

Best Practices for Universal Design

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[!Unexpected End of Formula](#)

BEST PRACTICES FOR UNIVERSAL DESIGN

Description

Universal Design (also called *Inclusive Design* or *Accessible Design*) refers to facility designs that accommodate the widest range of potential users, including people with mobility and visual disabilities and other special needs.

Although Universal Design standards address the needs of people with disabilities, it is a comprehensive concept that can benefit all users. For example, people who are unusually short or tall, carrying packages or pushing a cart are not disabled, but their needs should be considered in facility design.

Increased walkway widths, low-floor buses and smooth walking surfaces improve convenience for all travelers, not just those with mobility impairments. Curb ramps are important for people using handcarts, scooters, baby strollers and bicycles, as well as wheelchair users. Automatic door openers are another example of Universal Design features that can benefit many types of users.

Universal design should be comprehensive, meaning that it results in seamless mobility options from origin to destination for the greatest possible range of potential users. It should consider all possible obstacles that may exist in buildings, transportation terminals, sidewalks, paths, roads and vehicles.

An interesting paradox is that some features (such as some applications of street furniture) may improve overall accessibility, yet are poor in terms of true Universal Design.

The need for Universal Design will increase with the projected aging of our population.

Concept

A basic concept for Universal Design is that people's mobility and accessibility are largely determined by the built environment, that is, the design of buildings, sidewalks, paths, roads and vehicles. Design standards and practices based on an "average" person fail to accommodate many potential users.

Universal Design shifts more of the burden from the individual to the community; rather than assuming that people must accommodate to the built environment, it assumes that the built environment should accommodate all users as much as feasible.

Universal Design Concepts vs. Americans with Disabilities Act Guidelines

It is important to note that Universal Design Principles support and compliment the Americans with Disabilities Act (ADA) and provide planners ideas for how to implement the ADA. However, Universal design is not a synonym or a euphemism for accessibility standards.

For example, Universal Design goes beyond ADA requirements much the same as the Sacramento County Pedestrian Master Plan goes beyond the Sacramento County ADA Transition Plan. The ADA Transition Plan provides for programmatic access within a 15-20 year timeframe. The Pedestrian Master Plan goes beyond the requirements of the ADA by providing wider sidewalks, landscape buffers, enhanced lighting and other features to improve the pedestrian environment. In much the same way Universal Design could go beyond the ADA in providing additional amenities not required in the ADA such as audio and sensory information.

Universal Design can be distinguished from minimal compliance with accessibility standards in the way that the accessible features have been integrated into the overall design. This integration is important because it results in better design and avoids the stigmatizing quality of accessible features that have been added on late in the design process or as modifications after the design is complete.

Another important way in which Universal Design differs from accessibility requirements is that accessibility requirements are usually prescriptive whereas Universal Design is performance-based. Universal Design does not have rigid standards or requirements but addresses usability issues more holistically and should be judged by the resulting usability of the resulting facilities to the broadest range of users.

Applications of Universal Design

- Universal Design planning includes:
- Programs to educate planners and designers on incorporating the following seven principles of Universal Design into planning and transportation facility design.
- Standards for pedestrian facilities, transit vehicles and other transportation services adopted by local, state/provincial or federal governments. The federal *Americans with Disabilities Act* (ADA) includes standards for Accessible Design. Information on these standards is available from the Access Board (www.access-board.gov) and the USDOT *Accessibility Website* (www.dot.gov/accessibility).
- Special projects and funding to reduce barriers and upgrade facilities to meet new accessibility standards.
- Parking facility design standards that dedicate spaces for vehicles used by people with disabilities, and include extra large spaces for vans with lifts.
- Development of Multi-Modal Access Guides, which include maps and other visual, audio and sensory information, on access by people with disabilities to a particular destination, including availability of transit and taxi services, and the quality of walking conditions.

The Principles of Universal Design

The focus of this document is on how Universal Design should be incorporated into the design of the countywide area transportation system, facilities and services. However, the concepts of Universal Design should be applied to the design of all products and environments so that they are usable by all people, to the greatest extent possible, without the need for adaptation or supplemental accommodations.

A national working group of architects, product designers, engineers and environmental design researchers, collaborated to establish the following “Principles of Universal Design” to guide a wide range of design disciplines including environments, products, and communications. These seven principles should be applied to evaluate existing designs, guide the design process and educate both designers and consumers about the characteristics of more usable products and environments.

PRINCIPLE ONE: Equitable Use

The design is useful and marketable to people with diverse abilities.

Guidelines:

- 1a. Provide the same means of use for all users: identical whenever possible; equivalent when not.

- 1b. Avoid segregating or stigmatizing any users.
- 1c. Provisions for privacy, security, and safety should be equally available to all users.
- 1d. Make the design appealing to all users.

Examples:

- Universal tie down devices that work for all wheeled mobility devices. The use of automated systems that call out stops should be encouraged to make this feature be as consistent as possible, and should follow UD principles to be usable by the broadest cross-section of transit patrons, such as utilizing voice patterns and volumes that are discernible by passengers with hearing limitations (while minimizing adverse environmental impacts), and that incorporate visual messaging for deaf and speech cognition impaired riders.
- Audio pedestrian signal heads that serve both the sighted and the visually impaired.
- Low floor vehicles.



Low Floor Vehicle

PRINCIPLE TWO: Flexibility in Use

The design accommodates a wide range of individual preferences and abilities.

Guidelines:

- 2a. Provide choice in methods of use.
- 2b. Accommodate right- or left-handed access and use.
- 2c. Facilitate the user's accuracy and precision.
- 2d. Provide adaptability to the user's pace.

Examples:

- Voice Activated Telecom equipment at transit stations. Voice carry over phones allow users to speak to callers while reading their words on a built in screen.
- Motion detection flush toilets, sinks, soap dispensers, and other vending or service machines and dispensers.
- Placement of pedestrian push buttons; located in same direction as crosswalks and placed vertically 34"-36" from sidewalk for wheelchair users.



Phones That Convert Voice to Text

PRINCIPLE THREE: Simple and Intuitive Use

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

Guidelines:

- 3a. Eliminate unnecessary complexity.
- 3b. Be consistent with user expectations and intuition.

- 3c. Accommodate a wide range of literacy and language skills.
- 3d. Arrange information consistent with its importance.
- 3e. Provide effective prompting for sequential actions.

Examples:

- Voice Activated ticket vending machines for purchasing tickets.
- Use of smart card technology to alleviate the need for scrip, vouchers, and other cumbersome systems. It is a form of Universal Design in a broad sense, but more specifically it needs to be carried out in manner that allows patrons with disabilities to effectively handle the card media, such as with tactile identifiers for the visually impaired, and with on-board card readers that are positioned so that those with mobility limitations can effectively use them without assistance. This is especially an issue on transit vehicles with multiple entrances, where vehicle operators will not be available to assist.
- Pedestrian countdown heads that displays the time remaining until the signal light changes for through traffic. (These are installed by Sacramento County on all new signals, and all re-constructed signals.)

PRINCIPLE FOUR: Perceptible Information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Guidelines:

- 4a. Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
- 4b. Provide adequate contrast between essential information and its surroundings.
- 4c. Maximize "legibility" of essential information.
- 4d. Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).
- 4e. Provide compatibility with a variety of techniques or devices used by people with sensory limitations.



Tactile Door Signs

Examples:

- Large print/tactile mapping of transit centers that conveniently shows the layout and that provides directions to enable visually and cognitively impaired patrons to orient themselves to the various islands, walkways, boarding areas, or intersection components where they are expected to locate individual routes. (Local examples of where this might be helpful to one degree or another are at colleges and malls – the Universal Design aspect would be to include large print and tactile media, as opposed to only print materials that are typically encased behind plexiglass that the visually impaired cannot use.)
- Identifiers at bus stops that allow visually impaired users to differentiate between bus stop poles and other utility poles using a Braille/raised print plate that says "Bus". (Note: in some places bus stop poles are a unique shape that can be identified without special markings).

- Audible walk indicators that automatically adjust the volume to be 2-5 decibels above background traffic noise levels.

PRINCIPLE FIVE: Tolerance for Error

The design minimizes hazards and the adverse consequences of accidental or unintended actions.

Guidelines:

- 5a. Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.
- 5b. Provide warnings of hazards and errors.
- 5c. Provide fail safe features.
- 5d. Discourage unconscious action in tasks that require vigilance.

Examples:

- Motion Detection lighting to provide safety and reassurance.
- Alignment of pedestrian signals and audible indicators in the direction of the center of the crosswalk or in the direction of travel, to minimize confusion.



Motion Detection Light

PRINCIPLE SIX: Low Physical Effort

The design can be used efficiently and comfortably and with a minimum of fatigue.

Guidelines:

- 6a. Allow user to maintain a neutral body position.
- 6b. Use reasonable operating forces.
- 6c. Minimize repetitive actions.
- 6d. Minimize sustained physical effort.

Examples:

- Curved out, C-shape doorless entrances and exits at restrooms. (Example – Sacramento Metropolitan Airport).
- Automatic doors that do not require activation with a door opener control.
- Lever door handles.
- Pedestrian push buttons that require five pounds or less of pressure to operate.



Types of Lever Door Handles

PRINCIPLE SEVEN: Size and Space for Approach and Use

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

Guidelines:

- 6a. Provide a clear line of sight to important elements for any seated or standing user.
- 6b. Make reach to all components comfortable for any seated or standing user.
- 6c. Accommodate variations in hand and grip size.
- 6d. Provide adequate space for the use of assistive devices or personal assistance.

Examples:

- Seating and overhead covers on light rail platforms that allow patrons to wait comfortably and safely before using the accessible entrances of vehicles -- especially in comparison to provisions on the platform/boarding area for non-disabled persons.
- Benches should be of a height and shape that allows people to easily rest and alight from them, including those that have trouble standing up once they have sat down. This view is more of a design consciousness for architects and industrial designers than it is a prescription for having benches located throughout the area. There are many examples of street furniture that may meet general accessibility needs, but are poor in terms of true universal design.

How It Is Implemented

Universal Design can be implemented as part of virtually any planning or design process, or as a special process. It can be implemented by professional organizations (to help educate designers and other decision-makers about Universal Design concepts and standards), facility designers and managers, and by various levels of governments, to establish Universal Design standards for projects. Universal Design can be readily implemented on transportation facilities in new developing areas (greenfields) and larger infill projects but it can be difficult to retrofit existing urban areas to fully incorporate universal design.

Most importantly, Universal Design is a mindset to consider the widest range of potential users that should be pervasive during planning and designing transportation systems.

Travel Impacts and Benefits

Universal Design can increase use of pedestrian facilities and public transit services, reduce need for automobile chauffeuring trips and paratransit services, and make destinations directly accessible by walking and wheelchair.

Benefits include improved transportation options and mobility, particularly for people with mobility and visual impairments, and those who use strollers and handcars. Universal Design standards help reduce pedestrian falls, and create a more convenient and safer pedestrian network for all users.

Universal Design allows people with disabilities to participate fully in society, including improved education and employment opportunities that increase economic productivity, and reduces the need for special services such as paratransit and chauffeured automobile trips. By improving mobility options it tends to increase public health.

Universal Design can benefit all users. It gives people with physical disabilities better mobility and accessibility opportunities, making them less disadvantaged when compared to the non-disabled. However, it often requires public subsidies to fully implement Universal Design concepts.

A Brief Note about Costs

Costs associated with meeting Universal Design requirements include the resource costs and design constraints. Pratt (1999) discusses the incremental costs of special mobility services. If pedestrian and transit budgets are fixed, Universal Design requirements may reduce expenditures on other mobility services.

Universal Design Checklists / Universal Design Measures

Checklists have been developed for universal design, but primarily for the design of buildings, particularly homes and hotels/motels. Listed below is a subset of such lists that could be applied to the design of transportation facilities. These checklists are included merely as examples and not an exhaustive list of Universal Design considerations.

It is important, in reviewing and using any checklist, to understand that Universal Design is as much about a mindset that should be pervasive during planning and designing transportation systems as it is meeting a series of minimum standards.

Moreover, new ideas and technologies continue to become available and can quickly render a specific checklist outdated.

For these reasons checklists are not an effective substitute for careful thought, and should be used as prompts, rather than to ensure successful implementation of Universal Design.

Entrances and Accessible Pathways:

- Accessible routes from vehicle drop-offs and/or parking, with a maximum slope of a 1-foot change in 20 feet up or down to entry door, and handrails if needed.
- No-step entries with weather-sealed doors and thresholds less than ½" high.

Minimum 5' x 5' level maneuvering spaces (turning circles) on both sides of doors.

Interior Circulation and Other Overall Features:

- 32" minimum clear openings on interior and exterior doors; no interior door thresholds; maximum ½" rise at floor surface changes.
- 18" minimum space beside door latches to operate and avoid in-swing.
- Lever handles on all doors to allow opening with elbow, forearm, & wrist.
- Five-pound maximum force required to open doors.

Circulation routes (40" minimum) through rooms, hallways, and archways.

Improving Accessibility to Transit:

- Accessible covered shelters.
- Benches or rest stops along access ways to bus stops to facilitate walking.
- Elevators at stations and wheelchair lifts and ramps.
- Wide doors and gates.
- Training for bus drivers (such as to call out upcoming stops, etc.).

- ☑ Large print schedules.
- ☑ Voice Activated Technology (such as for purchasing transit tickets).
- ☑ Kiosks at transit stations with rider information in different languages.
- ☑ Vehicle tracking systems to provide vehicle arrival information and real-time maps – not just bus schedules – to passengers and managers of public transit, shuttles, and trains.
- ☑ Fare vouchers (since dealing with money/change is difficult for some people with disabilities).
- ☑ Adequate design of nearby street crossings (such as audible pedestrian signals, curb ramps, etc.).

Removal of obstacles/barriers in sidewalks and paths including:

Relocation of utility poles and equipment.

- Restrictions on garbage cans, basketball hoops, etc.

