ADA Transition Plan – Technical Assistance Training #1: Transition Plan Roadmap, Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights-of-Way (PROWAG), and Other Technical Resources

November 15, 2018

Agenda

- Transition Plan Roadmap (Discuss Homework)
- Introduction to Standards and Technical Resources
- PROWAG Overview
- Design Considerations

Transition Plan Roadmap

Gather Where You Are!

Discuss Homework

- Any questions?
- Difficulty finding materials?
- Internal coordination challenges?

Introduction to Standards and Technical Resources

Standards and Technical Resources

- ADA Standards Overview
- DOJ/FHWA Joint Technical Assistance Memo
- Local Jurisdiction Standards

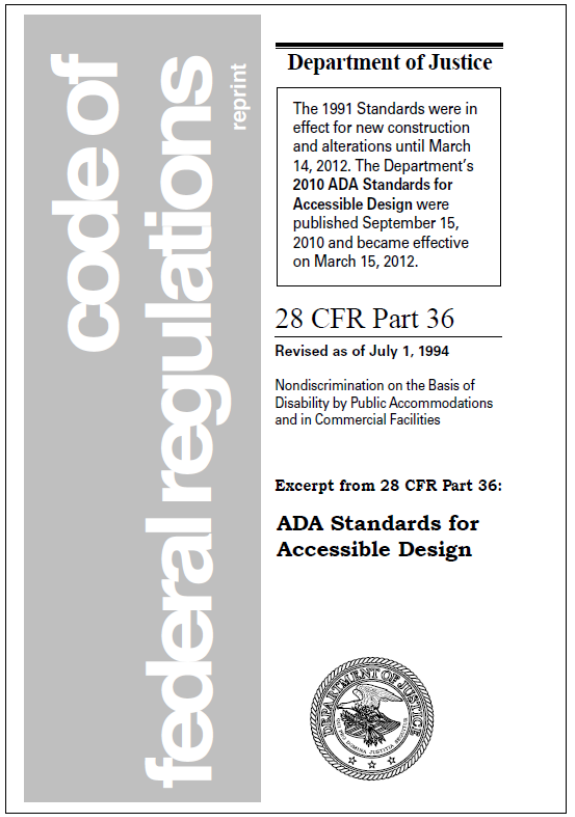
ADA Standards Overview

- 1991 ADA Standards for Accessible Design (ADA Standards, 1991)
- Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG, 2004)
- Americans with Disabilities Act Standards for Transportation Facilities (2006)
- 2010 ADA Standards for Accessible Design (ADA Standards, 2010)
- Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG, 2011)

1991 ADA Standards for Accessible Design

- DOJ published the ADA Title III regulations (including 1991 Standards) on July 26, 1991

- 1991 Standards were effective until March 14, 2011



2004 Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities

- 100 substantive changes to the 1991 Standards
  - Supplemental (e.g., new)
  - Revised

- Supplemental Changes
  - Judicial, Detention, and Correctional Facilities (1998)
  - Play Areas (2000)
  - Recreational Facilities (2002)

2004 Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities

Elements in existing public (Title II) facilities that are already compliant with the 1991 Standards or UFAS, are not subject to retrofitting due solely to incremental changes reflected in the 2004 ADAAG

2006 Americans with Disabilities Act Standards for Transportation Facilities

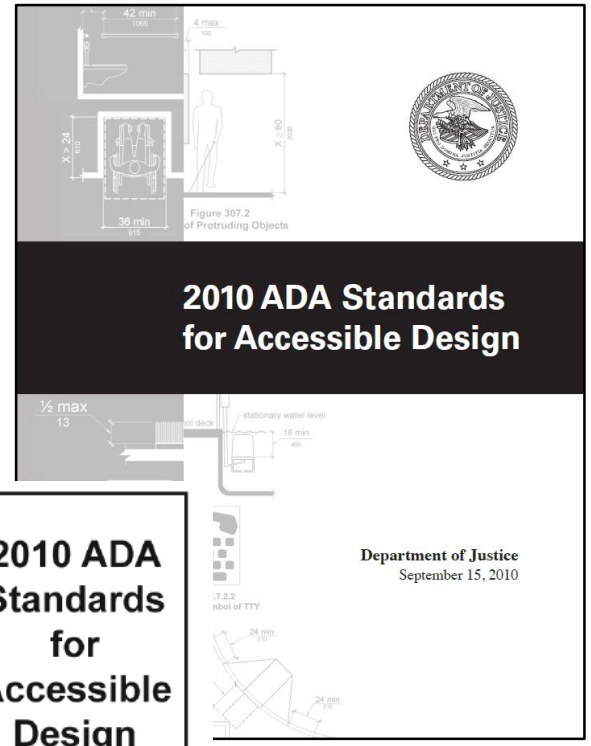
Closely based on 2004 ADAAG, but include additional requirements for:

- Location of accessible routes
- Detectable warnings on curb ramps
- Bus boarding and alighting areas
- Rail station platforms

2010 ADA Standards for Accessible Design

- DOJ published revised ADA Title II and Title III regulations on September 15, 2010

- Part of the revisions included the adoption of the 2010 ADA Standards
  - Scoping requirements
  - Technical requirements



28 CFR part 35.151 + 2004 ADAAG = 2010 ADA Standards for Accessible Design

2010 ADA Standards for Accessible Design

- Construction start date before March 15, 2012
  - 1991 Standards
  - Uniform Federal Accessibility Standards (UFAS)
  - 2010 Standards

- Construction start date on or after March 15, 2012
  - 2010 ADA Standards

2013 Final Guidelines for Outdoor Developed Areas

- Effective November 25, 2013
- Applies to federal agencies only
- Does not apply to state and local governments or private entities
- Future rulemaking will be conducted in the future for Title II and Title III entities
- Best practice for Title II and Title III entities

2013 Final Guidelines for Outdoor Developed Areas

- Scoping and technical requirements for:
  - Camping facilities
  - Picnic facilities
  - Viewing areas
  - Trails
  - Beach access routes

DOJ/FHWA Joint Technical Assistance Memo

- Whenever streets, roadways, or highways are *altered* curb ramps must be provided where street level pedestrian walkways cross curbs

- Clarification provided on definitions of “alteration” and “maintenance”

Maintenance vs. Alterations

Source: DOJ Briefing Memorandum on Maintenance versus Alteration Projects

Maintenance vs. Alterations

- DOJ/FHWA Alterations Memo:
  - https://www.fhwa.dot.gov/civilrights/programs/doj_fhwa_ta.cfm
  - https://www.ada.gov/doj-fhwa-ta.htm

- Glossary of Terms:
  - https://www.fhwa.dot.gov/civilrights/programs/doj_fhwa_ta_glossary.cfm

Local Jurisdiction Standards

- Examples
  - Florida Department of Transportation (FDOT) design standards
  - City design standards

- Must comply with most stringent standards that apply between federal and state/local

PROWAG Overview

PROWAG Overview

- Originally intended to supplement the ADAAG to provide standards specific to public rights-of-way; most recently formatted as a stand-alone document
- Applicable to new construction and alterations (of existing facilities)
- Undergoing the rulemaking process (2011 Notice of Proposed Rule Making published w/ updated guidelines)

PROWAG Overview

- Currently enforceable by local government agencies who adopt the document

- Enforceable by DOJ and FHWA once adopted on a federal level

- FHWA/DOJ Best Practice until adopted:
  - https://www.fhwa.dot.gov/environment/bicycle_pedestrian/resources/prwaa.cfm

PROWAG Overview

- Preamble
- Chapter R1: Application and Administration
- Chapter R2: Scoping Requirements
- Chapter R3: Technical Requirements
- Chapter R4: Supplementary Technical Requirements

Chapter R3: Technical Requirements

- R301: General
- R302: Pedestrian Access Routes
- R303: Alternate Pedestrian Access Routes
- R304: Curb Ramps and Blended Transitions
- R305: Detectable Warning Surfaces
- R306: Pedestrian Street Crossings
- R307: Accessible Pedestrian Signals and Pedestrian Pushbuttons
- R308: Transit Stops and Transit Shelters
- R309: On-Street Parking Spaces
- R310: Passenger Loading Zones

Chapter R4: Supplementary Technical Requirements

- R401: General
- R402: Protruding Objects
- R403: Operable Parts
- R404: Clear Spaces
- R405: Knee and Toe Clearance
- R406: Reach Ranges
- R407: Ramps
- R408: Stairways
- R409: Handrails
- R410: Visual Characters on Signs
- R411: International Symbol of Accessibility

Section Title

- The reference section title corresponds to the slide title

- The reference section number corresponds to the number in the upper-right hand corner of each slide

Project Scoping

New Construction

- All newly constructed facilities located in the public rights-of-way shall comply with PROWAG

Alterations

- Alterations to existing facilities must comply with requirements for new construction to the maximum extent feasible

- Reduction in Access Prohibited: Alterations shall not decrease or have the effect of decreasing the accessibility of a facility below the requirements for new construction

Alterations

- Alterations and elements added to existing facilities shall comply with R202

- Where elements are altered or added and the pedestrian circulation path to the altered or added elements is not altered, the pedestrian circulation path is not required to comply with R204

Alterations

- Where existing elements, spaces, or facilities are altered, each altered element, space, or facility within the scope of the project shall comply with the applicable requirements for new construction

- Where elements are added to existing facilities, the added elements shall comply with the applicable requirements

Technical Infeasibility

"…Something that has little likelihood of being accomplished because existing structural conditions would require removing or altering a load-bearing member that is an essential part of the structural frame; or because other existing physical or site constraints prohibit modification or addition of elements, spaces, or features that are in full and strict compliance with the minimum requirements."

Source: 2006 Standards, Section 106.5

Physical Constraints – Examples

- Underlying terrain
- Right-of-way availability
- Underground structures
- Adjacent developed facilities
- Drainage
- Presence of notable natural or historical features
- Cost of an improvement is NOT a constraint!!

MUST PROVIDE ACCESS TO THE MAXIMUM EXTENT FEASIBLE

Physical Constraints

Constrained ROW

Photo courtesy of Gary Schatz

Underlying Terrain

Photo courtesy of Heyden Black Walker

Number of Curb Ramps

- Two curb ramps must be provided at each street corner
- For alterations, a single diagonal curb ramp is permitted where existing physical constraints exist
- Project documentation shall be kept indicating why two ramps were not provided

Where are curb ramps required?

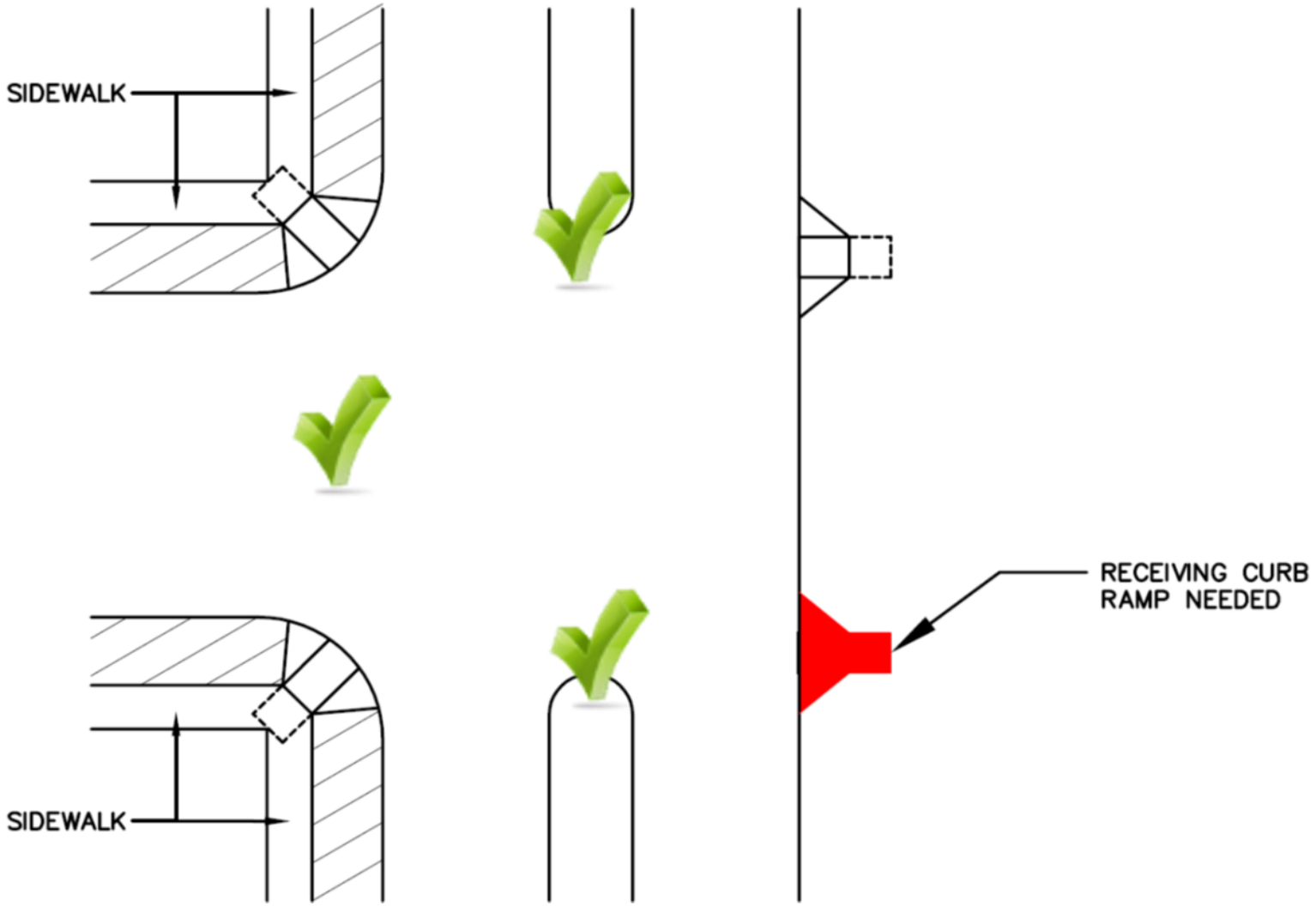
- The ADA of 1990, Section 35.150, Existing Facilities, requires that the Transition Plan include a schedule for providing curb ramps or other sloped area at existing pedestrian walkways, which applies to all facilities constructed prior to 1992.

- For any sidewalk installations constructed from 1992 to March 15, 2012, the curb ramps should have been installed as part of the sidewalk construction project per the 1991 Standards for Accessible Design, Section 4.7 Curb Ramp, which states, “curb ramps complying with 4.7 shall be provided wherever an accessible route crosses a curb.”

- For sidewalk installations constructed on or after March 15, 2012 similar guidance is provided in the 2010 Standards for Accessible Design, Section 35.151 of 28 CFR Part 35, New construction and alterations, which states, “newly constructed or altered street level pedestrian walkways must contain curb ramps or other sloped area at any intersection having curb or other sloped area at intersections to streets, roads, or highways.”

Where are curb ramps required?

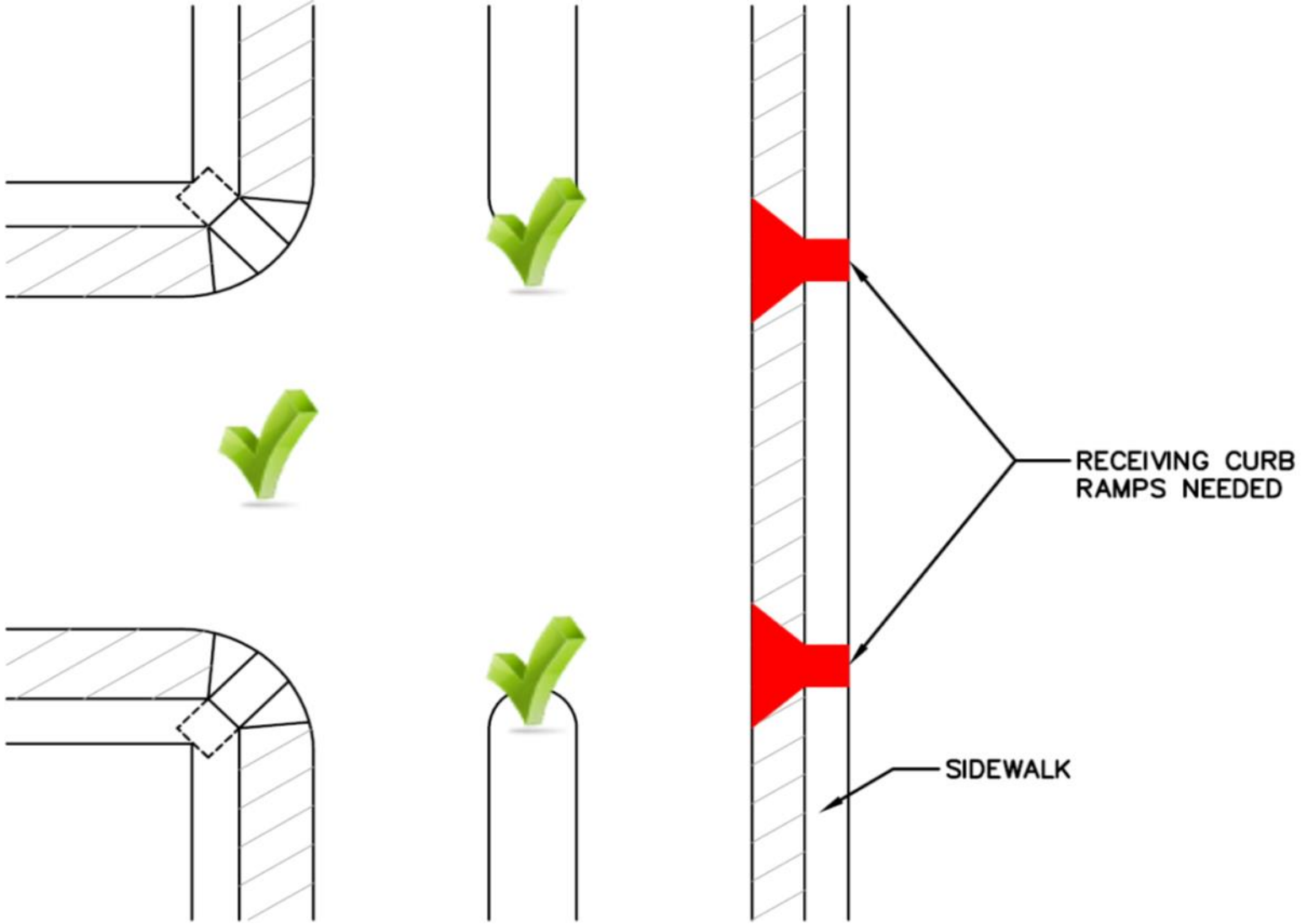
Where are curb ramps required?



