993.2822 tty); or at: www.access-board.gov.

Voting, Air Carrier Bills Proposed

Voting Accessibility. Sen. John McCain (R-Ariz.) has introduced a bill that would strengthen the enforcement of the Voting Accessibility for the Elderly and Handicapped Act of 1984.

"It is deplorable that millions of disabled and elderly voters are not voting because they are faced

with too many obstacles, including inaccessible polling places and ballots which are not accessible to blind or visually impaired voters," said McCain. "The right to vote is the heart and soul of our democracy, and we must work together to eliminate barriers preventing millions from participating in our democracy." The bill would:

- ◆ Require the U.S. Access Board to develop minimum guidelines for accessibility at polling places.
- ◆ Allow blind or visually impaired people to vote privately with the use of technology advances in voting equipment, mechanics of voting and ballots.
- ◆ Instill enforcement mechanisms to address the lack of accommodation by more than 20,000 polling places that are not accessible.

Air Carrier Accessibility. On another legislative note, McCain has introduced a bill that would strengthen the Air Carrier Access Act of 1986, which bans discrimination against people with disabilities among U.S. air carriers.

The bill would strengthen the enforcement of the act by requiring the Department of Transportation to investigate all complaints filed under the act and to implement a technical assistance plan on airline accessibility issues in conjunction with the Department of Justice and National Council on Disability. It also would extend coverage of the act to foreign air carriers doing business in the United States.

NFPA Okays Respiratory Protective Escape Device Standard

The National Fire Protection Association (NFPA), at its Spring Technical Meeting in Baltimore, approved a Standard on Air Purifying Respiratory Protective Escape Devices. The next step is ratification by the Standards' Council.

The passage of this standard is significant. As reported in the April 1999 issue of *Universal Design Newsletter*, for the first time, North America has a standard for design specifications and testing of personal respiratory protective escape devices.

The purpose of this standard is to establish minimum requirements for respiratory protective escape devices that can provide limited protection for 15 minutes for civilian escape from particulate matter, carbon monoxide, other toxic gases, and the effects of radiant heat produced by fire.

Two devices now available in North America reportedly can pass the rigorous specifications of this new standard. One is the EVAC-U8, which was mentioned in the April article. The other is Draeger Paerat C, which is manufactured in Germany and distributed in the United States.

The U.S. Access Board has adopted a proposed rule that would update the scoping and technical requirements of the ADAAG.

Trail Design: Balancing Accessibility and Nature

by Phyllis Cangemi

Planning trails that preserve the natural environment—yet provide a nature experience for all types of users—typically involves a high degree of skill. Designers must draw upon knowledge from diverse disciplines, including cartography, geology, hydrology, botany, meteorology, structural engineering, landscape architecture, road design and others.

Unfortunately, the practice of trail design is neither standardized nor professionally accredited. As a result, trails are designed and built by a variety of people, including conscripts, amateurs, volunteers and professionals. While some trail planners are extremely knowledgeable and do excellent work, others don't. As a result, all would benefit from the publication of coherent, consistent, yet flexible guidelines.

Whole Access, a member of the U.S. Access Board's Negotiated Rulemaking Committee for developing a Proposed Rule for Outdoor Developed Areas, is a major proponent of such guidelines. Over the years, this non-profit group has helped park and trail professionals and volunteer groups create and manage trails that provide meaningful nature opportunities to all people, and that protect and preserve the natural environment that we all treasure.

Benefits of Good Trail Design

Weather and traffic easily damage poorly designed trails. Degraded trails, in turn, inflict significant damage upon surrounding terrain. They also are unsightly, expensive to maintain, and may be difficult or impossible to traverse, depending on the user's degree of mobility.

Interestingly, well-designed trails not only protect the natural environment and are stable and less expensive to maintain, but, within the limits of the topography, often provide the highest possible degree of accessibility for all users.

In the early 1980s, Don Beers, supervisor of roads, trails and resource maintenance for California State Parks' North Coast Redwoods District, and Karl Knapp, district maintenance chief for California State Park's Sierra District, noticed a connection between good trail design and improved access.

According to Beers, "People like to build trails that offer the path of least resistance." But, he adds, steep trails often collect water runoff and create

erosion channels both along the path and on the terrain below. Routes that follow a more moderate grade along the contours of the land allow for even drainage and lower maintenance costs. They also improve access.

The work of Beers and Knapp represented exciting achievements in trail design and construction. Their simple, elegant trails provided the basis for a comprehensive trail design project.

Comprehensive Trail Design Project

In 1998, Whole Access, along with Beers, Knapp, Accessibility Specialist Barry Atwood and Video Producer Jay Moss, initiated a multi-phase project. The five phases of the project will, it is hoped, help to lay the groundwork for better trail design guidelines in the future.

A five-and-a-half-minute videotape, offering a brief overview of the project, is currently available from Whole Access. (To order the video, phone: 650.363.2647; e-mail: Waccess@aol.com). A more comprehensive 15- to 20-minute video will be available later this year or early next year, when work on the project has been completed.

Phase 1: Trail Design Charette. A five-day, intensive, problem-solving session brought together trail designers/builders, accessibility professionals, and geology, archaeology, ecology and landscape architecture professionals to fine-tune a preliminary design process. The resulting videos and manual from this session are expected to guide park officials across the nation.

