

(l) The head of the agency shall notify the complainant of the results of the appeal within 60 days of the receipt of the request. If the head of the agency determines that additional information is needed from the complainant, he/she shall have 60 days from the date of receipt of the additional information to make his/her determination on the appeal.

(m) The time limits cited in paragraphs (i) and (l) of this section may be extended with the permission of the Assistant Attorney General.

(n) The agency may delegate its authority for conducting complaint investigations to other Federal agencies, except that the authority for making the final determination may not be delegated to another agency.

PART 1155 [RESERVED]

PART 1190—ACCESSIBILITY GUIDELINES FOR PEDESTRIAN FACILITIES IN THE PUBLIC RIGHT-OF-WAY

Sec.

1190.1 Accessibility Guidelines.

APPENDIX TO PART 1190—ACCESSIBILITY GUIDELINES FOR PEDESTRIAN FACILITIES IN THE PUBLIC RIGHT-OF-WAY

AUTHORITY: 29 U.S.C. 792; 42 U.S.C. 12204; 42 U.S.C. 4151 *et seq.*

SOURCE: 88 FR 53650, Aug. 8, 2023, unless otherwise noted.

§ 1190.1 Accessibility Guidelines.

The accessibility guidelines for pedestrian facilities in the public right-of-way are set forth in the appendix to this part. When the guidelines are adopted, with or without additions and modifications, as accessibility standards in regulations issued by other Federal agencies implementing the Americans with Disabilities Act, Section 504 of the Rehabilitation Act, and the Architectural Barriers Act, compliance with the accessibility standards is mandatory.

APPENDIX TO PART 1190—ACCESSIBILITY GUIDELINES FOR PEDESTRIAN FACILITIES IN THE PUBLIC RIGHT-OF-WAY

CHAPTER 1: APPLICATION AND ADMINISTRATION

R101 Purpose and Application

R101.1 Purpose. These guidelines contain scoping and technical requirements to ensure that *pedestrian facilities* located in the *public right-of-way* (including a *public right-of-way* that forms the boundary of a site or that lies within a site bounded by a property line), are readily *accessible* to and usable by *pedestrians* with disabilities.

R101.2 Application to ADA-Covered Facilities. These guidelines apply to *pedestrian facilities* in *public rights-of-way* to the extent required by regulations issued by Federal agencies under the Americans with Disabilities Act of 1990, as amended (42 U.S.C. 12101 *et seq.*) (ADA).

R101.3 Application to ABA-Covered Facilities. These guidelines apply to *pedestrian facilities* in *public rights-of-way* to the extent required by regulations issued by Federal agencies under the Architectural Barriers Act of 1968 (42 U.S.C. 4151 *et seq.*) (ABA).

R101.4 Effect on Existing Pedestrian Facilities. These guidelines do not address existing *pedestrian facilities* unless the *pedestrian facilities* are altered at the discretion of a covered entity. The Department of Justice has authority over existing facilities that are subject to the requirement for program access under title II of the ADA. Any determination that this document applies to existing facilities subject to the program access requirement is solely within the discretion of the Department of Justice and is effective only to the extent required by regulations issued by the Department of Justice.

R102 Deviations From These Guidelines

R102.1 ADA-Covered Facilities and Equivalent Facilitation. The use of alternative designs, products, or technologies that result in substantially equivalent or greater accessibility and usability than the requirements in these guidelines shall be permitted for *pedestrian facilities* in the *public right-of-way* subject to the ADA.

R102.2 ABA-Covered Facilities and Waivers or Modifications. Equivalent facilitation is not permitted for *pedestrian facilities* in the *public right-of-way* subject to the ABA. The ABA authorizes the Administrator of the General Services Administration, the Secretary of the Department of Housing and Urban Development, the Secretary of the Department of Defense, and the United States Postal Service to modify or waive the accessibility standards for buildings and facilities covered by the ABA on a case-by-case basis, upon application made by the head of the department, agency, or instrumentality of the

United States concerned and upon a determination that the waiver is clearly necessary. Pursuant to Section 502(b)(1) of the Rehabilitation Act of 1973, 29 U.S.C. 792(b), the Access Board shall ensure that modifications and waivers are based on findings of fact and are not inconsistent with the ABA.

R103 Conventions

R103.1 *Conventional Industry Tolerances.* All dimensions are subject to conventional industry tolerances except where requirements are stated as a range with specific minimum or maximum endpoints.

R103.2 *Calculation of Percentages.* Where the required number of *elements* or facilities to be provided is determined by calculations of ratios or percentages and remainders or fractions result, the next greater whole number of such *elements* or facilities shall be provided.

R103.3 *Units of Measurement.* Measurements are stated in U.S. customary units and metric units. The values stated in each system (U.S. customary units and metric units) may not be exact equivalents, and each system shall be used independently of the other. Slopes are expressed in terms of both ratios and percentages. Ratios and percentages may not be exact equivalents, and each shall be used independently of the other.

R104 Definitions

R104.1 *Undefined Terms.* Terms that are not defined in R104.3 or in regulations issued by the Department of Justice and the Department of Transportation under the ADA, the four standard setting agencies under the ABA or other Federal agencies that adopt these guidelines as accessibility standards shall be given their ordinarily accepted meaning in the sense that the context implies.

R104.2 *Interchangeability.* Words, terms, and phrases used in the singular include the plural and those used in the plural include the singular.

R104.3 *Defined Terms.* For the purpose of these guidelines, the following terms have the indicated meaning:

Accessible. A *pedestrian facility* or *element* in the *public right-of-way* that complies with these guidelines.

Accessible Pedestrian Signal. A device that communicates information about *pedestrian* signal timing in non-visual formats such as audible tones or speech messages, and vibrating surfaces.

Alteration or altered. A change to or an addition of a *pedestrian facility* in an existing, *developed public right-of-way* that affects or could affect *pedestrian* access, circulation, or usability.

Blended Transition. A wraparound connection at a corner, or a flush connection where

there is no *curb* to cut through, other than a *curb ramp*.

Block Perimeter. The near side of the *streets* surrounding a block. For example, on a square block bounded by Main Street to the south, Pine Street to the north, 1st Street to the east, and 2nd Street to the west, the *block perimeter* includes the north side of Main Street, the south side of Pine Street, the west side of 1st Street, and the east side of 2nd Street.

Boarding Platform. A platform raised above *standard curb height* used for transit vehicle boarding and alighting.

Building. Any structure used or intended for supporting or sheltering any use or occupancy.

Crosswalk. That part of a *roadway* that is located at an intersection included within the connections of the lateral lines of the *pedestrian circulation paths* on opposite sides of the *highway* measured from the *curbs*, or in the absence of *curbs*, from the edges of the traversable *roadway*, and in the absence of a *pedestrian circulation path* on one side of the *roadway*, the part of a *roadway* included within the extension of the lateral lines of the *pedestrian circulation path* at right angles to the center line; or at any portion of a *roadway* at an intersection or elsewhere distinctly indicated as a *pedestrian* crossing by pavement marking lines on the surface. *Crosswalks* at intersections may be marked or unmarked.

Cross Slope. The slope that is perpendicular to the direction of *pedestrian* travel.

Curb. A raised feature along the side of a *street* that delineates the edge of the *roadway* or *pedestrian circulation path*.

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

Curb Ramp. A sloped connection that is cut through or built up to a *curb*. *Curb ramps* may be perpendicular or parallel to the *curb* or to the *street* they serve or be a combination thereof.

Detectable Warning Surface. A standardized surface feature built in or applied to *pedestrian circulation paths* and other *pedestrian facilities* to warn of hazards.

Developed. Containing *buildings*, *pedestrian facilities*, *roadways*, utilities, or *elements*.

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

Grade. See *Running slope*.

Grade Break. The line where two surface planes with different *running slopes* meet.

Highway. A general term denoting a public way for purposes of vehicular travel, including the entire area within the *public right-of-way*.

Median. The area between two *roadways* of a divided *highway* measured from edge of *traveled way* to edge of *traveled way*. The *median* excludes turn lanes. The *median* width

might be different between intersections, interchanges, and at opposite approaches of the same intersection.

Operable Part. A component of an *element* used to insert or withdraw objects, or to activate, deactivate, or adjust the *element*, or to interact with the *element*.

Parallel Curb Ramp. A *curb ramp* with a *running slope* that is parallel to the *curb* or *street* it serves.

Passenger Loading Zone. An area that is specifically designed or designated for loading and unloading passengers, but that does not primarily serve vehicles on a fixed or scheduled route.

Pedestrian. A person on foot, travelling by wheelchair or other mobility device, on skates, or on a skateboard.

Pedestrian Access Route. An *accessible*, continuous, and unobstructed path of travel for use by *pedestrians* with disabilities within a *pedestrian circulation path*.

Pedestrian Activated Warning Devices. Devices that are installed in conjunction with a warning sign and are activated to alert vehicle operators to the presence of a *pedestrian*, such as rectangular rapid flashing beacons.

Pedestrian Change Interval. An interval during which the flashing upraised hand (symbolizing "don't walk") signal indication is displayed.

Pedestrian Circulation Path. A prepared exterior or interior surface provided for *pedestrian* use in the *public right-of-way*.

Pedestrian Facility. A structure, route, or space for *pedestrian* circulation or use located in the *public right-of-way*.

Pedestrian Hybrid Beacon. A special type of hybrid beacon used to warn and control traffic at an unsignalized location to assist *pedestrians* in crossing a *street* at a marked *crosswalk*.

Pedestrian Refuge Island. A defined area 72 inches (1828 mm) long minimum in the direction of *pedestrian* travel located between traffic lanes for *pedestrian* refuge within a *median*, *splitter island*, or channelizing island.

Pedestrian Signal Head. A device containing the walking person symbol (symbolizing "walk") and the upraised hand symbol (symbolizing "don't walk"), that is installed to direct *pedestrian* traffic at a *crosswalk*.

Perpendicular Curb Ramp. A *curb ramp* with a *running slope* that is perpendicular to the *curb* or the *street* it serves.

Public Right-of-Way. Public land acquired for or dedicated to transportation purposes, or other land where there is a legally established right for use by the public for transportation purposes.

Push Button. A button to activate a device or signal timing for *pedestrians*, bicyclists, or others crossing a *roadway*.

Push Button Locator Tone. A repeating sound that informs approaching *pedestrians* that a *push button* exists to actuate *pedestrian* timing or receive additional informa-

tion and that enables *pedestrians* who are blind or have low vision to locate the *push button*.

Qualified Historic Building or Facility. A *building* or facility that is listed in or eligible for listing in the National Register of Historic Places or designated as historic under an appropriate state or local law.

Ramp. A sloped walking surface with a *running slope* steeper than 1:20 (5.0%) that accomplishes a change in level and is not part of a *pedestrian circulation path* that follows the *roadway grade*. A *curb ramp* is not a *ramp*.

Roadway. That portion of a *highway* improved, designed, or ordinarily used for vehicular travel and parking lanes, but exclusive of the *sidewalk*, berm, or shoulder.

Roundabout. A circular intersection with yield control at entry, which permits a vehicle on a circular *roadway* to proceed, and with deflection of the approaching vehicle counterclockwise around a central island.

Running Slope. The slope that is parallel to the direction of *pedestrian* travel.

Shared Use Path. A multi-use path designed primarily for use by bicyclists, *pedestrians*, and other authorized motorized and non-motorized users, for transportation purposes, and that may also be used for recreation. *Shared use paths* are physically separated from motor vehicle traffic by an open space or barrier and are either within the *highway* or other *public right-of-way*.