Must Accommodate Crossing

Do Not Need to Accommodate Crossing

Where are curb ramps required?



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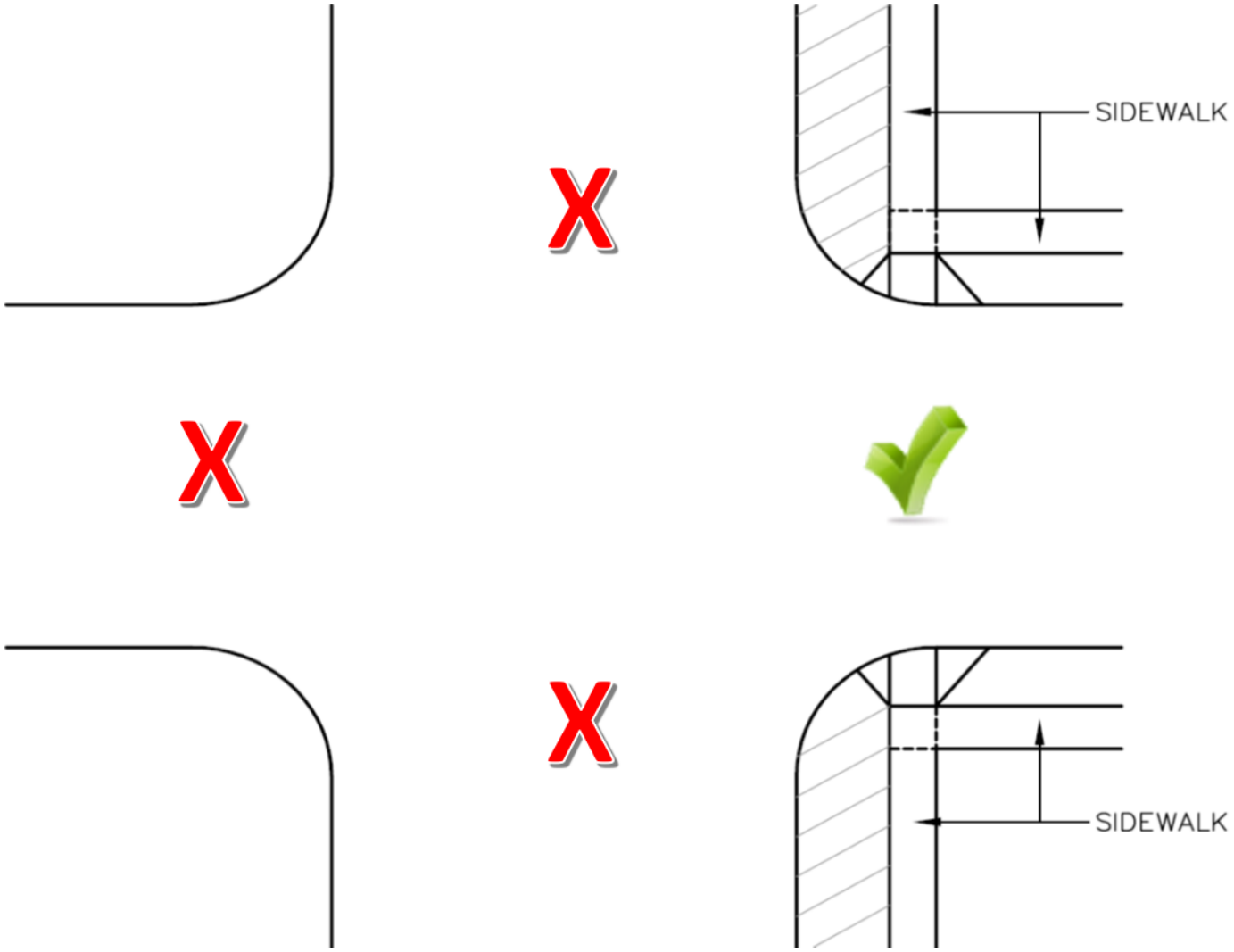
Do Not Need to Accommodate Crossing

Where are curb ramps required?



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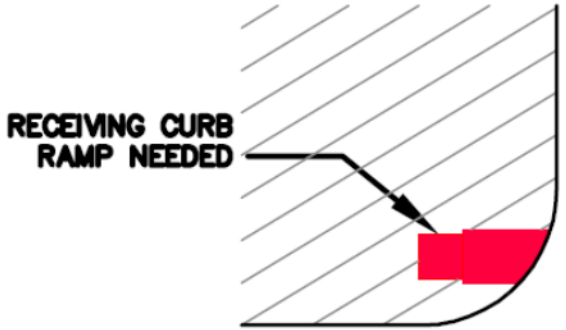
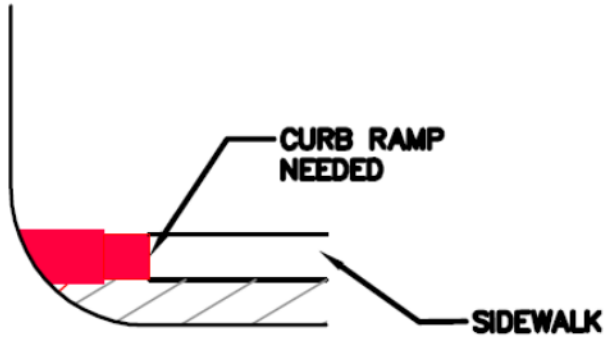
Do Not Need to Accommodate Crossing

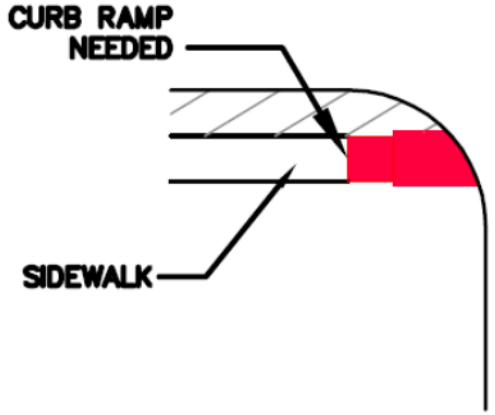
Where are curb ramps required?

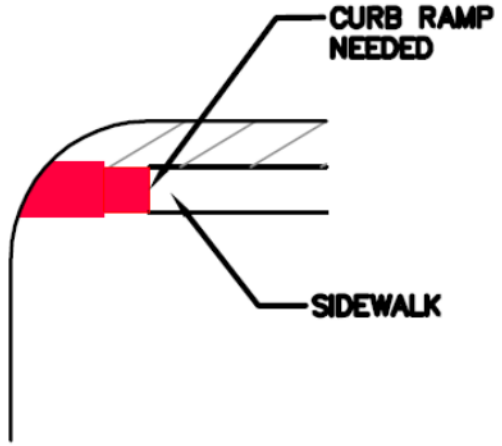
Must Accommodate Crossing

Do Not Need to Accommodate Crossing









Closing a Pedestrian Crossing

Perform engineering study to determine if the crossing is safe for any user. If it is not safe:

- Provide a physical barrier (a strip of grass or other non-traversable material between the sidewalk and the curb is acceptable)
- Install no pedestrian crossing signage
- Adopt a reasonable and consistent policy on how to determine if a crossing should be closed

Pedestrian Access Routes

Section R302

Key Differences Between Routes

Accessible Routes — An accessible route is a continuous, unobstructed path that connects all accessible elements and spaces of a building or facility. Interior accessible routes may include corridors, floors, ramps, elevators, lifts, and clear floor space at fixtures. Exterior accessible routes may include accessible parking space access aisles, curb ramps, crosswalks at vehicular ways, walks, ramps, and platform lifts.

Source: U.S. Access Board Outdoor Developed Areas

Key Differences Between Routes

Pedestrian Access Routes — A pedestrian access route, often called a sidewalk, is located in a public right-of-way and typically is parallel to a roadway. Consequently, side-walk grades (running slopes) must generally be consistent with roadway grades so that they fit into the right-of-way. Sidewalks are designed for pedestrian transportation and are not designed for bicycles or other recreational purposes.

Source: U.S. Access Board Outdoor Developed Areas

Key Differences Between Routes

Pedestrian Trails — A trail typically is not parallel to a roadway and is designed primarily for recreational purposes. Trails are not necessarily part of an infrastructure connecting elements or facilities, but typically are designed to provide a recreational experience. Trails may also be used by multiple types of users, but most are not designed for bicycles, nor do they have a transportation purpose.

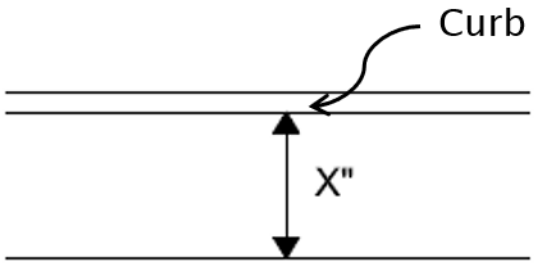
Source: U.S. Access Board Outdoor Developed Areas

Pedestrian Access Route Components

- Sidewalks
- Pedestrian street crossings
- At-grade rail crossings
- Pedestrian overpasses and underpasses
- Curb ramps and blended transitions
- Ramps
- Elevators
- Platform lifts
- Doors, doorways, and gates

Continuous Width

- Sidewalk
  - PROWAG: 4.0’ min., exclusive of curb
  - Where sidewalks are wider than 4.0’, only a portion of sidewalk is required to comply with R302.3 – R302.7
- Shared Use Path: full width of shared use path
- Medians/Pedestrian Refuge Islands: 5.0’ min.



Continuous Width

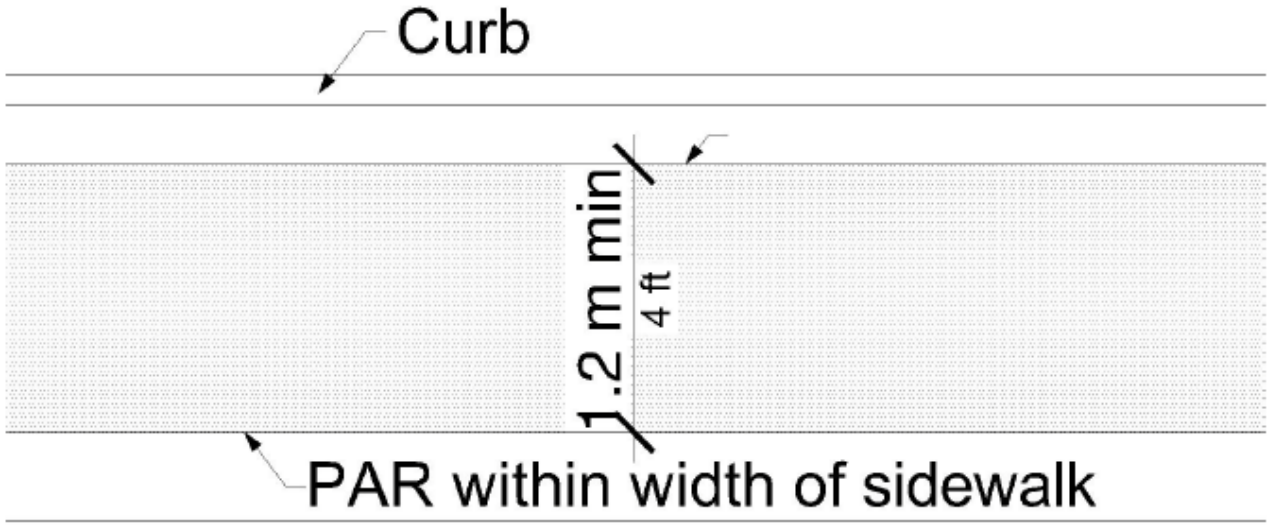


Figure R302.3
Continous Width

Clear Width – Pinch Points

- 2010 ADA
  - 36” min.
  - Exception: 32” (24” max. distance and 48” min. separation)
- PROWAG: Not addressed; comments have been submitted to include this requirement

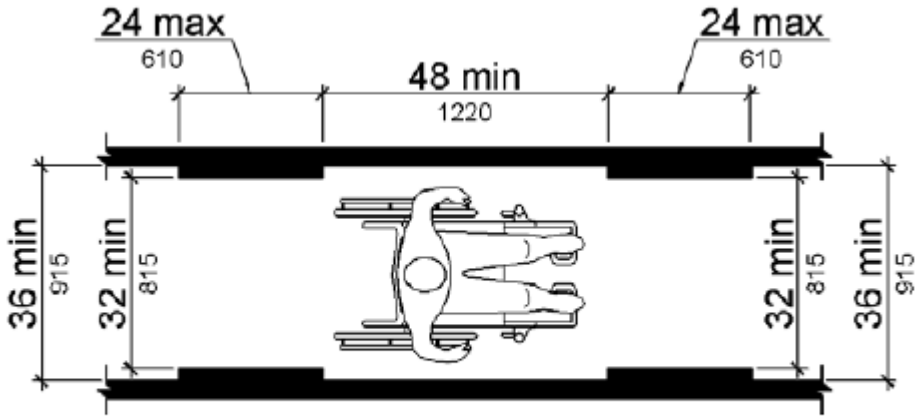


Figure 403.5.1
Clear Width of an Accessible Route

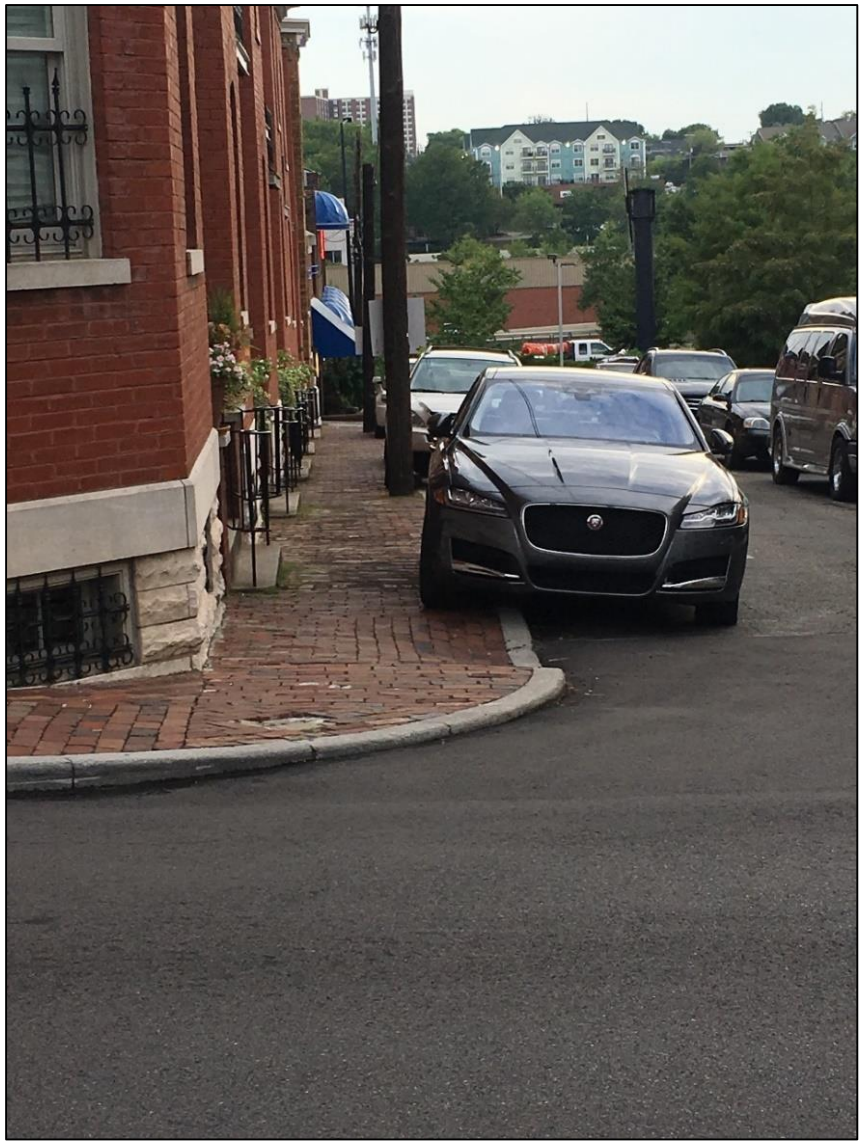
Clear Width

Source: civilnews.com

Source: streetblog.org

Clear Width

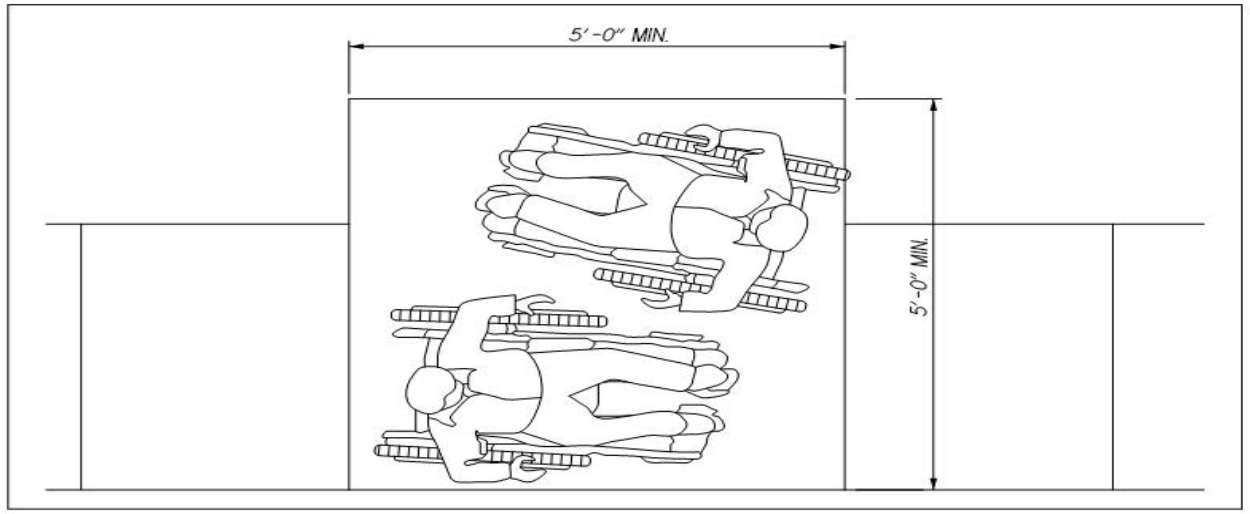

WALNUT
STREET GARAGE
OPEN
WALNUT STREET
MINI STORAGE
UNITS AVAILABLE
FOR
INFORMATION
CALL
865-546-7020



Passing Spaces

- If clear width < 5.0’, required every 200.0’ max.
- Passing space dimensions: 5.0’ x 5.0’
- May overlap pedestrian access routes
- Driveways and lead walkways serving residences or businesses meeting requirements may be used as passing zones

