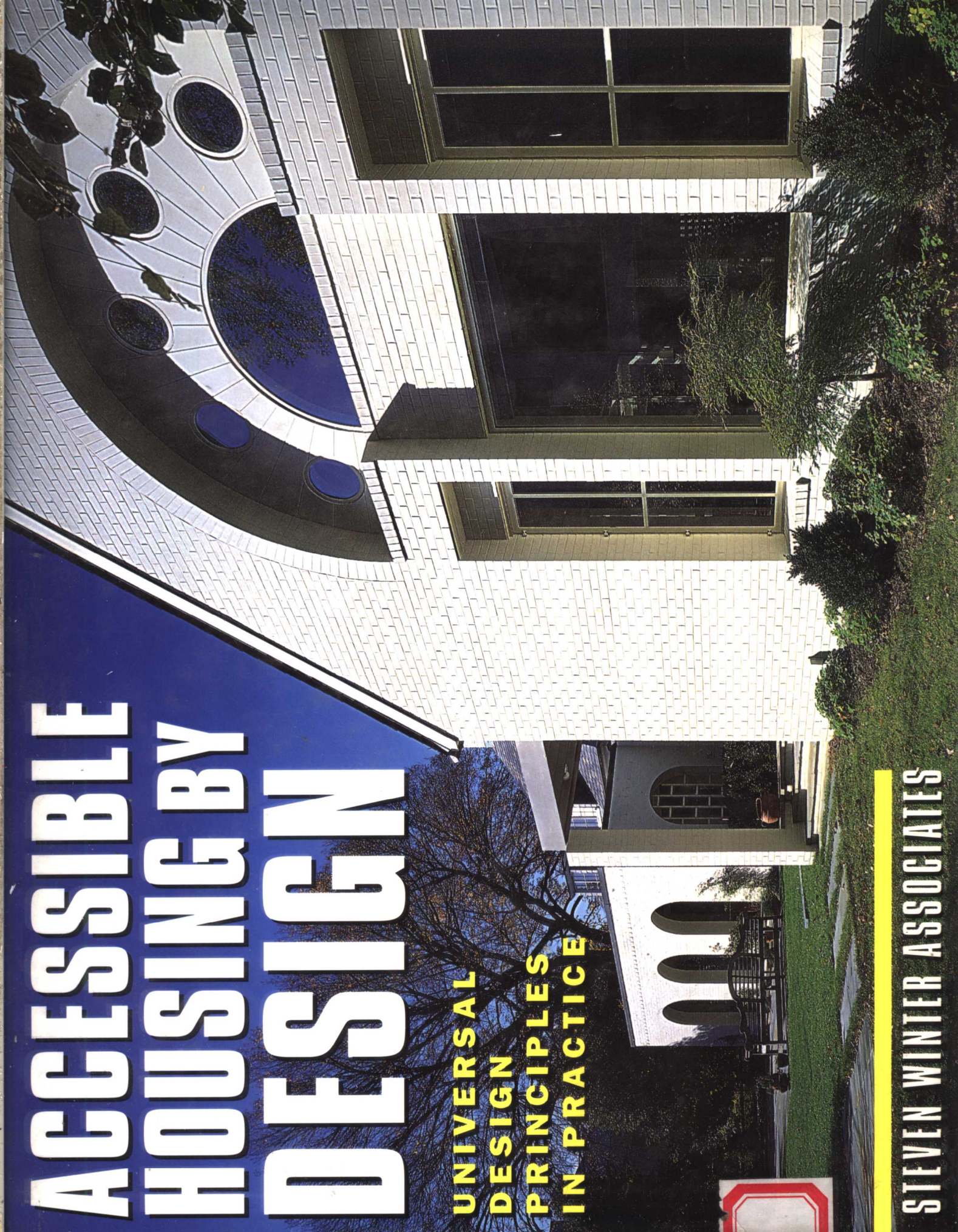


ACCESSIBLE HOUSING BY DESIGN

UNIVERSAL
DESIGN
PRINCIPLES
IN PRACTICE

STEVEN WINTER ASSOCIATES



ACCESSIBLE
HOUSING
BY DESIGN

ACCESSIBLE HOUSING BY DESIGN

Universal Design Principles in Practice

STEVEN WINTER ASSOCIATES

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FOREWORD

As we become aware of the growing need for environments that are usable by all persons, increasing numbers of Americans are accepting the principle that accessibility in all types of housing makes good sense.