Strategies for Implementation

- Various guides and standards listed below provide specific information on Universal Design. Best Practices include:
- Consider Universal Design objectives at all stages of transportation and land use planning, particularly with regard to roadway, pedestrian, transit, taxi and trail facilities and services.
- Incorporate Universal Design into the design standards for transportation facilities in each jurisdiction.
- Use the most current guidelines and standards when incorporating Universal Design into facility standards and design.
- Use a broad concept of Universal Design covering the needs of all potential users, not just people with a specific disability.
- Construction or modification of sidewalks to include curb ramps, audible signals at intersections, appropriate street or pedestrian signs and furnishings, clear paths of travel, and other accessibility features, improve usability and safety for all travelers.
- Coordination among jurisdictions both within Sacramento County and adjacent counties on the design of facilities that cross borders.
- Provision of adequate funding so that Universal Design can be implemented effectively and does not reduce funding for other transportation services.
- Obtain feedback from users with special needs in designing transportation systems and projects, from the perspective of Universal Design. Feedback on many projects may be needed at multiple steps since some Universal Design concepts should be considered in the early stages of design (e.g. widths and angles of walkways, location of facilities) while other Universal Design concepts are not applicable until latter stages of design (e.g. door handles).

- Ensure that at least some neighborhoods in each community have a high degree of accessibility to public services (shops, recreational facilities, medical services, etc.), and affordable/accessible housing for people with disabilities.

Barriers to Implementing Universal Design

There are both physical and other barriers to achieving a transportation system that fully incorporates the philosophy of Universal Design.

Non-physical barriers include a lack of information and education for transportation professionals and facility designers, and limited resources. Also, any policies that undervalue transportation choice, pedestrian improvements or transportation equity tend to reduce implementation of Universal Design.

Perhaps the greatest challenge is retrofitting existing urban areas to fully incorporate Universal Design principles. These efforts can be prohibitively costly. The fact that the built environment expands every day serves to underscore the need to fully consider these principles in the initial design and construction of public facilities.

Examples of physical barriers, and Best Practices to eliminate them, are:

- Installing ramps;

Making curb cuts in sidewalks and entrances;

- Repositioning shelves;
- Rearranging tables, chairs, vending machines, display racks, and other furniture;
- Repositioning telephones;
- Adding raised markings on elevator control buttons;
- Installing flashing alarm lights;
- Widening doors;
- Installing offset hinges to widen doorways;
- Eliminating a turnstile or providing an alternative accessible path;
- Installing accessible door hardware;
- Installing grab bars in toilet stalls;
- Rearranging toilet partitions to increase maneuvering space;
- Insulating lavatory pipes under sinks to prevent burns;
- Installing a raised toilet seat;
- Installing a full-length bathroom mirror;
- Repositioning the paper towel dispenser in a bathroom;
- Creating designated accessible parking spaces;
- Installing an accessible paper cup dispenser at an existing inaccessible water fountain;
- Removing high pile, low density carpeting; and,
- Installing vehicle hand controls.

Maintenance and Operations

All facilities require maintenance, upkeep, and repair to ensure usability. This is particularly true for facilities that are intended to serve a wide variety of users that have a range of needs. Users requiring the added features of a Universally-Designed facility tend to be dependent on its workability, and are less able to adapt to situations where these special design features are not functioning or not available.

Maintenance includes not only the upkeep, repair, and periodic rehabilitation of facilities, but on-going monitoring to ensure that walkways and doorways are not inadvertently impeded by garbage cans, basketball hoops, plants, or other objects.

Universal Design for the Elderly

Although Universal Design purposely looks at the population holistically and is intended to provide facilities that are accessible and usable for all persons, the rapid increases in the proportion of elderly members of our society warrants a brief discussion of issues specific to this demographic.

The following strategies are specific examples of how the seven principles of Universal Design can be applied to serve elderly users of transit. These Best Practices are excerpts from *Report 82: Improving Public Transit Options for Older Persons, Volume 1: Handbook* published by the Transit Cooperative Research Program.

- Develop an understanding of the diversity of needs among older persons and recognize the fact that older persons need different modes of transportation to meet different needs.
- Develop multiple transportation solutions to fit the varied needs of different older persons.
- Find ways to help seniors board vehicles when necessary.
- Develop partnership agreements and contracts with human service agencies to coordinate the provision of specialized services for clients who need additional assistance.
- Purchase and operate low-floor vehicles. Nine out of 10 seniors find low-floor buses easier to board.
- Establish driver training programs to improve interactions with seniors. Train drivers to recognize when an elderly passenger needs assistance and how to assist elderly passengers with boarding and alighting from the bus.
- Provide maps and schedules that are easy to understand and read. Make sure all text on the maps and schedules is printed in a large, bold font. Use color coded maps with contrasting primary colors indicating the different routes. Test the intelligibility of the maps and schedules with groups of seniors and ask for suggestions on how to make them clearer.
- Provide reserved seating for older persons at the front of the vehicle. Make sure that this seating has appropriate padding and support and that there are handholds within easy reach (for pulling themselves up off the seats).

SOME REFERENCES AND RESOURCES ON TRANSPORTATION-RELATED UNIVERSAL DESIGN

The Access Board (800-872-2253; www.access-board.gov) is a U.S. federal agency that develops guidelines and standards for accessible design. Publications include *Accessible Rights of Way: A Design Manual*, *Designing Sidewalks and Trails for Access* and *Checklist for Accessible Sidewalks and Street Crossings*.

Adaptive Environments Center (www.adaptenv.org) provides resources for universal design.

American Council of the Blind (Washington, DC; www.acb.org/pedestrian) supports programs to help people with visual impairments, including pedestrian improvements.

Beneficial Designs, Inc. et al., *Designing Sidewalks and Trails for Access; Part 1, Review of Existing Guidelines and Practices*, Publication No. FHWA-HEP-99-006, 1999; *Designing Sidewalks and Trails for Access; Part 2, Best Practice Design Guide*, Publication No. FHWA-EP-01-027, Federal Highway Administration, USDOT (www.fhwa.dot.gov/environment/bikeped), Sept. 2001.

Center for Universal Design at NC State University (www.design.ncsu.edu/cud) is a national research, information, and technical assistance center that evaluates, develops, and promotes universal design in housing, public and commercial facilities, and related products.

Federal Highway Administration's Bicycle and Pedestrian Program Office is responsible for promoting bicycle and pedestrian transportation accessibility, use, and safety (www.fhwa.dot.gov/environment/bikeped)

Federal Highway Administration, *Designing Sidewalks and Trails for Access; Part 2, Best Practice Design Guide*, Federal Highway Administration, USDOT (www.fhwa.dot.gov/environment/bikeped), Publication No. FHWA-EP-01-027, Sept. 2001.

Federal Highway Administration, *Guidelines and Recommendations: To Accommodate Older Drivers and Pedestrians*, Federal Highway Administration, USDOT (<http://www.tfhr.gov/humanfac/01105/cover.htm>), Publication No. FHWA- RD-01-051, May, 2001.

Federal Highway Administration, *Highway Design Handbook: For Older Drivers and Pedestrians*, Federal Highway Administration, USDOT (<http://www.tfhr.gov/humanfac/01103/coverfront.htm>), Publication No. FHWA- RD-01-103, May, 2001.

Institute on Independent Living (www.independentliving.org) serves self-help organizations of disabled people. Full-text online library including access and transport issues.

Pedestrian and Bicycle Information Center, *Image Library* (www.pedbikeimages.org), by the Pedestrian and Bicycle Information Center (www.walkinginfo.org) provides an extensive collection of photographs related to walking and cycling.

Richard H. Pratt, "Demand Response/ADA," *Traveler Response to Transportation System Changes, Interim Handbook*, TCRP Web Document 12 (www4.nationalacademies.org/trb/crp.nsf/all+projects/tcrp+b-12), DOT-FH-11-9579, 1999.

Recommended Street Design Guidelines for People Who Are Blind or Visually Impaired. American Council of the Blind (www.acb.org), (202) 467-5081.

Tom Rickert, *Mobility for All; Accessible Transportation Around the World* (1998) and *Making Access Happen: Promoting and Planning Transport For All* (2002) Access Exchange International (www.globalride-sf.org) and the Swedish Institute On Independent Living (www.independentliving.org), 1998.

Transit Cooperative Research Program, *Report 82: Improving Public Transit Options for Older Persons, Volume 1: Handbook*, Transportation Research Board (www.trb.org), 2002.

Transit Cooperative Research Program, *Report 82: Improving Public Transit Options for Older Persons, Volume:2, Final Report*, Transportation Research Board (www.trb.org), 2002.

Universal Design Newsletter (www.UniversalDesign.com) is a quarterly publication that provides up-to-date information on accessibility issues.

United States Department of Transportation, *Accessibility Website* (www.dot.gov/accessibility) by the U.S. Department of Transportation.

U.S. Department of Justice ADA Homepage (www.usdoj.gov/crt/ada/adahom1.htm) provides information on implementing the Americans with Disabilities Act.

www.NextBus.com

Attachment A

(Excerpt from) ADA Accessibility Guidelines (ADAAG) for Buildings and Facilities (28 CFR Part 36, Appendix A)

Section 10: Transportation Facilities

10.1 General. Every station, bus stop, bus stop pad, terminal, building or other transportation facility, shall comply with the applicable provisions of section 4, the special application sections, and the applicable provisions of this section.

10.2 Bus Stops and Terminals.

10.2.1 New Construction.

(1) Where new bus stop pads are constructed at bus stops, bays or other areas where a lift or ramp is to be deployed, they shall have a firm, stable surface; a minimum clear length of 96 inches (measured from the curb or vehicle roadway edge) and a minimum clear width of 60 inches (measured parallel to the vehicle roadway) to the maximum extent allowed by legal or site constraints; and shall be connected to streets, sidewalks or pedestrian paths by an accessible route complying with [4.3](#) and [4.4](#). The slope of the pad parallel to the roadway shall, to the extent practicable, be the same as the roadway. For water drainage, a maximum slope of 1:50 (2%) perpendicular to the roadway is allowed.

(2) Where provided, new or replaced bus shelters shall be installed or positioned so as to permit a wheelchair or mobility aid user to enter from the public way and to reach a location, having a minimum clear floor area of 30 inches by 48 inches, entirely within the perimeter of the shelter. Such shelters shall be connected by an accessible route to the boarding area provided under paragraph (1) of this section.

(3) Where provided, all new bus route identification signs shall comply with [4.30.5](#). In addition, to the maximum extent practicable, all new bus route identification signs shall comply with [4.30.2](#) and [4.30.3](#). Signs that are sized to the maximum dimensions permitted under legitimate local, state or federal regulations or ordinances shall be considered in compliance with [4.30.2](#) and [4.30.3](#) for purposes of this section.

EXCEPTION: Bus schedules, timetables, or maps that are posted at the bus stop or bus bay are not required to comply with this provision.

10.2.2 Bus Stop Siting and Alterations.

(1) Bus stop sites shall be chosen such that, to the maximum extent practicable, the areas where lifts or ramps are to be deployed comply with section [10.2.1\(1\)](#) and [\(2\)](#).

(2) When new bus route identification signs are installed or old signs are replaced, they shall comply with the requirements of [10.2.1\(3\)](#).

10.3 Fixed Facilities and Stations.

10.3.1 New Construction. New stations in rapid rail, light rail, commuter rail, intercity bus, intercity rail, high speed rail, and other fixed guideway systems (e.g., automated guideway transit, monorails, etc.) shall comply with the following provisions, as applicable:

(1) Elements such as ramps, elevators or other circulation devices, fare vending or other ticketing areas, and fare collection areas shall be placed to minimize the distance which wheelchair users and other persons who cannot negotiate steps may have to travel compared to the general public. The circulation path, including an accessible entrance and an accessible route, for persons with disabilities shall, to the maximum extent practicable, coincide with the circulation path for the general public. Where the circulation path is different, signage complying with [4.30.1](#), [4.30.2](#), [4.30.3](#), [4.30.5](#), and [4.30.7\(1\)](#) shall be provided to indicate direction to and identify the accessible entrance and accessible route.

(2) In lieu of compliance with [4.1.3\(8\)](#), at least one entrance to each station shall comply with [4.14](#), Entrances. If different entrances to a station serve different transportation fixed routes or groups of fixed routes, at least one entrance serving each group or route shall comply with [4.14](#), Entrances. All accessible entrances shall, to the maximum extent practicable, coincide with those used by the majority of the general public.

(3) Direct connections to commercial, retail, or residential facilities shall have an accessible route complying with [4.3](#) from the point of connection to boarding platforms and all transportation system elements used by the public. Any elements provided to facilitate future direct connections shall be on an accessible route connecting boarding platforms and all transportation system elements used by the public.

(4) Where signs are provided at entrances to stations identifying the station or the entrance, or both, at least one sign at each entrance shall comply with [4.30.4](#) and [4.30.6](#). Such signs shall be placed in uniform locations at entrances within the transit system to the maximum extent practicable.

EXCEPTION: Where the station has no defined entrance, but signage is provided, then the accessible signage shall be placed in a central location.

(5) Stations covered by this section shall have identification signs complying with [4.30.1](#), [4.30.2](#), [4.30.3](#), and [4.30.5](#). Signs shall be placed at frequent intervals and shall be clearly visible from within the vehicle on both sides when not obstructed by another train. When station identification signs are placed close to vehicle windows (i.e., on the side opposite from boarding) each shall have the top of the highest letter or symbol below the top of the vehicle window and the bottom of the lowest letter or symbol above the horizontal mid-line of the vehicle window.

(6) Lists of stations, routes, or destinations served by the station and located on boarding areas, platforms, or mezzanines shall comply with [4.30.1](#), [4.30.2](#), [4.30.3](#), and [4.30.5](#). A minimum of one sign identifying the specific station and complying with [4.30.4](#) and [4.30.6](#) shall be provided on each platform or boarding area. All signs referenced in this paragraph shall, to the maximum extent practicable, be placed in uniform locations within the transit system.

(7)* Automatic fare vending, collection and adjustment (e.g., add-fare) systems shall comply with [4.34.2](#), [4.34.3](#), [4.34.4](#), and [4.34.5](#). At each accessible entrance such devices shall be located on an accessible route. If self-service fare collection devices are provided for the use of the general public, at least one accessible device for entering, and at least one for exiting, unless one device serves both functions, shall be provided at each accessible point of entry or exit. Accessible fare collection devices shall have a minimum clear opening width of 32 inches; shall permit passage of a wheelchair; and, where provided, coin or card slots and controls necessary for operation shall comply with [4.27](#). Gates which must be pushed open by wheelchair or mobility aid users shall have a smooth continuous surface extending from 2 inches above the floor to 27 inches above the floor and shall comply with [4.13](#). Where the circulation path does not coincide with that used by the general public, accessible fare collection systems shall be located at or adjacent to the accessible point of entry or exit. [Appendix Note](#)

(8) Platform edges bordering a drop-off and not protected by platform screens or guard rails shall have a detectable warning. Such detectable warnings shall comply with [4.29.2](#) and shall be 24 inches wide running the full length of the platform drop-off.

