Americans with Disabilities Act: An Assessment of a University Demonstration Garden

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The guidelines of the Americans with Disabilities Act (ADA) have directed private and public institutions to provide access for all people. The ADA prohibits discrimination in employment, public services, public accommodations, and communications by a public entity on the basis of an individual's disability. Public gardens throughout the United States must evaluate the accessibility to individuals with disabilities of their programs and facilities and determine their compliance level with Title II of the ADA [U.S. Dept. of Justice (USDJ), 1992].

Purdue University Horticulture Gardens (PUHG) qualifies under Title II because it is state-funded. The purpose of this study was to assess PUHG's current level of ADA compliance and make recommendations for improving accessibility and outreach to individuals with disabilities. These results can serve as a model for other public gardens. According to the U.S. Census Bureau (1993), there are nearly 49 million Americans with disabilities. Population estimates suggest that there are 500,000 people in Indiana with disabilities (Indiana Governor's Planning Council, 1990). The American Association of Botanical Gardens and Arboreta (1993) estimated that American public gardens received about 50 million visitors in 1992, but it is unknown how many visitors had disabilities or how many potential visitors with disabilities have not visited a public garden due to limited accessibility.

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Publicly and privately owned public gardens are implementing changes to improve accessibility. Some public gardens are modifying their facilities. For example, the Arnold Arboretum redesigned the main entrance of its visitors' center, located in a century old historic building, by installing wider doors, a ramp, and new landscaping (Cook, 1993). To implement programmatic changes, the Denver Botanic Garden redesigned its tours and brochures to accommodate visitors with hearing or visual impairments and trained its staff in disability awareness (Hailer, 1993). Some public gardens perceive the ADA as 'a welcoming mat for all visitors (Briggs, 1993; Cook, 1993; Hailer, 1993; Ostenson, 1993). Preliminary feedback suggests that individuals with disabilities welcome changes that public gardens make in their programs or facilities.

Public gardens that evaluate the accessibility of their programs and facilities have an opportunity to be proactive in working with a previously underserved clientele. Public gardens can increase the visibility of their programs and facilities to individuals with disabilities by disseminating information to them and to staff members and the public, potentially increasing their numbers of visitors and memberships. To date, there has been no nationwide or Indiana state survey on the accessibility of public gardens. However, some public gardens have evaluated the accessibility of their programs (Briggs, 1993; Cook, 1993; Hailer, 1993; Ostenson, 1993).

Definition of terms

The following definitions apply to terms used throughout this report (USDJ, 1992).

Accessibility. This report focuses on two types: physical or facility accessibility, a structure that is readily usable by individuals with physical or differing abilities; and program accessibility, a program, activity, or service, -viewed from a whole, that is readily accessible to and usable by individuals with disabilities.

Disability. A disability is a physical or mental impairment that substantially limits one or more of the major life activities of an individual.

Legislation before the ADA

Federal legislation before the ADA established program and physical accessibility standards applicable to public gardens. The Architectural Barriers Act of 1968 established physical accessibility by requiring public entities receiving federal financial assistance to make their facilities accessible to individuals with disabilities [United States Architectural and Transportation Barriers Compliance Board (USATBCB), 1981]. The

Rehabilitation Act of 1973 prohibited discrimination against disabled individuals on the basis on their disability and required evaluation of federally funded programs and facilities (USDJ, 1992). Under this act, federally funded parks and recreation areas, museums, zoos, and historical places were required to survey the accessibility of their programs and facilities (Majewski, 1987).

In 1984, the Uniform Federal Accessibility Standards (UFAS) were adopted by federal agencies for accessibility of newly constructed federal facilities (USATBCB, 1992). In 1990, the United States Forest Service (USFS) and National Park Service (NPS) published guidelines for programs and services of parks and recreation facilities in an interim draft of the *Design Guide for Accessible Outdoor Recreation*, which was revised and published [U.S. Dept. of Agriculture (USDA) and U.S. Department of the Interior (USDI), 1990, 1993]. *The Design Guide for Universal Access to Outdoor Recreation* is based on accessibility guidelines issued under the ADA [ADA accessibility guidelines (ADAAGs)], but publishing them is pending establishment of national standards as a part of the ADA.