The term "Universal Design" has come to symbolize those features that make housing usable to persons with a broad range of needs. This publication, *Accessible Housing by Design: Universal Design Principles in Practice*, showcases 16 projects from many parts of the United States that illustrate these principles. The projects represent well-designed, marketable and generally affordable examples of Universal Design in recently completed or proposed single-family housing.

I am pleased to present this useful publication in the hope that the reader will find it thought provoking and a valuable resource, and that it will lead to a greater understanding and implementation of Universal Design concepts.



Michael A. Stegman
Assistant Secretary for Policy Development and Research
U.S. Department of Housing and Urban Development

INTRODUCTION

Our increasing awareness of America's large aging population, our acknowledgment of the needs of persons with disabilities and the fact that, as individuals, our own physical and mental abilities will inevitably change has alerted many of us to the need for more accessible (barrier-free) working and living environments. This awareness led to the Fair Housing Amendment Act of 1988 and the Americans with Disabilities Act of 1990. While the provisions of these acts do not apply to privately owned single-family homes, they have created general interest in Universal Design principles. Recognition of this interest prompted this book. These principles call for buildings and outdoor spaces to be "universally" designed, useable by a broad range of human beings including children, older people and those of differing stature and abilities.

The purpose of this book is to showcase recent projects by builders, architects and designers that illustrate successful Universal Design concepts as applied to single-family housing. These case-study projects vary greatly in responding to different programmatic, design and user requirements. Some represent recently built houses, some are remodelled structures, while others are works in progress. There are a few homes that are luxurious, but most are quite modest. This diversity is intentional. What these projects have in common is that they successfully, and in most cases seamlessly, integrate Universal Design features within the standard design elements of the house, often with modest or no additional cost. All of the designs are intended to blend in unobtrusively with neighboring structures.

The design features that make them accessible simply represent good design decisions that are intended to support and enhance the occupant's lifestyle so that they can remain and function well in their familiar surroundings throughout their lives. Because the elderly represent one of the largest and fastest growing segments of the population, the market demand for Universal Design features will continue to expand.

As an aid in illustrating Universal Design features, a series of symbols has been created that accompany the drawings and photographs and highlight these features. A list of these symbols and the features is found on page 9.

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METHODOLOGY

Prior to the selection process, the U.S. Department of Housing and Urban Development and Steven Winter Associates, Inc. developed a list of Universal Design criteria in order to evaluate individual projects. A "call-for-entries" was placed in various national trade publications and entered on Adaptive Environments' World Wide Web Site. Numerous other resources were investigated for qualifying projects including: universities with programs in Universal Design, organizations that promote or conduct conferences on Universal Design issues, associations or councils that represent people with disabilities, older individuals and consumers of Universal Design products, industry professionals with expertise in Universal Design and accessibility, professional organizations that represent architects and designers, and manufacturers of accessible products and assistive devices.

Candidates were contacted and asked to submit their projects for review. Each project was evaluated against the selection criteria, and the most interesting and successful projects were chosen for publication.