(9) In stations covered by this section, rail-to-platform height in new stations shall be coordinated with the floor height of new vehicles so that the vertical difference, measured when the vehicle is at rest, is within plus or minus 5/8 inch under normal passenger load conditions. For rapid rail, light rail, commuter rail, high speed rail, and intercity rail systems in new stations, the horizontal gap, measured when the new vehicle is at rest, shall be no greater than 3 inches. For slow moving automated guideway "people mover" transit systems, the horizontal gap in new stations shall be no greater than 1 inch.

EXCEPTION 1: Existing vehicles operating in new stations may have a vertical difference with respect to the new platform within plus or minus 1-1/2 inches.

EXCEPTION 2: In light rail, commuter rail and intercity rail systems where it is not operationally or structurally feasible to meet the horizontal gap or vertical difference requirements, mini-high platforms, car-borne or platform-mounted lifts, ramps or bridge plates, or similar manually deployed devices, meeting the applicable requirements of 36 [C.F.R. part 1192](#), or 49 C.F.R. part 38 shall suffice.

(10) Stations shall not be designed or constructed so as to require persons with disabilities to board or alight from a vehicle at a location other than one used by the general public.

(11) Illumination levels in the areas where signage is located shall be uniform and shall minimize glare on signs. Lighting along circulation routes shall be of a type and configuration to provide uniform illumination.

(12) Text Telephones: The following shall be provided in accordance with [4.31.9](#):

(a) If an interior public pay telephone is provided in a transit facility (as defined by the Department of Transportation) at least one interior public text telephone shall be provided in the station.

(b) Where four or more public pay telephones serve a particular entrance to a rail station and at least one is in an interior location, at least one interior public text telephone shall be provided to serve that entrance. Compliance with this section constitutes compliance with section [4.1.3\(17\)\(c\)](#);

(13) Where it is necessary to cross tracks to reach boarding platforms, the route surface shall be level and flush with the rail top at the outer edge and between the rails, except for a maximum 2-1/2 inch gap on the inner edge of each rail to permit passage of wheel flanges. Such crossings shall comply with [4.29.5](#). Where gap reduction is not practicable, an above-grade or below-grade accessible route shall be provided.

(14) Where public address systems are provided to convey information to the public in terminals, stations, or other fixed facilities, a means of conveying the same or equivalent information to persons with hearing loss or who are deaf shall be provided.

(15) Where clocks are provided for use by the general public, the clock face shall be uncluttered so that its elements are clearly visible. Hands, numerals, and/or digits shall contrast with the background either light-on-dark or dark-on-light. Where clocks are mounted overhead, numerals and/or digits shall comply with [4.30.3](#). Clocks shall be placed in uniform locations throughout the facility and system to the maximum extent practicable.

(16) Where provided in below grade stations, escalators shall have a minimum clear width of 32 inches. At the top and bottom of each escalator run, at least two contiguous treads shall be level beyond the comb plate before the risers begin to form. All escalator treads shall be marked by a strip of clearly contrasting color, 2 inches in width, placed parallel to and on the nose of each step. The strip shall be of a material that is at least as slip resistant as the remainder of the tread. The edge of the tread shall be apparent from both ascending and descending directions.

(17) Where provided, elevators shall be glazed or have transparent panels to allow an unobstructed view both in to and out of the car. Elevators shall comply with [4.10](#).

EXCEPTION: Elevator cars with a clear floor area in which a 60 inch diameter circle can be inscribed may be substituted for the minimum car dimensions of 4.10, [Fig. 22](#).

(18) Where provided, ticketing areas shall permit persons with disabilities to obtain a ticket and check baggage and shall comply with [7.2](#).

(19) Where provided, baggage check-in and retrieval systems shall be on an accessible route complying with [4.3](#), and shall have space immediately adjacent complying with [4.2](#). If unattended security barriers are provided, at least one gate shall comply with [4.13](#). Gates which must be pushed open by wheelchair or mobility aid users shall have a smooth continuous surface extending from 2 inches above the floor to 27 inches above the floor.

10.3.2 Existing Facilities: Key Stations.

(1) Rapid, light and commuter rail key stations, as defined under criteria established by the Department of Transportation in subpart C of 49 C.F.R. part 37 and existing intercity rail stations shall provide at least one accessible route from an accessible entrance to those areas necessary for use of the transportation system.

(2) The accessible route required by [10.3.2\(1\)](#) shall include the features specified in 10.3.1(1), (4)-(9), (11)-(15), and (17)-(19).

(3) Where technical infeasibility in existing stations requires the accessible route to lead from the public way to a paid area of the transit system, an accessible fare collection system, complying with [10.3.1\(7\)](#), shall be provided along such accessible route.

(4) In light rail, rapid rail and commuter rail key stations, the platform or a portion thereof and the vehicle floor shall be coordinated so that the vertical difference, measured when the vehicle is at rest, is within plus or minus 1-1/2 inches under all normal passenger load conditions, and the horizontal gap, measured when the vehicle is at rest, is no greater than 3 inches for at least one door of each vehicle or car required to be accessible by [49 C.F.R. part 37](#).

EXCEPTION 1: Existing vehicles retrofitted to meet the requirements of [49 C.F.R. 37.93](#) (one-car-per-train rule) shall be coordinated with the platform such that, for at least one door, the vertical difference between the vehicle floor and the platform, measured when the vehicle is at rest with 50% normal passenger capacity, is within plus or minus 2 inches and the horizontal gap is no greater than 4 inches.

EXCEPTION 2: Where it is not structurally or operationally feasible to meet the horizontal gap or vertical difference requirements, mini-high platforms, car-borne or platform mounted lifts, ramps or bridge plates, or similar manually deployed devices, meeting the applicable requirements of [36 C.F.R. part 1192](#), or 49 C.F.R. part 38, shall suffice.

(5) New direct connections to commercial, retail, or residential facilities shall, to the maximum extent feasible, have an accessible route complying with [4.3](#) from the point of connection to boarding

platforms and all transportation system elements used by the public. Any elements provided to facilitate future direct connections shall be on an accessible route connecting boarding platforms and all transportation system elements used by the public.

10.3.3 Existing Facilities: Alterations.

(1) For the purpose of complying with [4.1.6\(2\)](#) (Alterations to an Area Containing a Primary Function), an area of primary function shall be as defined by applicable provisions of [49 C.F.R. 37.43\(c\)](#); (Department of Transportation's ADA Rule) or [28 C.F.R. 36.403](#) (Department of Justice's ADA Rule).

10.4. Airports.

10.4.1 New Construction.

(1) Elements such as ramps, elevators or other vertical circulation devices, ticketing areas, security checkpoints, or passenger waiting areas shall be placed to minimize the distance which wheelchair users and other persons who cannot negotiate steps may have to travel compared to the general public.

(2) The circulation path, including an accessible entrance and an accessible route, for persons with disabilities shall, to the maximum extent practicable, coincide with the circulation path for the general public. Where the circulation path is different, directional signage complying with [4.30.1](#), [4.30.2](#), [4.30.3](#) and [4.30.5](#) shall be provided which indicates the location of the nearest accessible entrance and its accessible route.

(3) Ticketing areas shall permit persons with disabilities to obtain a ticket and check baggage and shall comply with [7.2](#).

(4) Where public pay telephones are provided, and at least one is at an interior location, a public text telephone (TTY) shall be provided in compliance with [4.31.9](#). Additionally, if four or more public pay telephones are located in any of the following locations, at least one public text telephone (TTY) shall also be provided in that location:

- (a) a main terminal outside the security areas;
- (b) a concourse within the security areas; or
- (c) a baggage claim area in a terminal.

Compliance with this section constitutes compliance with section [4.1.3\(17\)\(c\)](#);

(5) Baggage check-in and retrieval systems shall be on an accessible route complying with [4.3](#), and shall have space immediately adjacent complying with [4.2.4](#). If unattended security barriers are provided, at least one gate shall comply with [4.13](#). Gates which must be pushed open by wheelchair or mobility aid users shall have a smooth continuous surface extending from 2 inches above the floor to 27 inches above the floor.

(6) Terminal information systems which broadcast information to the general public through a public address system shall provide a means to provide the same or equivalent information to persons with a hearing loss or who are deaf. Such methods may include, but are not limited to, visual paging systems using video monitors and computer technology. For persons with certain types of hearing loss such methods may include, but are not limited to, an assistive listening system complying with [4.33.7](#).

(7) Where clocks are provided for use by the general public the clock face shall be uncluttered so that its elements are clearly visible. Hands, numerals, and/or digits shall contrast with their background either light-on-dark or dark-on-light. Where clocks are mounted overhead, numerals and/or digits shall comply with [4.30.3](#). Clocks shall be placed in uniform locations throughout the facility to the maximum extent practicable.

(8)* Security Systems. In public facilities that are airports, at least one accessible route complying with [4.3](#) shall be provided through fixed security barriers at each single barrier or group of security barriers. A group is two or more security barriers immediately adjacent to each other at a single location. Where security barriers incorporate equipment such as metal detectors, fluoroscopes, or other similar devices which cannot be made accessible, an accessible route shall be provided adjacent to such security screening devices to facilitate an equivalent circulation path. The circulation path shall permit persons with disabilities passing through security barriers to maintain visual contact with their personal items to the same extent provided other members of the general public. [Appendix Note](#)

EXCEPTION: Doors, doorways, and gates designed to be operated only by security personnel shall be exempt from [4.13.9](#), [4.13.11](#), and [4.13.12](#).

Attachment B
ADA Accessibility Guidelines (ADAAG) for Public Accommodations

Attachment C
California State Building Code
Title 24, Part 2, of the California Code of Regulation

(Incorporated by Reference)

Attachment D

Draft Guidelines for Accessible Public Rights-of-Way

United States Access Board, Public Rights-of-Way Access Advisory Committee
June 17, 2002

[Introduction](#)

[Background](#)

[Discussion of Provisions](#)

[Text of the Draft Guidelines](#)

The Americans with Disabilities Act (ADA) recognizes and protects the civil rights of people with disabilities and is modeled after earlier landmark laws prohibiting discrimination on the basis of race and gender. To ensure that buildings and facilities are accessible to and usable by people with disabilities, the ADA establishes accessibility requirements for State and local government facilities, places of public accommodation, and commercial facilities. Under the ADA, the Access Board has developed and continues to maintain design guidelines for accessible buildings and facilities known as the ADA Accessibility Guidelines (ADAAG). ADAAG covers a wide variety of facilities and establishes minimum requirements for new construction and alterations.

The Board maintains a similar responsibility for accessibility guidelines under the Architectural Barriers Act (ABA). The ABA requires access to certain facilities designed, built, altered, or leased with Federal funds. Like ADAAG, the Board's ABA accessibility guidelines apply to new construction and alterations.

The Board plans to undertake rulemaking to supplement its ADA and ABA accessibility guidelines, which primarily cover facilities on sites, by adding new provisions specific to public rights-of-way. The Board's aim is to ensure that access for persons with disabilities is provided wherever a pedestrian way is newly built or altered, and that the same degree of convenience, connection, and safety afforded the public generally is available to pedestrians with disabilities. The guidelines would not require alterations to existing public rights-of-way, but would apply where a pedestrian route or facility is altered as part of a planned project to improve existing public rights-of-way.

BACKGROUND

The Need for Guidelines on Public Rights-of-Way

Local jurisdictions, and other entities covered by the ADA or ABA, must ensure that the facilities they build or alter are accessible to people with disabilities. The Board's ADA and ABA accessibility guidelines specify the minimum level of accessibility in new construction and alteration projects and serve as the basis for enforceable standards maintained by other agencies. Currently, the Board's guidelines, like the industry standards from which they derive, focus mainly on facilities on sites. While they address certain features common to public sidewalks, such as curb ramps, accessible routes, ground and floor surfaces, and bus stops and shelters, further guidance is necessary to address conditions unique to public rights-of-way. Various constraints posed by space limitations at sidewalks, roadway design practices, slope, and terrain raise valid questions on how and to what extent access can be achieved. Access for blind pedestrians at street crossings and wheelchair access to on-street parking are typical of the issues for which additional guidance is needed. In

addition, new trends in roadway design, such as the growing use of traffic roundabouts, pose additional challenges to access, while various technological innovations, particularly those pertaining to pedestrian signaling devices, offer new solutions.

The Board previously proposed guidelines for public rights-of-way under the ADA which were published for public comment in 1992 and 1994. Based on the comments received, the Board determined that it should further coordinate with the transportation industry and State and local governments before continuing its rulemaking. Consequently, the Board undertook an outreach and training program on accessible public rights-of-way. Under this program, the Board developed a series of videos, an accessibility checklist, and a design guide on accessible public rights-of-way. In addition, the Board sponsored research on tactile warnings at street crossings, accessible pedestrian signals, and traffic roundabouts. The Board has made this information widely available to the public. The interest in these materials has underscored the need for criteria for public rights-of-way that are definitive and enforceable so that local jurisdictions and others are clear on their obligations when constructing or altering streets and sidewalks.

Public Rights-of-Way Access Advisory Committee

In resuming its rulemaking effort, the Board chartered an advisory committee in 1999 to develop recommendations on guidelines for accessible public rights-of-way. Use of advisory committees has become a standard practice in the Board's process for developing and updating design requirements. Through such committees, interested groups, including those representing designers, industry, and people with disabilities, play a substantive role in recommending to the Board the content of the guidelines to be developed. These committees provide significant sources of expertise while enhancing the level of consensus among stakeholders in advance of proposing a rule for public comment.

The Public Rights-of-Way Access Advisory Committee was composed of 33 [members](#) representing disability organizations, public works departments, transportation and traffic engineering groups, design professionals and civil engineers, government agencies, and standards-setting bodies. The committee coordinated its efforts with leading trade organizations represented on the committee, such as the American Association of State Highway and Transportation Officials, and federal agencies, such as the Federal Highway Administration, to ensure that its recommendations were consistent with generally accepted practice among design professionals. The committee organized several subcommittees focused on key issue areas. The subcommittee structure enabled members to continue work on a tight time schedule between meetings of the full committee and allowed for greater public participation in the process.