Phase 2: Demonstration Trails. Two "problem" trails were carefully chosen for reconstruction on the rugged terrain of Prairie Creek Redwoods State Park—Prairie Creek Trail and Foothill Trail.

Located in California's North Coast Redwoods District, Prairie Creek State

Park is a 14,000-acre sanctuary of old growth coast redwood. The terrain is relatively mild, with only 800 feet of elevation gain throughout the park.

Phase 3: Design Objectives. The centerpiece of the entire trail design project will be a comprehensive manual, "*Guidelines for Excellent Trail Design*," which can be used as a reference standard for the construction of nearly any type of trail, in nearly any kind of setting.



Routes that follow a more moderate grade along the contours of the land allow for even drainage and lower maintenance costs. They also improve access.

Experts have noticed a connection between good trail design and improved access.

Trail Design, from page 4

Phase 4: Professional Training Materials. Videos, design guidelines, demonstration trail and instructional materials will form the basis for a replicable series of training programs.

Phase 5: Building Public Awareness. Increased public awareness of good trail design will help to reinforce the training of park professionals. A pamphlet and field guide to trail design will contrast key environmental and accessibility aspects of good and bad trails. In addition, videos, displays, models, posters and naturalist programs also are being planned.

Summing It Up

Incorporating accessibility into trail planning and design does not mean leveling and paving all wildland footpaths. However, it does mean implementing strategies, such as replacing unnecessary

steps with continuous paths and more moderate grades.

Proper trail planning does not arbitrarily shut the door on access one-quarter mile past the parking lot.

Phyllis Cangemi, executive director of Whole Access, in Redwood City, Calif., can be reached at 650.363.2647 or at Waccess@aol.com. 



Incorporating accessibility into trail planning means replacing unnecessary steps with continuous paths and more moderate slopes. The steps in this photo have been removed, and the area has been revegetated.

Well-designed trails are stable and less expensive to maintain, and often provide the highest possible degree of accessibility for all users.

Accessibility Guidelines for Trails

To ensure compliance with the Americans With Disabilities Act's (ADA) requirements for access to public spaces by people with disabilities, the U.S. Access Board is promulgating accessibility guidelines for trails and other outdoor developed areas. These include beaches, picnic facilities and campgrounds (see the April 1999 issue of *Universal Design Newsletter*, page 2).

Although not all trails can comply fully with the guidelines for access to all people with disabilities, many trails could be made more accessible.

"The big thing was changing my mindset that it had to be all or nothing," said Don Beers, supervisor of roads, trails and resource maintenance for California State Parks' North Coast Redwoods District. "The thought now is, let's look at every trail to make it as accessible as possible."

At its April 1999 meeting in Arlington, Va., the U.S. Access Board's Regulatory Negotiation (Reg-Neg) Committee on Outdoor Developed Areas maintained its historic consensus on trail accessibility. The committee unanimously concurred that all trails are to be built considering access from the start. Each newly constructed trail or trail segment would apply the technical access provisions—trail width, cross-slope, surface, etc.—and depart (or not) from a technical provision(s) based solely on conditions at the site.

In response to concerns about how affected entities would apply the technical provisions—especially the "allowances"—to real trail design situations, the committee decided to assign numbers to some trail design situations that would allow departures from the technical provisions.

For example, it was proposed that under some extreme conditions, only the segment of trail between the trail head and first point of departure would have to comply with the technical provisions. An example of that would be if X percent of a new trail was constructed under conditional departures (being allowed to depart from specific technical provisions based on conditions at the site) and could not meet one or more of the technical provisions (e.g., the average running grade is greater than 25 percent maximum, the cross slope is greater than 12 percent, the trail head width is less than 16, 18 or 24 inches or the surface is extremely soft and unstable).

According to Phyllis Cangemi, executive director of Whole Access (one of 26 entity members of the Reg-Neg Committee on Outdoor Developed Areas), "I am always concerned about quantification as a potential segue to quotas and tokenism. However, I have accepted limited application of this approach as a means to give guidance to the resource agencies and trail groups charged with implementing these regulations."

The committee will meet again on July 15 and 16 in Arlington, Va. to complete its work on trails' technical specifications. A report—i.e., a compilation of the committee's work on trails, picnic areas, campsites and beaches over the past two years—will be presented to the Access Board in September. 

House That Grows, from page 1



Living room of the Lifestages home. The fireplace can be operated by remote control.

"It's a lot more expensive when homeowners need to modify their existing homes later on."

—Sandy Fennell

openings that are up to 36 inches wide. Doors have levers instead of knobs, and rocker switches are used for room lighting. Rooms with heavier traffic have hardwood floors, with dark and light border accents that provide visual contrast for persons with low vision.

Living/Dining Rooms and Kitchen. The 22- x 13-foot living area contains a low, open gas fireplace that's operable by remote control.

Adjacent to the living area is a 12- x 14-foot dining room. A family room and two bedrooms on the other side of the kitchen can be used as guest bedrooms and for entertainment.

The LifeStages model contains a breakfast nook for everyday meals. It's a dual-activity area with a wheelchair-accessible desk and adjustable-height cabinetry.

The kitchen work triangle is short, with a 5-foot radius provided for wheelchair turning space. Located close to each other in the food preparation

area are an adjustable-height sink (24 to 42 inches high), a 36-inch-high island, a 42-inch-high dishwasher (for someone who has trouble bending or who needs to work in a seated position), and a cooktop with knee clearance.