Applying the ADA to public gardens

Under Title III, the ADA loosely defines privately owned public gardens in one of 12 categories as places of public display or collection, such as parks, museums, or zoos (USDJ, 1992). Publicly and privately owned public gardens are subject to different titles of the ADA, but the process of assessing garden accessibility is similar. For most public gardens, portions of the ADA concerning program and facility accessibility did not take effect until January 1992. Physical changes to a facility had to be made as expeditiously as possible, but no later than January 1995 (USDJ, 1992). New buildings constructed or designed for public gardens after January 1992 must be accessible.

Public entities such as publicly owned public gardens must choose to implement UFAS guidelines, ADAAGs, or local or state codes. The most stringent applicable code must be used as the standard for barrier removal, but compliance is determined case by case (USATBCB, 1992; USDJ, 1992). It is anticipated that UFAS guidelines eventually will be eliminated (USDJ, 1993). Although the ADA is a landmark in civil rights legislation, it does not provide finding to achieve program or facility accessibility (USDJ, 1992).

There are three methods for achieving accessibility for publicly owned public gardens: a) barrier removal in existing programs

To date, there has been no nationwide survey on the accessibility of public gardens.

and facilities, b) alterations made to the program, and c) new construction (Majewski, 1987; USATBCB, 1992). Generally, barrier removal in an existing program means the physical removal of the barrier or a structural modification made to an existing facility. Physical changes to a building are required only when no other feasible means exist to make the program accessible (USDJ, 1992). For example, to accommodate wheelchairs, wider doors may be installed at the main entrance of the visitors' center. A program change may entail furnishing reading materials in large print.

Under Title III, privately owned public gardens are encouraged, but not required, to evaluate their programs and facilities (USDJ, 1992). They must remove facility and communication barriers in their existing facilities if barrier removal is readily achievable and does not create an undue financial or administrative burden or does not fundamentally modify the essential nature of the program offered (USDJ, 1992).

Privately owned public gardens must offer equal opportunity for individuals with disabilities to participate and benefit from the program in the most integrated setting appropriate. Examples of actions to achieve this include redesigning equipment or materials used by visitors, providing an aide to help a disabled visitor participate in a program, or choosing an alternate meeting site. For instance, altering an historic building's architecture to install an elevator to provide access to a second-floor library may impose an unmanageable cost to the facility. As an alterna-

tive, the privately owned public garden could offer the assistance of a staff member in retrieving a book for the disabled visitor or could relocate publicly accessible books to a main floor room.

Privately owned public gardens can provide special equipment or services to ensure effective communication (USDJ, 1992). Examples include an audio-taped or Braille version of the garden's brochure, large-print maps and brochures, text-telephone service, and closed-captioned videos.

A study of the Purdue University Horticulture Gardens

The Purdue University "Horticulture Gardens (PUHG) is a half-acre, publicly owned display garden featuring annual and perennial flowers, vegetables, and herbs. It is located on the Purdue Univ. campus adjacent to the horticulture building and is open continuously. PUHG serves the general public and is primarily self-service. All plants are labeled, and a self-guided tour booklet is available in several locations throughout the garden. Each year, PUHG hosts Purdue Garden Day, a 1-day open house for the public featuring lectures, guided tours, displays, and an information booth.

PUHG also serves as a teaching laboratory for undergraduate classes in horticulture. The public garden provides learning opportunities for groups such as Master Gardener, 4-H, FFA, and others attending workshops at Purdue. Although PUHG does not operate any public buildings, existing facilities of the Horticulture Dept. are used as

needed. The following briefly provides an overview of the facility and programmatic accessibility. It is not comprehensive and is only a tool to start the process of assessing accessibility.

Methods for improving facility accessibility

For PUHG, the priorities for physical access areas follows: a) parking and drop-off areas; b) entrances and circulation routes

Fig. 1. Site layout of Purdue Univ. Horticulture Gardens.

within the garden; c) restrooms and drinking fountains; and d) other amenities such as seating, public notices, and access to the gazebo. The following recommendations prioritize items as recommended by the ADAAGs and offer options to bring PUHG into compliance with the ADA. Recommendations are presented in the following format: physical access priority area, ADAAGs, current PUHG status, and recommendations for PUHG. Only the priorities in parking and garden access are discussed, although garden access addresses accessible routes, paths, path surfaces, assistance animals, and protrusions.

PUHG is located on a level site (Fig. 1), which facilitates access by reducing the need for ramps and railings.