The advisory committee met regularly over a year's time, usually in Washington, D.C. but also in Austin and San Francisco. Its work culminated in the issuance of a report, "[Building a True Community](#)," which was submitted to the Board in January 2001. The committee's report provides criteria for the construction or alteration of public rights-of-way that reflects the broad spectrum of expertise represented by committee members. The report follows a "toolbox" approach to the establishment of guidelines designed to facilitate implementation and to promote an understanding of the needs of all users of public rights-of-ways. The report comprehensively covers the various components of public streets and sidewalks and provides criteria for sidewalks, street fixtures and furnishings, street crossings, vehicular ways, parking, and other components of public rights-of-way. In addition, the report includes advisory notes, figures, and discussion of issues that merit further study or special attention in the Board's rulemaking.

Release of Draft Guidelines

An ad hoc group of Board members proceeded to review the committee's report in depth and to craft a set of draft guidelines based on the committee's recommendations. The draft guidelines depart from the advisory committee's report in several areas, which are detailed in the following discussion. Because of these differences, the Board is making an advance draft of the guidelines available for comment by the public, including industry groups, State and local governments, and advisory

committee members. The Board also seeks information and feedback, including usability and cost data. Instructions on providing comment in writing or at an information meeting to be held in Portland, Oregon, in October, are provided in a [notice](#) the Board published on the release of the draft guidelines.

Rulemaking Process

The Board is making these draft guidelines available for public review and comment to seek information and input for its use in developing a proposed rule. The proposed rule will provide another opportunity for public comment on the guidelines. The Board will then proceed to finalize the guidelines based on public comments received in response to the proposed rule. The Board's guidelines serve as the basis for enforceable standards maintained by other agencies under the ADA and the ABA. The Department of Justice and the Department of Transportation maintain standards based on the Board's guidelines that apply to facilities covered by the ADA. Design standards for federally funded facilities covered by the ABA are maintained by the Department of Defense, the Department of Housing and Urban Development, the General Services Administration, and the U.S. Postal Service. These enforceable standards must be consistent with the Board's guidelines.

Relationship to ADA and ABA Accessibility Guidelines

Currently, the Board is completing an update of ADAAG, the first comprehensive revision of the document since its publication in 1991. The revised ADAAG features a new format and numbering system and a host of updated scoping and technical provisions. The Board is updating its ABA Accessibility Guidelines along similar lines so that both of the documents are more consistent. The Board released a draft of the final ADA and ABA guidelines last April.

The draft guidelines for public rights-of-way are being developed as a supplement to the ADA and ABA guidelines and not as a stand-alone document. As such, they will ultimately comprise a new chapter on public rights-of-way. The Board has revised recommendations from the advisory committee in preparing these draft guidelines in order to facilitate their incorporation into the ADA and ABA guidelines. The draft guidelines presented here support the new format and structure of those documents. In addition, various provisions of this draft refer to provisions in the ADA and ABA guidelines to minimize redundancy. For simplicity, the following discussion refers to the draft final ADA and ABA guidelines released in April as "ADAAG," an acronym that has wide currency.

DRAFT GUIDELINES FOR PUBLIC RIGHTS-OF-WAY: DISCUSSION OF PROVISIONS

The proposed draft is formatted as a separate chapter, 11 Public Rights-of-Way, to be integrated into ADAAG. This chapter has a general section (1101), a scoping section, which indicates what is covered (1102), and technical sections addressing various elements of public rights-of-ways (1103 to 1111). Figures and advisory notes provided in the advisory committee's report are not included in this draft, but will be included in the proposed rule.

Application and Administration ([1101](#))

Referenced Standards (1101.2)

The draft guidelines reference standards issued by the U.S. Federal Highway Administration known as the [Manual on Uniform Traffic Control Devices](#) (MUTCD). The MUTCD, which is used by road managers nationwide, covers the application and installation of traffic signals, signs and pavement markings that regulate, warn, and guide vehicle and pedestrian users of the public right-of-way. Currently, the Federal Highway Administration is in the process of updating the MUTCD.

Defined Terms (1101.3)

The draft guidelines define various terms common to construction in the public right-of-way that are

used in the provisions that follow. Most of these definitions derive from key industry sources such as the MUTCD or industry practice. Consistent with the advisory committee's report, the draft guidelines minimize deviations from industry usage and understanding of defined terms to ensure consistency with industry standards and best practices.

General Scoping: New Construction, Alterations, and Additions (1102)

Scoping requirements in section 1102 indicate where the draft guidelines apply and which elements and spaces must comply with the technical provisions. The draft guidelines cover new construction (1102.1) and additions and alterations (1102.2). Scoping provisions address various elements and spaces, including access routes, curb ramps, signs, crossings, and street furniture (1102.3 through 1102.16).

New Construction (1102.1)

All areas of newly designed and newly constructed facilities in public rights-of-way would be subject to the guidelines. This scoping applies to work such as the extension of roadways and sidewalks into undeveloped areas, new subdivisions, and similar types of projects. Full compliance is generally easier in these types of projects because the scope of work is usually extensive enough to allow necessary grading and acquisition of sufficient right-of-way. The draft guidelines would not require the provision of sidewalks, street crossings, street furniture, parking, or other pedestrian elements where none are intended. The guidelines address such elements only where they are provided as part of construction or improvement projects.

Additions and Alterations (1102.2)

Much of the work that occurs in public rights-of-way involves alterations to existing facilities or the addition of facilities within the constraints posed by existing developed rights-of-way. The draft guidelines, consistent with ADAAG, would apply technical requirements according to the scope of work for a planned alteration or addition. This application is based on the premise that the more extensive the work is, the greater are the opportunities to achieve access. In effect, compliance is "prorated" based on the extent of the work planned. Industry and local practices, among other factors, typically govern the scope of a project. For example, industry practice may broaden the scope of work for a planned improvement project to ensure a smooth transition to adjacent areas, improve safety, or upgrade existing elements, such as drainage structures, within or near the area to be improved.

The scope of a project would determine the extent to which the guidelines apply. A project involving substantial reconstruction of a roadway may be subject to requirements in the draft guidelines for sidewalks, curb ramps, and street crossings, among others. For less extensive projects, limited improvements to accessibility would generally be expected. For example, if an existing portion of sidewalk along a block face were rebuilt or replaced, at a minimum the new portion of sidewalk would be subject to specifications for sidewalks, including those for curb ramps and surfacing, among other things. However, compliance with these guidelines would not extend to untouched sections of sidewalk outside the planned alterations.

Compliance in alterations is required except where it is "technically infeasible." As defined in ADAAG, this term covers existing structural or space constraints that prohibit compliance, such as removing or altering a load-bearing member of the structural frame. In the case of public rights-of-ways, this may pertain to other types of constraints, such as those posed by existing construction, right-of-way width, and underground structures. What is feasible in a given alteration will depend on a wide range of factors particular to the project. Determinations of technical infeasibility must be made on a case-by-case basis in relation to each project's unique conditions. For example, it might not be technically feasible to widen a narrow sidewalk undergoing an alteration due to existing buildings that front the sidewalk. On the other hand, such work might be technically feasible at other locations where acquiring additional right-of-way is practicable. Where technical infeasibility is encountered, compliance is required to the maximum extent possible.

The Board believes that guidance material on how to apply the guidelines in alterations projects would provide a valuable compliance tool. A subcommittee of advisory committee members is currently developing a guide on achieving accessibility in alterations to public rights-of-way. The subcommittee has conducted a series of meetings in different cities to gather information for case studies that will be included in the guide being developed. Over the past year, the subcommittee has met in Atlanta, Las Vegas, Portland (Oregon), and San Antonio. The guide is expected to be published early next year.

Existing Public Rights-of-Ways

In previous rulemakings in this and other areas, the Board has received comments concerning the impact of retrofitting existing facilities to meet new guidelines. However, the Board's authority under the ADA and ABA extends only to the establishment of accessibility guidelines for new construction and planned alterations. Its guidelines do not address existing facilities outside the context of a planned alteration (except for certain types of transit stations). Thus, the Board seeks comments on these draft guidelines only as they pertain to new construction, planned alterations, and additions. Under the ADA and other laws, requirements issued by the [Department of Justice](#) and the [Department of Transportation](#) address access to existing facilities.

Accessible Elements and Spaces: Scoping and Technical Requirements (1102.3 - 1111)

Alternate Circulation Path ([1102.3](#), [1111](#))

The draft guidelines address construction within public rights-of-way and call for alternate circulation paths where pedestrian access routes are temporarily blocked by construction, alteration, maintenance, or other temporary conditions. Technical specifications address the minimum clear width (36 inches), location (on the same side of the street parallel to the disrupted pedestrian access route), hazardous protruding objects, and criteria for signs and barriers. Construction at public rights-of-way can be particularly hazardous to people with visual or mobility impairments if the site is not adequately protected with a barrier or barricade. In particular, tape or a series of widely spaced traffic cones placed around a construction site may not be detected by some pedestrians. Such markings do not provide sufficient cues to enable a blind pedestrian to anticipate a hazard, nor do they provide an edge along which to travel around an obstruction. Barriers would be required to be detectable, with edge protection and railings. The requirements for barriers are based on proposed MUTCD standards (Chapter 6).

Pedestrian Access Route ([1102.4](#), [1103](#))

"Pedestrian Access Route" is a key term that refers to the portion of the public right-of-way that serves as an accessible route. Since the technical requirements for this route are unique to public rights-of-way, the advisory committee wanted to use a term distinct from "accessible route," which is used by ADAAG in referring to routes on sites. In many cases, the pedestrian access route would not have to encompass the full width of sidewalks and other pedestrian ways. Thus, the term is used to refer to the compliant portion which, in effect, provides a continuous accessible means of passage.

In new construction, the pedestrian access route would comprise a continuous, unobstructed path connecting to all elements and spaces required to be accessible. In an alteration or addition, the requirements for pedestrian access routes would apply only to new or altered portions of public rights-of-way. As a result, there may be breaks in continuity where the pedestrian access route is interrupted by portions of the existing pedestrian network which have not yet been altered. In such cases, the new or altered portions would be required to blend smoothly with the existing pedestrian network.

Specifications for pedestrian access routes address clear width, cross slope, grade, surface, changes in level, and other characteristics. The pedestrian access route may comprise sidewalks and walking surfaces, curb ramps and ramps, blended transitions, crosswalks, elevators, and other elements recognized by the guidelines.

Minimum Clear Width (1103.3)

The draft guidelines specify a minimum clear width of 48 inches for the pedestrian access route, excluding the width of curbs. The advisory committee had recommended a minimum width of 60 inches with various exceptions that would have permitted a reduction to 48 inches in order to accommodate certain fixtures and elements. A 60 inch width would provide wheelchair turning space and passing space. The Board has specified 48 inches minimum without exceptions, to be consistent with industry practice. The 48 inch width remains greater than the width ADAAG generally specifies for accessible routes on sites (36 inches).

Grade (1103.5)

A key issue of routes in public rights-of-ways is the grade or slope of the terrain. ADAAG requires accessible routes on sites that slope more than 1:20 to be treated as ramps. Ramps must have handrails on both sides, edge protection, and intermediate level landings at least every 30 feet, among other requirements. It would not be practical to apply ramp requirements generally to sidewalks in sloped areas. Consistent with an advisory committee recommendation, the grade of the pedestrian access route within a sidewalk is permitted to be as steep as the grade of the adjoining roadway. The grade can be steeper than the roadway grade where the route slopes less than 1:20 or is treated as a complying ramp.

Surfaces (1103.6)

The advisory committee recommended that the pedestrian access route also contain a narrower route within its boundaries that was smooth and free of irregular surface features, such as granite pavers, cobble stones, and other types of rough or jointed surfaces. This would minimize the sometimes painful vibration persons using wheeled mobility aids may experience traversing rough and uneven surfaces. However, the committee was not able to identify suitable methods for measuring surface roughness or rolling vibration that would help determine whether a given surface was sufficiently smooth. The advisory committee called attention to the need for research on the relationship between surface roughness and wheeled mobility aids, including possible measurement protocols. The Board agrees with the committee that such information needs to be developed, but believes that a requirement for surface smoothness should not be included until measurable technical specifications are identified. Thus, a requirement for surface smoothness has not been included. However, the pedestrian access route is subject to requirements in ADAAG (section 302) which require surfaces to be firm, stable, and slip resistant and which prohibit openings that are more than 1/2 inch in one dimension, such as might occur in a grating. In addition, the Board has limited the frequency of permitted level changes along the pedestrian access route (discussed below at [section 1103.8](#)).

Surface Gaps at Rail Crossings (1103.7)

Surface gaps or openings in pedestrian access routes would be limited to 1/2 inch in one dimension. This specification is not practicable at rail tracks where gaps must be at least 2 1/2 inches to safely accommodate rail car wheel flanges. Due to variations in load and wheel play, the gap must be even larger (3 inches) to accommodate heavy freight trains. However, such a gap can trap wheelchair caster wheels, which are prone to turning sideways against vertical displacements, even slight ones. Specifications in the draft guidelines recognize the gaps widths required along tracks, including those used by freight trains. The advisory committee recommended that this provision contain a "sunset" clause that would require compliance with a 1/2 inch specification by a specified time. The Board has not included such a clause since it is not possible to reliably predict when research may find a solution. Attempts have been made to develop a "gap filler" device, but none of those devices have been successful. The Board is pursuing options for research on this issue.

The draft guidelines would also require detectable warnings at the outside of each group of tracks that cross the pedestrian access route. This is important since flush surfaces at rail tracks will not provide a tactile cue to people with vision impairments. Where there are multiple sets of tracks, detectable warnings would be required along the outer edges of the entire group of tracks. Detectable warnings would not be required at tracks sharing vehicular ways, such as street car tracks in

roadways, since curb ramps along roadways are also required to have detectable warnings (discussed below at [section 1104](#)).