The refrigerator is grouped with the pantry and a low microwave, which is built in to a 36-inch-high cabinet. The kitchen, which contains plenty of pull-out drawer space, has an adjacent laundry room, equipped with an easy-access, front-load washer and dryer. The breakfast nook leads to a large deck/terrace.

Garages. A traditional garage fits in a corner of the house. In addition, a drive-through attached garage allows a driver to operate a vehicle comfortably, without the fear of an accident while backing up.

Master Suite. Double doors at one end of the gallery opens in to the master suite, which includes the master bedroom, a kitchenette (with a small refrigerator, microwave and adjustable-height cabinet), and "his and hers" bathrooms. The master suite can function as a fully equipped apartment should the owners ever have difficulty getting around the whole house.

The master bedroom can be split into two bedrooms. (Research shows that many aging couples prefer separate sleeping quarters.) With two 7-foot-wide walk-in closets, the room offers ample storage space. An adjacent den can be used as a home office.

The two bathrooms have ample wheelchair turning space, and a shared roll-in/roll-out shower with hand-held sprayer. Grab bars are provided in the shower and at the toilets.

A built-in shower bench has been installed in one of the bathrooms, in addition to a small, private deck from which the owner also can access the main deck. The other bathroom contains ample storage space under the sink. The sinks in both bathrooms have open space below to allow use by someone in a wheelchair.

Caregiver's Suite. Should a live-in companion become necessary, the two secondary bedrooms on the opposite end of the house can be combined to create a caregiver's suite with kitchenette, bath, dining and sleeping areas. The suite's location affords both the caregivers and owners privacy.

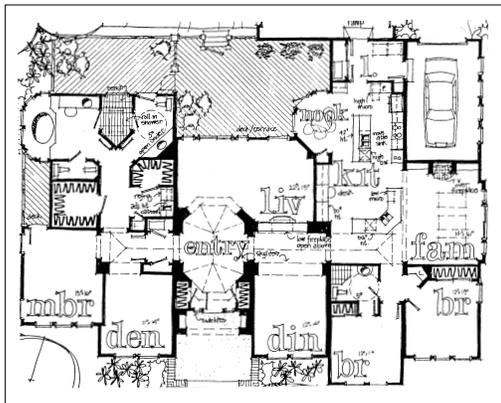
Showcased at NAHB's 1999 International Builders Show in Dallas, Texas, this adaptable house was sponsored by Fleetwood Homes; the Masco Corp.; *Builder* magazine; and Devereaux & Associates.

What is the price tag for such a dwelling? According to Fennell, this particular housing unit would cost about \$150,000, not including the lot or foundation.

She added, "LifeStages encourages builders and buyers to look at homes differently than they have before. A house doesn't need to look or be used in the same way throughout the years. With universal design like this, adapting becomes easy." ■



The entranceway includes a skylight and glass cupola. Two sets of remote-controlled sidelights also provide natural light.



Floor plan of the Lifestages '99 home.

World Update Column Debuts

To keep readers apprised of universal design news and events occurring throughout the world, *Universal Design Newsletter* is proud to introduce a new feature column, "World Update," written by Elaine Ostroff, founding director of Adaptive Environments Center. This column will highlight international research projects, educational opportunities and design innovations. If you have information about international universal design efforts that you would like to see published in *Universal Design Newsletter*, send it to us at: 6 Grant Ave., Takoma Park, MD 20912; or via e-mail at: UDandC@erols.com.

Canada

The University of Toronto has developed a tool to evaluate the accessibility of online distance learning tools. Authors Greg Gay and Laurie Harrison, of the Centre for Academic and Adaptive Technology, note, "Today's educators of college and university students face new challenges related to the increasing demand for course-related resources and documents via the Internet."

The Courseware Accessibility Study is a preliminary evaluation of certain products for their support of accessible design and access to persons with disabilities. A quick comparison summary is available at: <http://snow.utoronto.ca/best/crseval.html>.

Ireland

The DraWare project, which was funded by the European Union Social Fund, addresses the lack of accessibility awareness among architectural practitioners in Ireland. For more information, check out: <http://avc.ucd.ie/DraWare>

According to Ruth Morrow, with the School of Architecture at the University College Dublin, "Perhaps our most noticeable success to date has been persuading the Royal Institute of Architects in Ireland to change their Part III Professional Practice Examination to include universal design."

The Institute is now offering this continued professional development course to practicing architects. Morrow can be reached at: ruth.morrow@ucd.ie.

Italy

Luigi Biocca, with the Italian National Research Council of the Central Institute for Industrialization and Building Technology, has reported on a new kitchen prototype that takes into account the different needs of usability.

The kitchen, developed by Scavolini, was introduced at the Bauen & Wohnen Show in Wien, Austria, held March 19-28, 1999. It won top honors in a design competition, "Cooking Without Handicaps," sponsored by Scavolini, TVS and Teflon Co. The kitchen consists of a curve-shaped central block, which allows all activities within accessible reach ranges.

The prototype is expected to be mass-produced. The challenge will be to market the kitchen at a price no higher than current kitchen models. For more information, contact Biocca at: md3285@mclink.it.