Parking and drop-off areas. ADAAGs require that accessible parking be located closest to the accessible entrances of the garden. In general, there must be one accessible parking space for every eight nonaccessible parking spaces. An accessible parking space must be at least 8 feet wide and labeled with the symbol of accessibility. Van parking is optional, but if provided must be at least 8 feet wide and include an 8-foot side aisle for a van wheelchair lift.

At PUHG, on weekdays between 7:00 AM and 5:00 PM, parking is limited to university permit holders and university vehicles. Three-hour public parking is available on an adjacent city street.

We recommend that

- ◆ PUHG visitors use the service drive on the south side of the Horticulture Building for a drop-off area.
- ◆ An accessible parking space be located on the campus street closest to PUHG's west entrance or on the campus street north-east of the Horticulture Building to take advantage of the sidewalk (Fig. 1).

Entrances and circulation routes within the garden. ADAAGs require that there be at least one accessible route within the site boundary of a program's facilities. One accessible route should coincide with the entrance route for the general public and should connect all public buildings on the same site.

At PUHG, accessible routes are not designated or labeled.

We recommend

- ◆ Designating accessible routes at PUHG using public notices, maps, or tours.

For paths, ADAAGs require that the minimum path width is 36 inches; 60 inches is preferred to allow the passage of two wheelchairs side-by-side and turning space for wheelchairs.

At PUHG, paths measure at least 30 to 36 inches wide, and some paths are 60 inches wide. Gates to the vegetable garden are wide

enough to comply with ADAAGs and can be opened with a closed fist. Turf paths on the east half of PUHG are accessible, but wheelchair users may get stuck in wet weather. Ruts created by wheelchairs also could damage turf. The turf area northwest of the vegetable garden has a shallow trench perpendicular to the path entrance to catch rain run-off from the driveway entrance.

We recommend

- ◆ Encouraging visitors to use appropriate routes in PUHG by using public notices, maps, or audio-taped tours.
- ◆ Designating alternate routes for paths that are inaccessible to wheelchairs.
- ◆ Discouraging all visitors from using the path at the opening on the west side of the garden by leaving a molehill of soil at pavement entrance, allowing *Pinus strobus* (Eastern white pine) branches to continue to overhang the path or block the opening, and not incorporating the path on PUHG tours.
- ◆ If future plans include expanding the vegetable garden, making a wooden bridge so wheelchair users could cross the trench more easily.
- ◆ Wheelchair users use the path south of the vegetable garden to see the raised squash bed.

For path surfaces, ADAAGs require that paths and walkways be slip-resistant, stable, and firm. Ramps with a rise greater than 6 inches [with a maximum slope ratio of 1:10 (10%) or 1:12 (9%)] must have hand railings. The minimum slope ratio suggested for ramps is 1:12 (1 foot in height for every 12 feet in length). A slope of 1:20 (5%) is preferred because the slope is more gentle.

At PUHG, most path surfaces are suitable because paths are concrete, brick, or turf. A visually impaired person could encounter problems with the honey-comb pavers in the rest area. The slope ratio for the east ramp of the gazebo is about 0.75:9 (8%), while the slope ratio for the west ramp is about 1:8 (12.5%). The east side of the gazebo has a more gentle slope, which may facilitate walking and wheeling up the ramp, but the ramp is not flush with the gazebo floor. The west ramp of the gazebo maybe too steep for some individuals to use.

We recommend

- ◆ Keeping openings in honey-comb pavers filled with soil or other filler materials such as bark mulch or colored stone.
- ◆ Encouraging wheelchair users to use the west entrance of the gazebo by posting an accessibility sign.
- ◆ Installing railings on both sides of the gazebo entrance ramps.

ADAAGs require that all assistance animals be allowed.

One accessible route should coincide with the entrance route for the general public and should connect all public buildings on the same site.

At PUHG, there is no policy concerning assistance animals.

We recommend

- ◆ An audio device such as wind chimes at a garden or gazebo entrance to be a cue for guide dogs to assist hearing-impaired visitors in determining their direction and orientation within the garden. Wind chimes also can provide a point of orientation for visually impaired visitors. Since PUHG is small, small wind chimes are recommended.

For protrusions, ADAAGs do not require that objects protruding less than 4 inches into paths be removed. Items permanently mounted between 27 and 80 inches from the ground can protrude no more than

Fig. 2. Message on brochure indicating whom special-needs visitors may contact.

Assistance available on request.