Sidewalk. That portion of a *highway* between the *curb line*, or the lateral line of a *roadway*, and the adjacent property line, or on easements of private property, that is paved or improved and intended for use by *pedestrians*.

Splitter Island. A *median* island used to separate opposing directions of traffic entering and exiting a *roundabout*.

Stair. A change in elevation comprised of at least one tread and riser. A *curb* is not a *stair*.

Standard Curb Height. The typical height of a *curb* according to local standards for a given road type, but usually between 3 inches (75 mm) and 9 inches (230 mm) high relative to the surface of the *roadway* or gutter.

Street. See *Roadway*.

Transit Shelter. A structure provided at a *transit stop* to provide passengers protection from the weather.

Transit Stop. An area that is designated for passengers to board or alight from buses, rail cars, and other transportation vehicles that operate on a fixed route or scheduled route, including bus stops and *boarding platforms*. This definition does not include intercity rail except where a stop is located in the *public right-of-way*.

Transitional Segment. The portion of a *pedestrian circulation path* that connects adjacent surfaces with different slopes or dimensions to provide a smooth transition.

Traveled Way. The portion of the roadway for the movement of vehicles, exclusive of the shoulder, berm, sidewalk, and parking lane.

Vibrotactile. A method of communicating information by touch using a vibrating surface.

Walk Interval. An interval during which the walking person (symbolizing “walk”) signal indication is displayed.

CHAPTER 2: SCOPING REQUIREMENTS

R201 General

R201.1 Scope. All newly constructed *pedestrian facilities* and altered portions of existing *pedestrian facilities* for pedestrian circulation and use located in the *public right-of-way* shall comply with these guidelines.

Exception: Pedestrian facilities within vaults, tunnels, and other spaces used only by service personnel for maintenance, repair, or monitoring of equipment are not required to comply with these guidelines.

R201.2 Temporary and Permanent Pedestrian Facilities. The requirements in these guidelines shall apply to temporary and permanent *pedestrian facilities* and *elements* in the *public right-of-way*. Where a *pedestrian circulation path* or *transit stop* is temporarily closed by construction, maintenance operations, or similar conditions, an alternate *pedestrian access route* or *transit stop* shall be provided in accordance with R204.

R201.3 Buildings, Structures, and Elements. *Buildings*, structures, and *elements* in the *public right-of-way* that are not covered by the requirements in these guidelines shall comply with the applicable requirements in 36 CFR part 1191 (ADA & ABA Accessibility Guidelines). Examples include, but are not limited to, *buildings*, structures, and *elements* at safety rest areas or park and ride lots, temporary performance stages and reviewing stands.

R202 Alterations

R202.1 General. Alterations to *pedestrian facilities* shall comply with R202.

R202.2 Connection to Pedestrian Circulation Path. Where *pedestrian facilities* are altered, they shall be connected by a *pedestrian access route* complying with R302 to an existing *pedestrian circulation path*. A *transitional segment* may be used in the connection.

R202.3 Existing Physical Constraints. In alterations, where existing physical constraints make compliance with applicable requirements technically infeasible, compliance with these requirements is required to the maximum extent feasible. Existing physical constraints include, but are not limited to, underlying terrain, underground structures, adjacent *developed facilities*, drainage, or the presence of a significant natural or historic feature.

R202.4 Reduction in Access Prohibited. An alteration to *pedestrian facilities* or *elements* shall not decrease the accessibility of an existing *pedestrian facility* or *element* or an accessible connection to an adjacent *building* or site below the requirements in these guidelines.

R202.5 Alterations to Qualified Historic Facilities. Where the State Historic Preservation Officer or Advisory Council on Historic Preservation determines that compliance with an applicable requirement of these guidelines would threaten or destroy the historic significance of a *qualified historic building* or *facility*, compliance with that requirement is required to the maximum extent feasible without threatening or destroying the historic significance of the *qualified historic building* or *facility*.

R203 Pedestrian Access Routes

R203.1 General. Where provided, the *pedestrian facilities* addressed in R203 shall contain or connect a *pedestrian access route*, and shall comply with these guidelines.

R203.2 Connection to Accessible Facilities. *Pedestrian access routes* shall connect *accessible elements*, spaces, and *pedestrian facilities* in accordance with R203.2.

R203.2.1 Connection to Accessible Facilities subject to the ADA. *Pedestrian access routes* subject to the ADA shall connect *accessible elements*, spaces, and *pedestrian facilities* required to be accessible and connect to *accessible routes* required by section 206.2.1 of appendix B to 36 CFR part 1191 (ADA & ABA Accessibility Guidelines) that connect *building* and facility entrances to public *streets* and *sidewalks*.

Exception: Where *elements* are altered, on or adjacent to an existing *pedestrian circulation path*, the existing *pedestrian circulation path* need not be altered to provide a *pedestrian access route* complying with R202.2.

R203.2.2 Connection to Accessible Facilities subject to the ABA. *Pedestrian access routes* subject to the ABA shall connect *accessible elements*, spaces, and *pedestrian facilities* required to be accessible and connect to *accessible routes* required by section F206.2.1 of appendix C to 36 CFR part 1191 (ADA & ABA Accessibility Guidelines) that connect *building* and facility entrances to public *streets* and *sidewalks*.

Exception: Where *elements* are altered, on or adjacent to an existing *pedestrian circulation path*, the existing *pedestrian circulation path* need not be altered to provide a *pedestrian access route* complying with R202.2.

R203.3 Pedestrian Circulation Paths. *Pedestrian access routes* complying with R302 shall be provided within *pedestrian circulation paths*, including *sidewalks* and *shared use paths*. *Transitional segments* may be used to connect new or altered *pedestrian access routes* to existing *pedestrian circulation paths*, and the differences between adjacent surface

characteristics shall be minimized to provide a smooth transition.

R203.4 *Crosswalks*. A *pedestrian access route* complying with R302 shall be provided within and for the full length of a *crosswalk*, including *medians* and *pedestrian refuge islands*. *Crosswalks* shall comply with R306.

R203.5 *Pedestrian At-Grade Rail Crossing*. Where a *pedestrian circulation path* crosses at-grade rail tracks, a *pedestrian access route* complying with R302 shall be included within the *pedestrian* at-grade rail crossing. *Pedestrian* at-grade rail crossings shall comply with R306.

R203.6 *Curb Ramps and Blended Transitions*. A *curb ramp*, *blended transition*, or a combination of *curb ramps* and *blended transitions* shall be provided in accordance with R203.6 and shall comply with R304.

R203.6.1 *Placement*. Placement of *curb ramps* and *blended transitions* shall comply with R203.6.1.

R203.6.1.1 *Crosswalks at an Intersection*. At an intersection corner, one *curb ramp* or *blended transition* shall be provided for each *crosswalk*, or a single *blended transition* that spans all *crosswalks* at the intersection corner may be provided. Where *pedestrian* crossing is prohibited, *curb ramps* or *blended transitions* shall not be provided, and the *pedestrian circulation path* shall be either (a) separated from the *roadway* with landscaping or other non-prepared surface or (b) separated from the *roadway* by a detectable vertical edge treatment with a bottom edge 15 inches maximum above the *pedestrian circulation path*.

Exception: In *alterations*, where existing physical constraints make compliance with R203.6.1.1 technically infeasible, a single *curb ramp* complying with R304 shall be permitted at the apex of the intersection corner.

R203.6.1.2 *Mid-Block and Roundabout Crosswalks*. At a mid-block or roundabout *crosswalk*, *curb ramps* or *blended transitions* shall be provided on both ends of the *crosswalk*. Where *pedestrian* crossing is not intended, *curb ramps* or *blended transitions* shall not be provided, and the *pedestrian circulation path* shall be either (a) separated from the *roadway* with landscaping or other non-prepared surface or (b) separated from the *roadway* by a detectable vertical edge treatment with a bottom edge 15 inches maximum above the *pedestrian circulation path*.

R203.6.1.3 *Parallel On-Street Parking*. At parallel on-street parking spaces complying with the dimensions specified in R310.2.1, a *curb ramp* or *blended transition* shall be provided at either end of the parking space if needed to connect the parking space to a *pedestrian access route*.

R203.6.1.4 *Perpendicular and Angled On-Street Parking and Passenger Loading Zones*. At perpendicular and angled on-street parking spaces, and at *passenger loading zones*, a *curb ramp* or *blended transition* shall be pro-

vided if needed to connect the access aisle to a *pedestrian access route*.

R203.6.2 *Alterations to Crosswalks*. When *alterations* are made to *crosswalks*, *curb ramps* or *blended transitions* shall be provided on both ends of the *crosswalk* where the *pedestrian access route* crosses a *curb*.

R203.7 *Pedestrian Overpasses and Underpasses*. *Pedestrian* overpasses and underpasses shall contain a *pedestrian access route* complying with R302. Where an overpass, underpass, bridge, or similar structure is designed for *pedestrian* use only, or *pedestrian* and bicycle use only, and the approach slope to the structure exceeds 1:20 (5.0%), a *ramp* complying with R407, or an elevator or limited use/limited application elevator complying with sections 407 or 408 of Appendix D to 36 CFR part 1191 (ADA & ABA Accessibility Guidelines), shall be provided. Elevators and limited use/limited application elevators shall be unlocked and independently usable during the operating hours of the *pedestrian facility* served.

Exception: In *alterations*, where existing physical constraints make compliance with R203.7 technically infeasible, a platform lift complying with section 410 of Appendix D to 36 CFR part 1191 (ADA & ABA Accessibility Guidelines) shall be permitted.

R203.8 *Ramps*. Where provided, *ramps* shall comply with R407.

R203.9 *Elevators and Limited Use/Limited Application Elevators*. Where provided, elevators and limited use/limited application elevators shall comply with sections 407 or 408 of Appendix D to 36 CFR part 1191 (ADA & ABA Accessibility Guidelines).

R203.10 *Platform Lifts*. In *alterations*, where the use of elevators or limited use elevators is not technically feasible, platform lifts may be used and shall comply with section 410 of Appendix D to 36 CFR part 1191 (ADA & ABA Accessibility Guidelines).

R203.11 *Doors, Doorways, and Gates*. Doors, doorways, and gates that are part of a *pedestrian access route* shall comply with section 404 of Appendix D to 36 CFR part 1191 (ADA & ABA Accessibility Guidelines).

R204 Alternate Pedestrian Access Routes, Transit Stops, and Passenger Loading Zones

R204.1 *Alternate Pedestrian Access Route*. When a *pedestrian circulation path* is temporarily not *accessible* due to construction, maintenance operations, closure, or other similar conditions, an alternate *pedestrian access route* must be provided and comply with R303 and R402.

Exception: If establishing or maintaining an alternate *pedestrian access route* is technically infeasible due to site conditions or existing physical constraints, an alternate means of providing access for *pedestrians* with disabilities shall be permitted.

R204.2 Alternate Transit Stops. Where *accessible transit stops* are temporarily not *accessible* due to construction, maintenance operations, or other similar conditions, *alternate transit stops* complying with R309 shall be provided.

R204.3 Alternate Passenger Loading Zones. Where a permanently designated *passenger loading zone* is temporarily not *accessible* due to construction, maintenance operations, or other similar conditions, and a temporary *passenger loading zone* is provided, it must comply with R311.

R205 Detectable Warning Surfaces

R205.1 General. *Detectable warning surfaces* shall be provided in accordance with R205.

R205.2 Curb Ramps and Blended Transitions. *Curb ramps* shall have *detectable warning surfaces* complying with R205.2.1. *Blended transitions* shall have *detectable warning surfaces* complying with R205.2.2.