Japan

Universal Design Educational Events. Yokohama was the scene of two significant universal design events in December 1998.

1. The International Workshop on Universal Design, dedicated to the late Ron Mace, was organized by the Building Research Institute (BRI), Ministry of Construction and the Japan International Science and Technology Exchange.

Satoshi Kose, Ph.D., director of BRI, coordinated the week-long series. The workshop was designed to continue the international exchange begun at the Designing for the 21st Century Conference in New York in June 1998.

Proceedings from the workshop have been published. For more information, contact Kose at: skose@kenken.go.jp.

2. The Symposium on Universal Design was co-sponsored by the city of Yokohama in connection with the International Year of Older Persons. More than 450 participants attended the event.

Tama Art University. Professor Tatsuya Wada, with the Industrial Design Department at Tama Art University in Tokyo, has reported that universal design is now incorporated in all four years of its program. The work at Tama, initiated with support from NEC Corp., involved ongoing collaboration with the NEC Design Group in Tokyo. Recent student projects emphasized high-tech communication tools, such as creating cellular phones, fax machines and ATMs that will address the needs of users of all ages.

For more information, contact Chitose Ikeda of NEC Design at: chitose@design.nec.co.jp.

Tokyo Design Network. The Tokyo Design Network (TDN) is an industry supported educational organization. One of its latest investigations is into the nature and importance of inclusive (or universal) design. Members of the TDN include Canon Inc., NEC Corp., Nissan Motor Co. Ltd., and, until recently, Sony Corporation. The TDN website, www.meshnet.or.jp/tdn, showcases the universal design work from the four companies.



An Italian company has designed a kitchen prototype that takes into account the different needs of usability.



Students at Tama Art University explore the universal design of high-tech communication tools.

World Update, from page 7

Sweden

TIME magazine, in its Winter '98/'99 edition, recognized Adolf Ratzka, director of the Institute on Independent Living, as one of the leaders in the European disability rights and independent living movement. The article reviews Ratzka's work and the systemic changes that he has initiated.

"In the article, *TIME* recognizes disability as a profoundly political issue in contrast to the still-prevailing view of disabled people as objects of care, pity and humanitarian concerns. I am convinced that now, at the turn of the millenium, disabled people are at the threshold of a worldwide recognition of their human and civil rights," said Ratzka.

He adds that there still are obstacles to overcome. "I cannot go by ordinary bus," he said. "Is that because I had polio 37 years ago or because the transport authority doesn't buy buses that will work for everybody?" For more information, check out: www.independentliving.org.

United Kingdom

Accessible Cabs. Andrew Walker, of the United Kingdom Institute for Inclusive Design, reports that the latest black cab, the LTI, developed by London Taxis International, is a good example of inclusive design—design for all—in the United Kingdom.

The cab features: access for power chairs; a swing-out seat with strategically placed handles; an integral child seat built into the central armrest; an induction loop for communication with the driver; a pull-out ramp under the floor; a make-up mirror adjacent to the reading light; and even a recharging point for mobile phones.

For more information, contact Walker at: andrew@cottage.sonnet.co.uk.

School and Community Partnership. Sandra Manley, professor of architecture, describes her recent work in teaching universal design at the University of the West of England in a project called, "Creating An Accessible Public Realm."

"The spaces between buildings—the streets, footpaths, squares, parks and open spaces that make up the public realm—are often forgotten...if we are serious about trying to reduce the numbers of people using the car to get to the nearest shop and thus help to cut pollution levels, then the walk in the public realm has to be made safe, attractive, legible and accessible to all," said Manley.

The project was a partnership with the city council, transportation consultants and consultants with disabilities. Students from the university, working in in-

ter-disciplinary groups, were closely involved in the audit activity, and helped to conduct a parallel pedestrian perception study.

The audit information, which is currently available for use by the city council, has been entered into a computerized mapping system (*see illustration on this page*). It will be used to feed into the city's decision-making process for capital improvements.

It also will be used to improve the design of signage and street furniture (such as benches), and to justify bids for funding for the improvement of government works.

United States

Universal Design Added to Master's Program. Ed Steinfield, professor of architecture at State University of New York in Buffalo, N.Y., says that the university has begun offering a concentration in inclusive design as part of its master's degree program in architecture.

The concentration in inclusive design at the university includes the following: lecture courses in inclusive design, architecture and society, and ergonomics in building design; a studio; and an internship that could be in the Center for Inclusive Design and Environmental Access Center.

All students would do their master's thesis in an area of inclusive design. For more information, check out: www.ap.buffalo.edu.

Access to the Design Professions. The National Endowment for the Arts has awarded a Universal Design Leadership Initiative Project to the Adaptive Environments Center. The project, dedicated to the late Ron Mace, will create an international network of designers with disabilities, using their experiences to plan careers in design.

Mace was an influential architect whose personal experience of disability influenced his extraordinary contribution to universal design and to the increased understanding of an inclusive, accessible society. His death heightened everyone's awareness of how few people with disabilities there are in the various design professions.

Designers with disabilities are needed for part of this new project, called Access to Design Professions.

"We want to find ways that more people with disabilities can enter the design fields and use their personal experience to contribute to great design, as Ron did," said Elaine Ostroff, project director.

The interviews with designers will be used as the basis for an action plan, which will be created by a national task force. "Ron Mace wanted to form an international network of designers with disabilities. We plan to create that network," said Ostroff.