Changes in Level (1103.8)

The pedestrian access route would be subject to requirements in ADAAG for changes in level (ADAAG 303) which permit level changes up to 1/4 inch without treatment and level changes between 1/4 and 1/2 inch that are beveled with a slope no greater than 1:2. Changes in level greater than 1/2 inch are to be treated as a ramp or curb ramp. In addition to the referenced specifications, the draft guidelines specify a minimum linear separation of 30 inches between level changes in pedestrian access routes to prevent successive level changes that can be disruptive to wheelchair maneuvering, such as those that may be posed by sidewalk pavers. The advisory committee recommended specifying a minimum separation of 24 inches based on the standard wheelchair wheelbase, measured in the predominant direction of pedestrian travel. However, a separation of at least 30 inches corresponds to a common size of sidewalk segment and encompasses the wheelbase of most wheelchairs. This would allow most persons using wheelchairs to clear one level change before encountering another. This provision would not rule out the use of bricks or other small pavers that are installed in a manner that provides a relatively flush surface and that are properly maintained.

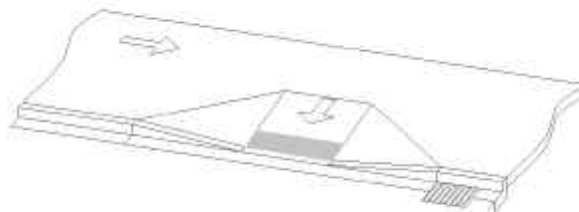
Protruding Objects (1102.5)

The draft guidelines address objects that may project into circulation paths in a manner hazardous to people with vision impairments. Unlike requirements for pedestrian access routes, these criteria would apply to the full circulation space of sidewalks and other pedestrian paths. Objects mounted on walls or posts with leading edges above the standard sweep of canes (27 inches) and below the standard head room clearance (80 inches) would be limited to a 4 inch protrusion.

Curb Ramps and Blended Transitions (1102.6,1104)

Curb ramps or blended transitions would be required to connect pedestrian access routes to street crossings and to be located within the width of each crosswalk. Generally, this would require two separate curb ramps at a corner instead of a single ramp that opens diagonally onto an intersection. The advisory committee strongly discouraged single installations where possible for several reasons. Single ramps can misdirect blind pedestrians who use the slope of curb ramps as a cue. They can increase crossing times for persons who use wheeled mobility aids and can place users into oncoming traffic at small radius corners where it is difficult to provide landing space at the bottom that is wholly within marked crossings. Also, drivers may not be as alert to persons crossing at the apex of a corner. On the other hand, the advisory committee recognized that providing two separate compliant curb ramps may not always be practicable, particularly in alterations, due to storm drain inlets, utility poles, and other constraints.

The draft guidelines provide technical criteria for perpendicular curb ramps, parallel curb ramps, and blended transitions. Perpendicular curb ramps, the most common type, have a running slope that cuts through a curb or meets the gutter grade break at right angles. Parallel curb ramps have a running



slope that is in line with the direction of sidewalk travel. Blended transitions can be achieved by depressing the entire curb radius to street level or, less commonly, raising street crossings to sidewalk level, which can serve as a traffic calming strategy by creating a "speed table" at intersections. Various combinations of these different types of ramps and transitions can be used. For example, parallel ramps can be used for a portion of a curb level change in conjunction with a perpendicular ramp or a blended transition. The draft guidelines include requirements specific to each of these elements as

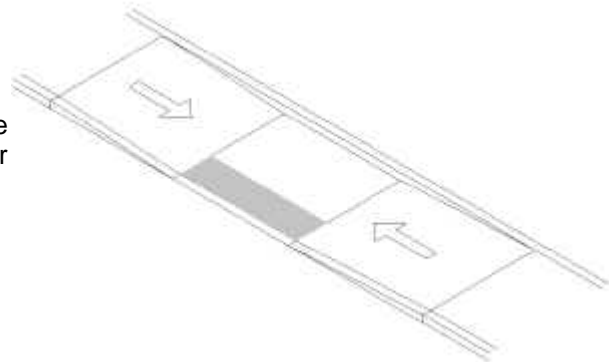
well as criteria common to all of them.

Perpendicular Curb Ramps (1104.2.1)

Consistent with ADAAG, curb ramps must have a maximum running slope of 1:12. The draft guidelines specify a minimum running slope of 1:48 for perpendicular ramps (and parallel ramps) in order to distinguish them from blended transitions, which cannot have a slope of more than 1:48. Requirements specific to perpendicular curb ramps address the cross slope (1:48 maximum), level landings at the top (48 by 48 inches minimum), and side flares (1:10 maximum slope). Sidewalks are permitted to follow the running grade of the adjoining roadway, which determines the cross slope of perpendicular ramps and landings at mid-block crossings. Exceptions are provided for ramps located at mid-block crossings that permit the cross slope of the ramp and landing to be greater than 1:48 so that the ramp can transition smoothly to the street crossing. Otherwise, maintaining a 1:48 cross slope at streets with a steeper grade would result in a warped transition from the ramp to the road, which is problematic for wheelchair maneuvering.

Parallel Curb Ramps (1104.2.2)

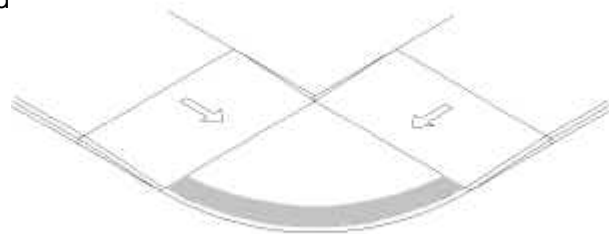
Parallel ramps are especially suited to narrow rights-of-way where there is insufficient space for the top landing of a perpendicular curb ramp. In this case, the bottom landing usually serves as the direct connection to the street crossing. Criteria for parallel curb ramps address the running slope (1:12 maximum and 1:48 minimum), cross slope (1:48 maximum), level landings at the bottom (at least 48 by 48 inches), and barriers at drop-offs. The running slope of parallel curb ramps will be affected by the slope of the sidewalk, which is permitted to be as steep as the adjacent roadway.



Thus, a maximum slope of 1:12 may not be achievable due to the road grade. In recognition of this, an exception limits the required length of a parallel ramp to 15 feet, regardless of the slope. The landing required at the bottom of the ramp is not permitted to slope more than 1:48 in any direction, but an exception is also provided for mid-block crossings where compliance with this specification may be affected by the roadway grade. Where parallel curb ramps do not span the full width of a sidewalk, a barrier is required along the drop-off created by the ramp to prevent tripping hazards.

Blended Transitions (1104.2.3)

Blended transitions are to have slopes parallel and perpendicular to the curb no greater than 1:48. Transitions with a slope greater than 1:48 are to be treated as a curb ramp.



Common Elements (1104.3)

Curb ramps and blended transitions would be subject to requirements for clear width (48 inches minimum), detectable warnings, surfaces, grade breaks, changes in level, counter slopes, and clear space.

Detectable Warnings (1104.3.2)

Detectable warnings provide a distinctive surface of truncated domes detectable by cane or underfoot to alert people with vision impairments of the transition to vehicular ways. These warnings compensate for the sloped surfaces of curb ramps which remove a tactile cue provided by curb faces. ADAAG, as originally published in 1991, contained a requirement for detectable warnings on the surface of curb ramps and other locations where pedestrian ways blend with vehicular ways without

tactile cues. This requirement was temporarily suspended due to concerns raised about the specifications, the availability of complying products, maintenance, usefulness, safety, and the need for further study. The suspension expired in July 2001.

The advisory committee considered the issue at length and recommended that the draft guidelines require detectable warnings according to revised specifications. The Board agrees with the committee's recommendation and has included a requirement for a detectable warning surface 2 feet deep where the ramp, landing, or blended transition connects to a crosswalk. Since detectable warnings are intended to replace the cue otherwise provided by a curb drop-off, they would be required to span the entire area where the curb drop-off is absent. This is especially important for blended transitions, where there is no slope to help detect the presence of a ramp.

The advisory committee deliberated on whether to require detectable warnings at all curb ramps and blended transitions or only those which were the least distinguishable. One organization represented on the committee suggested that detectable warnings be required only where the ramp slope was 1:15 or less. The Board seeks comment on this issue as well as any research that supports slopes of 1:15 or steeper being sufficiently detectable by persons with vision impairments.

The technical specifications for detectable warnings are discussed below in [section 1108](#).

Other Requirements for Curb Ramps and Blended Transitions (1104.3.3 - 1104.3.7)

Other technical requirements for curb ramps and blended transitions would:

- require compliance with specifications in ADAAG section 302 covering surface firmness, stability, and slip-resistance;
- prohibit the placement of gratings, storm drain, utility and sewer access covers, and similar fixtures on ramps, landings, transitions and portions of the gutter within the pedestrian access route;
- prohibit grade breaks on ramp runs, blended transitions, landings, and gutter areas within the pedestrian access route;
- require a flush transition at permitted grade breaks, such as at the top and bottom of ramp runs;
- prohibit any vertical changes in level on curb ramps, landings and gutter areas within the pedestrian access route;
- limit the counter slope of the gutter area or street at the foot of the curb ramp or blended transition to be 1:20 maximum (the advisory committee had recommended that the sum of the slope of the ramp and gutter or street be 11 percent or less, but the Board believes that the 1:20 specification, which is consistent with ADAAG, will be easier to understand and enforce); and
- require clear space at least 48 by 48 inches, located beyond the curb line and wholly within crosswalks and out of the parallel traffic travel lane.

Pedestrian Signs (1102.7)

Signs provided for pedestrian use would be subject to certain ADAAG specifications for visual legibility. These requirements would not apply to traffic and street signs intended for vehicle operators, which are covered by the MUTCD. Provisions are included for bus route identification signs, informational signs, and warning signs. Specifications in ADAAG 703.5 for visual characters are referenced. This section of ADAAG covers finish and contrast, style, the proportions and height of characters, sign height, stroke thickness, and character and line spacing.

Bus Route Identification (1102.7.1)

Bus route identification signs would be subject to the visual character requirements, except those for character height (which would apply only to the maximum extent practicable) and sign height. This requirement would not apply to bus schedules, timetables, or maps. This provision is consistent with

existing ADAAG provisions for bus stops and shelters (section 810.4). In addition, the draft guidelines would require route identification signs located at bus shelters to be tactile and provide information in raised and Braille characters according to specifications in ADAAG (section 703.2). Raised characters are to have rounded corners. An exception permits certain types of audible signs to substitute for tactile signage.

Informational Signs and Warning Signs (1102.7.2)

ADAAG specifications for visual legibility would also apply to informational signs and warning signs located in public rights-of-ways, but the draft guidelines would not require the inclusion of raised and Braille characters. This provision would apply to signs that label or provide information about, or direction to, public buildings, transit stations and stops, and many other facilities and elements. It would also cover signs at elements for pedestrian use, such as signal pushbuttons, and signs that warn of sidewalk closings or that provide direction to alternate pedestrian routes.

Pedestrian Crossings (1102.8, 1105)

This section addresses crosswalks, pedestrian signal timing for crossings, pedestrian islands, overpasses and underpasses, vehicular roundabouts, turn lane crossings, and pedestrian signals.

Crosswalks (1105.2)

Requirements for crosswalks cover the width, cross slope, and running grade. These specifications would apply to both marked and unmarked crossings, wherever pedestrian travel across the roadway is not prohibited. Marked crosswalks are specified to be at least 96 inches wide, as recommended by the advisory committee, which exceeds the 72 inch minimum specified in the MUTCD. Since pedestrians, including people with vision impairments and those who use wheelchairs, must pass each other in an environment that demands rapid crossing times, it is important for crosswalks to provide adequate width so quick and easy passing occurs without delaying clearance of the crosswalk.

The cross slope is limited to 1:48, except at mid-block crossings. The cross slope of the crosswalk is the running grade of the roadway. It is not uncommon for streets to be constructed with constant profile grades up to 9 or 10 percent. This specification would require reduction of these profile grades to 2 percent at intersection crosswalks, thus forming "tabled areas" at intersections so that the 1:48 slope is achieved at crosswalks. The specified running slope for crosswalks is 1:20.

Pedestrian Signal Phase Timing (1105.3)

The draft guidelines would require pedestrian signal phase timing to be calculated according to a walking speed of 3.0 feet per second. Industry practice generally recommends calculations based on a speed ranging from 3.5 to 4.0 feet per second, though some jurisdictions are reportedly considering a rate of 2.5 feet per second. The advisory committee recommended using a crossing speed of 3.5 feet per second or less. The Board believes that a rate of 3.0 feet per second will accommodate a broader range of pedestrians and offer greater access.

Medians and Pedestrian Refuge Islands (1105.4)

The draft guidelines would require that medians and pedestrian refuge islands, where provided, be cut through at street level or have complying curb ramps so that a pedestrian access route is maintained. Specifications for length and detectable warnings apply where signal timing does not permit crossing all traffic lanes in one cycle.

Pedestrian Overpasses and Underpasses (1105.5)

The draft guidelines address access to pedestrian overpasses and underpasses, which would be required to provide a pedestrian access route. A ramp would be required where the running slope exceeds 1:20. However, overpasses and underpasses commonly span significant elevation changes. A complying ramp requires at least a foot of run for every inch of elevation, in addition to space for intermediate level landings at least every 30 feet or where a ramp changes direction. Due to the

exertion required in maneuvering wheelchairs upslope, lengthy ramps often are unusable and can be impractical due to the amount of right-of-way space they require. The Board is not aware of information that specifically indicates at what point a ramp is too long to be used by persons with disabilities. The advisory committee recommended that an elevation change of 60 inches be the cut-off. Consistent with this recommendation, the draft guidelines would require elevator access where the rise of a ramped approach exceeds 60 inches. The Board seeks comment on whether this is an appropriate trigger for elevator access. The requirement references ADAAG specifications for standard passenger elevators (section 407) and limited-use/limited application elevators (section 408), which are usually smaller and slower than other passenger elevators and are typically used for low-traffic, low-rise installations.

In addition to elevator requirements, the draft guidelines apply ADAAG specifications to stairs (section 504) and escalators (section 810.9).

Roundabouts (1105.6)

A growing trend in roadway design favors continuous-flow roundabouts over traditional signalized intersections. While their design varies widely, roundabouts typically feature a circulatory roadway around a central island. Entering traffic yields to vehicles already in the circle. Increasingly popular in the U.S. because they add vehicle capacity and reduce delay, roundabouts are a common feature in Europe and Australia. Because crossing at a roundabout requires a pedestrian to visually select a safe gap between cars that may not stop, accessibility has been problematic.