Exception: *Detectable warning surfaces* are not required on *curb ramps* and *blended transitions* used exclusively to connect *passenger loading zones*, *accessible parallel on-street parking spaces*, and *access aisles* for *perpendicular and angled parking spaces* to *pedestrian access routes*.

R205.2.1 Curb Ramps. *Curb ramps* located at *crosswalks* shall have *detectable warning surfaces* complying with R305.1 and either R305.2.1 or R305.2.2.

R205.2.2 Blended Transitions. *Blended transitions* located at *crosswalks* shall have *detectable warning surfaces* complying with R305.1 and R305.2.3.

R205.3 Pedestrian Refuge Islands. *Cut-through pedestrian refuge islands* shall have *detectable warning surfaces* complying with R305.1 and R305.2.4.

R205.4 Pedestrian At-Grade Rail Crossings. *Pedestrian at-grade rail crossings* not located within a *street* shall have *detectable warning surfaces* complying with R305.1 and R305.2.5. *Pedestrian at-grade rail crossings* located within a *street* at a *crosswalk* shall not have *detectable warning surfaces* adjacent to the railway.

R205.5 Boarding Platforms. *Boarding platforms* at *transit stops* that are not protected by screens or guards along the sides of the boarding and alighting areas facing the transit vehicles shall have *detectable warning surfaces* complying with R305.1 and R305.2.6.

R205.6 Sidewalk and Street-Level Rail Boarding and Alighting Areas. *Boarding and alighting areas* at *sidewalk* or *street-level transit stops* for rail vehicles that are not protected by screens or guards along the side of the boarding and alighting areas facing the rail vehicles shall have *detectable warning surfaces* complying with R305.1 and R305.2.7.

R205.7 Driveways. *Pedestrian circulation paths* at *driveways* controlled with yield or stop control devices or traffic signals shall

have *detectable warning surfaces* complying with R305.2.8.

R206 Pedestrian Signal Heads and Pedestrian Activated Warning Devices

R206.1 General. Where provided, *pedestrian signal heads* and *pedestrian activated warning devices* shall comply with R206. The *accessible* features required by these guidelines shall be available at all times.

R206.2 Traffic Control Signals and Hybrid Beacons with Pedestrian Signal Heads. Where *pedestrian signal heads* are provided at *crosswalks*, the walk indication shall comply with R308. *Pedestrian signal heads* must have a *pedestrian push button* complying with R307, except for R307.7, or passive detection or pretimed operation that activates audible and *vibrotactile* indications complying with R308.

R206.3 Pedestrian Activated Warning Devices. *Pedestrian activated warning devices* shall have *pedestrian push buttons* complying with R307, except for R307.2 and R307.6, or passive detection that operates audible indications complying with R307.7.

R207 Protruding Objects and Vertical Clearance

R207.1 General. *Protruding objects* and *vertical clearance* along any portion of a *pedestrian circulation path* shall comply with R402.

R208 Pedestrian Signs

R208.1 General. Where provided, signs intended solely for *pedestrians*, including *transit signs*, and all signs serving *shared use paths*, shall comply with R410.

Exceptions: 1. *Transit schedules*, *timetables*, and *maps* are not required to comply with R410.

2. Signs mounted immediately above or incorporated into a *push button* detector unit are not required to comply with R410.

R209 Street Furniture

R209.1 General. Where provided, *street furniture* shall comply with the applicable requirements in R209.

R209.2 Drinking Fountains. *Drinking fountains* shall comply with sections 602.1 through 602.6 of Appendix D to 36 CFR part 1191 (ADA & ABA Accessibility Guidelines).

R209.3 Public Street Toilets. *Public street toilets* shall be provided in accordance with R209.3.

R209.3.1 Permanent Public Street Toilets. *Permanent public street toilets* shall comply with sections 603 through 610 of Appendix D to 36 CFR part 1191 (ADA & ABA Accessibility Guidelines).

R209.3.2 Portable Toilet Units. *Portable toilet units* shall comply with section 603 of Appendix D to 36 CFR part 1191 (ADA & ABA Accessibility Guidelines). Where multiple

single user portable toilet units are clustered at a single location, at least 5 percent, but no fewer than one of each type of the toilet units at each cluster shall be required to comply with 603 Appendix D to 36 CFR part 1191 (ADA & ABA Accessibility Guidelines). Portable toilet units complying with section 603 shall be identified by the International Symbol of Accessibility complying with R411.

R209.4 *Tables*. At least 5 percent of tables at each group of adjacent tables, but no fewer than one, shall comply with section 902 of Appendix D to 36 CFR part 1191 (ADA & ABA Accessibility Guidelines).

R209.5 *Sales or Service Counters*. Sales or service counters shall comply with section 904.4 of Appendix D to 36 CFR part 1191 (ADA & ABA Accessibility Guidelines).

Exception 1: Sales or service counters that are located in a *building* subject to the ADA that is not itself in the *public right-of-way* but that directly serve the *public right-of-way*, such as at a service window accessed from the *sidewalk*, may comply with section 227.3 of Appendix B to 36 CFR part 1191 (ADA & ABA Accessibility Guidelines).

Exception 2: Sales or service counters that are located in a *building* subject to the ABA that is not itself in the *public right-of-way* but that directly serve the *public right-of-way*, such as at a service window accessed from the *sidewalk*, may comply with section F227.3 of Appendix C to 36 CFR part 1191 (ADA & ABA Accessibility Guidelines).

R209.6 *Benches*. Benches, other than those that are part of tables complying with R209.4, shall comply with R209.6.

R209.6.1 *Benches at Transit Stops and Shelters*. Benches provided at *transit stops* shall have clear space complying with R404 next to either end of the bench, or if the bench has no end, such as a circular bench, the clear space shall either be integral to the bench or no more than 18 inches (455 mm) from the front of the bench. Benches provided within *transit shelters* shall have clear space complying with R309.2.2.

R209.6.2 *Benches Not at Transit Stops and Shelters*. At least 50 percent, but no less than one, of benches at each group of adjacent benches shall provide clear space complying with R404. The clear space shall be located next to either end of the bench, or if the bench has no end, such as a circular bench, the clear space shall either be integral to the bench or no more than 18 inches (455 mm) from the front of the bench.

R209.7 *Operable Parts of Other Fixed Elements*. *Operable parts of other fixed elements* to be used by *pedestrians* shall comply with R403.

R210 *Transit Stops and Transit Shelters*

R210.1 *General*. Where provided, *transit stops* and *transit shelters* shall comply with R309.

R210.2 *Fare Vending Machines*. Where provided at *transit stops* and *transit shelters*, fare vending machines shall comply with R403 and section 707 of Appendix D to 36 CFR part 1191 (ADA & ABA Accessibility Guidelines), except for 707.2 and 707.3.

R210.3 *Operable Parts of Other Fixed Elements*. *Operable parts of other fixed elements* at *transit stops* and shelters intended to be used by *pedestrians* shall comply with R403.

R211 *On-Street Parking Spaces*

R211.1 *General*. Where on-street parking is provided and is metered or designated by signs or pavement markings, accessible parking spaces complying with R310 shall be provided in accordance with R211 and Table R211.

Exceptions: 1. On-street parking spaces designated exclusively as residential parking shall not be required to comply with R211 and shall not be counted for purposes of Table R211.

2. On-street parking spaces designated exclusively for commercial or law enforcement vehicles shall not be required to comply with R211 and shall not be counted for purposes of Table R211.

3. Where on-street parking spaces are *altered*, the requirements of R211 shall apply only to the affected parking spaces until the minimum number of *accessible* on-street parking spaces as specified in Table R211 are provided.

R211.2 *Parking on Block Perimeter*. Where parking spaces are provided on a *block perimeter* and are metered or designated by signs or pavement markings, *accessible* parking spaces complying with R310 shall be provided in accordance with Table R211. Where parking is metered or designated by signs or pavement markings, but individual spaces are not marked, each 20 feet (6.1 m) of *block perimeter* where parking is designated shall be counted as one parking space.

R211.3 *Parking not on Block Perimeter*. Where parking spaces are provided on a section of a *street* that is not part of a *block perimeter*, *accessible* parking spaces complying with R310 shall be provided in accordance with Table R211. Where parking is metered or designated by signs or pavement markings, but individual spaces are not marked, each 20 feet (6.1 m) of *street* where parking is designated shall be counted as one parking space.

TABLE R211 ON-STREET PARKING SPACES

Total number of metered or designated parking spaces	Minimum required number of accessible parking spaces
1 to 25	1.
26 to 50	2.
51 to 75	3.
76 to 100	4.

TABLE R211 ON-STREET PARKING SPACES—
Continued

Total number of metered or designated parking spaces	Minimum required number of accessible parking spaces
101 to 150	5.
151 to 200	6.
201 and over	4 percent of total.

R212 Passenger Loading Zones

R212.1 General. Where permanently designated *passenger loading zones* other than *transit stops* are provided, at least one *accessible passenger loading zone* complying with R311 shall be provided in every continuous 100 feet (30 m) of loading zone space, or fraction thereof.

R213 Stairs and Escalators

R213.1 General. Where provided on *pedestrian circulation paths*, *stairs* shall comply with R408 and *escalators* shall comply with section 810.9 of Appendix D to 36 CFR part 1191 (ADA & ABA Accessibility Guidelines). *Stairs* and *escalators* shall not be part of *pedestrian access routes*.

R214 Handrails

R214.1 General. Where provided on *pedestrian circulation paths*, *handrails* shall comply with R409.

CHAPTER 3: TECHNICAL REQUIREMENTS

R301 General

R301.1 Scope. The technical requirements in Chapter 3 shall apply where required by Chapter 2 or where referenced by a requirement in these guidelines.

R302 Pedestrian Access Routes

R302.1 General. *Pedestrian access routes* shall comply with R302.

R302.2 Continuous Clear Width. Except as provided in R302.2.1 and R302.2.2, the continuous clear width of *pedestrian access routes* shall be 48 inches (1220 mm) minimum, exclusive of the width of any *curb*.

R302.2.1 Medians and Pedestrian Refuge Islands. The clear width of *pedestrian access routes* crossing *medians* and *pedestrian refuge islands* shall be 60 inches (1525 mm) minimum, except that where *shared use paths* cross *medians* and *pedestrian refuge islands* the clear width of the *pedestrian access route* shall be 60 inches (1525 mm) minimum or at least as wide as the *crosswalk*, whichever is greater.

R302.2.2 Shared Use Paths. On *shared use paths*, the clear width of the *pedestrian access route* shall extend the full width provided for *pedestrian* circulation on the path. Obstructions, such as *bollards*, shall not reduce the clear width of the *pedestrian access route* to

less than 48 inches (1220 mm) measured from the edge of the obstruction.

R302.3 Passing Spaces. Where the clear width of *pedestrian access routes* is less than 60 inches (1525 mm), *passing spaces* shall be provided at intervals of 200 feet (61 m) maximum. *Passing spaces* shall be 60 inches (1525 mm) minimum by 60 inches (1525 mm) minimum. *Passing spaces* and *pedestrian access routes* are permitted to overlap.

R302.4 Grade. The *grade* of *pedestrian access routes* shall comply with R302.4, except the *grade* of *curb ramps* and *blended transitions* shall comply with R304 and the *grade* of *ramps* shall comply with R407.

R302.4.1 Within Highway Right-of-Way. Except as provided in R302.4.3, where a *pedestrian access route* is contained within a *highway* right-of-way, the *grade* of the *pedestrian access route* shall not exceed 1:20 (5.0%).