Passing Spaces



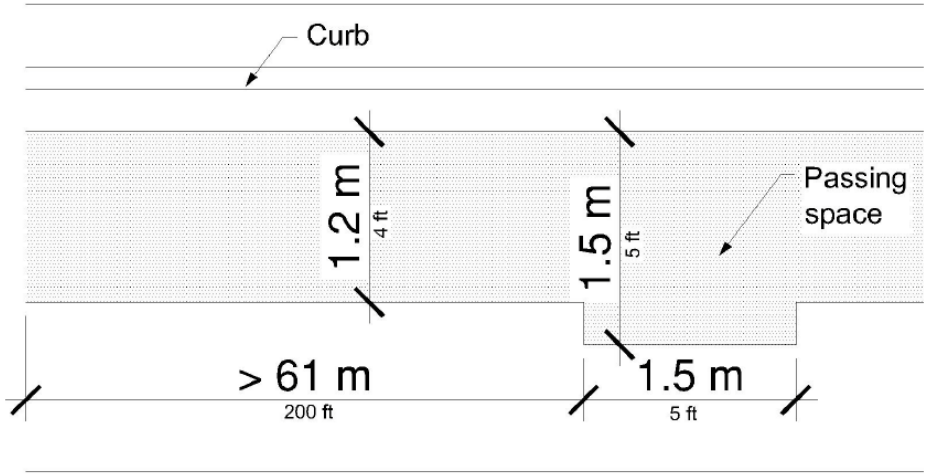


Figure R302.4
Passing Spaces

Grade (Running Slope)

Measured parallel to the direction of pedestrian travel

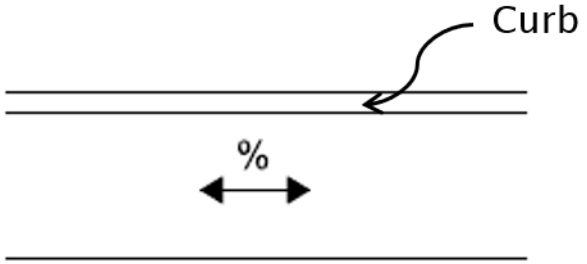
Location	Sidewalk	Pedestrian Street Crossings	Shared Use Path
Inside ROW and serving adjacent street or highway	May follow grade of adjacent street or highway	5% max.	May follow grade of adjacent street or highway to the extent practical where compliance is not practicable due to physical constraints and where compliance is precluded by regulatory constraints
Inside ROW but not serving adjacent street or highway	5% max.		
Outside ROW	5% max.		

Grade (Running Slope)

Sidewalk within the ROW serving adjacent street

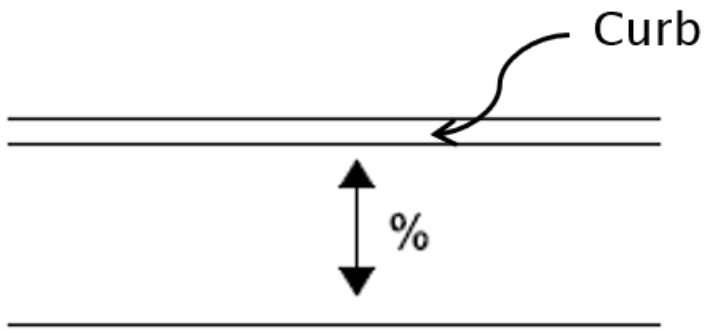
Back of Curb

Offset



Cross Slope

- Measured perpendicular to direction of pedestrian travel
- Includes driveway and entrance crossings
- Sidewalk: 2% max.



Cross Slope

- Street Crossings
- With Yield or Stop Control: 2% max.
  - Unsignalized, yield control approaches
  - Unsignalized, stop control approaches
- Without Yield or Stop Control: 5% max.
  - Unsignalized, free-flow approaches
  - Signalized, all approaches
- Midblock: may equal grade of street or highway

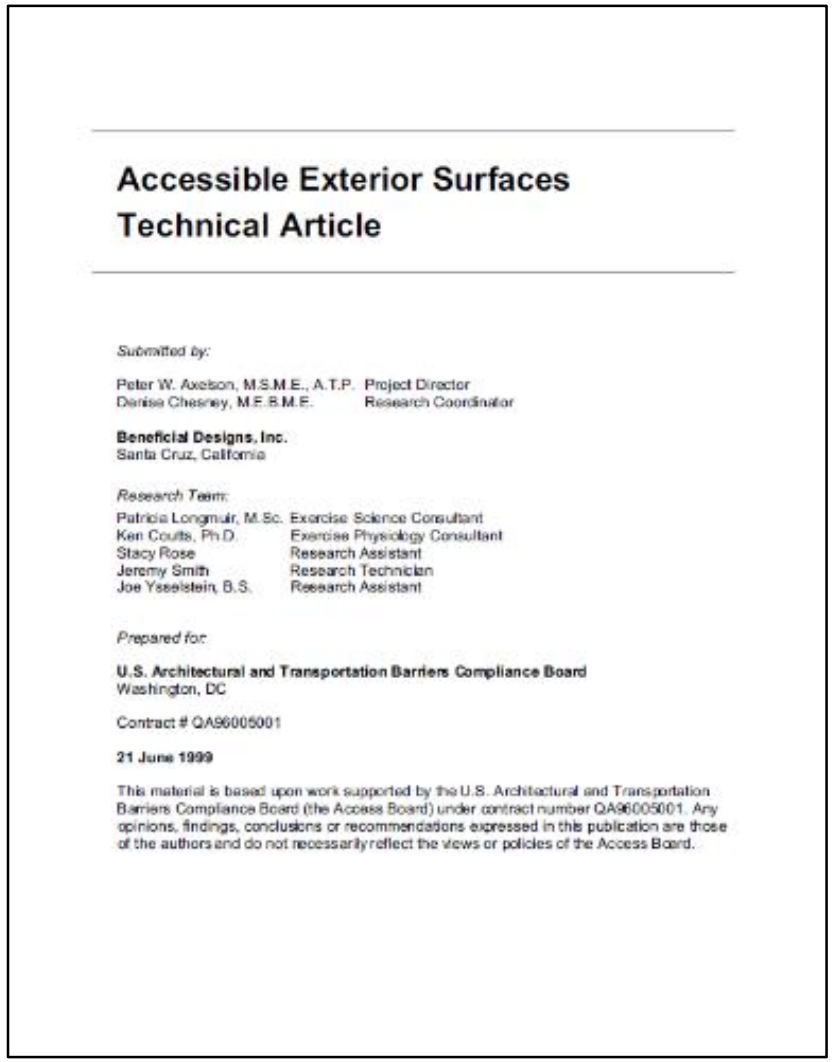
Surfaces

- All pedestrian access route surfaces must be firm, stable, and slip resistant

- Typical materials
  - Concrete
  - Bituminous Concrete Asphalt

Surfaces

Source: https://www.access-board.gov/attachments/article/1225/exterior-surfaces.pdf



Accessible Exterior Surfaces
Technical Article

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Washington, DC

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Surfaces

- Vertical Alignment
  - Generally planar and smooth (easy “rollability”)
  - Consider vibrations when choosing surface material
  - Flush grade breaks
  - At rail crossings, level and flush with rails

- Vertical Surface Discontinuities
  - With beveled edge across entire vertical surface discontinuity: 0.5” max.
  - Without beveled edge: 0.25” max.

Surfaces

Allowance intended for sidewalk expansion joints and utilities that cannot be placed outside sidewalks (not curb ramps and blended transitions)

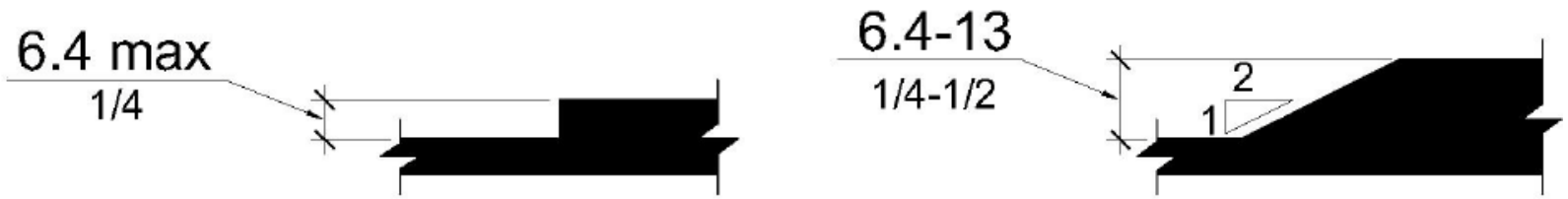


Figure R302.7.2
Vertical Surface Discontinuities

Surfaces

- Utility covers and property access covers
- Do not locate in pedestrian access route
- If must be located in pedestrian access route, covers and approaches must be ADA compliant
  - Firm, stable, slip-resistant
  - No vertical elevations greater than ¼”
  - No gaps greater than ½”

Surfaces

Avoid utility covers in pedestrian street crossings

Surfaces

Avoid utility covers in curb ramps

Surfaces:
Vertical Discontinuities

Cracking

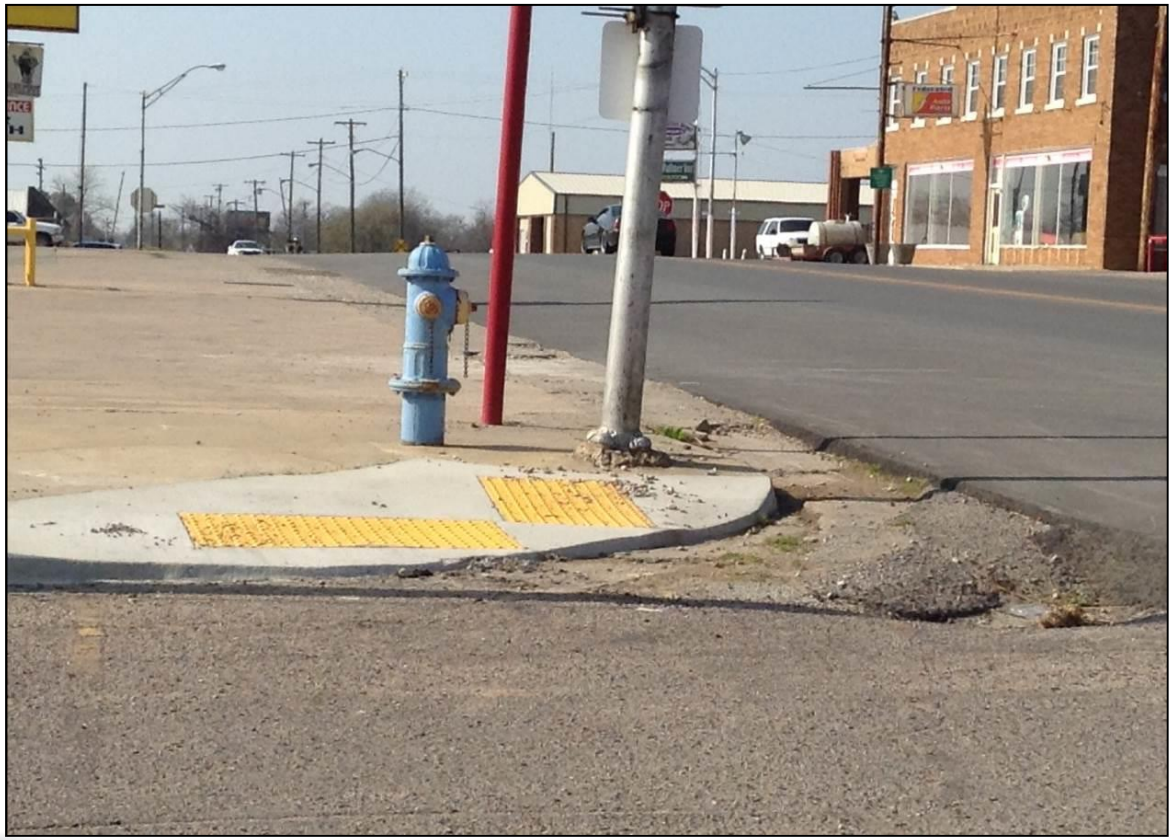
Heaving

Sinking

Surfaces:
Vertical Discontinuities

Non-Flush
Curb Ramp
Transition

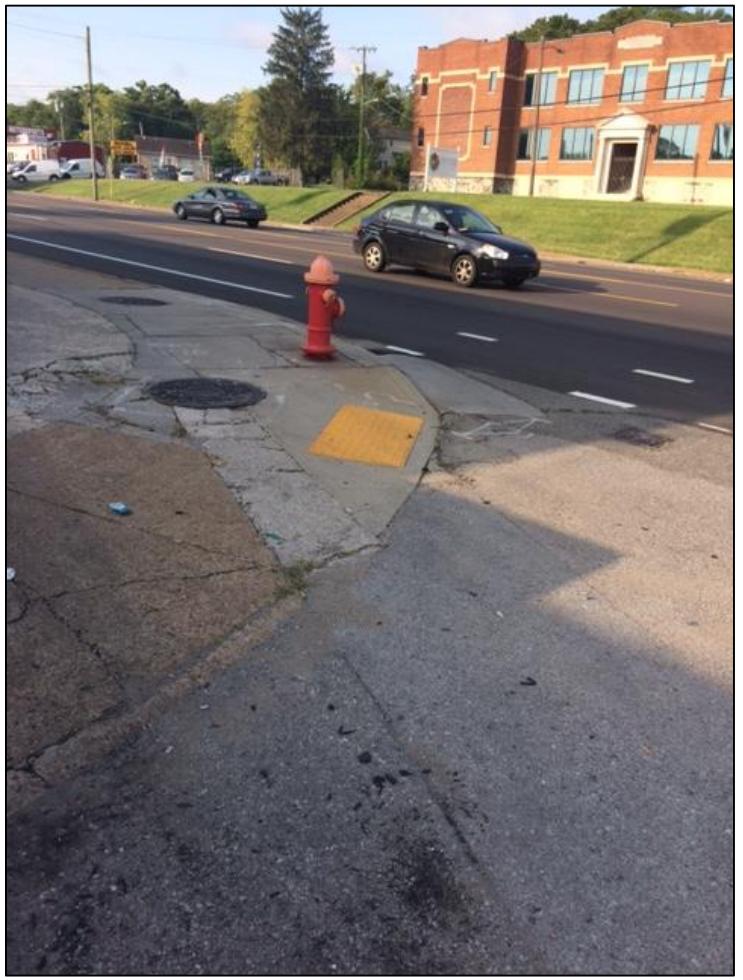
Surfaces:
Vertical Discontinuities



Non-Flush
Curb Ramp
Transition

Surfaces:
Vertical Discontinuities

Non-Flush
Curb Ramp
Transition



Surfaces: Horizontal Openings

- Includes gratings and lateral sidewalk joints
- Shall not permit passage of a sphere 0.5” in diameter
- Elongated openings in gratings must be placed with long dimension perpendicular to dominant direction of travel

Surfaces

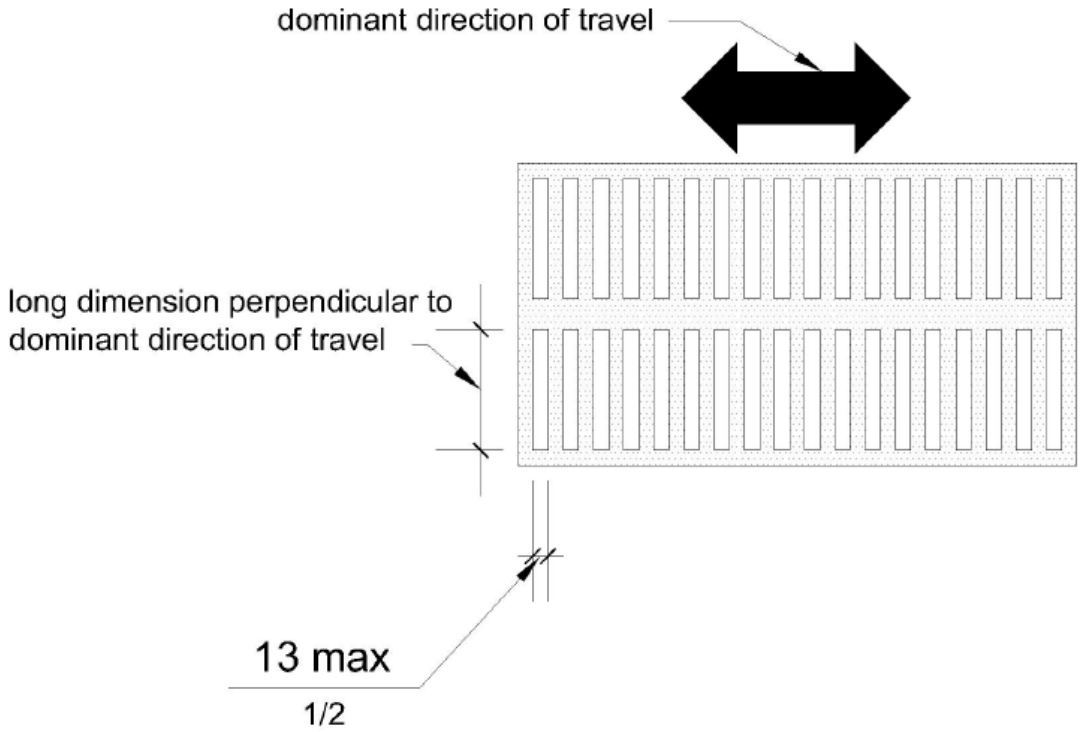


Figure R302.7.3
Horizontal Openings

Accessible Grate in Pedestrian Access Route

Surfaces

Non-Compliant

Source: universaldesignstyle.com

Surfaces

- Flangeway Gaps
  - Non-Freight rail track: 2.5” max.
  - Freight rail track: 3” max.