While roundabouts may be an asset to traffic planners in controlling and slowing the flow of traffic at intersections without using traffic signals, the absence of stopped traffic presents a problem for pedestrians with vision impairments in crossing streets. Pedestrians report that vehicles at roundabouts, as well as at other unsignalized crossings, often do not yield for pedestrians. Persons with vision impairments and pedestrians who may hesitate at such crossings are at a particular disadvantage.

To provide safer crossing at roundabouts, the draft guidelines would require pedestrian activated crossing signals at each roundabout crosswalk, including those at splitter islands. (The draft guidelines would ensure that such signals are usable by persons with vision impairments under requirements in [section 1106](#) discussed below.) Although roundabouts are typically used to avoid signalization, the Board is not aware of alternatives that would allow safe passage for pedestrians with disabilities. Aside from accessibility, the use of roundabouts in areas of high pedestrian use has been questioned by some in the industry.

Requiring the signal to be pedestrian activated may help limit the impact on traffic flow. Signal technologies are available that can further minimize the impact, such as devices that halt traffic only while a pedestrian is in the crosswalk. The Board seeks information on alternative design strategies and available technologies that can improve access at roundabouts for persons with disabilities, particularly those with vision impairments.

Barriers or similarly distinct elements are needed to prevent blind persons from inadvertently crossing a roundabout roadway in unsafe locations. The draft guidelines would require a continuous barrier along the street side of the sidewalk where pedestrian crossing is prohibited. If a railing is used, it must have a bottom rail no higher than 15 inches. This dimension would allow use of a standard roadside guardrail while providing sufficient cane detectability.

Turn Lanes at Intersections (1105.7)

The draft guidelines also include a requirement for a pedestrian activated signal at each segment of a crosswalk that crosses right or left turn slip lanes.

Accessible Pedestrian Signal Systems (1102.8, 1106)

At signalized intersections, people with vision impairments typically rely on the noise of traffic alongside them as a cue to begin crossing. The effectiveness of this technique is compromised by various factors, including increasingly quiet cars, permitted right turns on red, pedestrian activated signals, and wide streets. Further, low traffic volumes may make it difficult to discern signal phase changes. Technologies are available that enable audible and vibrating signals to be incorporated into pedestrian signal systems, which are those systems that provide signals expressly for pedestrians, such as "walk" signs. The draft guidelines would require pedestrian signal systems, where provided, to provide both audible and vibrating indications of the "walk" interval. Typically, a small box, with a directional arrow, emits an audible tone or voice message and vibrates when the walk interval begins.

Increasingly, signals activated by pedestrians, usually by means of a push button, are being installed. The draft guidelines would require push buttons, where provided, to be equipped with a locator tone integrated into the signaling device to indicate that pedestrian activation is necessary and to identify the location of the push button.

The Board is proposing to apply these requirements where pedestrian signal systems are provided at pedestrian crossings. The advisory committee had recommended limiting their application only where certain types of pedestrian signal systems are provided, such as those that are pedestrian activated. The Board believes that access should be required at all crossings equipped with pedestrian signals to ensure a consistent level of accessibility within a pedestrian network. Compliant products are available. A project the Board sponsored on accessible pedestrian signals provides a synthesis on current technology in accessible pedestrian signals, including a listing of devices and manufacturers in the U.S. and abroad, and a matrix comparing the features of each device. The project report, "[Accessible Pedestrian Signals](#)" provides information on several different types of devices on the market, including audible, vibrating, and receiver-based infrared systems. Audible systems are now available that feature discreet tones which automatically adjust to the ambient noise level. These systems have replaced older products that had raised concerns about noise pollution.

In addition, the criteria for pedestrian signal devices, most of which are consistent with MUTCD specifications, address:

- placement close to the crosswalk they serve and separation from other signals;
- mounting location at accessible reach ranges (as specified in ADAAG section 308);
- clear ground space (complying with ADAAG section 305) that is connected to the pedestrian access route;
- characteristics of required tone or voice indicators;
- operating characteristics for pushbuttons (as specified in ADAAG section 309.4 for operable parts); and
- tactile and visual signs that indicate crosswalk direction, street names, and crosswalk configurations.

Street Furniture (1102.9, 1107)

The draft guidelines provide requirements for street furniture made available for pedestrian use, including drinking fountains, public telephones, toilet facilities, tables, and benches. The draft guidelines would not require provision of street furniture, but instead would apply access requirements where such furniture is provided for pedestrian use. Access would not be required to elements that do not serve pedestrians, such as utility poles, fire hydrants, and signal transformers. Since the types of furniture addressed in this section are covered in ADAAG, this section references relevant ADAAG requirements.

Clear Floor Space (1107.2)

The draft guidelines address wheelchair access to street furniture by referencing requirements for clear floor or ground space in ADAAG 305. Such space must be connected to a pedestrian access route and meet ADAAG criteria for size (30 by 48 inches minimum), surfacing, knee and toe clearances, positioning, approach, and maneuvering clearances.

Drinking Fountains (1107.3)

ADAAG requirements for drinking fountains in section 602 cover access for people who use wheelchairs and access for standing persons who may have difficulty bending or stooping. The draft guidelines would apply these requirements for this dual access to each installation in public rights-of-way. This can be achieved by providing two units at each location or installing single units that provide dual access, such as those equipped with two spouts or combination high-lo types.

Public Telephones (1107.4)

ADAAG requirements for public telephones in section 704 cover wheelchair access, volume controls, and TTYs, which are devices that enable people with hearing or speech impairments to communicate through the telephone. For single installations, the draft guidelines would require public telephones to provide wheelchair access and TTY access. Where a bank of telephones is provided, these requirements are to be met at two different phones. All public telephones would be required to have volume controls, which is consistent with ADAAG, as well as guidelines the Board issued for telecommunication products under section 255 of the Telecommunications Act of 1996, which requires telecommunication products and services to be accessible.

Public Toilet Facilities (1107.5)

The draft guidelines would require permanent or portable public toilet facilities to be accessible according to ADAAG section 603. Where single-user facilities are clustered at a single location, an exception would permit at least 5% to be accessible. The advisory committee recommended a minimum scoping requirement of 25%, but the Board has chosen the 5% specification for consistency with ADAAG. Provided fixtures would be subject to ADAAG requirements in sections 604 through 610, which cover water closets and toilet compartments, urinals, lavatories, bathing fixtures, and grab bars. In addition, operable parts, dispensers, receptacles, or other equipment in toilet facilities would need to comply with relevant criteria in ADAAG section 309, which addresses clear floor space, height, and operating characteristics (operable with one hand and not requiring tight grasping, pinching, twisting of the wrist, or more than 5 pounds of force to operate).

Tables, Counters, and Benches (1107.6)

At least 5% of tables, where provided, would be required to comply with ADAAG requirements in section 902 which cover surface height, knee clearance, and clear ground space. Counters would be subject to ADAAG requirements at section 904 which address surface height and approach clearances. Accessible bench requirements in ADAAG section 903 would be applied to at least half the benches provided. ADAAG criteria for benches cover size, back support, height, structural strength, and other features. In addition, the draft guidelines would require accessible benches to provide an armrest on at least one end.

Detectable Warning Surfaces (1108)

Pedestrian street crossings, including, curb ramps and blended transitions (1104.3.2), certain median and refuge islands (1105.4.2), and rail lines (1103.7) are required to have detectable warnings for persons with vision impairments. These surfaces feature a distinctive pattern of raised domes to provide a tactile cue detectable by cane or underfoot at the boundary between pedestrian and vehicular routes.

Specifications in section 1108 address the area that these warnings are to cover at required locations. The Board has revised the technical criteria for detectable warnings in order to facilitate compliance and to accommodate existing detectable warning products that have been deemed to provide an equivalent level of accessibility. The revised specifications are also responsive to

concerns that had been raised about the impact of the truncated dome surface on wheelchair maneuvering. The Board believes that the revised specifications, which permit wider dome spacing, an in-line grid pattern, and smaller surface coverage at curb ramps (24 inches instead of the full ramp length) will further minimize disruptions or hazards to wheelchair traffic.

Stairs ([1102.10](#))

The draft guidelines apply requirements in ADAAG section 504 to stairs in public rights-of-way. These ADAAG specifications address tread depth and riser height, nosings, handrail and surface requirements, and prohibit open risers. The draft guidelines also include a new requirement for contrasting color across the nosing of stairs in the public right-of-way. This latter provision was recommended by the advisory committee because of the difficulty persons with low vision have in perceiving steps under the variable lighting conditions in public rights-of-ways.

Handrails ([1102.11](#))

Consistent with the revised ADAAG, handrails, where provided, would be subject to ADAAG section 505, which provides specifications for height, knuckle clearance, gripping surface, cross section, surfaces, fittings, and extensions.

Vertical Access ([1102.12](#))

Where elevators or lifts are provided in public rights-of-ways, the draft guidelines would apply specifications in ADAAG for passenger elevators (section 407), limited-use/ limited-application elevators (section 408), and platform lifts (section 410). Elevators are not required by these guidelines except at certain pedestrian overpasses and underpasses with elevation changes greater than 60 inches.

Bus Stops ([1102.13](#))

ADAAG contains requirements for bus boarding and alighting areas and bus shelters in section 810.2 and 810.3. These requirements address bus stop surfacing, dimensions, connections to accessible routes, slope, and wheelchair space within bus shelters. The draft guidelines would apply these requirements to bus stops and shelters provided in public rights-of-way.

On-Street Parking ([1102.14](#), [1109](#))

A key issue addressed in the guidelines is how to provide access to on-street parking. Current ADAAG scoping and technical requirements are specific to parking lots and facilities on sites. Over the years, the Board has received many inquiries on how they can be applied to on-street spaces. The draft guidelines would require access to at least one parking space on each block face. The advisory committee recommended applying ADAAG requirements in section 208 for parking lots and facilities which uses a sliding scale based on the total number of spaces provided. This scale starts out with a requirement for access to at least 1 space for every 25 spaces provided. The Board was concerned about confusion that might arise in applying a requirement written for parking facilities on sites to on-street parking. The Board believes that the proposed requirement will be easier to implement and enforce.

Technical specifications are provided for parallel and perpendicular or angled spaces. Requirements address adjoining access aisles at spaces, accessible connecting routes, signs, and parking meters. An accessible parallel space and access aisle, which must be flush with the street, can be achieved by indenting the curb line, similar to a loading zone. For a passenger with a disability, drivers park in line with the other spaces, leaving aisle space free; drivers with disabilities can park against the curb, leaving aisle space on the driver's side free. Since the curb indentation takes space from the sidewalk, the access aisle can only be provided where there is sufficient public right-of-way width. Consequently, an exception is provided that allows spaces without aisles where the available public right-of-way is less than 168 inches wide; such spaces would be placed at the end of a block, closer to corner curb ramps or blended transitions. This exception would not apply where perpendicular and angled parking spaces are provided, which are required to have aisles sufficiently wide enough (96 inches minimum) to accommodate van-mounted lifts.

Signs labeling accessible spaces are to include the International Symbol of Accessibility and be located at least 60 inches high at the head or foot of the parking space. Criteria for parking meters address location, the visibility of displays and information, and the height and operating characteristics of controls as specified in ADAAG section 309.

Passenger Loading Zones ([1102.15](#))

ADAAG requirements for passenger loading zones would be applied to loading zones in the public right-of-way. Where a long loading zone is provided, at least one area in every 100 continuous feet must comply with requirements in ADAAG section 302 and 503 which address the surfacing, the size of vehicle pull-up spaces (8 by 20 feet minimum), the marking and size of access aisles (at least 60 inches wide and as long as the pull-up space), and vertical clearance (114 inches minimum).

Call Boxes ([1102.16](#), [1110](#))

The draft guidelines address emergency call boxes that are provided at intervals on roadsides for stranded motorists to use to summon aid. Access requirements would apply where such devices are provided. Specifications address access for persons with mobility impairments and persons with sensory impairments, including those with hearing impairments.

The draft guidelines would require that operable parts be located within accessible reach ranges and meet operating characteristics in ADAAG sections 308 and 309.4. ADAAG specifies that controls be operable with one hand and not require tight grasping, pinching, twisting of the wrist, or more than 5 pounds of force to operate. The Board has received information demonstrating that a particular type of call box that initiates a signal through a lever pull requires up to 12 pounds of force to successfully initiate a signal. An exception has been included for lever pull systems.

Specifications also address the wheelchair space complying with ADAAG 304, edge protection at abrupt level changes in the call-box area as is otherwise specified for ramps in ADAAG section 405.9.2, and access at vehicle pull-over spaces. In addition, audible and visual indicators of an activated signal are required in compliance with ADAAG requirements for two-way communication systems in section 708. Handsets, where provided, must also meet specifications in ADAAG section 708. To accommodate persons with hearing impairments, including those who are deaf, the draft guidelines would require volume control and TTY access at call boxes that provide two-way voice communication.

Text of the Draft Guidelines for Accessible Public Rights-of-Way

[1101 Application and Administration](#)(referenced standards and defined terms)

[1102 Scoping Requirements](#)

[1103 Pedestrian Access Route](#)

[1104 Curb Ramps and Blended Transitions](#)

[1105 Pedestrian Crossings](#)

[1106 Accessible Pedestrian Signal Systems](#)

[1107 Street Furniture](#)

[1108 Detectable Warning Surfaces](#)

[1109 On-Street Parking](#)

[1110 Call Boxes](#)

[1111 Alternate Circulation Path](#)

1101 Application and Administration

1101.1 General. For the purposes of these requirements, the terms listed in section 1101.3 shall have the indicated meaning.

1101.2 Referenced Standards.

1101.2.1 MUTCD. Copies of the referenced standards may be obtained on-line from the Federal Highway Administration at <http://mutcd.fhwa.dot.gov>.

MUTCD 2000-Millennium Edition Manual on Uniform Traffic Control Devices.

1101.3 Defined Terms.

Accessible Pedestrian Signal. A device that communicates information about the pedestrian WALK phase in non-visual format.

Accessible Route. A continuous, unobstructed path that complies with Chapter 4.

Channelizing Island. Curbed or painted area outside the vehicular path that is provided to separate and direct traffic movement, which also may serve as a refuge for pedestrians.