Exception: Where the *grade* established for the adjacent *street* exceeds 1:20 (5.0%), the *grade* of the *pedestrian access route* shall not exceed the *grade* established for the adjacent *street*.

R302.4.2 Not Within Highway Right-of-Way. Where a *pedestrian access route* is not contained within a *highway* right-of-way, the *grade* of the *pedestrian access route* shall not exceed 1:20 (5.0%).

R302.4.3 Within a Crosswalk. Where a *pedestrian access route* is contained within a *crosswalk*, the *grade* of the *pedestrian access route* shall be 1:20 (5.0%) maximum.

Exception: Where *roadway* design requires *superelevation* greater than 1:20 (5.0%) at the location of a *crosswalk*, the *grade* of the *pedestrian access route* within the *crosswalk* may be the same as the *superelevation*.

R302.5 Cross Slope. The *cross slope* of a *pedestrian access route* shall comply with R302.5.

R302.5.1 Not Contained Within a Crosswalk. The *cross slope* of a *pedestrian access route* not contained within a *crosswalk* shall be 1:48 (2.1%) maximum.

Exception: The portion of a *pedestrian access route* within a *street* that connects an *accessible* parallel on-street parking space to the nearest *crosswalk* at the end of the block face or the nearest *midblock crosswalk* is not required to comply with R302.5.

R302.5.2 Contained Within a Crosswalk. The *cross slope* of a *pedestrian access route* contained within a *crosswalk* shall comply with R302.5.2.

R302.5.2.1 Crosswalk with Yield or Stop Control Devices. Where a *pedestrian access route* is contained within a *crosswalk* at an intersection approach with *yield* or *stop* control devices, the *cross slope* of the *pedestrian access route* shall be 1:48 (2.1%) maximum.

R302.5.2.2 Crosswalk at Uncontrolled Approach. Where a *pedestrian access route* is contained within a *crosswalk* at an uncontrolled approach, the *cross slope* of the *pedestrian access route* shall be 1:20 (5.0%) maximum.

R302.5.2.3 *Crosswalk with Traffic Control Signal or Pedestrian Hybrid Beacon.* Where a pedestrian access route is contained within a crosswalk at an intersection approach controlled by a traffic control signal or pedestrian hybrid beacon, the cross slope of the pedestrian access route shall be 1:20 (5.0%) maximum.

R302.5.2.4 *Midblock and Roundabout Crosswalks.* The cross slope of a pedestrian access route within a midblock crosswalk or a crosswalk at a roundabout shall not exceed the street grade.

R302.6 *Surfaces.* The walking surfaces of pedestrian access routes, elements, and spaces that are required to be accessible shall be stable, firm, and slip resistant and shall comply with R302.6.

R302.6.1 *Grade Breaks.* Grade breaks shall be flush.

R302.6.2 *Changes in Level.* Changes in level of ¼ inch (6.4 mm) maximum shall be permitted to be vertical. Changes in level between ¼ inch (6.4 mm) and ½ inch (13 mm) shall be beveled with a slope not steeper than 1:2 (50.0%). Changes in level greater than ½ inch (13 mm) up to 6 inches shall have a 1:12 (8.3%) maximum slope. Changes in level greater than 6 inches (150 mm) shall comply with R407.

R302.6.3 *Horizontal Openings.* Horizontal openings in ground surfaces, such as those in gratings and joints, other than flangeway gaps (see R302.6.4), shall not allow passage of a sphere larger than ½ inch (13 mm) in diameter. Except where multiple directions of travel intersect, elongated openings are permitted and shall be placed so that the long dimension is perpendicular to the dominant direction of travel.

R302.6.4 *Surfaces at Pedestrian At-Grade Rail Crossings.* Surfaces at pedestrian at-grade rail crossings shall comply with R302.6.4.

R302.6.4.1 *Surface Alignment.* Where a pedestrian access route crosses rails at grade, the pedestrian access route surface shall be level and flush with the top of rail at the outer edges of the rails, and the surface between the rails shall be aligned with the top of rail.

R302.6.4.2 *Flangeway Gaps.* Flangeway gaps shall comply with R302.6.4.2.

R302.6.4.2.1 *Flangeway Gaps at Tracks Subject to FRA Safety Regulations.* At pedestrian at-grade rail crossings that cross tracks that are subject to safety regulations at 49 CFR part 213, issued by the Federal Railroad Administration, flangeway gaps shall be 3 inches (75 mm) wide maximum.

R302.6.4.2.2 *Flangeway Gaps at Tracks Not Subject to FRA Safety Regulations.* At pedestrian at-grade rail crossings that cross tracks that are not subject to safety regulations at 49 CFR part 213, issued by the Federal Railroad Administration, flangeway gaps shall be 2 ½ inches (64 mm) wide maximum.

R303 Alternate Pedestrian Access Routes

R303.1 *General.* Alternate pedestrian access routes shall comply with R303.

R303.2 *Signs.* Signs identifying alternate pedestrian access routes shall be provided in advance of decision points and shall comply with R410. Proximity actuated audible signs or other non-visual means within the public right-of-way of conveying the information that identifies the alternate pedestrian access route shall also be provided.

R303.3 *Surface.* Alternate pedestrian access route surfaces shall comply with R302.6 or shall not be less accessible than the surface of the temporarily closed pedestrian circulation path.

R303.4 *Continuous Clear Width.* The minimum continuous clear width of alternate pedestrian access routes shall be 48 inches (1220 mm) exclusive of the width of any curb.

Exception: Where the alternate pedestrian access route utilizes an existing pedestrian circulation path, the width shall not be less than the width of the temporarily closed pedestrian circulation path.

R303.5 *Curb Ramp or Blended Transition.* Where an alternate pedestrian access route crosses a curb, a curb ramp or blended transition complying with R304 shall be provided.

R303.6 *Detectable Edging of Channelizing Devices.* Where a channelizing device is used to delineate an alternate pedestrian access route, continuous detectable edging complying with R303.6 shall be provided throughout the length of the route.

Exception: Where pedestrians or vehicles turn or cross, gaps in the detectable edging are permitted.

R303.6.1 *Top.* The top of the top detectable edging shall be no lower than 32 inches (815 mm) above the walking surface and be free of sharp or abrasive surfaces.

R303.6.2 *Bottom.* The bottom of the bottom detectable edging shall be 2 inches (51 mm) maximum above the walking surface.

R303.7 *Pedestrian Signal Heads.* Where temporary pedestrian signal heads are provided at a crosswalk that is part of an alternate pedestrian access route, pedestrian pushbuttons or passive detection devices shall be provided and shall comply with R307.

R304 Curb Ramps and Blended Transitions

R304.1 *General.* Curb ramps and blended transitions shall comply with R304 and have detectable warning surfaces in accordance with R205.

R304.2 *Perpendicular Curb Ramps.* Perpendicular curb ramps shall comply with R304.2 and R304.5.

R304.2.1 *Running Slope.* The running slope of a curb ramp shall be perpendicular to the curb or gutter grade break. The running slope of the curb ramp shall be 1:12 (8.3%) maximum.

Exception: Where the *curb ramp* length must exceed 15 feet (4.6 m) to achieve a 1:12 (8.3%) *running slope*, the *curb ramp* length shall extend at least 15 feet (4.6 m) and may have a *running slope* greater than 1:12 (8.3%).

R304.2.2 *Cross Slope.* The *cross slope* of a *curb ramp* run shall be 1:48 (2.1%) maximum.

Exception: At *crosswalks*, the *cross slope* of the *curb ramp* run shall be permitted to be equal to or less than the *cross slope* of the *crosswalk* as specified by R302.5.

R304.2.3 *Grade Breaks.* *Grade breaks* at the top and bottom of a *curb ramp* run shall be perpendicular to the direction of the *curb ramp* run. *Grade breaks* shall not be permitted on the surfaces of *curb ramp* runs and landings. Surface slopes that meet at *grade breaks* shall be flush.

R304.2.4 *Clear Area.* A clear area 48 inches (1220 mm) wide minimum by 48 inches long (1220 mm) minimum shall be provided beyond the bottom *grade break* of the *perpendicular curb ramp* run and within the width of the *crosswalk*. At *shared use paths*, the clear area shall be as wide as the *shared use path*. The clear area shall be located wholly outside the vehicle travel lanes, including bicycle lanes, that run parallel to the *crosswalk*. The *running slope* of the clear area shall be 1:20 (5.0%) maximum. The *cross slope* of the clear area shall be as specified by R302.5.

R304.2.5 *Landing.* When a change in direction is necessary to access a *curb ramp* from a *pedestrian access route*, a landing shall be provided at the top of the *curb ramp*. The landing shall be 48 inches (1220 mm) wide minimum by 48 inches (1220 mm) long minimum. At *shared use paths*, the landing shall be as wide as the *shared use path*. Where a landing serves only one *curb ramp*, the landing slope measured perpendicular to the *curb ramp* run shall be equal to or less than the *cross slope* of the *curb ramp* run, and the landing slope measured parallel to the *curb ramp* run shall be 1:48 (2.1%) maximum. Where a landing serves two *curb ramps*, the landing slope in either direction of travel shall not exceed the *cross slope* of the *crosswalk* parallel to the direction of travel as specified by R302.5.

R304.2.6 *Side Treatments.* Where a *pedestrian circulation path* crosses the side of a *curb ramp*, the side of the *curb ramp* shall be flared. The slope of the flared side shall be 1:10 (10.0%) maximum, measured parallel to the adjacent *curb line*.

R304.2.7 *Connection to Pedestrian Facilities.* *Perpendicular curb ramps* or their landings shall be connected to adjacent *pedestrian facilities* by *pedestrian access routes* complying with R302. A *transitional segment* may be used in the connection.

R304.3 *Parallel Curb Ramps.* *Parallel curb ramps* shall comply with R304.3 and R304.5.

R304.3.1 *Running Slope.* The *running slope* of the *curb ramp* run shall be parallel to the curb and shall be 1:12 (8.3%) maximum.

Exception: Where the *curb ramp* run length must exceed 15 feet (4.6 m) to achieve a 1:12 (8.3%) *running slope*, the *curb ramp* run length shall extend at least 15 feet (4.6 m) and may have a *running slope* greater than 1:12 (8.3%).

R304.3.2 *Cross Slope.* The *cross slope* of the *curb ramp* run shall be 1:48 (2.1%) maximum.

R304.3.3 *Grade Breaks.* *Grade breaks* at the top and bottom of a *curb ramp* run shall be perpendicular to the direction of the *curb ramp* run. *Grade breaks* shall not be permitted on the surfaces of *curb ramp* runs or landings. Surface slopes that meet at *grade breaks* shall be flush.

R304.3.4 *Landings.* Landings shall be provided at the bottom of *parallel curb ramps*. Landings shall be 48 inches (1220 mm) wide minimum by 48 inches (1220 mm) long minimum. The slope of the landing, measured parallel to the direction of travel on the *curb ramp* run, shall be permitted to be equal to or less than the slope of the *roadway* or the *cross slope* of the *crosswalk* as specified by R302.5. The *cross slope* of the landing shall be 1:48 (2.1%) maximum measured perpendicular to the direction of travel on the *curb ramp* run.

R304.4 *Blended Transitions.* *Blended transitions* shall comply with R304.4 and R304.5.

R304.4.1 *Running Slope.* The *running slope* of *blended transitions* shall be 1:20 (5.0%) maximum.

R304.4.2 *Cross Slope.* The *cross slope* of *blended transitions* shall be equal to or less than the *cross slope* of the *crosswalk* as specified by R302.5.