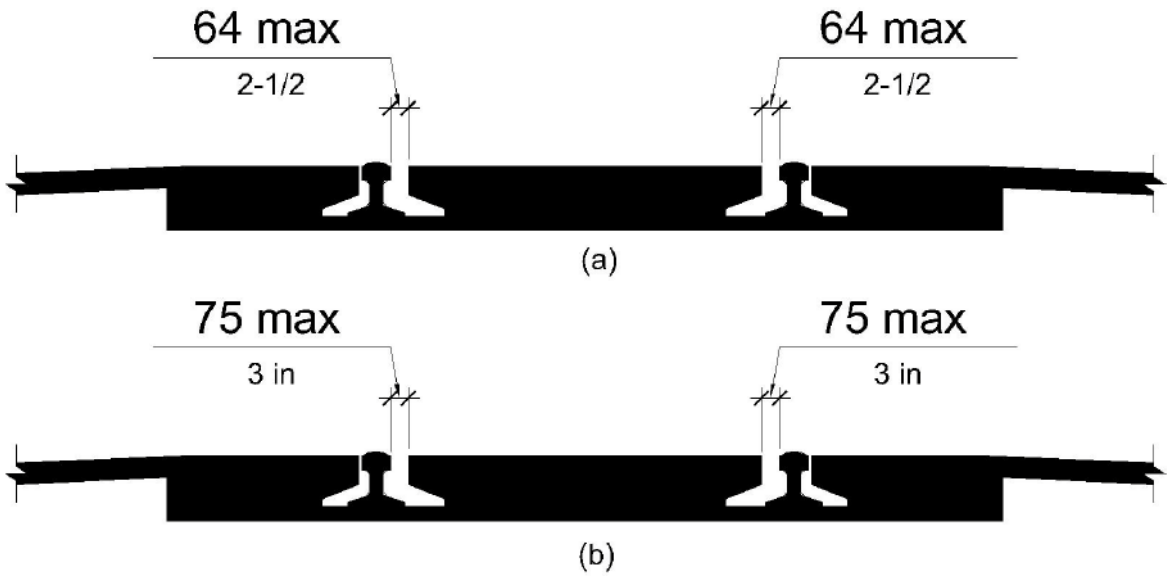
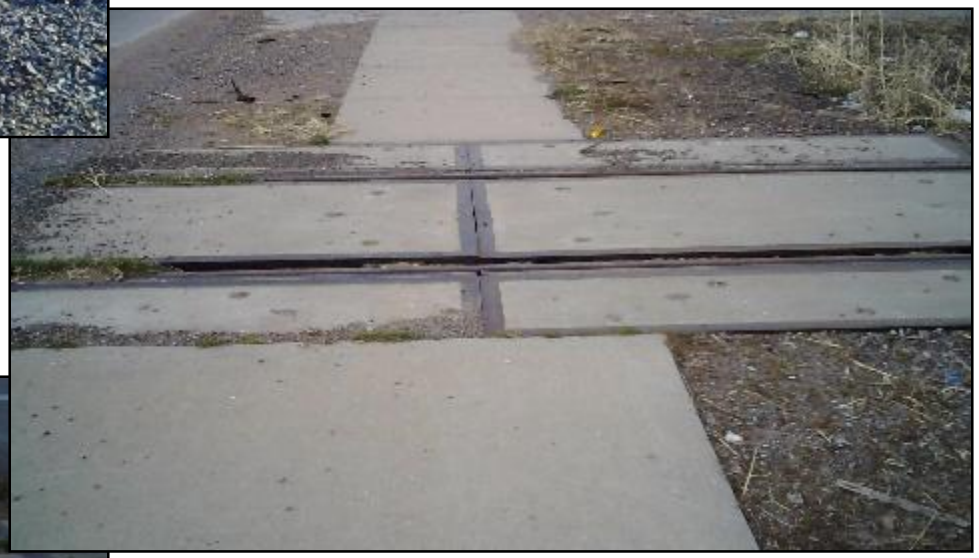


Figure R302.7.4
Flangeway Gaps

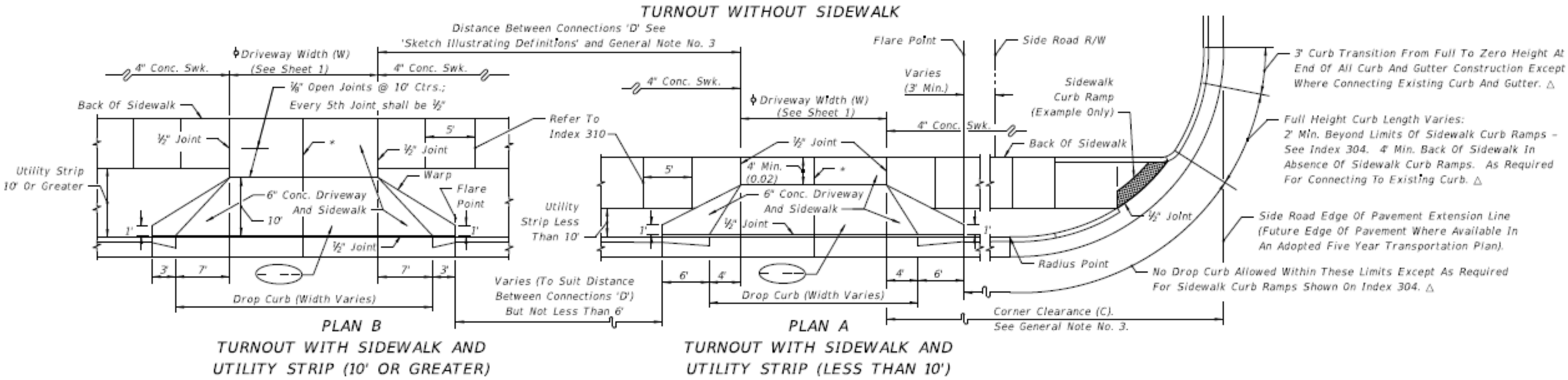
Pre-fabricated Plates



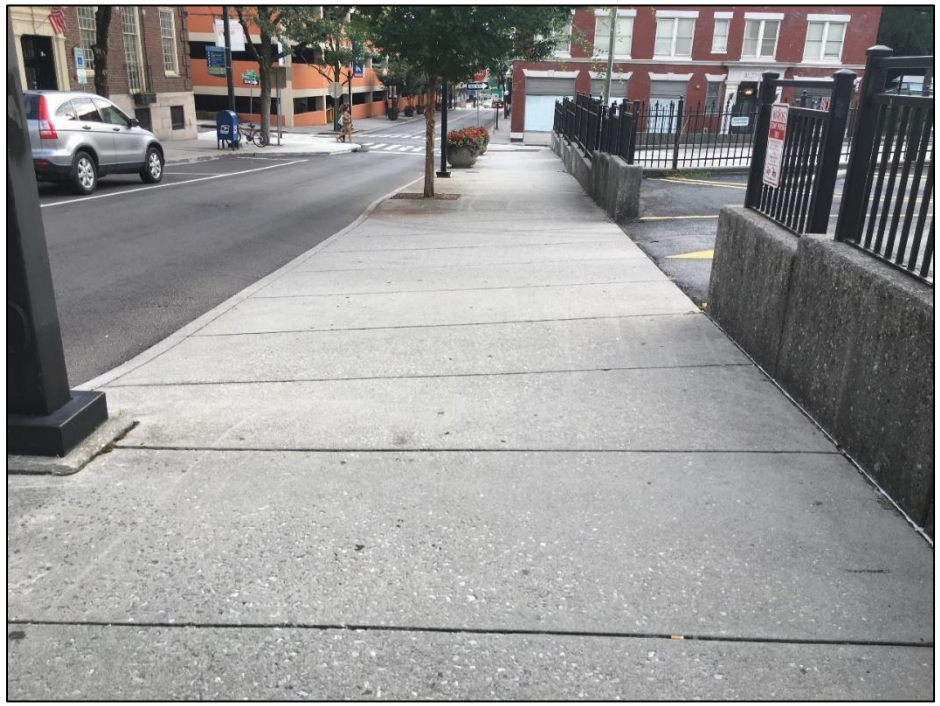
No Pre-fabricated Plates

Driveway and Entrance Crossings

Driveways with Sidewalk



Driveways



Non-compliant

Compliant

Driveways

Non-compliant

Compliant

Protruding Objects

Section R402

Defined Terms

- Pedestrian Circulation Path: A prepared exterior or interior surface provided for pedestrian travel in the public ROW

- Pedestrian Access Route: A continuous unobstructed path of travel provided for pedestrians with disabilities within or coinciding with a pedestrian circulation path

Protruding Objects

- Objects along or overhanging any portion of a pedestrian circulation path shall not reduce the clear width required for pedestrian access routes

- Requirements for protruding objects apply across the entire width of the pedestrian circulation path, not just the pedestrian access route

Protruding Objects – Examples

- Utility poles
- Mailboxes
- Signal poles
- Signal cabinets
- Signs
- Trees
- Shrubs
- Other obstructions

Protrusion Limits

- If objects height is:
  - Sidewalks: 27” – 80” above finish surface
  - Shared Use Paths: 8.0’ below finished surface

- Then horizontal overhang: 4” max.

Protrusion Limits

“Cane detectable range”

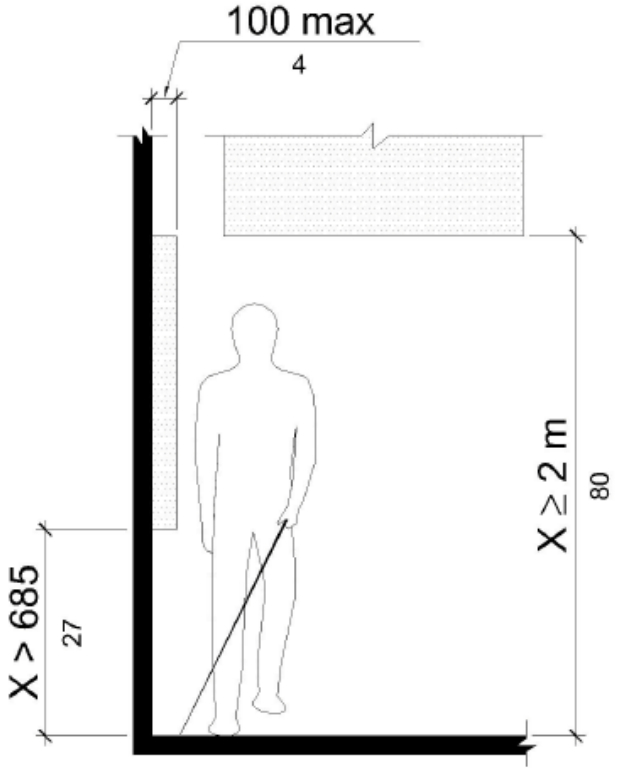


Figure R402.2
Protrusion Limits

Protrusion Limits

Temporary obstructions such as overgrown bushes and trees must also be considered

Post-Mounted Objects

- Mounted on free-standing posts or pylons
  - If object height: 27” – 80” above finish surface
  - Then horizontal overhang: 4” max. from post or pylon
  - If base, base thickness: 2.5” min.
  - Regulatory, warning, or guide signs: mount 84” above finish surface

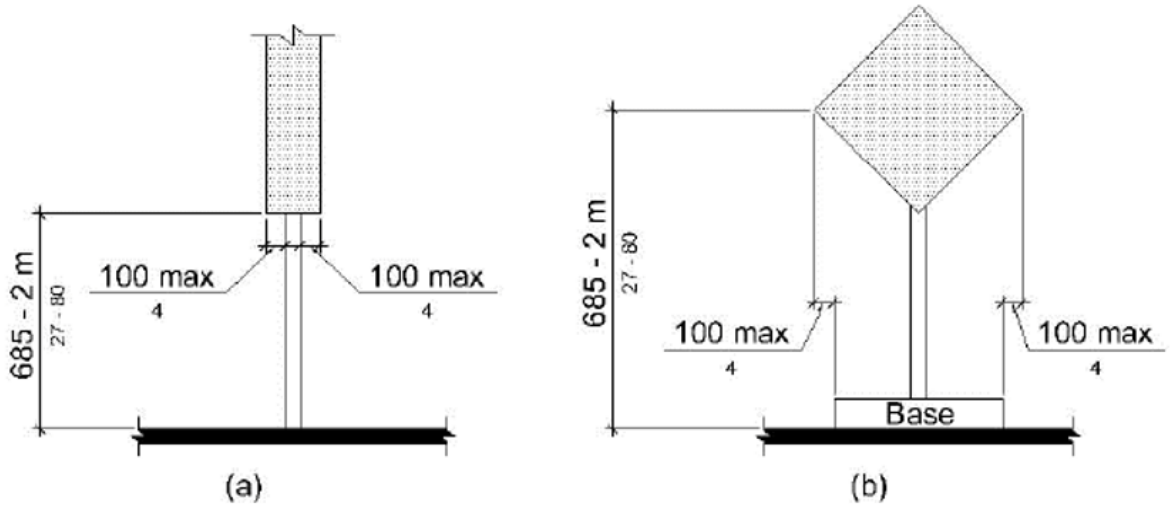
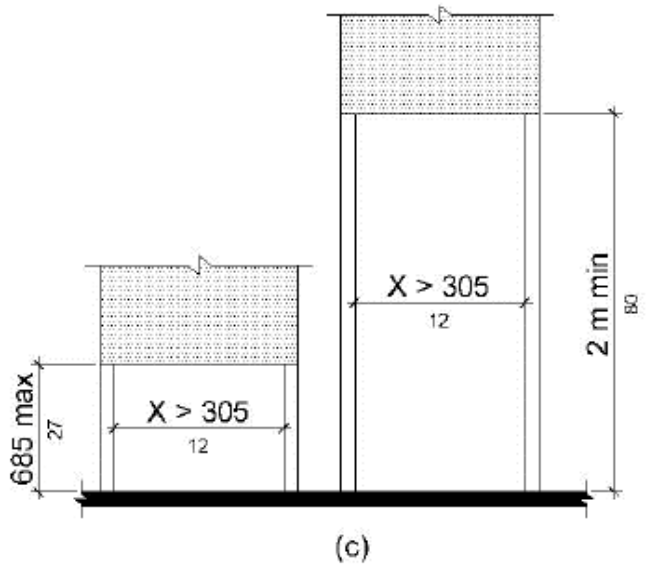


Figure R402.3
Post-Mounted Objects

Post-Mounted Objects

Mounted between posts or pylons and clear distance between posts or pylons is greater than 1.0’

- Allowable Object Heights:
  - 2.25’ max. above finish surface
  - 6.7’ max. above finish surface



(c)

Post-Mounted Objects

Non-Compliant

Compliant

Reduced Vertical Clearance

- Guardrails or other barriers (e.g., planters or benches) to pedestrian travel must be provided when vertical clearance is less than 80” high
- Leading edge of guardrail must be located 27” max. above finish surface

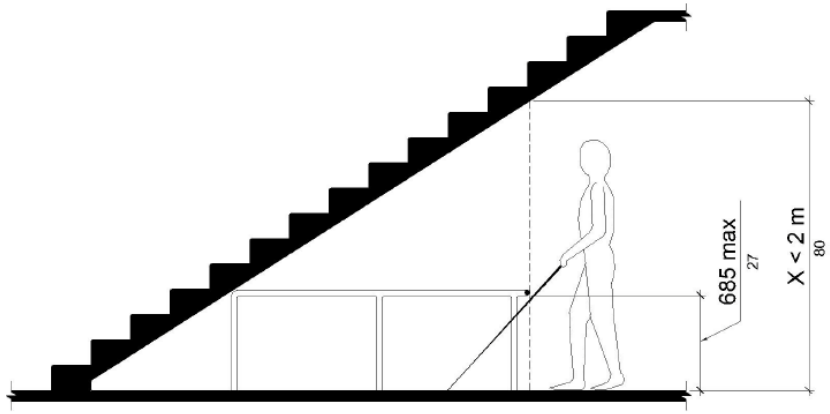
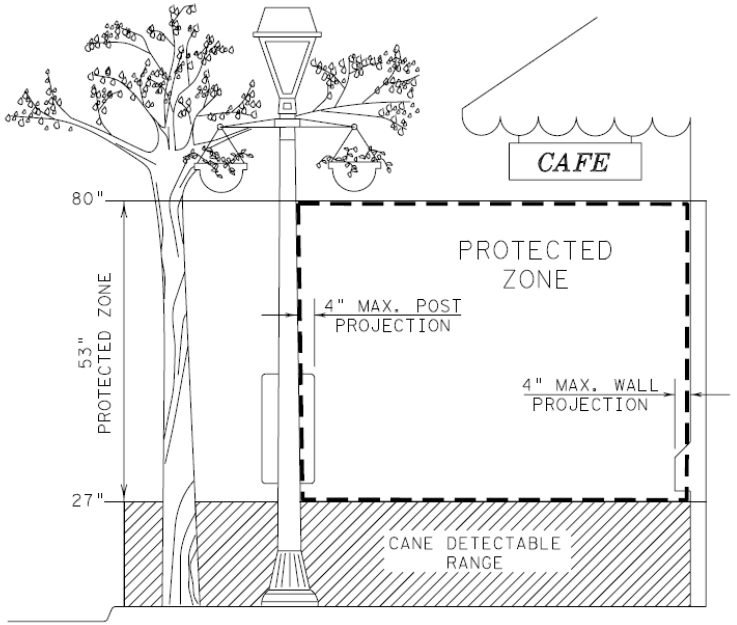


Figure R402.4
Reduced Vertical Clearance

Reduced Vertical Clearance

Temporary obstructions such as low-hanging tree branches must also be considered



PROTECTED ZONE

In pedestrian circulation area, maximum 4" projection for post or wall mounted objects between 27"and 80" above the surface.