SYMBOLS



BASIC ACCESSIBILITY FEATURES

- Step-free accessway
- Level, protected entrance
- Low-threshold at entry with 36-inch-wide minimum door width
- No level changes on entrance level
- Motorized stair lifts and elevators
- At least one bedroom and an accessible bathroom on the entrance level
- 32-inch-wide minimum clear door openings
- Lever hardware on doors
- Minimum 36-inch-wide, short hallways
- At least one bathroom that provides sufficient clear floor space for wheelchair access to all fixtures
- Grab bars or bathroom walls reinforced for future installation of grab bars
- Reinforced ceiling for installation of a powered track lift
- Kitchen plan that provides easy access to and use of all elements



SECURITY OR COMMUNICATION SYSTEMS

- Audio/visual alarms
- Programmable lighting
- Motion detectors
- Electric door locks
- Occupancy sensors
- Exterior door sidelights
- Intercoms



EASILY TRAVERSED FLOORS

- Low-pile carpet
- Slip-resistant floor coatings



REMOTE CONTROL FEATURES

- Fireplace
- Windows
- Door openers
- Lighting
- Television and/or stereo



ACCESSIBLE LAVATORIES, SINKS, AND COUNTERS

- Open kneespace below sinks, cooktops or counters
- Removable or slide-in base-cabinet doors
- Removable base cabinets
- Insulated or protected pipes to prevent scalding



ACCESSIBLE BATHING

- Roll-in shower
- Shower seats
- Bathtub deck doubles as a transfer surface



VARIABLE HEIGHT COUNTERS

- Multi-level counter heights
- Adjustable counter heights



ACCESSIBLE WORK SURFACES

- Roll-out carts
- Pull-out trays



HEARING IMPAIRMENT AIDS

- Smoke/burglar alarms trigger blinking lights
- Doorbell triggers blinking lights
- Ringing telephone triggers blinking lights



VISUAL IMPAIRMENT AIDS

- Tactile surface cues
- Illuminated work surfaces
- Contrasting floor borders provide room dimension cues
- Contrasting banded edges along countertops provide cues to counter locations
- Countertop surface borders provide counterspace cues
- Strategic use of contrasting colors
- Voice activated home communication/security systems

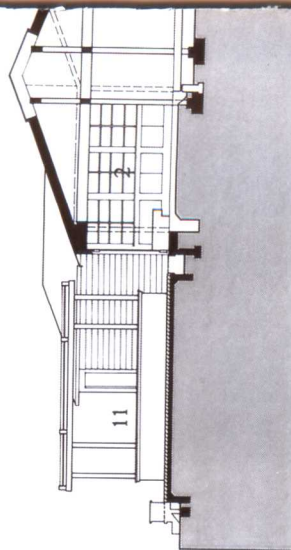
SCHULTZ RESIDENCE

Architect
Corson Associates, Architects
Sebastopol, California

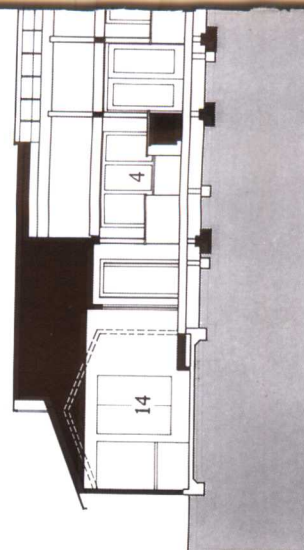
This renovation is for a client with lower body paralysis. Responding to the need for a barrier-free environment, the architects provided a skillful blend of structure, open planning, large glass openings, skylit areas and Universal Design features.

The entire central area of the house was rebuilt, the main entrance moved, and the garage expanded. Access from the street is achieved with a bermed walk. The removal of interior walls opens direct physical and visual paths through the core of the house. A large central skylight is located above the new post-and-beam structure.

Two-level kitchen counters, each with a sink, provide work space for the entire family.