R304.4.3 *Bypass.* Where a *blended transition* serving more than one *pedestrian circulation path* has a *running slope* greater than 1:48 (2.1%), a *pedestrian access route* shall be provided so that a *pedestrian* not crossing the *street* may bypass the *blended transition*.

R304.5 *Common Requirements.* *Curb ramps* and *blended transitions* shall comply with R304.5.

R304.5.1 *Width.* The width of *curb ramp* runs (excluding any flared sides) and *blended transitions* shall comply with R304.5.1.1 or R304.5.1.2, as applicable.

R304.5.1.1 *Curb Ramps and Blended Transitions Not on Shared Use Paths.* The clear width of *curb ramp* runs (excluding any flared sides) and *blended transitions* not on *shared use paths* shall be 48 inches (1220 mm) minimum.

R304.5.1.2 *Curb Ramps and Blended Transitions on Shared Use Paths.* On *shared use paths*, the width of *curb ramp* runs (excluding any flared sides) and *blended transitions* shall be equal to the width of the *shared use path*.

R304.5.2 *Change of Grade.* At gutters and *streets* where a change of *grade* occurs adjacent to *curb ramps* and *blended transitions*, the change of *grade* shall comply with the requirements contained in (A) or (B) below:

A. The change of *grade* shall not exceed 13.3 percent, or

B. A transitional space shall be provided at the bottom of the *running slope* of the *curb ramp run* or *blended transition*. The transitional space shall extend 24 inches (610 mm) minimum in the direction of *pedestrian travel* and the full width of the *curb ramp run* or *blended transition*. Transitional spaces shall have *running slopes* of 1:48 (2.1%) maximum and *cross slopes* no greater than the *cross slope* of the *crosswalk* as specified by R302.5.

R304.5.3 *Crosswalks*. *Perpendicular curb ramp runs*, *parallel curb ramp landings*, and 48 inches (1220 mm) minimum width of *blended transitions*, except those at *shared use paths*, shall be contained wholly within the width of the *crosswalks* they serve. At *shared use paths*, the full width of a *perpendicular curb ramp run*, *parallel curb ramp landing*, or the *blended transition* shall be contained wholly within the width of the *crosswalk* it serves.

R304.5.4 *Surfaces*. Surfaces of *curb ramps* and *blended transitions* shall comply with R302.6 except that changes in level are not permitted.

R305 Detectable Warning Surfaces

R305.1 *General*. *Detectable warning surfaces* shall consist of truncated domes in a square or radial grid pattern and shall comply with R305.

R305.1.1 *Dome Size*. The truncated domes shall have a base diameter of 0.9 inches (23 mm) minimum and 1.4 inches (36 mm) maximum, a top diameter of 50 percent of the base diameter minimum and 65 percent of the base diameter maximum, and a height of 0.2 inches (5.1 mm). When *detectable warning surface* tiles are cut to fit, partial domes are permitted along the cut edges.

R305.1.2 *Dome Spacing*. The truncated domes 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 (17 mm) minimum, measured between the most adjacent domes.

Exceptions: 1. When *detectable warning surfaces* are cut to fit, center-to-center spacing measured between domes adjacent to cut edges shall not exceed twice the normal spacing between domes not adjacent to cut edges.

2. Dome spacing requirements do not apply at a gap in a *detectable warning surface* at an expansion joint provided that the *detectable warning surface* aligns with both edges of the expansion joint.

R305.1.3 *Contrast*. *Detectable warning surfaces* shall contrast visually with adjacent walking surfaces, either light-on-dark or dark-on-light.

R305.1.4 *Surface Size*. *Detectable warning surfaces* shall extend 24 inches (610 mm) minimum in the direction of *pedestrian travel*. The width of *detectable warning surfaces* shall be as follows:

A. At *curb ramps* and *blended transitions*, *detectable warning surfaces* shall extend the full

width of the *curb ramp run* (excluding any flared sides), *blended transition*, or landing.

B. At cut-through *pedestrian refuge islands*, *detectable warning surfaces* shall extend the full width of the *pedestrian circulation path* opening.

C. At *pedestrian at-grade rail crossings* not located within a *street*, *detectable warning surfaces* shall extend the full width of the *pedestrian circulation path*.

D. Where required at *boarding platforms*, *detectable warning surfaces* shall extend the full length of the unprotected areas of the platform.

E. At boarding and alighting areas at *sidewalk* or *street level transit stops* for rail vehicles, *detectable warning surfaces* shall extend the full length of the unprotected area of the *transit stop*.

R305.2 *Location*. The location of *detectable warning surfaces* shall comply with R305.2. Where a concrete border is required for proper installation of a *detectable warning surface*, a concrete border not exceeding 2 inches (51 mm) shall be permitted on all sides of the *detectable warning surface* except between the *detectable warning surface* and the edge of pavement where a setback is already permitted.

R305.2.1 *Perpendicular Curb Ramps*. On *perpendicular curb ramps*, *detectable warning surfaces* shall be located as follows:

A. Where the ends of the bottom *grade break* are in front of the back of *curb* or at the edge of pavement where there is no *curb*, the *detectable warning surface* shall be placed at the back of *curb* or no greater than 6 inches (150 mm) from the edge of pavement where there is no *curb*.

B. Where the ends of the bottom *grade break* are behind the back of *curb* or edge of pavement where there is no *curb* and the distance from both ends of the bottom *grade break* to the back of *curb* or edge of pavement where there is no *curb* is 60 inches (1525 mm) or less, the *detectable warning surface* shall be placed on the *ramp run* at the bottom *grade break*.

C. Where the ends of the bottom *grade break* are behind the back of *curb* or edge of pavement where there is no *curb* and the distance from either end of the bottom *grade break* to the back of *curb* or edge of pavement where there is no *curb* is more than 60 inches (1525 mm), the *detectable warning surface* shall be placed on the clear area so that both front corners of the *detectable warning surfaces* are at the back of *curb* or no greater than 6 inches (150 mm) from the edge of pavement where there is no *curb*.

R305.2.2 *Parallel Curb Ramps*. On *parallel curb ramps*, *detectable warning surfaces* shall be located on the landing at either the back of *curb* or the edge of pavement where there is no *curb*.

R305.2.3 *Blended Transitions*. On *blended transitions*, *detectable warning surfaces* shall

be located on the *blended transition* so that both front corners of the *detectable warning surfaces* are at the back of *curb* or no greater than 6 inches (150 mm) from the edge pavement where there is no *curb*.

R305.2.4 Pedestrian Refuge Islands. At cut-through *pedestrian refuge islands*, *detectable warning surfaces* shall be located no greater than 6 inches (150 mm) from the edges of the *pedestrian refuge island* or at back of *curb* and shall be separated by a 24 inch (610 mm) minimum length of surface in the direction of travel without *detectable warning surfaces*.

R305.2.5 Pedestrian At-Grade Rail Crossings. At *pedestrian at-grade rail crossings* not located within a *street*, *detectable warning surfaces* shall be located on each side of the rail crossing. The edge of the *detectable warning surface* nearest the rail crossing shall be 6 feet (1.8 m) minimum and 15 feet (4.6 m) maximum from the centerline of the nearest rail. Where *pedestrian gates* are provided, *detectable warning surfaces* shall be located on the side of the gate opposite the rail. *Pedestrian gates* shall not overlap *detectable warning surfaces*.

R305.2.6 Boarding Platforms. At *boarding platforms* for transit vehicles, *detectable warning surfaces* shall be located at the boarding edge of the platform.

Exception: Where a *curb* is present at the boarding edge of the platform, the *detectable warning surface* may be placed at the back of *curb*.

R305.2.7 Sidewalk and Street-Level Rail Boarding and Alighting Areas. At boarding and alighting areas at *sidewalk* or *street-level transit stops* for rail vehicles, *detectable warning surfaces* shall be located at the edge of the boarding and alighting area closest to the rail vehicles.

R305.2.8 Driveways. Where driveways are controlled with yield or stop control devices or traffic signals, *detectable warning surfaces* shall be provided on the *pedestrian circulation path* where the *pedestrian circulation path* meets the driveway.

R306 Crosswalks

R306.1 General. *Crosswalks* shall comply with R306.

R306.2 Pedestrian Signal Phase Timing. Where a traffic control signal with *pedestrian signal indications* is provided at a *crosswalk*, *pedestrian signal phase timing* shall be based on a *pedestrian clearance time* that is calculated using a *pedestrian walking speed* of 3.5 ft/s (1.1 m/s) or less from the location of the *pedestrian push button* to a *pedestrian refuge island* or the far side of the *traveled way*. The *walk interval* shall be 7 seconds minimum. Where the *pedestrian clearance time* is calculated to a *pedestrian refuge island*, an additional *pedestrian push button* or passive detection device shall be provided on the *pedestrian refuge island*.

Exception: If a passive *pedestrian detection device* is used to automatically adjust the *pedestrian clearance time* based on the *pedestrian's actual clearance of the crosswalk*, a faster walking speed may be used.

R306.3 Accessible Walk Indication. An *accessible walk indication* complying with R308.2 shall have the same duration as the *walk interval*.

Exception: Where the *pedestrian signal rests in walk*, the *accessible walk indication* may be limited to the first 7 seconds of the *walk interval*. If the *pedestrian signal* is resting in walk and there is sufficient time remaining to provide an *accessible walk interval* before the beginning of the *pedestrian change interval*, the *accessible walk indication* may be recalled by a button press.

R306.4 Roundabouts. Where *pedestrian circulation paths* are provided at *roundabouts*, they shall comply with R306.4.

R306.4.1 Edge Detection. The *street side edge of the pedestrian circulation path* at the approach and along the *circulatory roadway of the roundabout* shall comply with R306.4.1.1 where not attached to the *curb*, or R306.4.1.2 where attached to the *curb*. *Detectable warning surfaces* shall not be used for *roundabout edge detection*.

R306.4.1.1 Separation. Where *pedestrian crossing* is not intended, the *pedestrian circulation path* shall be separated from the *curb*, *crosswalk to crosswalk*, with landscaping or other nonprepared surface 24 inches (610 mm) wide minimum.

R306.4.1.2 Vertical Edge Treatment. Where *pedestrian crossing* is not intended, a *curb-attached pedestrian circulation path* shall have a continuous and detectable vertical edge treatment along the *street side of the pedestrian circulation path*, from *crosswalk to crosswalk*. The bottom edge of the vertical edge treatment shall be 15 inches (380 mm) maximum above the *pedestrian circulation path*.

R306.4.2 Crosswalk Treatments. Each multi-lane segment of the *roundabout* containing a *crosswalk* shall provide a *crosswalk treatment* consisting of one or more of the following: a traffic control signal with a *pedestrian signal head*; a *pedestrian hybrid beacon*; a *pedestrian actuated rectangular rapid flashing beacon*; or a raised crossing.

R306.5 Channelized Turn Lanes. *Crosswalks* at multi-lane channelized turn lanes shall provide treatments consisting of one or more of the following: a traffic control signal with a *pedestrian signal head*; a *pedestrian hybrid beacon*; a *pedestrian actuated rectangular rapid flashing beacon*; or a raised crossing.

R307 Pedestrian Push Buttons and Passive Pedestrian Detection

R307.1 General. *Pedestrian push buttons* and passive *pedestrian detection devices* shall comply with R307. *Operable parts of pedestrian push buttons* shall comply with R403.