Alternate Pedestrian Routes

Section R205/R303

Alternate Pedestrian Access Routes

Alternate pedestrian access routes must be provided when a pedestrian circulation path is temporarily closed:

- Construction
- Alterations
- Maintenance Operations
- Other conditions

Alternate Pedestrian Access Routes

- Alternate routes must comply with MUTCD Sections 6D.01, 6D.02, 6G.05

- Pedestrian barricades and channelizing devices must comply with MUTCD Sections 6F.63, 6F.68, and 6F.71

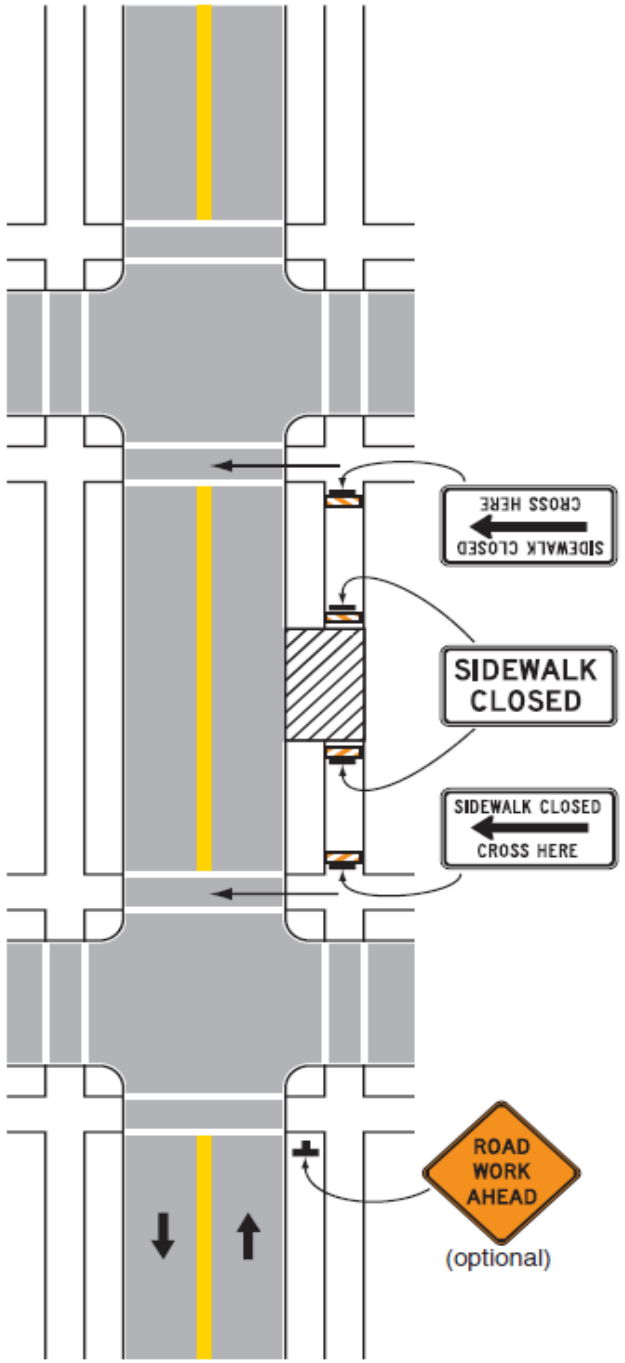
Sidewalk Detour

Notes:

Standard. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility.

Only the traffic control devices controlling pedestrian flows are shown. Other devices may be needed to control traffic on the streets. Use lane closure signing, ROAD NARROWS, or LANE NARROWS signs as needed.

Fort nighttime closures, Type A flashing warning lights may be used on barricades that support signs and close walkways. Temporary street lighting may also be considered.



SIDEWALK DETOUR

Curb Ramps and Blended Transitions

Section R304

Defined Terms

Curb Ramp: A ramp that cuts through or is built up to the curb. Curb ramps can be perpendicular or parallel, or a combination of parallel and perpendicular ramps. A short ramp cutting through a curb or built up to it.

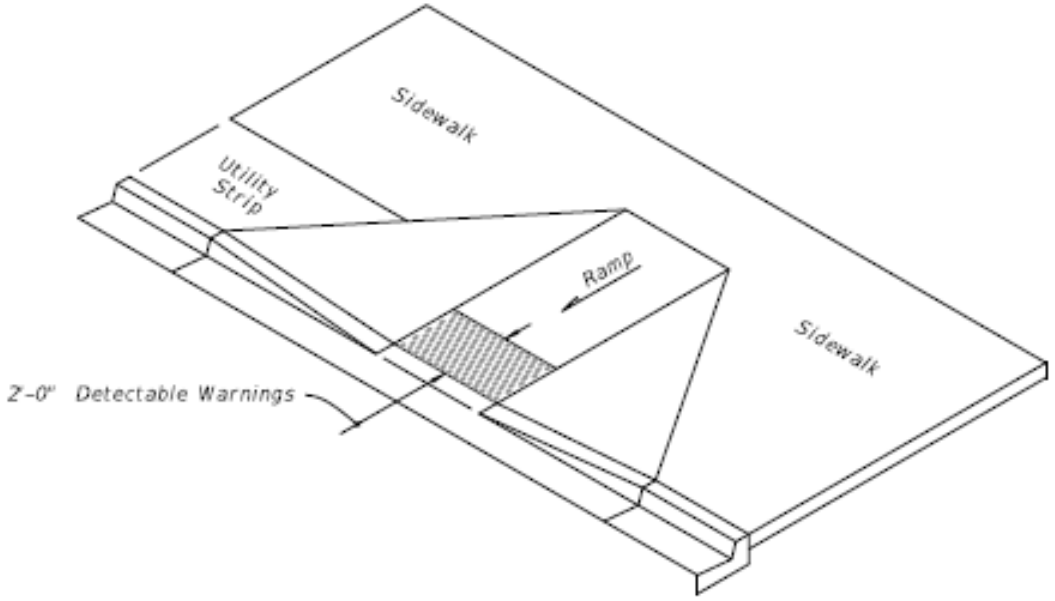
Defined Terms

Blended Transition: A raised pedestrian street crossing, depressed corner, or similar connection between the pedestrian access route at the level of the sidewalk and the level of the pedestrian street crossing that has a grade of 5% or less.

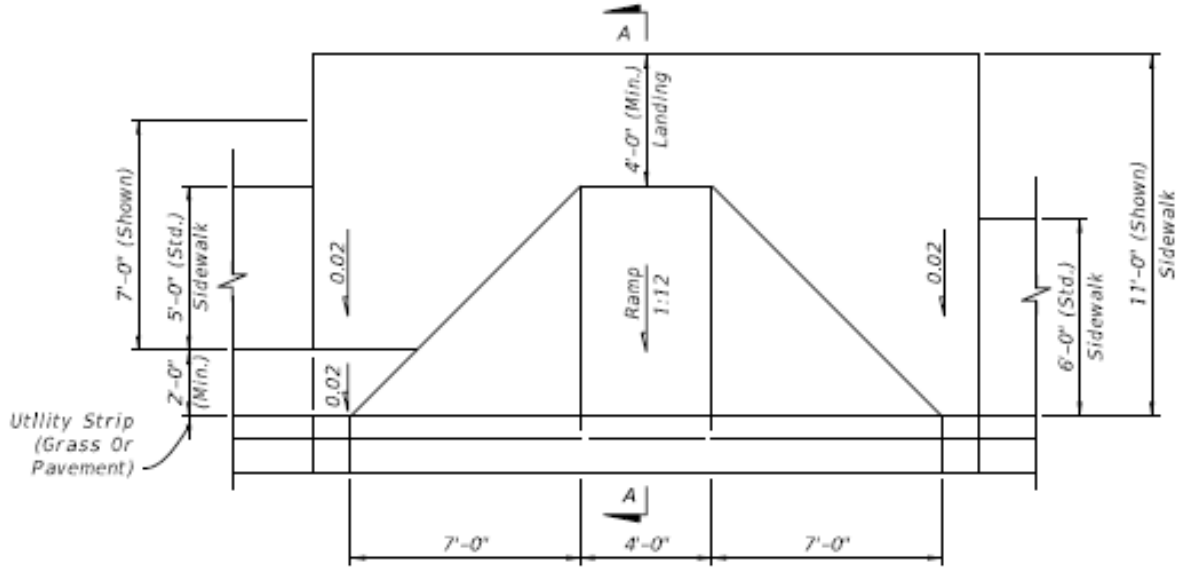
General

Type	Application
Perpendicular curb ramp	Sidewalk ≥ 12.0’ wide
Parallel curb ramp	Sidewalk ≥ 4.0’ wide
Combination curb ramp	Sidewalk ≥ 6.0’ wide
Blended transition	Range of sidewalk conditions
Lowered corner ramp	N/A

Perpendicular Curb Ramp



ISOMETRIC VIEW



PLAN VIEW

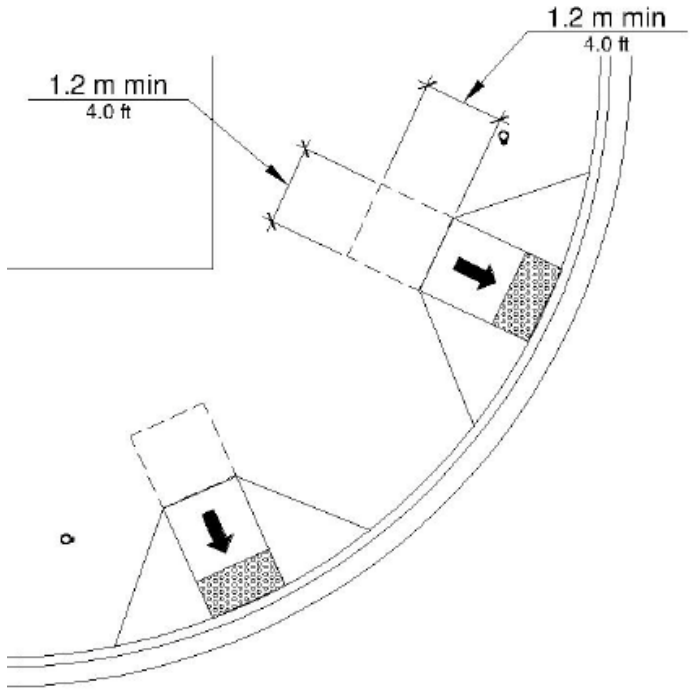
Perpendicular Curb Ramps

Turning Space (Landing)

- Located at top of curb ramp
- May overlap other turning spaces and clear spaces

Condition	Turn Space Size
Unconstrained by back of sidewalk	4.0’ x 4.0’ min.
Constrained by back of sidewalk	• 4.0’ x 5.0’ min. • 5.0’ dimension provided in direction of ramp run
Shared Use Paths	4.0’ x 4.0’ min.

Perpendicular Curb Ramps



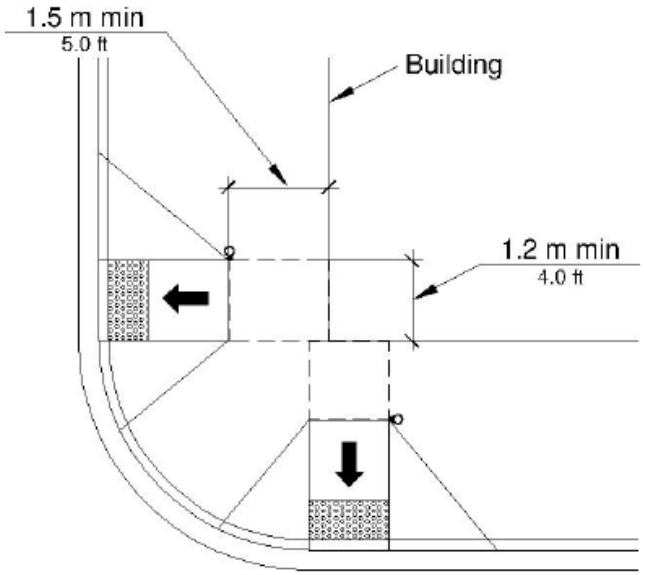
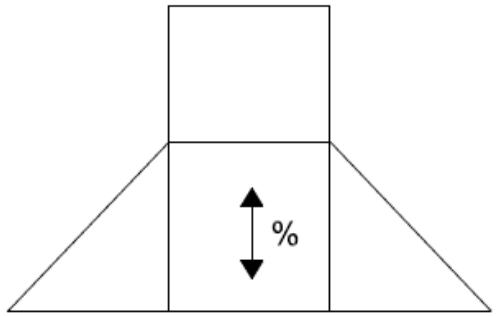


Figure R304.2.1
Turning Space

Perpendicular Curb Ramps – Running Slope

- Curb Ramps
  - Cut through, built up to curb at right angles, or meets gutter grade breaks at right angles where curb is curved
  - Min: 5% (for ramp length considerations)
  - Max: 8.3%
  - Ramp Length Max: 15.0’
- Turning Spaces
  - Max: 2%



Perpendicular Curb Ramps

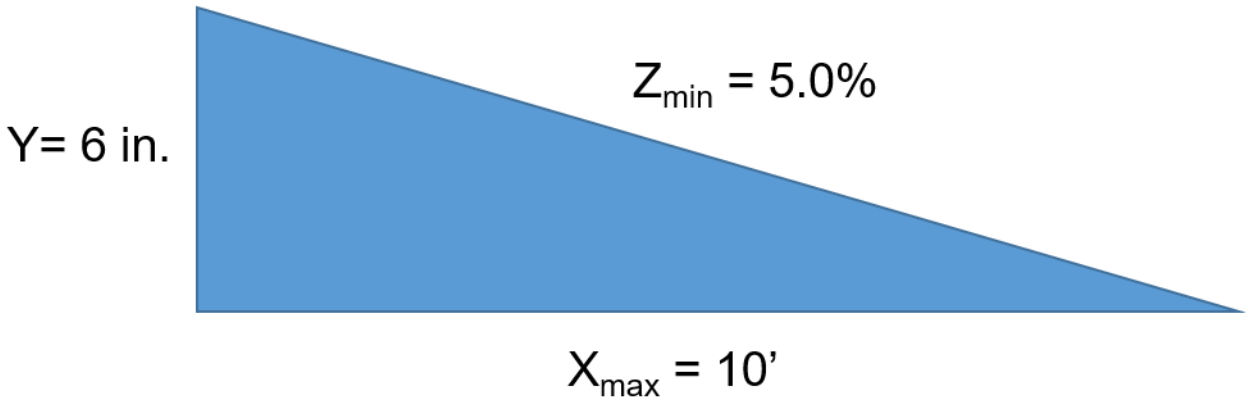
Non-compliant:
Sides not 90˚

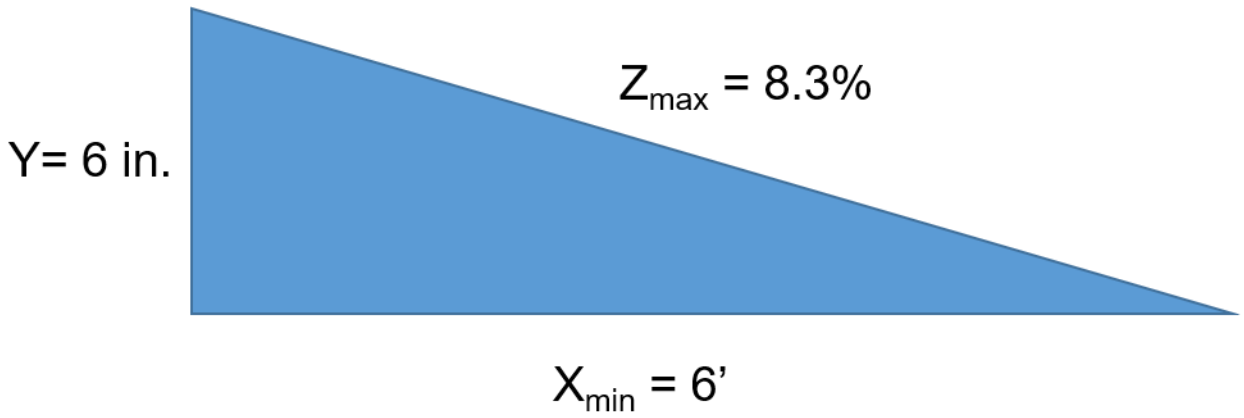
Perpendicular Curb Ramps

Compliant:
Sides 90°

Perpendicular Curb Ramps

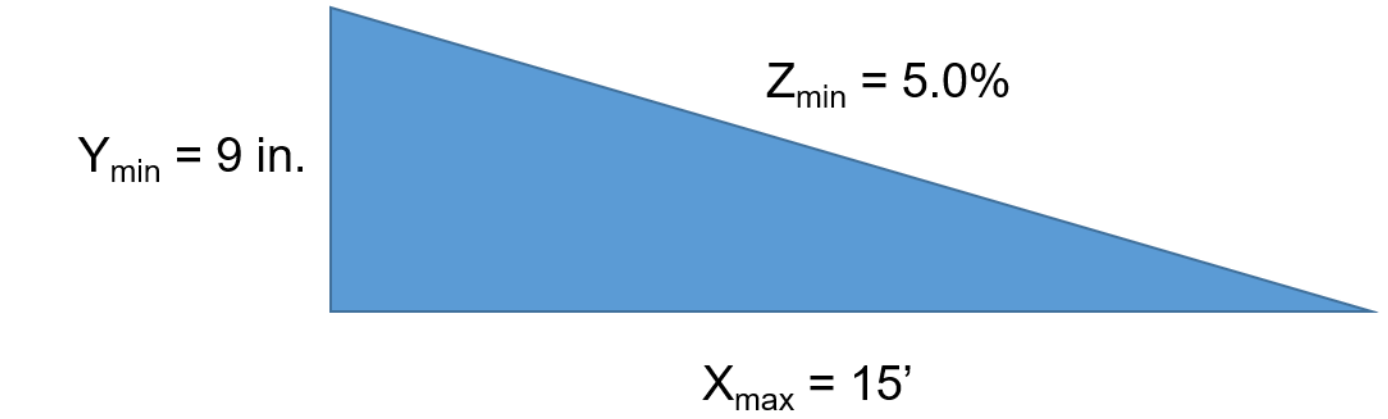
Example: Run limits for typical 6” curb

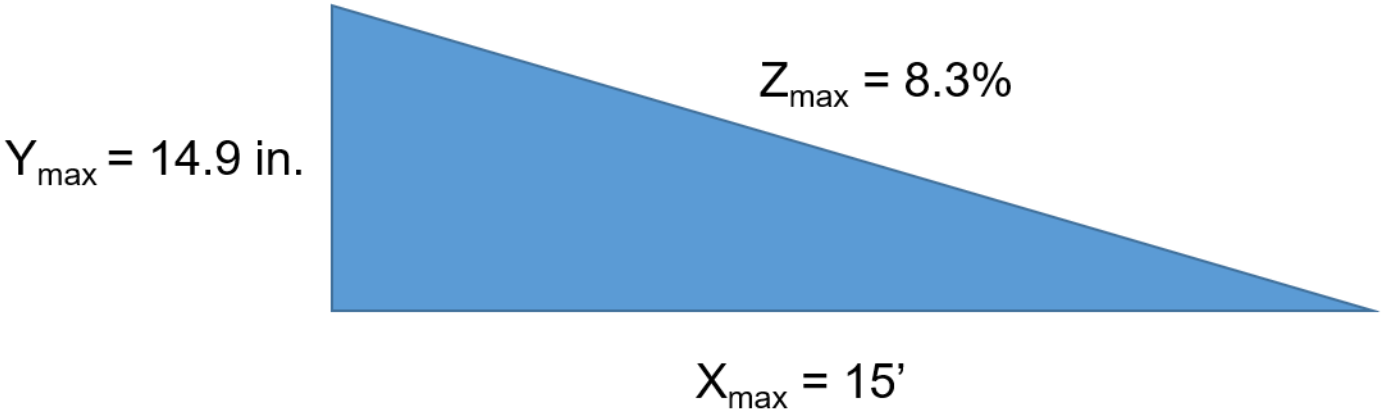




Perpendicular Curb Ramps

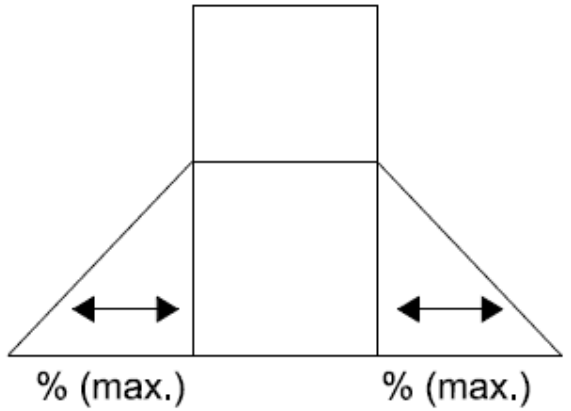
Example: Rise limits using max. run length