Cross Slope. The slope that is perpendicular to the direction of travel. This is usually called superelevation on curves in the public right-of-way (see superelevation).

Crosswalk. That part of a roadway at an intersection that is included within the extensions of the lateral lines of the sidewalks on opposite sides of the roadway, measured from the curblines or, in the absence of curbs, from the edges of the roadway or, in the absence of a sidewalk on one side of the roadway, the part of the roadway included within the extension of the lateral lines of the sidewalk at right angles to the centerline. Also, any portion of a roadway at an intersection or elsewhere that is distinctly indicated for pedestrian crossing by lines or other markings on the surface.

Curb Line. A line at the face of the curb that marks the transition between the sidewalk and the gutter or roadway.

Curb Ramp. A ramp cutting through a curb or built up to it.

Detectable Warning. A surface feature built in or applied to walking surfaces or other elements to warn of hazards on a circulation path.

Dynamic Envelope. The clearance required for a rail vehicle and its cargo overhang due to any combination of loading, lateral motion, or suspension failure.

Element. An architectural or mechanical component of a building, facility, space, site or public right-of-way.

Facility. All or any portion of buildings, structures, improvements, elements and pedestrian or vehicular routes located on a site or in a public right-of-way.

Grade. (See running slope).

Grade Break. The meeting line of two adjacent surfaces of different slope (grade).

Locator Tone. A repeating sound that identifies the location of the pedestrian push button.

Pedestrian Access Route. An accessible corridor for pedestrian use within the public right-of-way.

Public Right-of-Way. Land or property, usually in a corridor, that is acquired for or devoted to transportation purposes.

Roundabout. A circular intersection that has yield control of entering traffic, channelized approaches, counterclockwise circulation, and appropriate geometric curvature to limit travel speeds on the circulatory roadway.

Running Slope. The slope that is parallel to the direction of travel expressed as a ratio of rise to run. In the public right-of-way, this is usually called grade, and is expressed in percent.

Sidewalk. That portion of a public right-of-way between the curb line or lateral line of a roadway and the adjacent property line that is improved for use by pedestrians.

Splitter Island. A flush or raised island that separates entering and exiting traffic in a roundabout.

Street Furniture. Elements in the public right-of-way that are intended for use by pedestrians.

Superelevation. Cross slope on a curve in the roadway (see cross slope).

Walk Interval. That phase of a traffic signal cycle during which the pedestrian is to begin crossing, typically indicated by a WALK message or the walking person symbol and its audible equivalent.

1102 Scoping Requirements

1102.1 General. All areas of newly designed and newly constructed facilities in public rights-of-way and altered portions of existing facilities in public rights-of-way shall comply with Chapter 11.

1102.2 Existing Public Rights-of-Way. Additions to existing public rights-of-way shall comply with 1102.2.1. Alterations to existing public rights-of-way shall comply with 1102.2.2.

1102.2.1 Additions. Each addition to an existing public right-of-way shall comply with the applicable provisions of Chapter 11. Where the addition connects with existing construction, the connection shall comply with 1102.2.2.

1102.2.2 Alterations. Where existing elements or spaces in the public right-of-way are altered, each altered element or space shall comply with the applicable provisions of Chapter 11.

EXCEPTION: In alterations, where compliance with applicable provisions is technically infeasible, the alteration shall comply to the maximum extent feasible.

1102.2.2.1 Extent of Application. An alteration of an existing element, space, or area of a public right-of-way shall not impose a requirement for accessibility greater than required for new construction.

1102.2.2.2 Prohibited Reduction in Access. An alteration that decreases or has the effect of decreasing the accessibility of a public right-of-way or site arrival points to buildings or facilities

adjacent to the altered portion of the public right-of-way, below the requirements for new construction at the time of the alteration is prohibited.

1102.3 Alternate Circulation Path. An alternate circulation path complying with [1111](#) shall be provided whenever the existing pedestrian access route is blocked by construction, alteration, maintenance, or other temporary conditions.

1102.4 Sidewalks. Where sidewalks are provided, they shall contain a continuous pedestrian access route complying with [1103](#). The pedestrian access route shall connect to elements required to comply with Chapter 11.

1102.5 Protruding Objects. Protruding objects on sidewalks and other pedestrian circulation paths shall comply with 1102.5 and shall not reduce the clear width required for pedestrian accessible routes.

1102.5.1 Protrusion Limits. Objects with leading edges more than 27 inches (685 mm) and not more than 80 inches (2030 mm) above the finish floor or ground shall protrude 4 inches (100 mm) maximum horizontally into the circulation path.

EXCEPTION: Handrails shall be permitted to protrude 4-1/2 inches (115 mm) maximum.

1102.5.2 Post-Mounted Objects. Free-standing objects mounted on posts or pylons shall overhang circulation paths 4 inches (100 mm) maximum when located 27 inches (685 mm) minimum and 80 inches (2030 mm) maximum above the finish floor or ground. Where a sign or other obstruction is mounted between posts or pylons is greater than 12 inches (305 mm), the lowest edge of such sign or obstruction shall be 27 inches (685 mm) maximum or 80 inches (2030 mm) minimum above the finish floor or ground.

EXCEPTION: This requirement shall not apply to sloping portions of handrails serving stairs and ramps.

1102.5.3 Reduced Vertical Clearance. Guardrails or other barriers shall be provided where the vertical clearance is less than 80 inches (2030 mm) high. The leading edge of such guardrail or barrier shall be located 27 inches (685 mm) maximum above the finish floor or ground.

EXCEPTION: Door closers and door stops shall be permitted to be 78 inches (1980 mm) minimum above the finish floor or ground.

1102.6 Curb Ramps and Blended Transitions. A curb ramp or blended transition complying with [1104](#), or a combination of curb ramps and blended transitions, shall connect the pedestrian access routes to each street crossing within the width of each crosswalk.

1102.7 Pedestrian Signs. Signs for pedestrian use shall comply with 1102.7.

1102.7.1 Bus Route Identification. Bus route identification signs shall comply with 703.5.1 through 703.5.4, and 703.5.7 and 703.5.8. In addition, to the maximum extent practicable, bus route identification signs shall comply with 703.5.5. Bus route identification signs located at bus shelters shall provide raised and Braille characters complying with 703.2, and shall have rounded corners.

EXCEPTIONS 1: Bus schedules, timetables and maps that are posted at the bus stop or bus shelter shall not be required to comply with 1102.7.

2: Signs shall not be required to comply with 703.2 where audible signs are user- or proximity-actuated or are remotely transmitted to a portable receiver carried by an individual.

1102.7.2 Informational Signs and Warning Signs. Informational signs and warning signs shall comply with 703.5.

1102.8 Pedestrian Crossings. Where a pedestrian crossing is provided, it shall comply with the applicable provisions of [1105](#). Where pedestrian signals are provided at a pedestrian crossing, they shall comply with [1106](#).

1102.9 Street Furniture. Street furniture that is intended for use by pedestrians and installed on or adjacent to a sidewalk shall comply with 309 and [1107](#).

1102.10 Stairs. Where provided, stairs shall comply with 504. Stair treads shall have a 2 inch (51 mm) wide strip of color contrasting with the tread and riser, the full width of the front edge of each tread.

1102.11 Handrails. Where provided, handrails shall comply with 505.

1102.12 Vertical Access. Where provided elevators shall comply with 407, limited-use/limited-application elevators shall comply with 408, and platform lifts shall comply with 410. Vertical access shall remain unlocked during the operating hours of the facility served.

1102.13 Bus Stops. Bus boarding and alighting areas shall comply with 810.2. Bus shelters shall comply with 810.3.

1102.14 On-Street Parking. Where on-street parking is provided, at least one accessible on-street parking space shall be located on each block face and shall comply with [1109](#).

1102.15 Passenger Loading Zones. Where passenger loading zones are provided, they shall connect to a pedestrian access route and shall provide a minimum of one passenger loading zone in every continuous 100 linear feet (30 m) of loading zone space, or fraction thereof, complying with 302, 503.2, 503.3, and 503.5.

1102.16 Call Boxes. Where provided, call boxes shall comply with [1110](#).

1103 Pedestrian Access Route

1103.1 General. Pedestrian access routes shall connect to elements required to be accessible and shall comply with 1103.

1103.2 Components. Pedestrian access routes shall consist of one or more of the following components: walking surfaces, ramps, curb ramps, blended transitions, crosswalks, pedestrian overpasses and underpasses, elevators, and platform lifts. All components of a pedestrian access route shall comply with the applicable portions of this chapter.

1103.3 Clear Width. The minimum clear width of a pedestrian access route shall be 48 inches (1220 mm), exclusive of the width of the curb.

1103.4 Cross Slope. The cross slope of the pedestrian access route shall be 1:48 maximum.

1103.5 Grade. The grade of the pedestrian access route within a sidewalk shall not exceed the grade established for the adjacent roadway.

EXCEPTION: The running slope of a pedestrian access route shall be permitted to be steeper than the grade of the adjacent roadway, provided that the pedestrian access route is less than 1:20, or complies with 405.

1103.6 Surfaces. The surfaces of the pedestrian access route shall comply with 302.

1103.7 Surface Gaps at Rail Crossings. Where the pedestrian access route crosses rail systems at grade, the horizontal gap at the inner edge of each rail shall be constructed to the minimum dimension necessary to allow passage of railroad car wheel flanges and shall not exceed 2-½ inches (64 mm).

EXCEPTION: On tracks that carry freight, a maximum horizontal gap of 3 inch (75 mm) shall be permitted.

1103.7.1 Detectable Warnings. Where rail systems cross pedestrian facilities that are not shared with vehicular ways, a detectable warning shall be provided in compliance with [1108](#).

1103.8 Changes in Level. Changes in level shall comply with 303. Changes in level shall be separated horizontally 30 inches (760 mm) minimum.

EXCEPTION: The horizontal separation requirement shall not apply to detectable warnings.

1103.8.1 Rail Crossings. Where the pedestrian access route crosses rail systems at grade, the surface of the pedestrian access route shall be level and flush with the top of the rail at the outer edge and between the rails.

1104 Curb Ramps and Blended Transitions

1104.1 General. Curb ramps and blended transitions shall comply with 1104.

1104.2 Types. Perpendicular curb ramps shall comply with 1104.2.1 and 1104.3; parallel curb ramps shall comply with 1104.2.2 and 1104.3; blended transitions shall comply with 1104.2.3 and 1104.3.

1104.2.1 Perpendicular Curb Ramps. Perpendicular curb ramps shall comply with 1104.2.1, and shall have a running slope that cuts through the curb at right angles or meets the gutter grade break at right angles.

1104.2.1.1 Running Slope. The running slope shall be 1:48 minimum and 1:12 maximum.

1104.2.1.2 Cross Slope. The cross slope shall be 1:48 maximum.

EXCEPTION: This requirement shall not apply to mid-block crossings.

1104.2.1.3 Landing. A landing 48 inches (1220 mm) minimum by 48 inches (1220 mm) minimum shall be provided at the top of the curb ramp and shall be permitted to overlap other landings and clear floor or ground space. Running and cross slopes shall be 1:48 maximum.

EXCEPTION: Running and cross slope requirements shall not apply to mid-block crossings.

1104.2.1.4 Flares. Flared sides with a slope of 1:10 maximum, measured along the curb line, shall be provided where a circulation path crosses the curb ramp.

1104.2.2 Parallel Curb Ramps. Parallel curb ramps shall comply with 1104.2.2, and shall have a running slope that is in-line with the direction of sidewalk travel.

1104.2.2.1 Running Slope. The running slope shall be 1:48 minimum and 1:12 maximum.

EXCEPTION: A parallel curb ramp shall not be required to exceed 15 feet (4570 mm) in length.

1104.2.2.2 Cross Slope. The cross slope shall be 1:48 maximum.

1104.2.2.3 Landing. A landing 48 inches (1220 mm) minimum by 48 inches (1220 mm) minimum shall be provided at the bottom of the ramp run and shall be permitted to overlap other landings and clear floor or ground space. Running and cross slopes shall be 1:48 maximum.

EXCEPTION: Running and cross slope requirements shall not apply to mid-block crossings.

1104.2.2.4 Diverging Sidewalks. Where a parallel curb ramp does not occupy the entire width of a sidewalk, drop-offs at diverging segments shall be protected with a barrier.

1104.2.3 Blended Transitions. Blended transitions shall comply with 1104.3, and shall have running and cross slopes of 1:48 maximum.

1104.3 Common Elements. Curb ramps and blended transitions shall comply with 1104.3.

1104.3.1 Width. The clear width of landings, blended transitions, and curb ramps, excluding flares, shall be 48 inches (1220 mm) minimum.

1104.3.2 Detectable Warnings. Detectable warning surfaces complying with [1108](#) shall be provided, where a curb ramp, landing, or blended transition connects to a crosswalk.

1104.3.3 Surfaces. Surfaces of curb ramps, blended transitions, and landings shall comply with 302. Gratings, access covers, and other appurtenances shall not be located on curb ramps, landings, blended transitions, and gutter areas within the pedestrian access route.

1104.3.4 Grade Breaks. Grade breaks shall not be permitted on curb ramps, blended transitions, landings, and gutter areas within the pedestrian access route. Surface slopes that meet at grade breaks shall be flush.

1104.3.5 Changes in Level. Vertical changes in level shall not be permitted on curb ramps, blended transitions, landings, or gutter areas within the pedestrian access route.

1104.3.6 Counter Slopes. The counter slope of the gutter area or street at the foot of a curb ramp or blended transition shall be 1:20 maximum.

1104.3.7 Clear Space. Beyond the curb line, a clear space of 48 inches (1220 mm) minimum by 48 inches (1220 mm) minimum shall be provided within the width of the crosswalk and wholly outside the parallel vehicle travel lane.

1105 Pedestrian Crossings

1105.1 General. Pedestrian crossings shall comply with 1105.

1105.2 Crosswalks. Crosswalks shall comply with 1105.2.

1105.2.1 Width. Marked crosswalks shall be 96 inches (2440 mm) wide minimum.

1105.2.2 Cross Slope. The cross slope shall be 1:48 maximum measured perpendicular to the direction of pedestrian travel.

EXCEPTION: This requirement shall not apply to mid-block crossings.