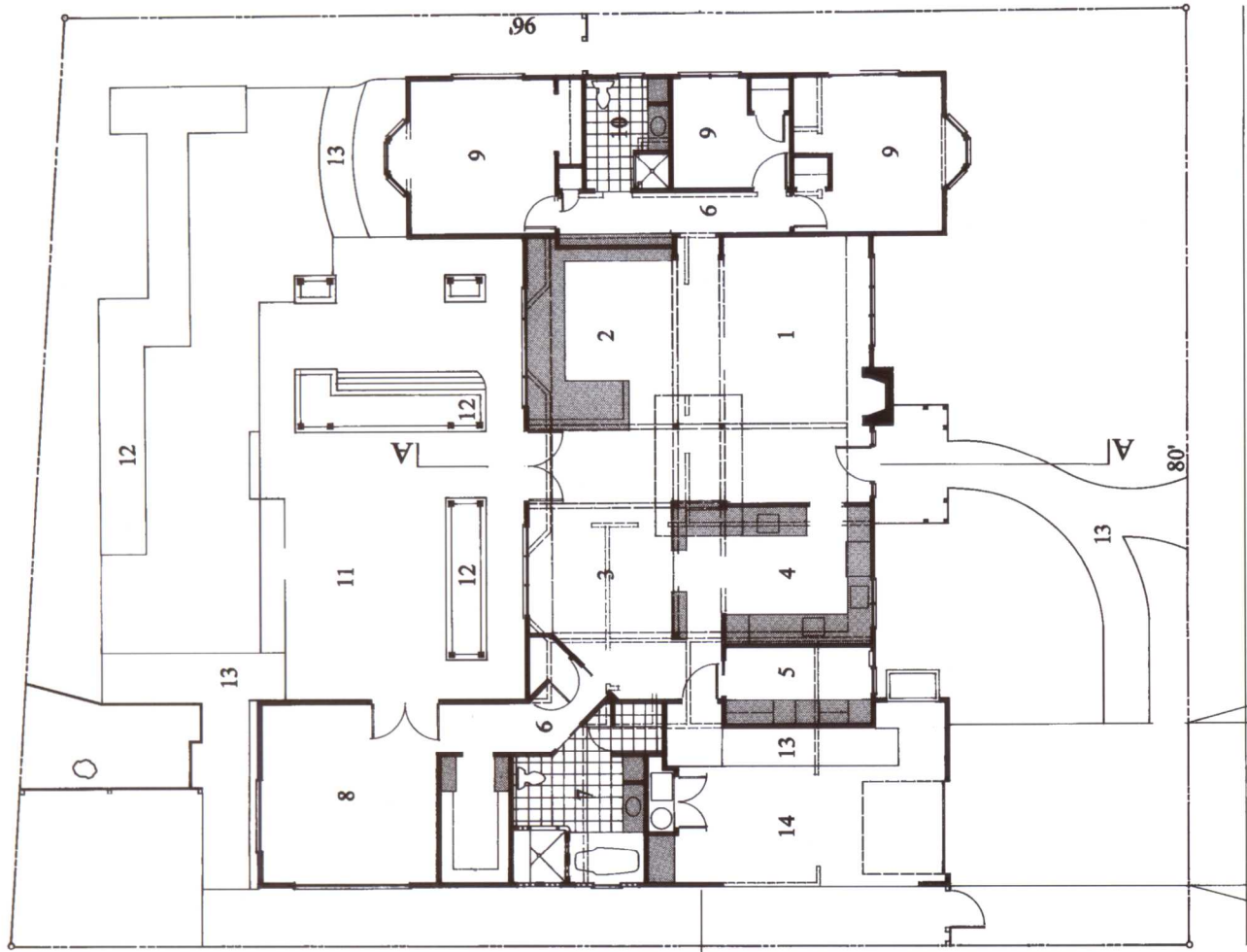
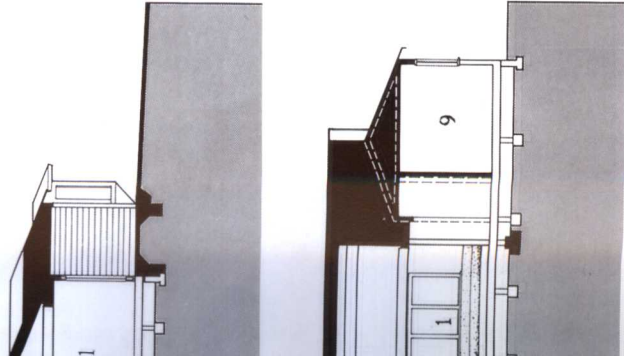


Section A-A



Section B-B

The effort to reduce interior obstacles required the removal of many walls, most of which were located in several small, dark rooms. As a result, a new roof structure was devised as a means of providing a separate architectural identity to the spatially integrated kitchen, dining room, living room and family room. The new purlin-and-beam roof structure is supported by columns located at the corners of the different spaces. The resulting open plan with its defined central axis allows travel between the spaces with limited turning movements. The central skylight creates a large interior pool of light.