Perpendicular Curb Ramps – Flared Sides

- Required where pedestrian circulation path crossed curb ramp
- Flared sides not allowed where curb ramp is adjacent to a non-walking surface
- Max. slope: 10%
- Measured parallel to curb line



Perpendicular Curb Ramps

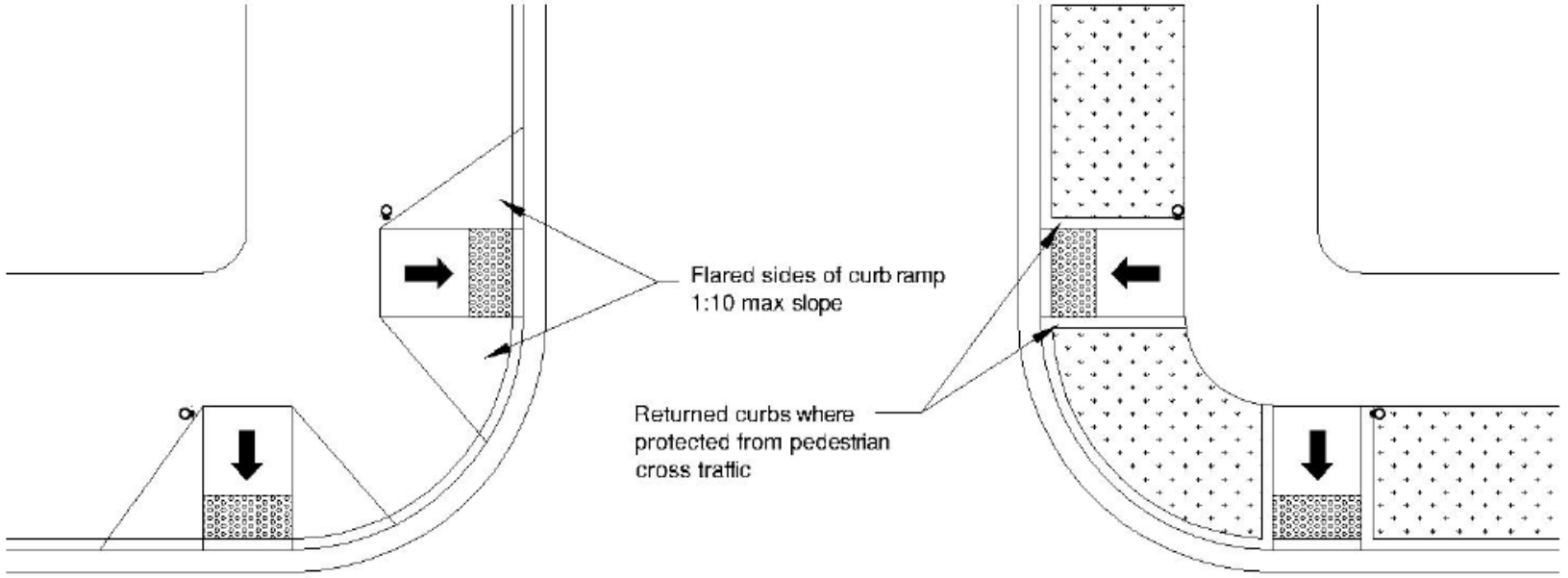


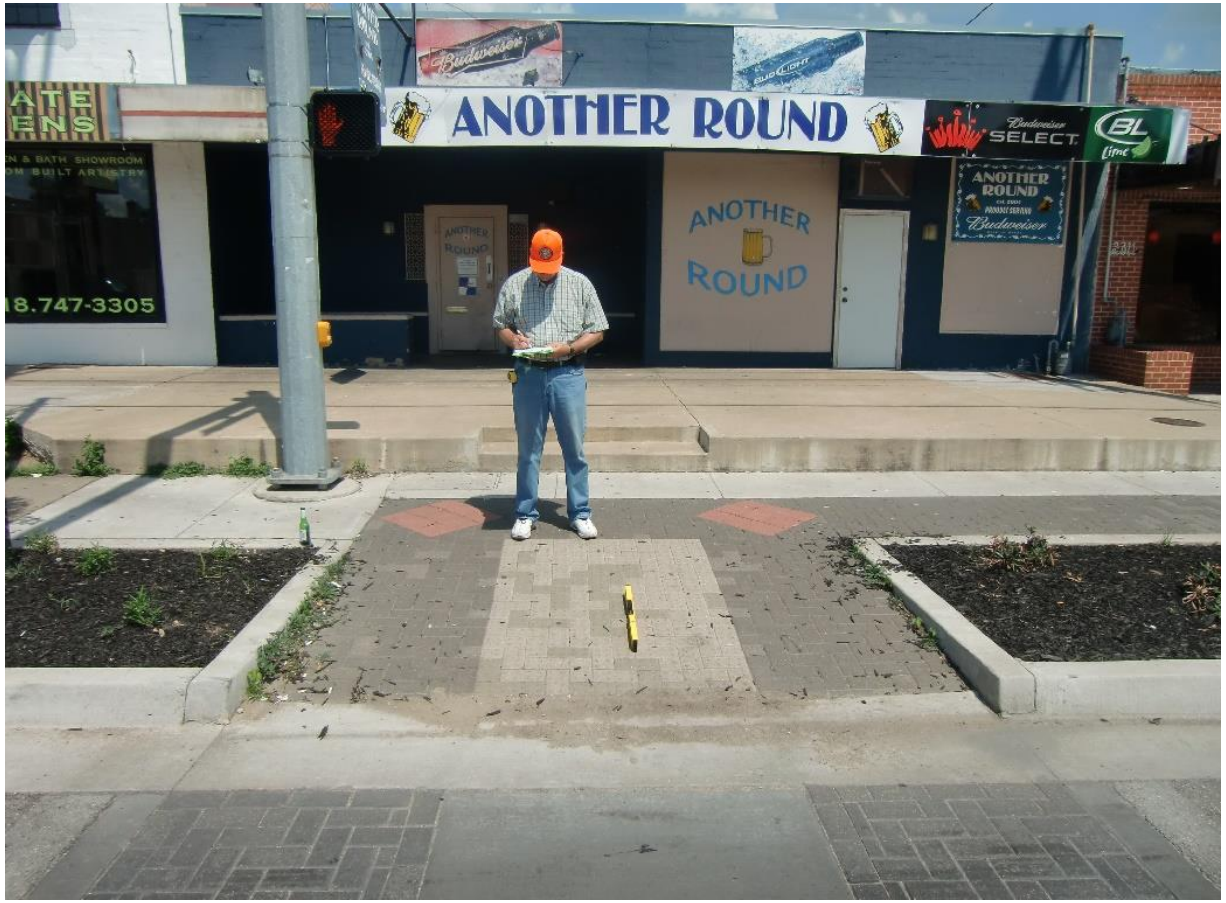
Figure R304.2.3
Flared Sides

Perpendicular Curb Ramps

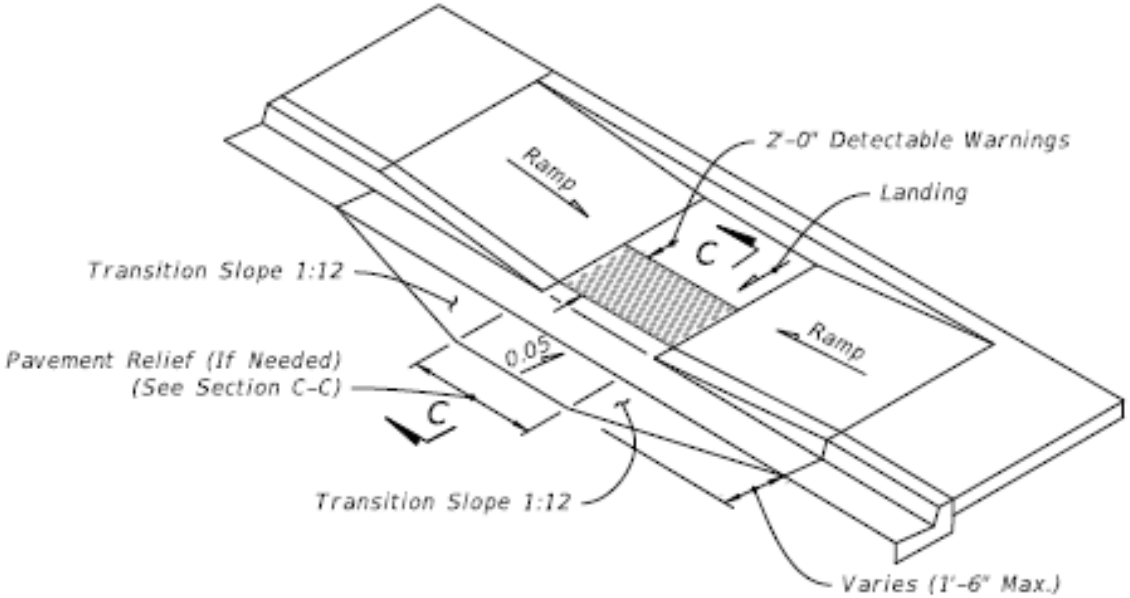
NON-COMPLIANT
(traversable adjacent surface)

Perpendicular Curb Ramps

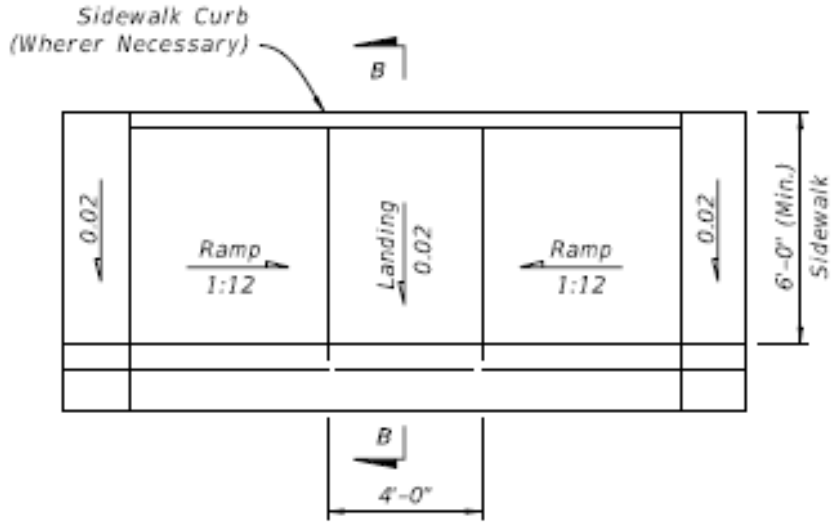
COMPLIANT
(protected with landscaping; non-traversable)



Parallel Curb Ramp



ISOMETRIC VIEW



PLAN VIEW

CR-C

Parallel Curb Ramps – Turning Space

- Located at bottom of curb ramp
- May overlap other turning spaces and clear spaces

Condition	Turning Space Size
Unconstrained on 2 or more sides	4.0’ x 4.0’ min.
Constrained on 2 or more sides	• 4.0’ x 5.0’ min. • 5.0’ dimension provided in direction of pedestrian street crossing
Shared Use Paths	4.0’ x 4.0’ min.

Parallel Curb Ramps

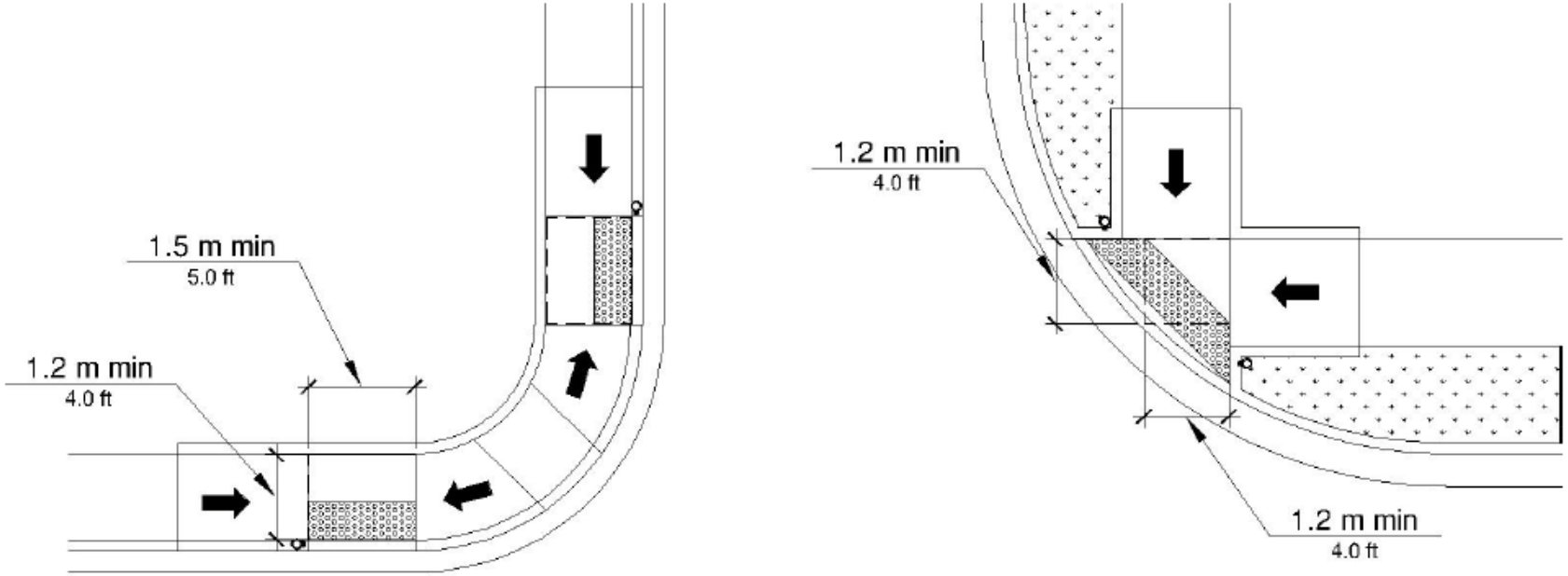
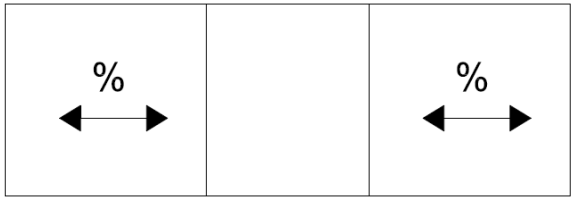