(Office hours and phone number)

4 inches because a visually impaired person with a guide cannot detect that object (depending on the swinging pattern used with the cane: side-to-side or pushing). Items mounted more than 27 inches from the ground can protrude any amount because they can be detected by a guide cane. Items mounted between 27 and 80 inches from the ground on a free-standing post may have an overhang of up to 12 inches.

At PUHG, most of the protrusions in PUHG are tree or shrub branches that overhang paths. These branches may reduce height clearance, present obstacles, or get tangled in wheelchair spokes. Other protrusions include a sharp rim of a planter and steel edging, which may be hazardous. In addition, the patio of the seating area sits almost 2 inches lower than its accessing turf path and is separated by metal edging.

We recommend

- ◆ That most branches be thinned or headed back. This should not detract from the plants' appearances.
- ◆ Pruning vegetation away from pathways.
- ◆ Leaving the planter in the area because it provides an interesting focal point; planting different plant species such as *Portulaca* sp. or *Lobelia* sp. in the planter to drape over the rim and cushion the rim; and covering the sharp rim with 1/4-inch-thick plastic or cut garden hose.
- ◆ Pounding the edging into the ground another inch.

- ◆ Encouraging all visitors to use other PUHG seating areas and making available PUHG staff to assist anyone who needs help walking in the seating areas.
- ◆ Resetting pavers at the same grade as the turf path.
- ◆ Completing the original plans for replacing all turf paths with brick paving.

Methods of achieving programmatic accessibility

If removing physical barriers in facilities is not readily achievable and creates an unmanageable expense to the public garden, then programs must provide alternative services. Equipment or materials may be redesigned, aides provided to assist visitors, or alternate meeting sites offered. Accommodations must be reasonable and provide an integrated setting for individuals with disabilities.

The ADAAGs are limited in their scope because they focus on facility accessibility, but they include aspects of program accessibility such as assistive listening devices and public notices. In many cases, ADAAGs and ADA requirements for program accessibility differ, leaving public gardens to their own discretion in determining exactly which guidelines to apply to a certain situation. The following recommendations specific to PUHG for program accessibility are based on Title II requirements, although the ADA requirement is integrated in three instances.

PUHG's program comprises tour brochures, plant displays, a 1-day public event (the Purdue Garden Day, which includes tours), and public notices such as plant labels and temporary directional signs.

Self-guided tour booklet. There are no ADAAGs available for booklet format. At PUHG, a printed tour booklet is available in a self-service dispenser and is 12-point print.

We recommend

- ◆ Making the tour booklet available on disk for personal-computer users to make use of computer programs.
- ◆ Making the tour booklet available on audio tape.
- ◆ Making the tour booklet available in large print, preferably 16-point, and including the universal accessibility symbol in the publication (Fig. 2).
- ◆ Making the tour booklet available in Braille.
- ◆ Using symbols used by the USFS and NPS (Fig. 3).

ADAAGs require that the booklet holder location be within a height range of 48 to 54 inches from the ground for a side approach from a wheelchair. Items should be located no higher than 48 inches for someone to reach from a forward approach in a wheelchair.

At PUHG, not all brochure holders have to be accessible. The booklet holder in the vegetable garden is the most accessible. We recommend

- ◆ Lowering the booklet holder in the gazebo 2 inches so that it is 48 inches from the gazebo floor.
- ◆ Moving the northeast booklet holder of PUHG guide 2 inches closer to the planting bed edge.

ADAAGs require that, for registration for Purdue Garden Day, accessible tables be between 28 and 42 inches high and 30 inches wide. The entire registration area does not have to be accessible, but part of it must be.

At PUHG, the current booth height is 37 inches.

We recommend

- ◆ Setting up a card table in addition to the registration booth.
- ◆ Providing clipboards so that people can fill out registration forms on their laps. Clipboards with blank sheets of paper also may be used by individuals who are deaf but able to communicate by writing messages.
- ◆ Placing a sign at the registration booth that states, "If you need assistance, please ask."

ADAAGs require that, for tours, equivalent accessible viewing positions may be located on levels having accessible right of way.