1. Living room
2. Family room
3. Dining room
4. Kitchen
5. Laundry
6. Hall
7. Master bathroom
8. Master bedroom
9. Bedroom
10. Bathroom
11. Terrace
12. Raised garden
13. Ramp
14. Garage

Floor plan and sections of the accessible renovation

In the original house, the front porch and steps were inaccessible. In the remodeling, the front door opens directly across a 1/2-inch-high threshold to a large front porch. From the porch, a brick path connects to both the front public sidewalk and the driveway. The new landscape treatment effectively integrates the ramp by berming gently up to its sides.



The winding path that connects the front entry to the street

Raised planting boxes were built in the rear yard before the renovation of the house began. The client requested a terrace that would provide additional accessible planting boxes and an operable shade system. This was accomplished by continuing the beam and column theme from the main entry of the living area to the outdoors. Above this structure is a cable-supported fabric shade that the client can adjust as needed. The new, raised planting boxes are accessible from all sides. A new walk built around the side of the house provides a direct, level connection between the rear yard and the front of the house.



Accessible terrace with raised planting boxes and an operable shading system



The family room

The client requested a family room that would allow her to leave her wheelchair and sit with family members. The wide window seat/sofa, separated from the dining room by a

cabinet, serves this purpose. The bookcase was designed to contain accessible electronic equipment.



Master bathroom

The bathroom was designed to be light, airy and accessible. This was accomplished by using glass block panels at the exterior wall and between the tub and shower. The shower, with a low curb to contain water, has a folding seat that extends beyond it. This allows the client to leave her wheelchair outside the curb

and transfer to the shower seat from the dry floor. The seat slides back and folds out of the way of other users.



Accessible laundry area



The washer and dryer have front-mounted controls and side-hinged, fully-opening doors. They are installed so that the drum is at lap height. Work surfaces are found above and

beside these machines. A fold-down ironing board is provided.



Central to the design of the accessible kitchen was the desire to have bi-level counter space large enough to accommodate more than one person at a time. This was accomplished by making the side of the kitchen with the cooktop and oven accessible at the lower level. Included on this side are an accessible corner sink and pull-out table drawers that provide an additional horizontal surface next to the stove. The oven has a side-hinged door and is sufficiently high, allowing wheelchair access under the pull-out surface. The refrigerator door swings 180 degrees against the adjacent pull-out storage wall, allowing full access to the interior. The upper level of the kitchen has a sink and a disposal. The cabinet doors below the sink are mounted on hardware that allow the doors to open and slide back, making the sink accessible. A 6-inch-deep raised shelf at the back of the 2-foot-deep main counters provides additional storage space. Behind the corner sink, a pair of windows with low sills allows easily operated ventilation and a clear view of the street and front walk.



Accessible kitchen

UNIVERSAL HOME

Architect
James Fahy Design
Rochester, New York
Builder
Whitney East, Inc.
Rochester, New York

This popular, fully accessible two-story house, built in Rochester, New York, as a model home for the local 1995 Homearama, responds to a growing regional market for accessible housing. The floor plan was designed to attract a wide market range, from empty-nesters to young couples with or without children. The animated façade blends with the local architectural context and the design skillfully integrates the accessible features inconspicuously. Constructing this home was a first-time venture for the builder, who had previously developed accessible commercial properties.

The house is approached via a gently sloping walkway from the garage to the front door. The front porch adds visual interest and provides a protective transition to the interior. Inside, double-height spaces

and the open plan provide drama and ease of movement.