Figure R304.3.1
Turning Space

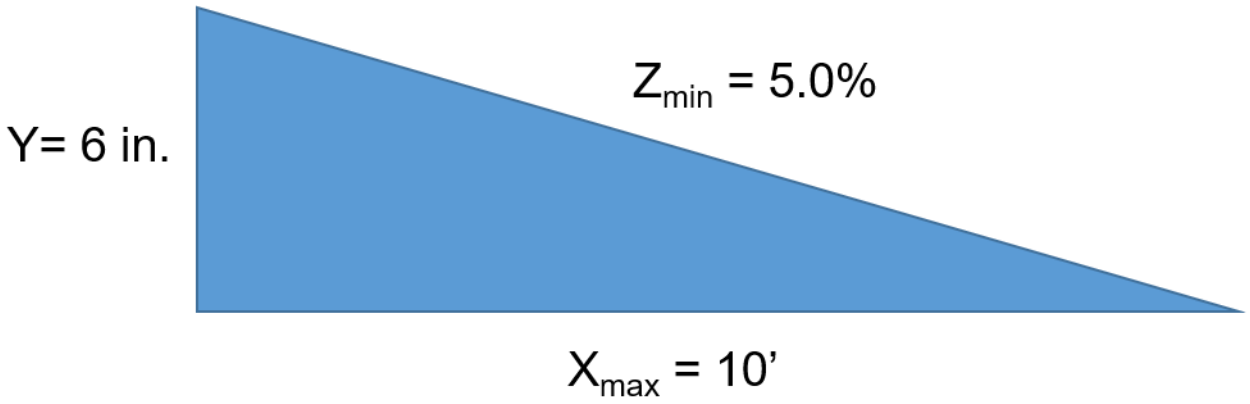
Parallel Curb Ramps – Running Slope

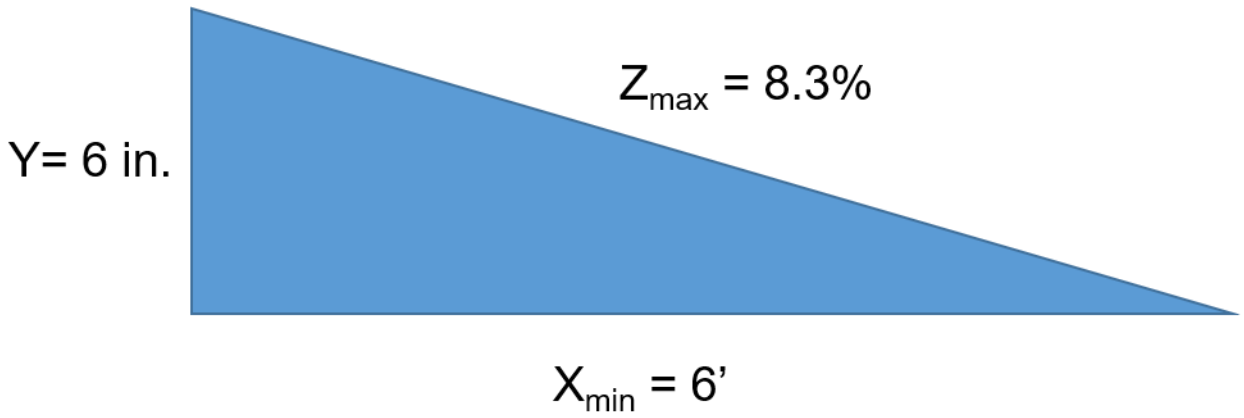
- Curb Ramps
  - In-line with direction of sidewalk travel
  - Min: 5%
  - Max: 8.3%
  - Ramp Length Max: 15.0’
- Turning Spaces
  - Max: 2%



Parallel Curb Ramps

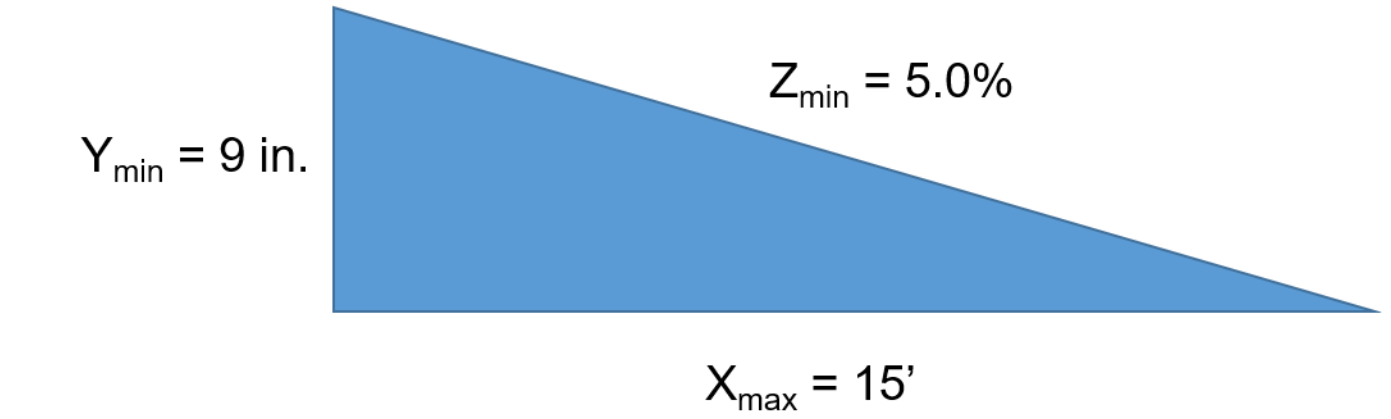
Example: Run limits for typical 6” curb

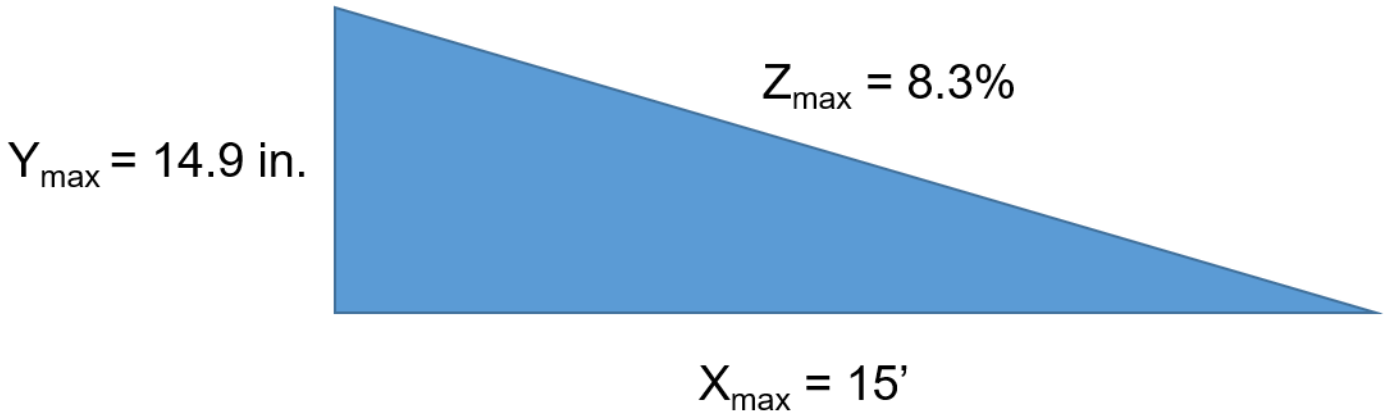




Parallel Curb Ramps

Example: Rise limits using max. run length





Blended Transitions

- Treatment type for entire curb radius
- Running Slope: 5% max.

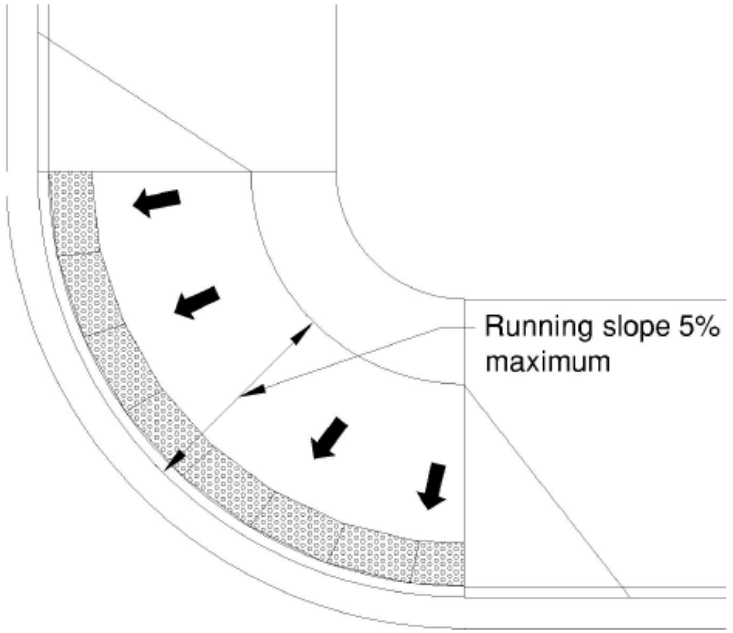


Figure R304.4.1
Running Slope

Common Requirements – Width

- Sidewalk
  - 4.0’ min.
  - Excludes any flared sides
- Shared Use Path
  - At least as wide as path width
  - Excludes any flared sides

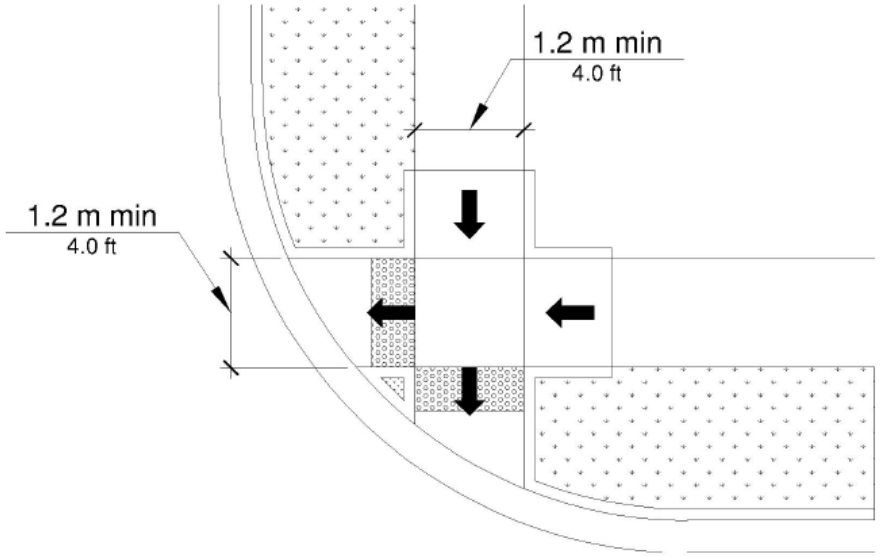


Figure R304.5.1
Width

Common Requirements – Grade Breaks

- Must be perpendicular to direction of ramp run at top and bottom of curb ramps
- Not permitted on surface of ramp runs and turning spaces
- Surface slope that meet at grade breaks must be flush

Common Requirements – Grade Breaks

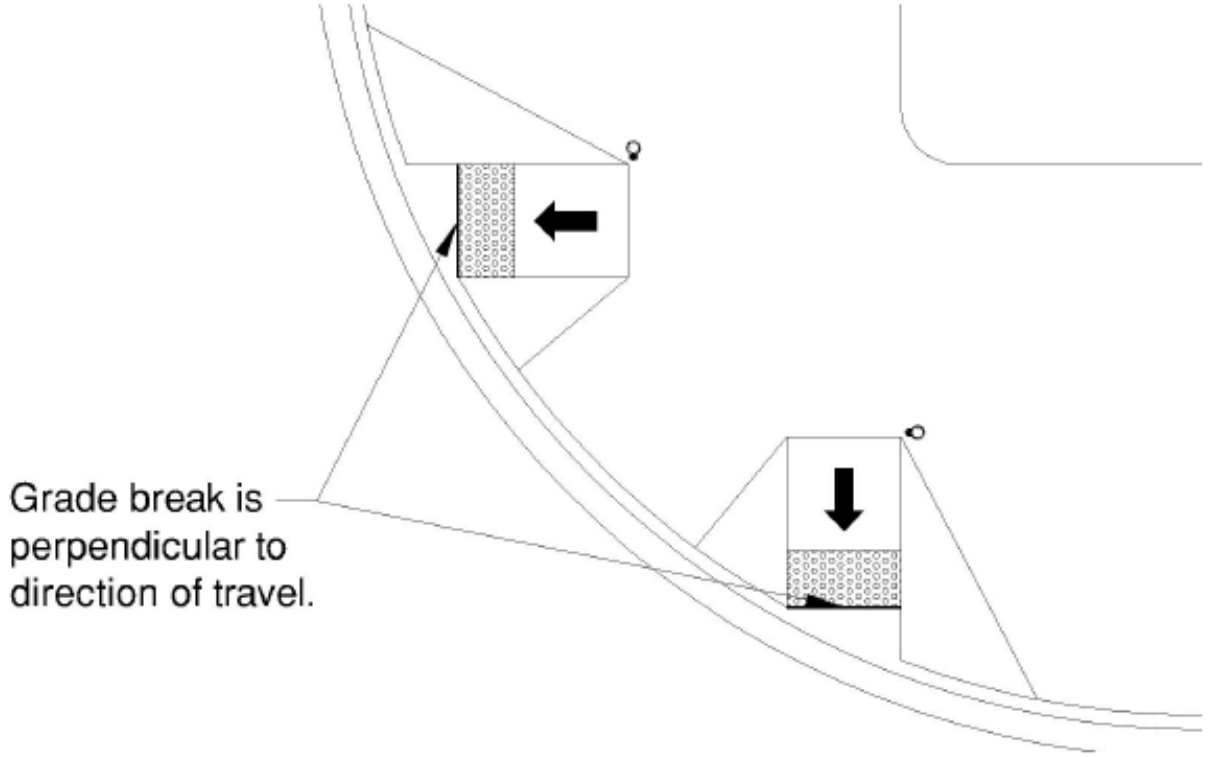
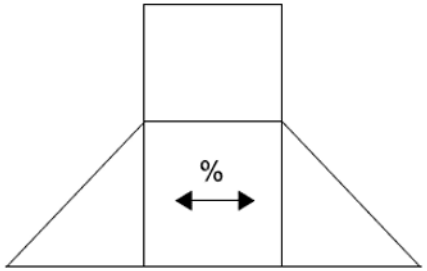


Figure R304.5.2
Grade Breaks

Common Requirements – Cross Slope

- Measured perpendicular to the pedestrian path of travel
- 2% max.

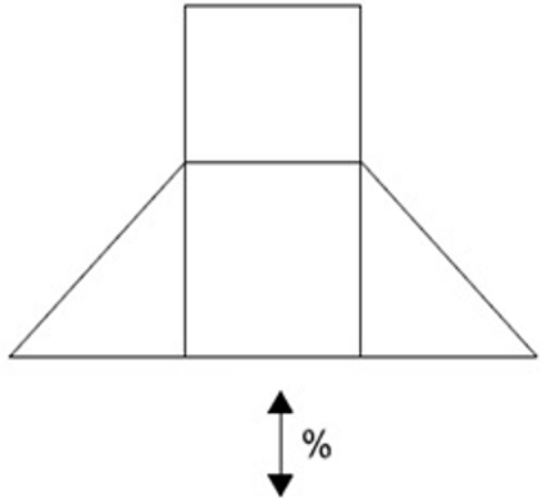
Parallel Curb Ramp



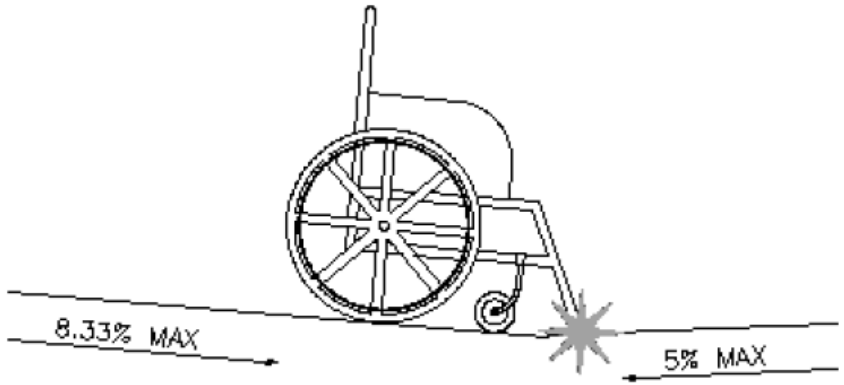
Perpendicular
Curb Ramp

Common Requirements – Counter Slope

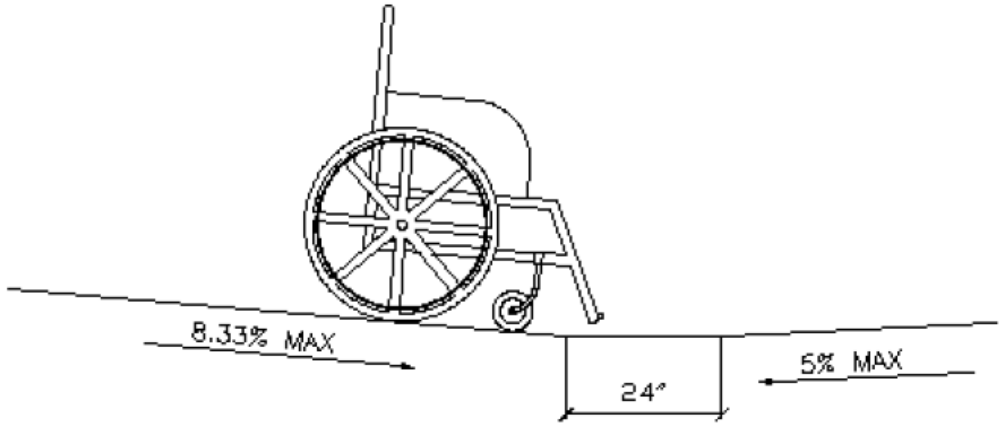
- Measured in gutter or street at foot of curb ramp runs, blended transitions, and turning spaces
- PROWAG: 5% max.
- US Access Board Guidance:
- G = g2 – g1 = 11% max.
  - g1: curb ramp running slope
  - g2: crosswalk slope



Common Requirements – Counter Slope



ALGEBRAIC DIFFERENCE
GREATER THAN 11% NOT
PERMITTED



PROVIDE 24" LEVEL STRIP IF
ALGEBRAIC DIFFERENCE
EXCEEDS 11%

Common Requirements – Clear Space

- Measure beyond the bottom grade break
- 4.0’ x 4.0’ min.
- Within the width of pedestrian street crossing
- Wholly outside the parallel vehicle travel lane