R307.2 *Activation. Pedestrian push buttons and passive detection devices shall activate the accessible pedestrian signals and, where applicable, the walk interval.*

R307.3 *Extended Push Button Press.* Where an extended *push button* press is used to provide any additional features, a *push button* press of less than one second shall actuate only the *pedestrian* timing and any associated *accessible* walk indication, and a *push button* press of one second or more shall actuate the *pedestrian* timing, any associated *accessible* walk indication, and any additional features. If additional crossing time is provided by means of an extended pushbutton press, a sign so indicating shall be mounted adjacent to or integral with the pedestrian push button.

R307.4 *Location. Pedestrian push buttons* shall be located no greater than 5 feet from the side of a *curb ramp* run or the edge of the farthest associated *crosswalk* line from the center of the intersection. *Pedestrian push buttons* shall be located between 1.5 and 10 feet from the edge of the *curb* or pavement.

R307.4.1 *Two Pedestrian Push Buttons on Same Corner.* Where two *pedestrian push buttons* are provided on the same corner, they shall be 10 feet or more apart.

Exception. In *alterations*, where technically infeasible to provide 10 feet separation between *pedestrian push buttons* on the same corner, a *pedestrian push button* information message complying with R308.3.2 shall be provided.

R307.5 *Push Button Orientation.* The face of the *push button* shall be parallel to its associated *crosswalk*.

R307.6 *Audible and Vibrotactile Walk Indications for Pedestrian Signal Heads.* *Pedestrian push buttons* or passive detection devices shall activate audible and *vibrotactile* walk indications complying with R308.

R307.7 *Audible and Vibrotactile Indication for Pedestrian Activated Warning Devices Without a Walk Indication.* Where a *pedestrian push button* or a passive detection device is provided for *pedestrian activated warning devices*, such as rectangular rapid flashing beacons, the *pedestrian push button* or passive detection device shall activate a speech message that indicates the status of the beacon in lieu of an audible walk indication. The speech message volume shall comply with R308.4. Where a *pedestrian push button* is provided, it shall not include *vibrotactile* features indicating a *walk interval*.

R307.8 *Locator Tone. Pedestrian push buttons* shall incorporate a locator tone complying with R307.8.

R307.8.1 *Duration.* Locator tones shall have a duration of 0.15 seconds or less and repeat at one-second intervals except when another audible indication from the same device is active. When another audible indication from the same device is active, the locator tone shall be silenced.

Exception: A locator tone may be silenced if a passive detection system activates the locator tone when a *pedestrian* is within a 12-foot radius of the *pedestrian push button*.

R307.8.2 *Locator Tone in Response to Ambient Sound. Pedestrian push button locator tones* shall be intensity responsive to ambient sound and shall be audible 6 to 12 feet from the *push button*, or to the *building* line, whichever is less. The *push button locator tone* shall be louder than ambient sound up to a maximum volume of 5 dBA louder than ambient sound. Automatic volume adjustment in response to ambient traffic sound level shall be a maximum volume of 100 dBA.

R307.8.3 *Locator Tone and Audible Beaconing.* Where audible beaconing is used, the volume of the *push button locator tone* during the *pedestrian change interval* of the called *pedestrian* phase shall be increased and operated in one of the following ways:

A. The louder audible walk indication and louder locator tone comes from the far end of the *crosswalk*, as *pedestrians* cross the *street*;

B. The louder locator tone comes from both ends of the *crosswalk*; or

C. The louder locator tone comes from an additional speaker that is aimed at the center of the *crosswalk* and that is mounted on a *pedestrian signal head*.

R307.8.4 *Locator Tone and Traffic Control Signal in Flashing Mode.* When the traffic control signal is operating in a flashing mode, *pedestrian push button locator tones* shall remain active, and the *pedestrian push button* shall activate a speech message that communicates the operating mode of the traffic control signal. Where traffic control signals or *pedestrian hybrid beacons* are activated from a flashing or dark mode to a stop-and-go mode by *pedestrian* actuations, a speech message communicating the operating status of the traffic control signal is not required.

R307.9 *Tactile Arrow. Pedestrian push buttons* shall have a tactile arrow with high visual contrast that is aligned parallel to the direction of travel on their associated *crosswalks*.

R308 Accessible Pedestrian Signal Walk Indications

R308.1 *General. Accessible pedestrian signal* walk indications shall comply with R308.

R308.2 *Audible and Vibrotactile Walk Indications. Accessible pedestrian signals* shall have an audible and *vibrotactile* walk indication during the *walk interval* only. The audible walk indication shall be audible from the beginning of the associated *crosswalk*. Following the audible and *vibrotactile* walk indication and during the *pedestrian change interval*, *accessible pedestrian signals* shall revert to the *pedestrian push button locator tone*.

R308.3 *Audible Walk Indications.* Audible walk indications shall comply with R308.3.

R308.3.1 Percussive Tone. Where an *accessible pedestrian signal* is provided at a single crossing or where two *accessible pedestrian signals* are 10 feet or greater from each other at a corner, the audible walk indication shall be a percussive tone and repeat eight to ten ticks per second with multiple frequencies and a dominant component at 880 Hz.

R308.3.2 Speech Walk Message. In *alterations*, where it is technically infeasible to provide 10 feet separation between *pedestrian push buttons* on the same corner, the audible walk indication for each signal shall be a speech walk message that complies with R308.3.2.

R308.3.2.1 Speech Information Message when Walk Interval is Not Timing. Where speech *push button* information messages are made available at a pre-timed signal or by actuating the *accessible pedestrian push button* or passive detection device, they shall only be actuated when the *walk interval* is not timing. They shall begin with the term “Wait,” followed by intersection identification information modeled after: “Wait to cross Broadway at Grand.” If information on intersection signalization or geometry is also given, it shall follow the intersection identification information.

R308.3.2.2 Speech Walk Message during Pedestrian Phasing Concurrent with Vehicular Phasing. Speech walk messages that are used at intersections having *pedestrian phasing* that is concurrent with vehicular phasing shall be patterned after the model: “Broadway. Walk sign is on to cross Broadway.”

R308.3.2.3 Speech Walk Message during Exclusive Pedestrian Phasing. Speech walk messages that are used at intersections having *exclusive pedestrian phasing* shall be patterned after the model: “Walk sign is on for all crossings.”

R308.3.2.4 Speech Walk Message and Pilot Light. If a pilot light is used at an *accessible pedestrian signal* location, each actuation shall be accompanied by the speech message, “Wait.”

R308.4 Volume. Audible walk indications shall be louder than ambient sound up to a maximum volume of 5 dBA louder than ambient sound. Automatic volume adjustment in response to ambient traffic sound level shall be a maximum volume of 100 dBA.

Exception: Where audible beaconing is provided in response to an extended *push button* press, the beaconing can exceed 5 dBA louder than ambient sound.

R308.5 Vibrotactile Walk Indication. The *pedestrian push button* shall vibrate during the *walk interval*.

R309 Transit Stops and Transit Shelters

R309.1 Transit Stops. *Transit stops* shall comply with R309.1.

R309.1.1 Boarding and Alighting Areas. Boarding and alighting areas at *sidewalk* or *street-level transit stops* must serve each ac-

cessible vehicle entry and exit and shall comply with R309.1.1 and R309.1.3.

R309.1.1.1 Dimensions. Boarding and alighting areas shall have a clear length of 96 inches (2440 mm) minimum, measured perpendicular to the face of the *curb* or *street* edge, and a clear width of 60 inches (1525 mm) minimum, measured parallel to the *street*.

R309.1.1.2 Slope. The slope of boarding and alighting areas measured parallel to the *street* shall be the same as the *grade* of the *street*. The slope of boarding and alighting areas measured perpendicular to the *street* shall be 1:48 (2.1%) maximum.

R309.1.2 Boarding Platforms. *Boarding platforms* at *transit stops* shall comply with R309.1.2 and R309.1.3.

R309.1.2.1 Platform and Vehicle Floor Coordination. *Boarding platforms* shall be positioned to coordinate with vehicles in accordance with the applicable requirements in 49 CFR parts 37 and 38.

R309.1.2.2 Slope. The slope of the *boarding platform* measured parallel to the track or *street* shall be the same as the *grade* of the track or *street*. The *slope* of the *boarding platform* measured perpendicular to the track or *street* shall be 1:48 (2.1%) maximum.

R309.1.3 Common Requirements. Boarding and alighting areas and *boarding platforms* shall comply with R309.1.3.

R309.1.3.1 Surfaces. The surfaces of boarding and alighting areas and *boarding platforms* shall comply with R302.6.

R309.1.3.2 Connection to Existing Pedestrian Circulation Paths. In *alterations*, boarding and alighting areas and *boarding platforms* shall be connected to existing *pedestrian circulation paths* by *pedestrian access routes* complying with R302.

R309.2 Transit Shelters. *Transit shelters* shall comply with R309.2.

R309.2.1 Connection to Boarding and Alighting Areas. *Transit shelters* shall be connected by *pedestrian access routes* complying with R302 to boarding and alighting areas complying with R309.1.1 or *boarding platforms* complying with R309.1.2.

R309.2.2 Clear Space. *Transit shelters* shall provide a minimum clear space complying with R404 entirely within the shelter. Where seating is provided within *transit shelters*, the clear space shall be located either at one end of a seat or so as to not overlap the area within 18 inches (455 mm) from the front edge of the seat.

R309.2.3 Environmental Controls. Where provided, environmental controls within *transit shelters* shall be proximity-actuated.

R309.2.4 Protruding Objects. Protruding objects within *transit shelters* shall comply with R402.

R310 On-Street Parking Spaces

R310.1 General. On-street parking spaces shall comply with R310.

R310.2 *Parallel On-Street Parking Spaces.* Parallel on-street parking spaces shall comply with R310.2.

R310.2.1 *Dimensions.* Parallel on-street parking spaces shall be 24 feet (7.3 m) long minimum and 13 feet (4.0 m) wide minimum. Parallel on-street parking spaces shall not encroach on the traveled way.

Exceptions: 1. Where parallel on-street parking spaces are altered but the adjacent pedestrian circulation path is not, any accessible parallel on-street parking spaces provided may have the same dimensions as the adjacent parallel on-street parking spaces if they are provided nearest the crosswalk at the end of the block face or nearest a midblock crosswalk, and a curb ramp or blended transition is provided serving the crosswalk.

2. In alterations, where providing parallel on-street parking spaces with the dimensions specified in R310.2.1 would result in an available right-of-way width less than or equal to 9 feet (2.7 m), measured from the curb line to the right-of-way line, the accessible parallel on-street parking spaces may have the same dimensions as the adjacent parallel on-street parking spaces if they are provided nearest the crosswalk at the end of the block face or nearest a midblock crosswalk, and a curb ramp or blended transition is provided serving the crosswalk.

R310.2.2 *Pedestrian Access Route Connection.* Parallel on-street parking spaces shall connect to pedestrian access routes. Where curb ramps and blended transitions are used, they shall not reduce the required width or length of the parking spaces and shall be located at either end of the parking space. Where two or more accessible parallel on-street parking spaces complying with the dimensions specified in R310.2.1 are contiguous on a block face, each accessible parallel on-street parking space shall have an independent connection to the pedestrian access route. Curb ramps and blended transitions shall be provided in accordance with R203.6.1.3 and shall comply with R304. Detectable warning surfaces are not required on curb ramps and blended transitions used exclusively to connect accessible on-street parallel parking spaces to pedestrian access routes.

Exception: In alterations, where parallel on-street parking spaces are provided in accordance with Exception 1 or 2 to R310.2.1, the parallel on-street parking space shall be connected to the curb ramp or blended transition serving the crosswalk by a pedestrian circulation path complying with R302.6, except that changes in level are not permitted.