1105.2.3 Running Slope. The running slope shall be 1:20 maximum measured parallel to the direction of pedestrian travel in the crosswalk.

1105.3 Pedestrian Signal Phase Timing. All pedestrian signal phase timing shall be calculated using a pedestrian walk speed of 3.0 feet per second (0.91 m/s) maximum. The total crosswalk distance used in calculating pedestrian signal phase timing shall include the entire length of the crosswalk plus the length of the curb ramp.

1105.4 Medians and Pedestrian Refuge Islands. Medians and pedestrian refuge islands in crosswalks shall comply with 1105.4 and shall be cut through level with the street or have curb ramps complying with [1104](#) and shall contain a pedestrian access route complying with [1103](#). Where the cut-through connects to the street, edges of the cut-through shall be aligned with the direction of the crosswalk for a length of 24 inches (610 mm) minimum.

1105.4.1 Length. Where signal timing is inadequate for full crossing of all traffic lanes or where the crossing is not signalized, cut-through medians and pedestrian refuge islands shall be 72 inches (1830 mm) minimum in length in the direction of pedestrian travel.

1105.4.2 Detectable Warnings. Medians and refuge islands shall have detectable warnings complying with [1108](#). Detectable warnings at cut-through islands shall be separated by a 24 inch (610 mm) minimum length of walkway without detectable warnings.

EXCEPTION: Detectable warnings shall not be required on cut-through islands where the crossing is controlled by signals and is timed for full crossing.

1105.5 Pedestrian Overpasses and Underpasses. Pedestrian overpasses and underpasses shall comply with 1105.5.

1105.5.1 Pedestrian Access Route. Pedestrian overpasses and underpasses shall contain a pedestrian access route complying with [1103](#).

1105.5.2 Running Slope. The running slope shall not exceed 1:20 maximum.

1105.5.3 Approach. Where the approach exceeds 1:20, the approach shall be a ramp 48 inches (1220 mm) minimum in width and shall comply with 405. Where the rise of a ramped approach exceeds 60 inches (1525 mm), an elevator complying with 407, or a limited- use/limited-application elevator complying with 408 shall be provided.

1105.5.4 Stairs. Stairs shall comply with 504.

1105.5.5 Escalators. Escalators shall comply with 810.9.

1105.6 Roundabouts. Where pedestrian crosswalks and pedestrian facilities are provided at roundabouts, they shall comply with 1105.6.

1105.6.1 Separation. Continuous barriers shall be provided along the street side of the sidewalk where pedestrian crossing is prohibited. Where railings are used, they shall have a bottom rail 15 inches (380 mm) maximum above the pedestrian access route.

1105.6.2 Signals. A pedestrian activated traffic signal complying with [1106](#) shall be provided for each segment of the crosswalk, including the splitter island. Signals shall clearly identify which crosswalk segment the signal serves.

1105.7 Turn Lanes at Intersections. Where pedestrian crosswalks are provided at right or left turn slip lanes, a pedestrian activated traffic signal complying with [1106](#) shall be provided for each segment of the pedestrian crosswalk, including at the channelizing island.

1106 Accessible Pedestrian Signal Systems

1106.1 General. Pedestrian signal systems shall comply with 1106.

1106.2 Pedestrian Signal Devices. Each crosswalk with pedestrian signal indication shall have a signal device which includes audible and vibrotactile indications of the WALK interval. Where a pedestrian pushbutton is provided, it shall be integrated into the signal device and shall comply with 1106.3.

1106.2.1 Location. Pedestrian signal devices shall be located 60 inches (1525 mm) maximum from the crosswalk line extended, 120 inches (3050 mm) maximum and 30 inches (760 mm) minimum from the curb line, and 120 inches (3050 mm) minimum from other pedestrian signal devices at a crossing. The control face of the signal device shall be installed to face the intersection and be parallel to the direction of the crosswalk it serves.

EXCEPTION: The minimum distance from other signal devices shall not apply to signal devices located in medians and islands.

1106.2.2 Reach and Clear Floor or Ground Space. Pedestrian signal devices shall comply with 308. A clear floor or ground space complying with 305 shall be provided at the signal device and shall connect to or overlap the pedestrian access route.

1106.2.3 Audible Walk Indication. The audible indication of the WALK interval shall be by voice or tone.

1106.2.3.1 Tones. Tones shall consist of multiple frequencies with a dominant component at 880 Hz. The duration of the tone shall be 0.15 seconds and shall repeat at intervals of 0.15 seconds.

1106.2.3.2 Volume. Tone or voice volume measured at 36 inches (915 mm) from the pedestrian signal device shall be 2 dB minimum and 5 dB maximum above ambient noise level and shall be responsive to ambient noise level changes.

1106.3 Pedestrian Pushbuttons. Pedestrian pushbuttons shall comply with 1106.3.

1106.3.1 Operation. Pedestrian pushbuttons shall comply with 309.4.

1106.3.2 Locator Tone. Pedestrian pushbuttons shall incorporate a locator tone at the pushbutton. Locator tone volume measured at 36 inches (915 mm) from the pushbutton shall be 2 dB minimum and 5 dB maximum above ambient noise level and shall be responsive to ambient noise level changes. The duration of the locator tone shall be 0.15 seconds maximum and shall repeat at intervals of one second. The locator tone shall operate during the DON'T WALK and flashing DON'T WALK intervals only and shall be deactivated when the pedestrian signal system is not operative.

1106.3.3 Size and Contrast. Pedestrian pushbuttons shall be a minimum of 2 inches (51 mm) across in one dimension and shall contrast visually with their housing or mounting.

1106.3.4 Optional Features. An extended button press shall be permitted to activate additional features. Buttons that provide additional features shall be marked with three Braille dots forming an equilateral triangle in the center of the pushbutton.

1106.4 Directional Information and Signs. Pedestrian signal devices shall provide tactile and visual signs on the face of the device or its housing or mounting indicating crosswalk direction and the name of the street containing the crosswalk served by the pedestrian signal.

1106.4.1 Arrow. Signs shall include a tactile arrow aligned parallel to the crosswalk direction. The arrow shall be raised 1/32 inch (0.8 mm) minimum and shall be 1-1/2 inches (38 mm) minimum in length. The arrowhead shall be open at 45 degrees to the shaft and shall be 33 percent of the length of the shaft. Stroke width shall be 10 percent minimum and 15 percent maximum of arrow length. The arrow shall contrast with the background.

1106.4.2 Street Name. Signs shall include street name information aligned parallel to the crosswalk direction and complying with 703.2.

1106.4.3 Crosswalk Configuration. Where provided, graphic indication of crosswalk configuration shall be tactile and shall comply with 703.5.1.

1107 Street Furniture

1107.1 General. Street furniture shall comply with 1107.

1107.2 Clear Floor or Ground Space. Street furniture shall have clear floor or ground space complying with 305 and shall be connected to the pedestrian access route. The clear floor or ground space shall overlap the pedestrian access route 12 inches (305 mm) maximum.

1107.3 Drinking Fountains. Where drinking fountains are provided, they shall comply with 602.

1107.4 Public Telephones. Where public telephones are provided, they shall comply with 1107.4.

1107.4.1 Single Telephone. Where a single public telephone is provided, it shall comply with 704.2 and 704.4

1107.4.2 Multiple Telephones. Where a bank of public telephones is provided, at least one telephone shall comply with 704.2, and at least one additional telephone shall comply with 704.4.

1107.4.3 Volume Controls. All public telephones shall provide volume controls complying with 704.3.

1107.5 Public Toilet Facilities. Permanent or portable public toilet facilities shall comply with 603. At least one fixture of each type provided shall comply with 604 through 610. Operable parts, dispensers, receptacles, or other equipment shall comply with 309.

EXCEPTION: Where multiple single-user toilet facilities are clustered at a single location, at least 5 percent, but no fewer than one single-user toilet at each cluster shall comply with 603 and shall be identified by the International Symbol of Accessibility complying with 703.7.2.1.

1107.6 Tables, Counters, and Benches. Tables, counters, and benches shall comply with 1107.6.

1107.6.1 Tables. Where tables are provided in a single location, at least 5 percent but no fewer than one, shall comply with 902.

1107.6.2 Counters. Where provided, counters shall comply with 904.

1107.6.3 Benches. Where benches without tables are provided at a single location, at least 50 percent, but no fewer than one, shall comply with 903 and shall have an armrest on at least one end.

1108 Detectable Warning Surfaces

1108.1 General. Detectable warnings shall consist of a surface of truncated domes aligned in a square grid pattern and shall comply with 1108.

1108.1.1 Dome Size. Truncated domes in a detectable warning surface shall have a base diameter of 0.9 inches (23 mm) minimum to 1.4 inches (36 mm) maximum, a top diameter of 50% of the base diameter minimum to 65% of the base diameter maximum, and a height of 0.2 inches (5 mm).

1108.1.2 Dome Spacing. Truncated domes in a detectable warning surface shall have a center-to-center spacing of 1.6 inches (41 mm) minimum and 2.4 inches (61 mm) maximum, and a base-to-base spacing of 0.65 inches (16 mm) minimum, measured between the most adjacent domes on square grid.

1108.1.3 Contrast. Detectable warning surfaces shall contrast visually with adjacent walking surfaces either light-on-dark, or dark-on-light.

1108.1.4 Size. Detectable warning surfaces shall extend 24 inches (610 mm) minimum in the direction of travel and the full width of the curb ramp, landing, or blended transition.

1108.2 Location.

1108.2.1 Curb Ramps and Blended Transitions. The detectable warning surface shall be located so that the edge nearest the curb line is 6 inches (150 mm) minimum and 8 inches (205 mm) maximum from the curb line.

1108.2.2 Rail Crossings. The detectable warning surface shall be located so that the edge nearest the rail crossing is 6 inches (150 mm) minimum and 8 inches (205 mm) maximum from the vehicle dynamic envelope.

1108.2.3 Platform Edges. Detectable warning surfaces at platform boarding edges shall be 24 inches (610 mm) wide and shall extend the full length of the platform.

1109 On-Street Parking

1109.1 General. Car and van on-street parking spaces shall comply with 1109.

1109.2 Parallel Parking Spaces. An access aisle at least 60 inches (1525 mm) wide shall be provided at street level the full length of the parking space. The access aisle shall connect to a pedestrian access route serving the space. The access aisle shall not encroach on the vehicular travel lane.

EXCEPTION: An access aisle is not required where the width of the sidewalk between the extension of the normal curb and boundary of the public right-of-way is less than 14 feet (4270 mm). When an access aisle is not provided, the parking space shall be located at the end of the block face.

1109.3 Perpendicular or Angled Parking Spaces. Where perpendicular or angled parking is provided, an access aisle 96 inches (2440 mm) wide minimum shall be provided at street level the full length of the parking space and shall connect to a pedestrian access route serving the space. Access aisles shall be marked so as to discourage parking in them.

1109.4 Curb Ramps or Blended Transition. A curb ramp or blended transition complying with [1104](#) shall connect the access aisle to the pedestrian access route.

1109.5 Obstructions. There shall be no obstructions on the sidewalk adjacent to and for the full length of the space.

EXCEPTION: This provision shall not apply to parking signs complying with 1109.6 and parking meters complying with 1109.7.2.

1109.6 Signs. Parking spaces shall be designated as reserved by a sign complying with 502.6. Signs shall be located at the head or foot of the parking space so as not to interfere with the operation of a side lift or a passenger side transfer.

1109.7 Parking Meters. Where parking meters are provided, they shall comply with 1109.7.

1109.7.1 Operable Parts. Operable parts shall comply with 309.

1109.7.2 Location. A parking meter shall be located at the head or foot of the parking space so as not to interfere with the operation of a side lift or a passenger side transfer.

EXCEPTION: Where parking meters are not provided at the space, but payment for parking in the space is included in a centralized collection box or paying station, the space shall be connected to the centralized collection point with a pedestrian access route.

1109.7.3 Displays and Information. Displays and information shall be visible from a point located 40 inches (1015 mm) maximum above the center of the clear floor space in front of the meter.

1110 Call Boxes

1110.1 General. Call boxes shall comply with 1110.

1110.2 Operable Parts. Operable parts shall comply with 308 and 309.4. Where provided, labeling shall comply with 703.2 and 703.3.

EXCEPTION: Mechanically operated systems in which the signal is initiated by a lever pull shall be permitted to have an activating force of 12 lbf (53.4 N) maximum.

1110.3 Turning Space. A turning space complying with 304 shall be provided at the controls.

1110.4 Edge Protection. Edge protection complying with 405.9.2 shall be provided where the area at the call box is adjacent to an abrupt level change.

1110.5 Motor Vehicle Turnouts. Where provided, a motor vehicle turnout shall have a minimum paved area of 16 feet (4880 mm) wide minimum and 23 feet (7015 mm) long minimum and shall connect to the turning space at the call box with a pedestrian access route complying with [1103](#). Where shoulder texturing is used, it shall be discontinued at the turnout.

1110.6 Two-Way Communication. Where provided, two-way voice communication shall comply with 1110.6, 708.2 and 708.3.

1110.6.1 Volume Controls. Volume controls complying with 704.3 shall be provided.

1110.6.2 TTY. A TTY complying with 704.4 shall be provided.

1111 Alternate Circulation Path

1111.1 General. Alternate circulation paths shall comply with 1111.

1111.2 Width. The alternate circulation path shall have a width of 36 inches (915 mm) minimum.

1111.3 Location. The alternate circulation path shall parallel the disrupted pedestrian access route, on the same side of the street.

1111.4 Protection. The alternate circulation path shall comply with 307 and shall be protected with a barricade complying with 1111.6 to separate the pedestrian access route and alternate circulation path from any adjacent construction, drop-offs, openings, or other hazards.

1111.5 Signs. Signs complying with 703.5 shall be provided at both the near side and the far side of the intersection preceding a disrupted pedestrian access route.

1111.6 Barricades. Barricades shall be continuous, stable, and non-flexible and shall consist of a solid wall or fence or a Type II or Type III barricade as specified in MUTCD section 6F-60 with the bottom or lower rail 1-1/2 inches (38 mm) maximum above the ground or walkway surface, and the top of the fence, wall or upper rail 36 inches (915 mm) minimum above the ground or walkway surface. Barricade support members shall not protrude beyond the barricade face into the pedestrian access route or alternate circulation path.

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