For more information, contact Ostroff at 617.695.1225, ext. 30 or at: elaineos@ici.net. ■

TIME magazine honors Adolf Ratzka as one of the leaders in the European disability rights and independent living movement.



Described as "a fashion accessory" in a glossy men's magazine, this black cab has numerous universal design features.



The audit information, entered into a computerized mapping system, will help the city make decisions about capital improvements.



Will You Help Us?

We are conducting this brief survey to help us enhance *Universal Design Newsletter*. Your responses to the following questions would be much appreciated!

To thank you for responding, we will extend your current subscription by three months or send you the next issue of *Universal Design Newsletter* FREE of charge if you are not a current subscriber. All we ask is that you FAX or MAIL your response to us no later than **Sept. 30, 1999**. The results of this Readership Survey will be displayed in the January 2000 issue of *Universal Design Newsletter*.

Please indicate each of your answers by placing an "X" in the box or writing in the space provided.

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FedWatch.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
World Update.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New Media.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New Products.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Design Tips.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Excellence in Universal Design Projects.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calendar.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. On a scale from 0 to 5, please indicate your interest in the following universal design- and ADA-related topics (0 = not at all interested; 5 = very interested):

Acoustical design..... <input type="checkbox"/>	Building code changes..... <input type="checkbox"/>	Commercial applications..... <input type="checkbox"/>
Court decisions/legal issues... <input type="checkbox"/>	Design competitions..... <input type="checkbox"/>	Graphic design..... <input type="checkbox"/>
Landscape design..... <input type="checkbox"/>	Manual dexterity issues..... <input type="checkbox"/>	Mobility issues..... <input type="checkbox"/>
Product design..... <input type="checkbox"/>	Professional profiles..... <input type="checkbox"/>	Public space design..... <input type="checkbox"/>
Regulatory issues..... <input type="checkbox"/>	Research projects..... <input type="checkbox"/>	Residential design..... <input type="checkbox"/>
Telecommunications..... <input type="checkbox"/>	Teaching universal design..... <input type="checkbox"/>	Universal design publications..... <input type="checkbox"/>
Universal design websites..... <input type="checkbox"/>	Vision-related issues..... <input type="checkbox"/>	Other <input type="text"/>

5. Would you use a free online service that enabled you to find and download articles from back issues? Yes No

6. Please list any other universal design or accessibility publications that you regularly read: _____

7. What kind of information do you look for in those publications? _____

Thank you for responding to our survey. Please FAX your completed questionnaire to us by **Sept. 30** at **(301) 270-8199**. Or SEND it to: **Universal Design Newsletter, 6 Grant Avenue, Takoma Park, MD 20912, USA**. Please complete the following to receive your free issue or subscription extension.

Name _____

Company _____

Position _____

Address _____

City _____ State _____ Zip _____ Country _____

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Web Spotlight: Trace Research and Development Center

The Trace Research and Development Center's website, www.trace.wisc.edu, is a comprehensive universal design resource. The site offers links to other disability-related websites; and information about universally designed computers, software and consumer products; telecommunications; accessible kiosks, ATMs, housing and building environments, trails and recreation.

The site also features the center's three-year Universal Design Research Project, which is being funded by the U.S. Department of Education National Institute on Disability and Rehabilitation Research. The project was designed to gain an understanding of why and how companies adopt universal design.

Other features include: an online design/evaluation tool that can assist designers in creating better, more usable products; a tool with which users can create customized bibliographies; a portfolio of exemplary design projects; and a list of universal design and other disability educational resources.



The Trace Research and Development Center's website is a comprehensive universal design resource.

Universal Design: Children and Parks

The following publications are available from Moore Iacofano Goltsman (MIG)—a team of recreation specialists, landscape architects, social scientists, planners and communication professionals. The publications can be ordered by calling 800.790.8444; or go to www.migcom.com.

Universal School Construction



"The Accessible School: Universal Design for Educational Settings," written by Laurel Bar and Judith Galluzzo, shows how to implement universal design in school construction.

The guide covers space allowances, reach ranges for wheelchair users, protruding objects, vertical clearance and special operating mechanisms. Indoor and outdoor accessibility is analyzed, as well as standard classroom accessibility. Guidelines for art and music rooms, home economic rooms, science labs and other learning spaces also are provided, along with diagrams with measurements.

Universally Safe Play Areas

1. *"Play For All Guidelines: Planning, Design and Management of Outdoor Play Settings for All Children"* (second edition), edited by Robin Moore, Susan Goltsman, and Daniel Iacofano, offers a look at outdoor play area designs.

This edition goes beyond the Americans with Disabilities Act and the Consumer Product Safety Commission's playground guidelines. Child development goals, site analyses, site design and management criteria are provided. The book emphasizes that builders of play settings have to plan for universal entrances, pathways, signage, grounds/surfacing, fences/enclosures and safety features, keeping children's needs in mind.

Ways to adapt existing equipment, such as a tire swing, are shown. Water, sand, garden, vegetation and animal play areas are analyzed, as well, since the natural world takes up a large part of a child's rec-

reation time. The book also recognizes the needs of chemically sensitive children and their families.