R310.2.3 *Surfaces.* Surfaces of parking spaces shall comply with R302.6, except that changes in level are not permitted.

R310.2.4 *Clearance Adjacent to Parking Spaces.* The center 50 percent of the length of the sidewalk, or other surface, adjacent to an accessible parallel parking space shall be free

of obstructions, including parking identification signs, parking pay meters, and parking pay stations, and shall comply with R302.6.

R310.2.5 *Identification.* Parallel on-street parking spaces shall be identified by signs displaying the International Symbol of Accessibility complying with R411. Signs shall be 60 inches (1525 mm) minimum above the ground surface measured to the bottom of the sign.

R310.3 *Perpendicular Parking Spaces.* Perpendicular parking spaces shall comply with R310.3.

R310.3.1 *Access Aisles.* Perpendicular on-street parking spaces shall have adjacent access aisles 96 inches (2440 mm) wide minimum extending the full length of the parking space. One access aisle shall be permitted to serve two parking spaces where front and rear entry parking are both permitted. Where an access aisle serves only one parking space and parking is restricted to either front entry or rear entry orientation, the access aisle shall be located on the passenger side of the vehicle.

R310.4 *Angled Parking Spaces.* Accessible angled parking spaces shall comply with R310.4.

R310.4.1 *Width.* The width of an angled parking space shall be 132 inches (3350 mm).

R310.4.2 *Access Aisles.* Each angled on-street parking space shall have an adjacent access aisle 60 inches (1525 mm) wide minimum extending the full length of the parking space on the passenger side.

R310.5 *Common Requirements for Perpendicular and Angled Parking Spaces.* Perpendicular and angled parking spaces shall comply with R310.5.

R310.5.1 *Access Aisle Markings.* The access aisle surface shall be marked to discourage parking in the access aisle.

R310.5.2 *Access Aisle Location.* Access aisles shall be located at the same level as the parking space they serve and shall not encroach on the traveled way.

R310.5.3 *Pedestrian Access Route Connection.* Access aisles shall connect to pedestrian access routes. Where curb ramps and blended transitions are used, they shall not reduce the required width or length of access aisles and parking spaces. Curb ramps and blended transitions shall be provided in accordance with R203.6.1.4 and shall comply with R304. A detectable warning surface is not required on a curb ramp or blended transition used exclusively to connect on-street parking access aisles to pedestrian access routes.

Exception: In alterations, the access aisle may connect to an existing pedestrian circulation path in accordance with R202.2.

R310.5.4 *Surfaces.* Surfaces of parking spaces and access aisles serving them shall comply with R302.6, except that changes in level are not permitted.

R310.5.5 *Identification.* Perpendicular or angled on-street parking spaces shall be

identified by signs displaying the International Symbol of Accessibility complying with R411. The signs shall be located at the head of the parking space. Signs shall be 60 inches (1525 mm) minimum above the ground surface measured to the bottom of the sign.

R310.6 *Parking Meters and Parking Pay Stations.* Parking meters and parking pay stations that serve *accessible* parking spaces shall provide *operable parts* complying with R403. The clear space required by R403.2 shall be located so that displays and information on parking meters and pay stations are visible from a point located 40 inches (1015 mm) maximum above the center of the clear space in front of the parking meter or parking pay station.

R311 Passenger Loading Zones

R311.1 *General.* Accessible passenger loading zones shall comply with R311.

R311.2 *Vehicle Pull-Up Space.* Accessible passenger loading zones shall provide a vehicular pull-up space that is 96 inches (2440 mm) wide minimum and 20 feet (6.1 m) long minimum.

R311.3 *Access Aisle.* Vehicle pull-up spaces shall have adjacent access aisles complying with R311.3 that are 60 inches (1525 mm) wide minimum extending the full length of the vehicle pull-up space. Access aisles shall be at the same level as the vehicle pull-up space they serve and shall not encroach on the traveled way.

R311.3.1 *Clearance Adjacent to Passenger Loading Zone.* The center 50 percent of the length of the sidewalk, or other surface, adjacent to an *accessible passenger loading zone* shall be free of obstructions and comply with R302.6.

R311.3.2 *Marking.* Access aisle surfaces shall be marked to discourage parking in them.

R311.4 *Surfaces.* Surfaces of vehicle pull-up spaces and the access aisles serving them shall comply with R302.6, except that changes in level are not permitted.

R311.5 *Pedestrian Access Route Connection.* Access aisles shall connect to *pedestrian access routes*. Where *curb ramps* and *blended transitions* are used, they shall be provided in accordance with R203.6.1.4 and comply with R304, and shall not reduce the required width or length of access aisles. *Detectable warning surfaces* are not required on *curb ramps* and *blended transitions* used exclusively to connect access aisles to *pedestrian access routes*.

Exception: In alterations, the access aisle may connect to an existing *pedestrian circulation path* in accordance with R202.2.

CHAPTER 4: SUPPLEMENTAL TECHNICAL REQUIREMENTS

R401 General

R401.1 *Scope.* The supplemental technical requirements in Chapter 4 shall apply where

required by Chapter 2 or where referenced by a requirement in these guidelines.

R402 Protruding Objects and Vertical Clearance

R402.1 *General.* Protruding objects and vertical clearance shall comply with R402.

R402.2 *Protrusion Limits.* Objects with leading edges more than 27 inches (685 mm) and less than 80 inches (2030 mm) above the walking surface shall not protrude horizontally more than 4 inches (100 mm) into *pedestrian circulation paths*.

Exception: Handrails shall be permitted to protrude 4½ inches (115 mm) maximum.

R402.3 *Post-Mounted Objects.* Where objects are mounted on posts or pylons, they shall comply with R402.3.

Exception: The sloping portions of handrails serving stairs and ramps shall not be required to comply with R402.3.

R402.3.1 *Objects Mounted on Single Post or Pylon.* Where objects are mounted on a single post or pylon and the objects are more than 27 inches (685 mm) and less than 80 inches (2030 mm) above the walking surface, the objects shall not protrude into the *pedestrian circulation path* more than 4 inches (100 mm) measured horizontally from the post or pylon or more than 4 inches (100mm) measured horizontally from the outside edge of the base where the base height is 2½ inches (64 mm) minimum.

R402.3.2 *Objects Mounted Between Posts or Pylons.* Where objects are mounted between posts or pylons and the clear distance between the posts or pylons is greater than 12 inches (305 mm), the lowest edge of the object shall be 27 inches (685 mm) maximum or 80 inches (2030 mm) minimum above the walking surface.

Exception: Objects mounted with the lowest edge greater than 27 inches (685 mm) and less than 80 inches (2030 mm) above the walking surface are permitted if a barrier with its lowest edge at 27 inches (685 mm) maximum above the walking surface is provided between the posts or pylons.

R402.4 *Vertical Clearance.* Vertical clearance shall be 80 inches (2030 mm) high minimum. Guards or other barriers to prohibit *pedestrian* travel shall be provided where the vertical clearance is less than 80 inches (2030 mm) high above the walking surface. The lowest edge of the guard or barrier shall be located 27 inches (685 mm) maximum above the walking surface.

R402.5 *Required Clear Width.* Protruding objects shall not reduce the clear width required for *pedestrian access routes*.

R403 Operable Parts

R403.1 *General.* Operable parts shall comply with R403.

R403.2 *Clear Space*. A clear space complying with R404 shall be provided at *operable parts*.

R403.3 *Height*. *Operable parts* shall be placed within one or more of the reach ranges specified in R406.

R403.4 *Operation*. *Operable parts* shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate *operable parts* shall be 5 pounds (22.2 N) maximum.

R404 Clear Spaces

R404.1 *General*. Clear spaces shall comply with R404.

R404.2 *Surfaces*. Surfaces of clear spaces shall comply with R302.6. The slope of the clear space shall be 1:48 (2.1%) maximum in both directions.

Exception: Where the slope of the clear space would exceed 1:48 (2.1%) in either or both directions due to the *grade* of an adjacent *pedestrian access route* conforming to the requirements of R302.4, the slope of the clear space may be consistent with the slope of the *pedestrian access route*.

R404.3 *Size*. Clear spaces shall be 30 inches (760 mm) minimum by 48 inches (1220 mm) minimum.

R404.4 *Knee and Toe Clearance*. Unless otherwise specified, clear spaces shall be permitted to include knee and toe clearance complying with R405.

R404.5 *Position*. Clear spaces shall be positioned either for forward approach where the 30-inch side is nearest to the *element*, or for parallel approach where the 48-inch side is nearest to the *element*. Clear spaces shall not be located on *curb ramp* runs or flares.

R404.6 *Approach*. One full unobstructed side of a clear space shall adjoin a *pedestrian access route* or adjoin another clear space.

R404.7 *Maneuvering Clearance*. Where a clear space is confined on all or part of three sides, additional maneuvering clearance shall be provided in accordance with R404.7.1 and R404.7.2.

R404.7.1 *Forward Approach*. The clear space and additional maneuvering clearance shall be 36 inches (915 mm) wide minimum where the depth of the confined space exceeds 24 inches (610 mm) measured perpendicular to the *element*.

R404.7.2 *Parallel Approach*. The clear space and additional maneuvering clearance shall be 60 inches (1525 mm) wide minimum where the depth of the confined space exceeds 15 inches (380 mm) measured perpendicular to the *element*.

R405 Knee and Toe Clearance

R405.1 *General*. Where space beneath an *element* is included as part of a clear space, the space shall comply with R405. Additional space shall not be prohibited beneath an *element* but shall not be considered as part of the clear space.

ment but shall not be considered as part of the clear space.

R405.2 *Toe Clearance*. Toe clearance shall comply with R405.2.

R405.2.1 *General*. Space under an *element* between the ground surface and 9 inches (230 mm) above the ground surface shall be considered toe clearance and shall comply with R405.2.

R405.2.2 *Maximum Depth*. Toe clearance shall extend 25 inches (635 mm) maximum under an *element*.

R405.2.3 *Minimum Required Depth*. Where toe clearance is required at an *element* as part of a clear space, the toe clearance shall extend 17 inches (430 mm) minimum under the *element*.

R405.2.4 *Additional Clearance*. Space extending greater than 6 inches (150 mm) beyond the available knee clearance at 9 inches above the ground surface shall not be considered toe clearance.

R405.2.5 *Width*. Toe clearance shall be 30 inches (760 mm) wide minimum.

R405.3 *Knee Clearance*. Knee clearance shall comply with R405.3.

R405.3.1 *General*. Space under an *element* between 9 inches (230 mm) and 27 inches (685 mm) above the ground surface shall be considered knee clearance and shall comply with R405.3.

R405.3.2 *Maximum Depth*. Knee clearance shall extend 25 inches (635 mm) maximum under an *element* at 9 inches (230 mm) above the ground surface.

R405.3.3 *Minimum Required Depth*. Where knee clearance is required under an *element* as part of a clear space, the knee clearance shall be 11 inches (280 mm) deep minimum at 9 inches (230 mm) above the ground surface, and 8 inches (205 mm) deep minimum at 27 inches (685 mm) above the ground surface.

R405.3.4 *Clearance Reduction*. Between 9 inches (230 mm) and 27 inches (685mm) above the ground surface, the knee clearance shall be permitted to reduce at a rate of 1 inch (25 mm) in depth for each 6 inches (150 mm) in height.

R405.3.5 *Width*. Knee clearance shall be 30 inches (760 mm) wide minimum.

R406 Reach Ranges

R406.1 *General*. Reach ranges shall comply with R406.