At PUHG, since the site is located mostly on level ground, seating from almost any place in the garden offers an overview. The vegetable garden can be viewed in its entirety by looking through the woven wire fence from the west side. Raised beds, such as the circle bed of *Crataegus viridis* 'Winter King' (Winter King hawthorns) in the parking area south of the Horticulture Building, offer a variation on vertical views; vegetables in raised beds and other plants in chimney-liner containers offer vertical views of PUHG. Additional various container gardens provide another option, and, for tactile or sensory gardens, visitors can visit the herb garden to rub and smell herbs. All plants are labeled.

We recommend

- ◆ Making a tour of PUHG available on audio tape in lieu of visiting PUHG and considering a standard tour for which a printed document and an audio tape

**Urban/Rural
(Easy)**

**Roaded natural
(Moderate)**

**Semi-primitive
(Difficult)**

**Primitive
(Most difficult)**

can be written and recorded. For example, PUHG may describe a tour following one of the accessible routes through the garden. The audio tour may include the functions of PUHG, a brief description of Purdue Garden Day, and the site layout. The tour also could describe briefly the categories of vegetables, herbs, and flowers displayed. To describe the 300 cultivars of plants in PUHG would not be necessary, as the intent of the tour is solely to describe PUHG'S landscape to visitors.

- ◆ Using the PUHG video on Purdue Garden Day.
- ◆ Using a sign-language interpreter. The cost of hiring an interpreter may be prohibitive for Purdue Garden Day; however, a volunteer maybe available or one may be provided by other agencies (including the department of vocational rehabilitation, social services, human services, organizations specific to a disability, local schools serving individuals with disabilities, local independent living centers, or local rehabilitation centers).
- ◆ Offering the same information on all plant labels on a large-print handout or an audio tape, since modifying all labels would be a financial and administrative burden for PUHG.

Additional recommendations that exceed ADAAGs include the following:

- ◆ Making tailored tours available.
- ◆ Creating a tour to accommodate a specific group of people.
- ◆ Segmenting tours of PUHG so that people with varying levels of physical ability can be involved in one or more parts of the tour.
- ◆ If parts of the tour go through inaccessible areas, one of the following options at the site of departure into the inaccessible area could be considered: showing a video or slide review of PUHG; setting up a photo display, such as a table-top display; or using a scale model of PUHG showing locations of vegetable garden, gazebo, and ornamental gardens. These options also give some visitors a sense of

Fig. 3. Symbols used in parks and recreation areas to indicate accessibility levels.

visual orientation of PUHG.

Conclusion

Public gardens can view the ADA as an opportunity to make changes and attract all visitors. Some public gardens already have reviewed and revised their programs, but more need to examine the accessibility of their programs and facilities.

This study provided an opportunity for PUHG to examine its compliance level with

the ADA and investigate its compliance options. The cost of implementing these recommendations will vary and influence PUHG's final decisions.

Options provided for PUHG's compliance with ADAAGs are intended solely for informal guidance and are not a determination of PUHG's responsibility under the ADA. Information presented in this article must be supplemented by contacting the appropriate agencies, consultants, and state and local building codes (see Sidebar).

American Horticultural Therapy Association

362A Christopher Ave.

Gaithersburg, MD 20679

(800) 634-1603 Voice/text telephone (TT); (301) 948-3010 Voice/TT

Provides basic guidance on accessibility issues and information on developments horticultural therapy.

Architectural and Transportation Barriers Compliance Board

1331 F Street, NW, Suite 1000

Washington, DC 20004-1111

(800) 872-2253 Voice/TT (202) 272-5434 Voice/TT

Issues accessibility guidelines for the ADA.

Disability & Business Technical Assistance Centers

(800) 949-4ADA Voice/TT

Provides answers on all aspects of the ADA.

Job Accommodation Network

West Virginia University

918 Chestnut Ridge Rd., Suite 1, P.O. Box 6080

Morgantown, WV 26506-6080

Provides suggestions for practical solutions to accessibility problems.

National Park Service

Preservation Assistance Division

P.O. Box 37127

Washington, DC 20013-7127

(202) 343-9587 Voice/TT

Offers technical assistance about accessibility and historic properties.

President's Committee on Employment of People with Disabilities

1331 F Street, NW, Suite 300

Washington, DC 20004-1107

(202) 376-6200 Voice; (202) 376-6205 TT

Promotes the employment of individuals with disabilities.

Rehabilitation Engineer Society of North America (RESNA)

1101 Connecticut Ave., NW, Suite 700

Washington, DC 20036-4303

(202) 857-1199 Voice/TT

Provides technical information in design and assistive technology (adaptive aids).

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