2. The *"Safety First Checklist: Audit and Inspection Program for Children's Play Areas,"* written by Sally McIntyre and Susan Goltsman, is based upon ASTM Standard F 1487-95 and the Consumer Product Safety Commission's 1994 Handbook for Public Playground Safety.

The checklist also includes a bibliography/definitions of safety terms; information on conducting an inspection; a general site survey; and a surfacing evaluation. Perforated checklists allow for the inspection of swings, slides, climbers, playground riding toys and more. A summary form is provided to record findings.



Accessible Parks and Facilities

The *"Accessibility Checklist User's Guide and Survey Forms,"* written by Susan Goltsman, Timothy Gilbert and Steven Wohlford, offers an evaluation of parks and facilities based upon ADA guidelines and California's Title 24 building codes.

The checklist helps determine the accessibility of offices, parks and playgrounds, community centers, retail areas, recreation facilities, restaurants, banks, transportation facilities, and parking and site design. The "User's Guide" covers the legal framework, and how to plan an evaluation and train a survey team.

The survey forms contain perforated pages for easy removal. Included are: parking areas, passenger loading zones, curb ramps, transit stations, restrooms, auditoriums, and signs/site furniture.



Infant Tub Addresses Universal Bathing

A Project from the NEA's Search for Excellence in Universal Design

Project: Cuddle Tub.

Designers: Robert Wise and Kathleen Campisano of Century Products Inc. with Thomas McLinden and W. Daniel Haberstich of Anderson Design Associates.

Discipline: Industrial Design.

Due to its universal design, the tub can easily be used by either parents or children with disabilities.

How can parents safely and securely bathe infants—particularly those parents who have limited motor control or the use of only one arm? They can use the Cuddle Tub, which is being manufactured by Century Products Inc.

Made of a molded plastic shell with a velvety surface texture, hammock insert and head cushion, the design of the Cuddle Tub directs the user. No additional explanation is needed. And because of its unique design, the tub can easily be used by either parents or children with disabilities.

The cradle design of the tub's cuddle net eliminates the need for parents to support and secure the baby's head and body during bathing. Thus, the tub can be used comfortably and efficiently, with minimum fatigue. In 1996, the Cuddle Tub received a gold award in the Industrial Design Excellence Award competition.



At the head of the tub, a cushion provides added comfort for the infant's head. The top of the tub is curved, creating a convenient headrest.

Editor's note: This article is one in a series highlighting projects from the National Endowment for the Arts' Search for Excellence in Universal Design and the elements that make them exemplary.

The 38 winning projects are documented in "Images of Universal Design," a slide show that's available from Universal Designers & Consultants Inc. For more information, check out: www.UniversalDesign.com or call 301.270.2470. ■

FedWatch, from page 3

Improving Classroom Acoustics

The U.S. Access Board has agreed to collaborate with a private group on the development of standards to improve classroom acoustics for students with hearing impairments.

The group will be headed by the Acoustical Society of America and the American National Standards Institute. For more information, contact the Access Board at: 800.872.2253 (800.993.2822 tty); or at: www.access-board.gov.

Making Websites Accessible

The World Wide Web Consortium (W3C) has released its Web Content Accessibility Guidelines. The guidelines establish principles for the accessible design of websites, such as the need to provide adequate alternatives for auditory and visual information.

W3C is an international group created to develop common protocols that promote the evolution of the web and ensure its interoperability. It is run by MIT Laboratory for Computer Science (U.S.), the National Institute for Research in Computer Science and Control (France) and Keio University (Japan).

The guidelines are the result of a collaboration of industry, disability groups, accessibility research centers and governments working to identify consensus solutions for the barriers that people with disabilities encounter on the web. For more information, see: www.w3.org/WAI.

Access for Electronic and Information Technology

The Electronic and Information Technology Access Advisory Committee (EITAAC) has developed recommendations on providing access to electronic/information technology for people with disabilities.

In its report to the U.S. Access Board, the EITAAC recommended performance-based standards due to the variety of access needs among users and the range and ever-changing nature of technology.

The Board plans to use the committee's report to craft enforceable standards to help federal agencies comply with the Rehabilitation Act Amendments of 1998. (Section 508 of the act requires that the federal government develops, procures, uses and maintains electronic and information technology that is accessible.) The Board intends to publish the proposed standard for public comment by late summer.

For more information, contact the Department of Justice's Section 508 coordinators at 202.305.8304 (202.353.8944 tty); or see the press release and Frequently Asked Questions section at: www.access-board.gov. ■

PRODUCTS

Kitchen and Bath Design Competition

Each year, *Kitchen and Bath Business* magazine sponsors a Product Innovator Awards competition for the kitchen and bath industry. Products are judged on their innovation, quality, aesthetics, technical advancements and value. Following are a few of the more noteworthy entries that have been designed for universal usage:

Accessible Dishwasher

New Zealand-based Fisher & Paykel Appliances placed third overall for its DishDrawer—a new type of dishwasher that an individual can easily operate from a seated position. Unlike a standard dishwasher that has two loading racks and a pull-down door, the DishDrawer looks like regular kitchen cabinets. Each unit operates independently, handling half a load with a flow-through detergent and rinse dispenser. The drawers can be installed anywhere—stacked or on either side of the sink.



The DishDrawer uses eight rinse cycles and, reportedly, as little as 2.4 gallons of water per load. An energy-efficient fan draws in air to dry the dishes.