R406.2 *Reach Range Limits*. For forward and parallel approaches, the high reach shall be 48 inches (1220 mm) maximum and the low reach shall be 15 inches (380 mm) minimum above the ground surface.

R406.3 *Obstructions*. Obstructed reach shall comply with R406.3.

R406.3.1 *Forward Reach*. Where the clear space is configured solely for a forward approach to an *element*, obstructions shall not be permitted between the clear space and the *element* for a forward reach.

R406.3.2 *Side Reach*. Where a clear space is configured for a parallel approach to an *element*, an obstruction shall be permitted between the clear space and the *element* where the depth of the obstruction is 10 inches (255 mm) maximum and the height of the obstruction is 34 inches (865 mm) maximum.

R407 Ramps

R407.1 *General*. Ramps shall comply with R407. R407 does not apply to *curb ramps* or *pedestrian access routes* following the *grade* established for the adjacent *street* consistent with the requirements of R302.4.1.

R407.2 *Running Slope*. The *running slope* of each *ramp run* shall be 1:12 (8.3%) maximum.

R407.3 *Cross Slope*. The *cross slope* of *ramp runs* shall be 1:48 (2.1%) maximum.

R407.4 *Clear Width*. The clear width of a *ramp run* shall be 48 inches (1220 mm) minimum. Where handrails are provided, the clear width between handrails shall be 48 inches (1220 mm) minimum.

Exception: Where a *ramp* only serves a *building entrance*, the clear width of the *ramp run* shall be permitted to be 36 inches (915 mm) minimum. Where handrails are provided, the clear width between handrails shall be permitted to be 36 inches (915 mm) minimum.

R407.5 *Rise*. The rise for any *ramp run* shall be 30 inches (760 mm) maximum.

R407.6 *Landings*. Ramps shall have landings at the top and the bottom of each *ramp run*. Landings shall comply with R407.6.

R407.6.1 *Slope*. Landing slopes shall be 1:48 (2.1%) maximum parallel and perpendicular to the *ramp running slope*.

R407.6.2 *Width*. The landing clear width shall be at least as wide as the widest *ramp run* leading to the landing.

R407.6.3 *Length*. The landing clear length shall be 60 inches (1525 mm) long minimum.

R407.6.4 *Change in Direction*. Ramps that change direction between runs at landings shall have a clear landing 60 inches (1525 mm) minimum by 60 inches (1525 mm) minimum.

R407.7 *Surfaces*. Surfaces of *ramp runs* and landings shall comply with R302.6, except that changes in level are not permitted.

R407.8 *Handrails*. *Ramp runs* with a rise greater than 6 inches (150 mm) shall have handrails complying with R409.

R407.9 *Edge Protection*. Edge protection complying with R407.9.1 or R407.9.2 shall be provided on each side of *ramp runs* and each side of *ramp landings* except those serving an adjoining *ramp run*, *stairway*, or other *pedestrian circulation path*.

R407.9.1 *Extended Ramp Surface*. The surface of the *ramp run* or landing shall extend 12 inches (305 mm) minimum beyond the inside face of a handrail complying with R409.

R407.9.2 *Curb or Barrier*. A *curb* that is 4 inches (100 mm) high minimum, or a barrier that prevents the passage of a 4-inch (100

mm) diameter sphere, where any portion of the sphere is within 4 inches (100 mm) of the surface of the *ramp run* or landing, shall be provided.

R408 Stairs

R408.1 *General*. Stairs shall comply with R408.

R408.2 *Treads and Risers*. All steps on a flight of *stairs* shall have uniform riser heights and uniform tread depths. Risers shall be 4 inches (100 mm) high minimum and 7 inches (180 mm) high maximum. Treads shall be 11 inches (280 mm) deep minimum.

R408.3 *Open Risers*. Open risers are not permitted.

R408.4 *Tread Surface*. Stair treads shall comply with R302.6, except that changes in level are not permitted.

Exception: Treads shall be permitted to have a slope not steeper than 1:48 (2.1%).

R408.5 *Nosings*. The radius of curvature at the leading edge of the tread shall be ½ inch (13 mm) maximum. Nosings that project beyond risers shall have the underside of the leading edge curved or beveled. Risers shall be permitted to slope under the tread at an angle of 30 degrees maximum from vertical. The permitted projection of the nosing shall extend 1½ inches (38 mm) maximum over the tread below.

R408.6 *Visual Contrast*. The leading edge of each step tread and top landing shall be marked by a stripe. The stripe shall be 1 inch (25 mm) wide minimum and shall contrast visually with the rest of the step tread or circulation path surface either light-on-dark or dark-on-light.

R408.7 *Handrails*. Stairs shall have handrails complying with R409.

R409 Handrails

R409.1 *General*. Handrails required at *ramps* and *stairs*, and handrails provided on *pedestrian circulation paths* shall comply with R409. R409 does not apply to *curb ramps*.

R409.2 *Where Required*. Handrails shall be provided on both sides of *ramps* and *stairs*.

R409.3 *Continuity*. Handrails shall be continuous within the full length of each *ramp run* or *stair flight*. Inside handrails on switchback or dogleg *ramps* and *stairs* shall be continuous between *ramp runs* or *stair flights*.

R409.4 *Height*. The top of gripping surfaces of handrails shall be 34 inches (865 mm) minimum and 38 inches (965 mm) maximum vertically above walking surfaces, *ramp surfaces*, and *stair nosings*. Handrails shall be at a consistent height above walking surfaces, *ramp surfaces*, and *stair nosings*.

R409.5 *Clearance*. Clearance between handrail gripping surfaces and adjacent surfaces shall be 1½ inches (38 mm) minimum.

R409.6 *Gripping Surface*. Handrail gripping surfaces shall be continuous along their

length and shall not be obstructed along their tops or sides. The bottoms of handrail gripping surfaces shall not be obstructed for more than 20 percent of their length. Where provided, horizontal projections shall occur 1½ inches (38 mm) minimum below the bottom of the handrail gripping surface.

R409.7 Cross Section. Handrail gripping surfaces shall have a cross section complying with R409.7.1 or R409.7.2. Where expansion joints are necessary for large spans of handrails, the expansion joint cross section is permitted to be smaller than the specified cross section diameters for 1 inch (25 mm) maximum in length.

R409.7.1 Circular Cross Section. Handrail gripping surfaces with a circular cross section shall have an outside diameter of 1¼ inches (32 mm) minimum and 2 inches (51 mm) maximum.

R409.7.2 Non-Circular Cross Section. Handrail gripping surfaces with a non-circular cross section shall have a perimeter dimension of 4 inches (100 mm) minimum and 6¼ inches (160 mm) maximum, and a cross-section dimension of 2¼ inches (57 mm) maximum.

R409.8 Surfaces. Handrail gripping surfaces and any surfaces adjacent to them shall be free of sharp or abrasive elements and shall have rounded edges.

R409.9 Fittings. Handrails shall not rotate within their fittings. Where expansion joints are necessary for large spans of handrails, the expansion joint is permitted to rotate in its fitting.

R409.10 Handrail Extensions. Handrail gripping surfaces shall extend beyond and in the same direction of ramp runs and stair flights in accordance with R409.10. Handrail extensions shall not extend into the roadway or pedestrian circulation path. In alterations, if handrail extensions complying with R409.10 would reduce the clear width of a pedestrian access route, they shall extend as far as possible without reducing the clear width of the pedestrian access route.

Exception: Extensions shall not be required for continuous handrails at the inside turn of switchback or dogleg ramps and stairs.

R409.10.1 Top and Bottom Extension at Ramps. Ramp handrails shall extend hori-

zontally above the landing for 12 inches (305 mm) minimum beyond the top and bottom of ramp runs. Extensions shall return to a wall, guard, or the landing surface, or shall be continuous to the handrail of an adjacent ramp run.

R409.10.2 Top Extension at Stairs. At the top of a stair flight, handrails shall extend horizontally above the landing for 12 inches (305 mm) minimum beginning directly above the first riser nosing. Extensions shall return to a wall, guard, or the landing surface, or shall be continuous to the handrail of an adjacent stair flight.

R409.10.3 Bottom Extension at Stairs. At the bottom of a stair flight, handrails shall extend at the slope of the stair flight for a horizontal distance at least equal to one tread depth beyond the last riser nosing. Extensions shall return to a wall, guard, or the landing surface, or shall be continuous to the handrail of an adjacent stair flight.

R410 Visual Characters on Signs

R410.1 General. Visual characters on signs shall comply with R410.

R410.2 Finish and Contrast. Characters and their background shall have a non-glare finish. Characters shall contrast with their background with either light characters on a dark background or dark characters on a light background.

R410.3 Case. Characters shall be uppercase or lowercase or a combination of both.

R410.4 Style. Characters shall be conventional in form. Characters shall not be italic, oblique, script, highly decorative, or of other unusual forms.

R410.5 Character Proportions. Characters shall be selected from fonts where the width of the uppercase letter "O" is 55 percent minimum and 110 percent maximum of the height of the uppercase letter "I".

R410.6 Character Height. Minimum character height shall comply with Table R410.6. Viewing distance shall be measured as the horizontal distance between the character and an obstruction preventing further approach towards the sign. Character height shall be based on the uppercase letter "I".

R410.6 VISUAL CHARACTER HEIGHT

Height to finish surface from baseline of character	Horizontal viewing distance	Minimum character height
40 inches (1015 mm) to less than or equal to 70 inches (1780 mm).	Less than 72 inches (1830 mm).	5/8 inch (16 mm).
40 inches (1015 mm) to less than or equal to 70 inches (1780 mm).	72 inches (1830 mm) and greater.	5/8 inch (16 mm), plus 1/8 inch (3.2 mm) per foot (305 mm) of viewing distance above 72 inches (1830 mm).
Greater than 70 inches (1780 mm) to less than or equal to 120 inches (3050 mm).	Less than 180 inches (4570 mm).	2 inches (51 mm).

R410.6 VISUAL CHARACTER HEIGHT—Continued

Height to finish surface from baseline of character	Horizontal viewing distance	Minimum character height
Greater than 70 inches (1780 mm) to less than or equal to 120 inches (3050 mm).	180 inches (4570 mm) and greater.	2 inches (51 mm), plus 1/8 inch (3.2 mm) per foot (305 mm) of viewing distance above 180 inches (4570 mm).
Greater than 120 inches (3050 mm).	Less than 21 feet (6400 mm)	3 inches (75 mm).
Greater than 120 inches (3050 mm).	21 feet (6400 mm) and greater	3 inches (75 mm), plus 1/8 inch (3.2 mm) per foot (305 mm) of viewing distance above 21 feet (6400 mm).

R410.7 *Stroke Thickness.* Stroke thickness of the uppercase letter “I” shall be 10 percent minimum and 30 percent maximum of the height of the character.

R410.8 *Character Spacing.* Character spacing shall be measured between the two closest points of adjacent characters, excluding word spaces. Spacing between individual characters shall be 10 percent minimum and 35 percent maximum of character height.

R410.9 *Line Spacing.* Spacing between the baselines of separate lines of characters within a message shall be 135 percent minimum and 170 percent maximum of the character height.

R410.10 *Height from Ground Surface.* Visual characters shall be 40 inches (1015 mm) minimum above the ground surface.

R411 *International Symbol of Accessibility*

R411.1 *General.* The International Symbol of Accessibility shall comply with R411 and Figure R411.

R411.2 *Finish and Contrast.* The symbol and its background shall have a non-glare finish. The symbol shall contrast with its background with either a light symbol on a dark background or a dark symbol on a light background.

FIGURE R411—INTERNATIONAL SYMBOL OF ACCESSIBILITY