Single Handle Bath Faucet



Kohler's Fairfax lavatory faucet is a single-lever-controlled faucet. The ergonomic single lever handle meets Americans With Disabilities Act requirements. Buttons indicate hot and cold water, and a temperature limit stop helps

prevents scalding. The unit's one-piece ceramic valve is said to resist debris and hard water build-up. The faucet's single-hole installation helps provide a clean look.

Fairfax mixes traditional and contemporary styles with either polished chrome, or polished chrome with polished brass accents.

Kitchen Faucet Filters Water

Moen's PureTouch faucet design was based on research that more Americans are concerned about their tap water and prefer using their own filtering equipment. As a result, Moen built this filtering feature into its PureTouch kitchen faucets.



A battery-powered filter-life indicator in the faucet allows for easy replacement. The filters, made by Culligan, come in single or two-packs.

The pull-out faucet easily fits a person's hand for smooth operation by all age groups and abilities. The hose retracts easily, and the faucet is easy to clean. At the touch of a button, three water streams are available. A wide, forceful spray allows for faster cleanup.

Fisher & Paykel Appliances

22982 Alcalde Drive
Suite 201
Laguna Hills, CA
92653
Ph: 949.829.8865
www.fisherpaykel.com

Kohler Plumbing

444 Highland Drive
Kohler, WI 53044
Ph: 800.4.KOHLER or
920.457.4441
www.kohlerco.com

Moen Incorporated

25300 Al Moen Drive
North Olmsted, OH
44070-8022
Ph: 440.962.2000
www.moen.com;
www.puretouch.com

Human Measures, from page 2

The final report, "*Anthropometry for Persons with Disabilities: Needs for the 21st Century*," by Bruce Bradtmiller, Ph.D., gives an assessment of this data. The report concludes: "Unfortunately, most of the studies were conducted on specialized populations, many of them foreign. Dimension definitions and measurement techniques vary from study to study and, in many cases, samples were very small...Thus, while there is a great deal of existing anthropometric data, any attempt to combine them into a useful database would be futile."

A review of six international studies of persons with lower limb disorders discovered that not a single dimension was found to be in common. In fact, no study has attempted to standardize either body land marking (the points from which measures are taken) or measurement procedures.

Bradtmiller considers these and similar findings "illustrative of the current state of affairs in regard to anthropometry of people with disabilities." He notes

that policy issues concerning the purpose, limits and procedures that are necessary to guide the development of a sound anthropometric database have not been addressed. To that end, the report provides short- and long-term goals for developing the data, including recommendations for a pilot study.

In 1999, the Access Board plans to convene a study panel to consider these and related issues. It will also assess how state-of-the-art technologies may be applied to the development of an anthropometry of disability for the design of the built environment and the policies that should govern its development. The panel will include experts in virtual reality, statistics, computer modeling, anthropometry and the social sciences. For more information, contact the Access Board at 800.872.2253 (tty: 800.993.2822) or visit its website at www.access-board.gov.

David Yanchulis is an accessibility specialist with the U.S. Access Board.

International Codes, from page 1

This ambitious—albeit flawed—effort is being led by the International Code Council (ICC), a group formed in 1994 by the three regional model code organizations in the United States: BOCA, ICBO and SBCCI. Now, ICC has absorbed CABO, eliminated BCMC and serves as secretariat for ANSI A117.1. Final hearings, called the Final Action Consideration, for the 2000 edition of these codes will take place Sept. 13-17, 1999, in St. Louis, Mo.

ICC is Advocating a Flawed Process

The ICC has a flawed process and is developing flawed requirements. These will lead to dysfunctional buildings that will serve their users badly and that might, in the future, require expensive modification. Unless these flaws are addressed, the new millennium—with its International Codes—portends yet more costly, preventable injuries and disabilities, in addition to other problems—especially in our homes.

Partly paving the way for the new codes was the work of the Council of American Building Officials (CABO) Board for the Coordination of the Model Codes (BCMC), which developed scoping requirements for ANSI A117.1 (accessible and usable buildings and facilities). Paralleling BCMC's scoping effort—and supporting a universal design approach—was its recommendation to mainstream certain accessibility/usability/safety requirements.

Unfortunately, CABO, BOCA, ICBO and SBCCI did not carry through with this contribution to universal design and to safer, more usable buildings. The codes' traditional double standard of requirements for dwellings and other buildings, though challenged, is largely intact. That's partly due to an agreement between ICC and the National Association of Home Builders (NAHB) to jointly develop the new International Residential Code (IRC).

Specific Code Changes

The following technical issues being considered for the IRC feature prominent sources of injuries and usability problems in homes. Comments on these proposals could lead, at the September 1999 conference, to voting membership reversals of committee actions.

Stairway Illumination. The IRC committee approved a proposal adding specific criteria for minimum illuminance (108 lux or 10 footcandles) on interior stair treads and landings or, alternatively, requirements for light fixtures having minimum wattage ratings. A proposal requiring lighting controls that can be used without having to traverse any step of the stair also was approved.

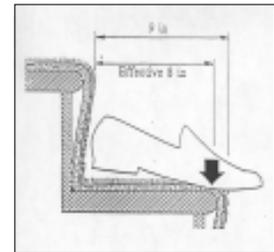
Zero-Step Entrances. The committee did not accept a "zero-step entrance," an important aspect of the so-called "visitability" requirements recently

introduced for new dwellings in the United Kingdom and in some U.S. cities. Additional advocates for universal design will have testify if the proposal is to begin gaining crucial support from the voting officials and others.

Ramp Surfaces. The committee narrowly approved a proposal for walking surfaces of ramps (with slopes as much as 1:8) to be slip resistant and securely attached. The IBC already has these requirements, and limits ramp slope to 1:12.

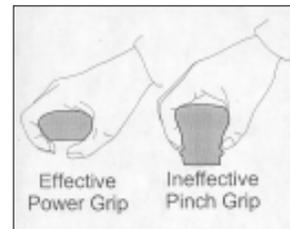
Step Geometry for

Dwellings. The committee denied an extensively documented, 14-page proposal mainstreaming the "7-11" step geometry (which is extensively required in the IBC final draft and in current model codes and standards). The committee also denied a related proposal dealing with the detrimental effect of carpeting on usable step geometry.



Handrail Graspability.

On handrail graspability, the committee's vote was countered by a floor action (in which only regulatory officials vote), accepting a requirement compatible with ANSI A117.1, which facilitates an effective power grip.



Handrail Scoping. In a serious blow to usability and safety, a homebuilder-sponsored proposal won committee support permitting one- and two-riser stairs to be built without a handrail.

Summing It Up

Proponents of universal design should not sit idly while crucial aspects of environmental design are so inadequately served.

Jake Pauls is a Certified Professional Ergonomist with 32 years of experience in research, consulting and codes/standards development. He serves on the ANSI A117.1 committee, committees for ANSI/NFPA standards and APHA's Housing and Health Committee. He also represents APHA on ICC's Industry Advisory Committee. He can be reached at 301.933.5275; e-mail: bldguse@aol.com.

The preceding article is an excerpt. The full text can be found at: www.humanics-es.com/ed-tg.htm (the article can be downloaded from the May '99 issue in a PDF format).

The ICC has a flawed process and is developing flawed requirements.



Printed on recycled paper with vegetable inks.

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

Universal Design Newsletter
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July 12-16, 1999: Vision '99, International Conference on Low Vision. Sponsored by the Lighthouse Intl. and held in New York City, this conference will showcase rehabilitation and design solutions for people with low or no vision. Questions? Call the Lighthouse at 212.821.9482; e-mail: vision99@lighthouse.org.

July 27-28, 1999: The Universal Design Conference. To be held in Perth, Australia, this conference is primarily sponsored by the Disability Services Commission, the Design Institute of Australia (WA Chapter) and the Royal Australian Institute of Architects (WA Chapter). Focusing on retail design, it will include a design competition. John Salmen, AIA, of Universal Designers & Consultants Inc., will present the keynote address. Questions? Contact Pip Daly-Smith at: pip.dalysmith@dsc.wa.gov.au.

Aug. 9-10 and Oct. 27-29, 1999: Designing for Usability, Flexibility, and Compliance. These training courses by the Trace Center are targeted toward key individuals who are involved in improving the usability of telecommunications products. Questions? Go to: www.tracecenter.org/tuder/.

Aug. 11, 1999: Common Frustrations in Acquiring Assistive Technology Teleconference. This audio conference will explore barriers in assistive technology and identify strategies for creating collaborations to address assistive technology barriers. Questions? Call Teresa Johnson at 877.835.7335 (v/tty).

Sept. 5-8, 1999: The Fourth Global Conference of the International Federation on Ageing. To be held in Montreal, Quebec, Canada, it will feature a universal design track. John Salmen, AIA, Universal Designers & Consultants Inc., will present the keynote address. Questions? Call IFA at 514.287.1070; e-mail: ageingconf@jpd.com.

Sept. 13-16, 1999: Retrofitting for Accessibility. To be held in Gatlinburg, Tenn., this National Center on Accessibility educational course was designed to educate maintenance professionals, facility managers, site access coordinators and planners on the barriers that can be eliminated to promote full access to recreation facilities for people with disabilities. The registration deadline is July 12. Questions? Please call 765.349.9240 or e-mail: nca@indiana.edu

Sept. 30-Oct. 2, 1999: Universal Design in the City: Beyond 2000. This conference, which will be held in Winnipeg, Manitoba, Canada, is being hosted by the Canadian Institute for Barrier-Free Design and the Faculty of Architecture from the University of Manitoba. The conference is geared toward designers, planners, educators, consumers, researchers and other individuals who are interested in universal design. Questions? Please call Susan Shanley at 204.474.6801; e-mail: pparch@cc.umanitoba.ca.

Dec. 6-10, 1999: Universal Design Methods to Include the Widest Spectrum of Users in Parks and Recreation. This National Center on Accessibility course, to be held in Houston, is aimed at designers, architects and engineers from park, recreation, museum, outdoor education and historic environments. The course will include an Architectural Track on interior/outdoor environmental design. The registration deadline is Nov. 1. Questions? Call 765.349.9240; e-mail: nca@indiana.edu

June 14-18, 2000: Designing for the 21st Century II, an International Conference on Universal Design. This event, which will be held in Providence, R.I., is sponsored by Adaptive Environments Center and the Center for Universal Design. Keep checking www.adaptenv.org/21century/ for announcements. Questions? Please contact: mdilorenzo@adaptenv.org.



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