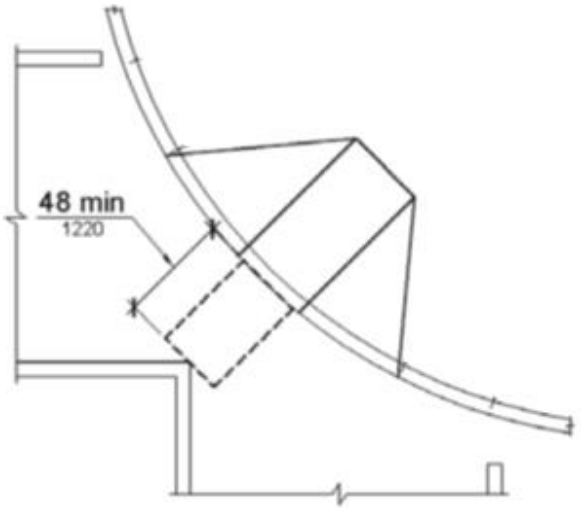


Figure 406.6
Diagonal or Corner Type Curb Ramps

Common Requirements – Clear Space

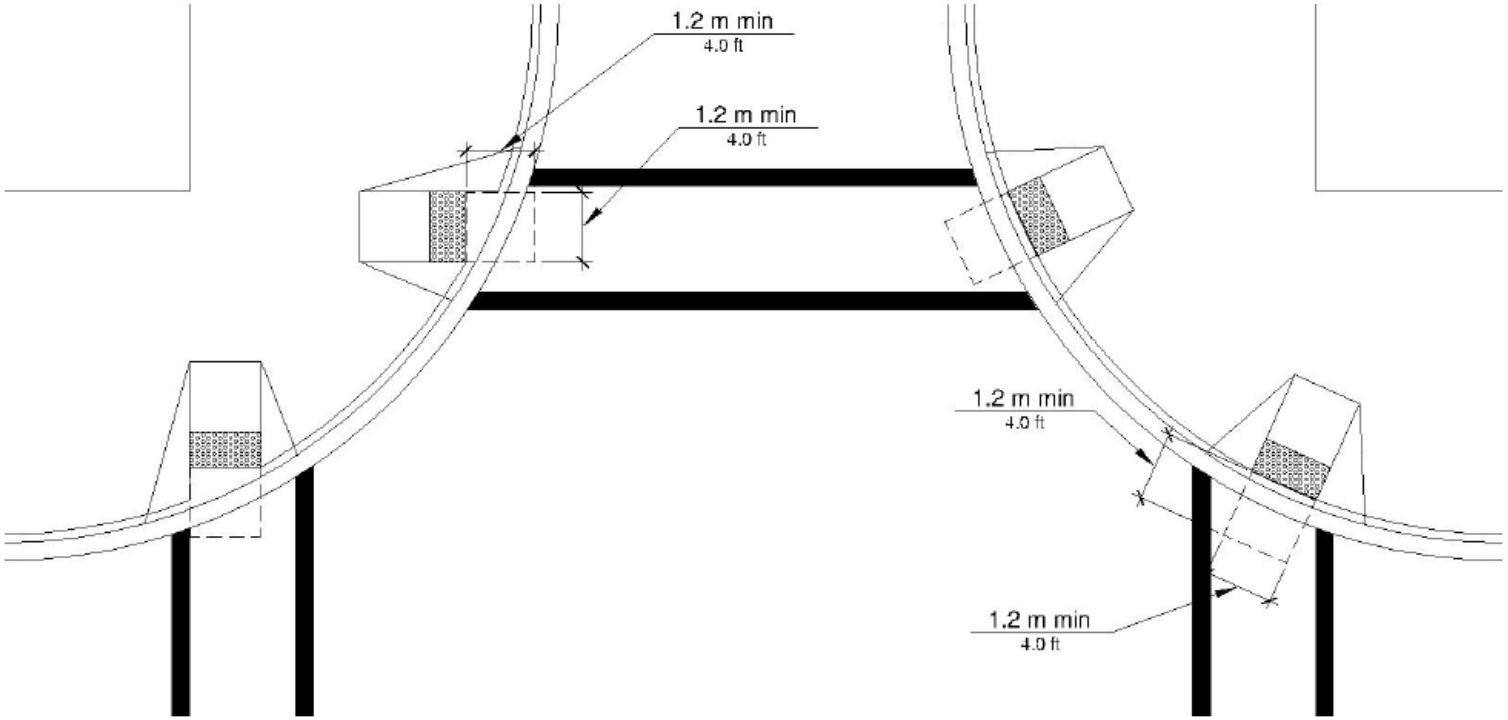


Figure R304.5.5
Clear Space

Detectable Warning Surfaces

Section R208.1/Section R305

Where Required

- Curb ramps and blended transitions at street crossings
- Pedestrian refuge islands ≥ 6’ in length
- Pedestrian at-grade rail crossings not located within street or highway
- Boarding and alighting areas at sidewalk or street level transit stops for rail vehicles where the side of the boarding and alighting areas facing the rail vehicles is not protected by screens or rails
- Commercial driveways with yield or stop control

Where Not Required

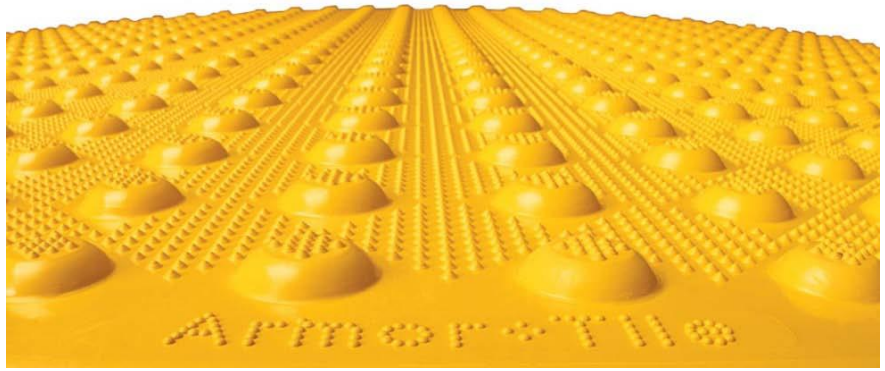
- Residential driveways
- Commercial driveways without yield or stop control (NOTE: driver handbook implies stop or yield control, even if not posted)
- Refuge islands that are cut-through at street level and less than 6.0’ in length in direction of pedestrian travel

History

Element	Standard			
	1991	**2004**	**2010**	**PROWAG (2011)**
Where Required	All curb ramps	None for curb ramps	None for curb ramps	All curb ramps at intersections
Width	Full width of curb ramp	N/A	N/A	Full width of curb ramp
Depth	Full depth of curb ramp	N/A	N/A	2 ft. min.
Contrast	70% contrast	Light-on-dark or dark-on-light	Light-on-dark or dark-on-light	Light-on-dark or dark-on-light

General – Detectable Warning Surfaces

- Truncated domes
- Aligned in a square or radial pattern



Source: armor-tile.com

General – Dome Size

- Base Diameter
  - 0.9” min.
  - 1.4” max.
- Top Diameter
  - 50% of base diameter min.
  - 65% of base diameter max.
- Height: 0.2”

General – Dome Size

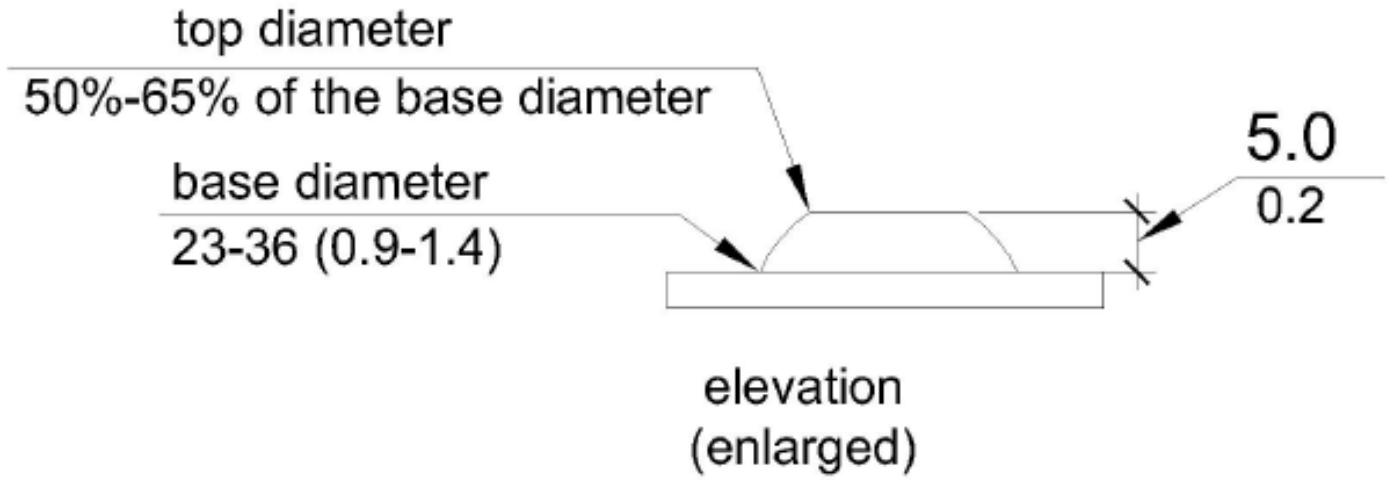


Figure R305.1.1
Dome Size

General – Dome Spacing

- Center-to-Center Spacing
  - 1.6” min.
  - 2.4” max.

- Base-to-Base Spacing
  - 0.65” min.
  - Measured between the most adjacent domes

General – Dome Spacing

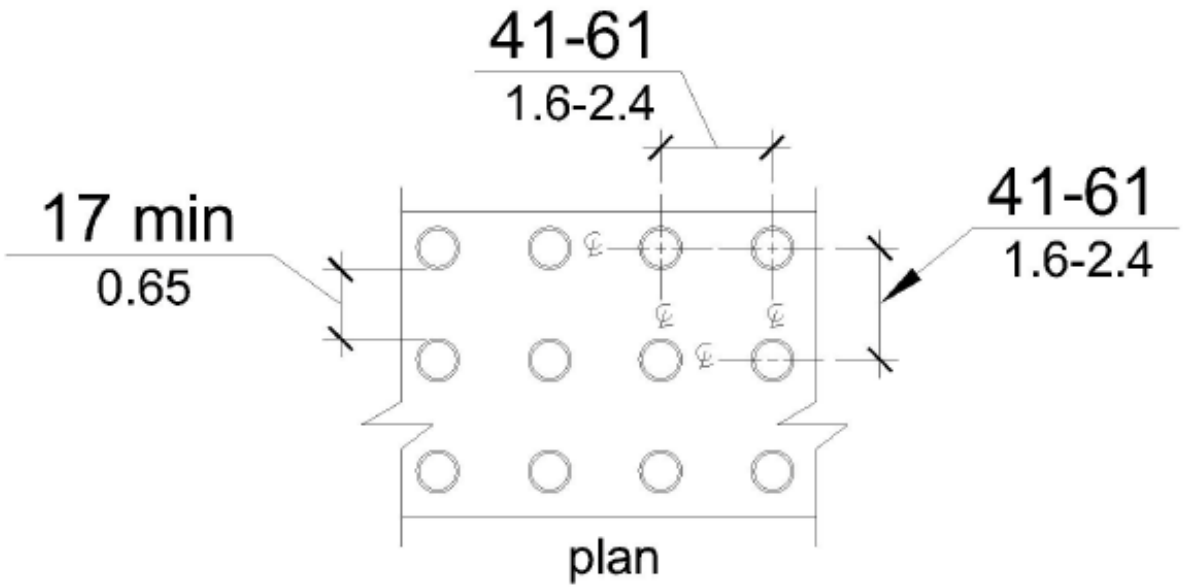
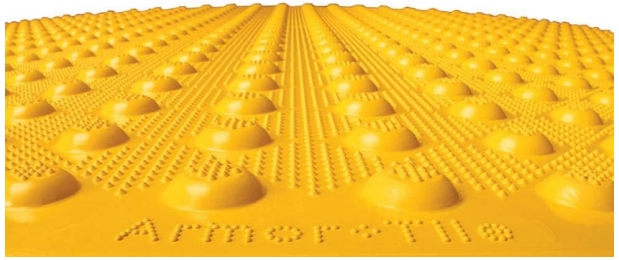


Figure R305.1.2
Dome Spacing

General – Contrast

- Must contrast visually with adjacent gutter, street or highway, or pedestrian access route surface

- Either light-on-dark or dark-on-light



Source: armor-tile.com

General – Contrast

Non-compliant
(No contrast)

General – Contrast

- FHWA Technical Brief on Color and Contrast of Detectable Warnings

- https://www.access-board.gov/research/completed-research/visual-detection-of-detectable-warning-materials/technical-brief

e: saferouteproducts.com

General – Size

- Length: 2.0’ min. in direction of pedestrian travel

- Width:

Location	Installation width
Perpendicular Curb Ramps	Full width of ramp run (excluding flares)
Parallel Curb Ramps	Full width of turning space
Blended Transitions	Full width of blended transition
At-grade Rail Crossings	Full width of crossing

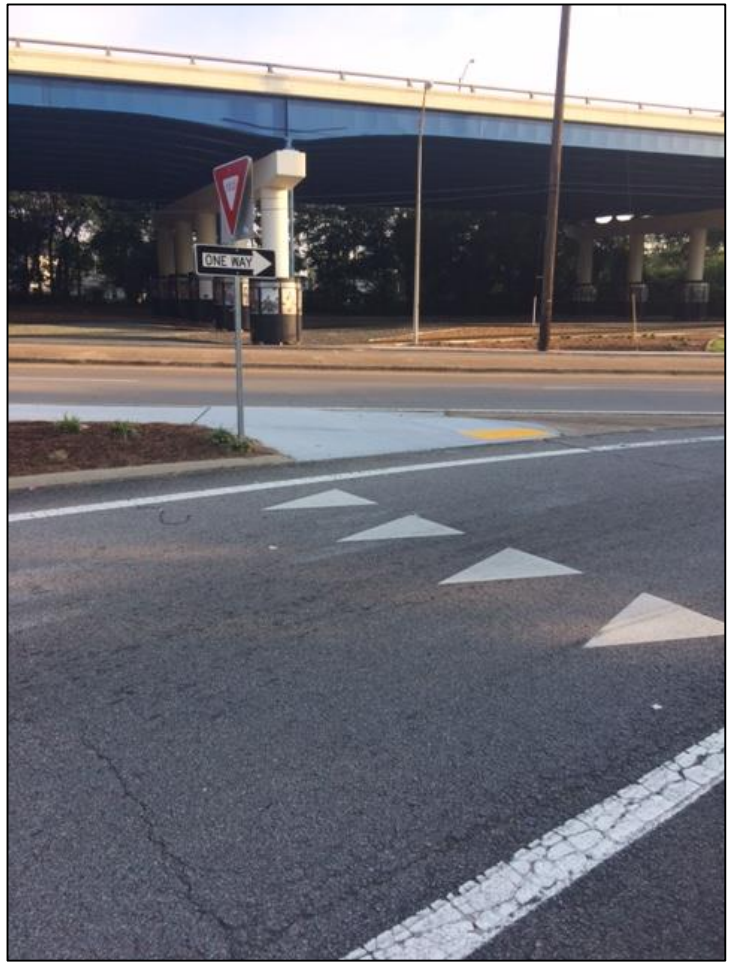
General – Size

Non-compliant: Detectable warning surface required across entire length of curb removal

General – Size

Non-compliant:
Detectable warning surface required across entire shared use path curb ramp width

General – Size

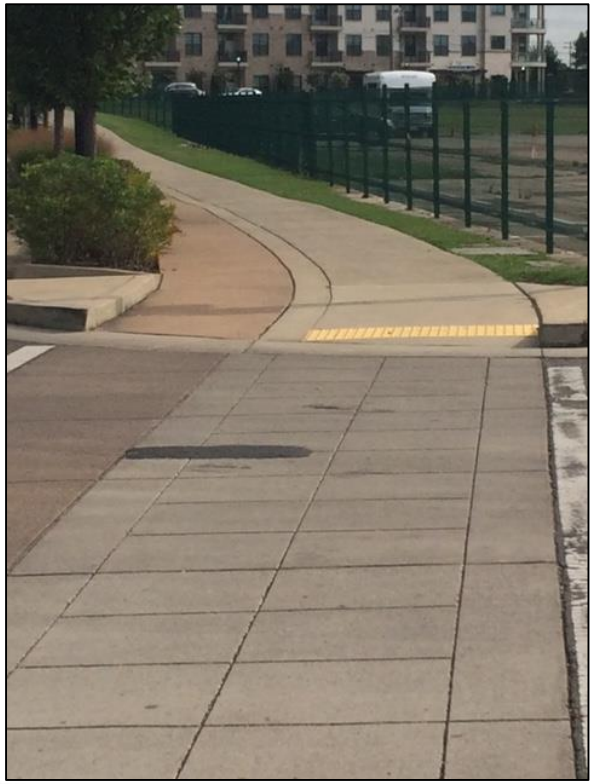


Non-compliant: Detectable warning surface required across entire shared use path curb ramp width

General – Size

Non-compliant:
Detectable warning surface required across entire length of curb removal

General – Size



Non-compliant:
Detectable warning surface required across entire shared use path curb ramp width

General – Size

- NOT needed on entire ramp run
- Avoid using brick pavers – the dimensions will become non-compliant over time

Source: armor-tile.com

General – Size

General – Size

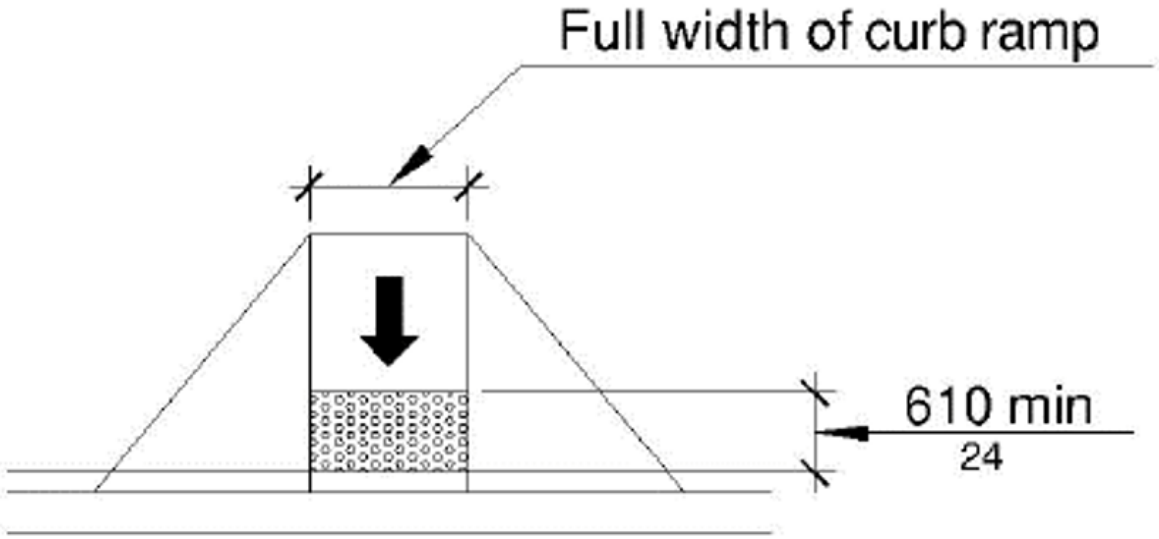
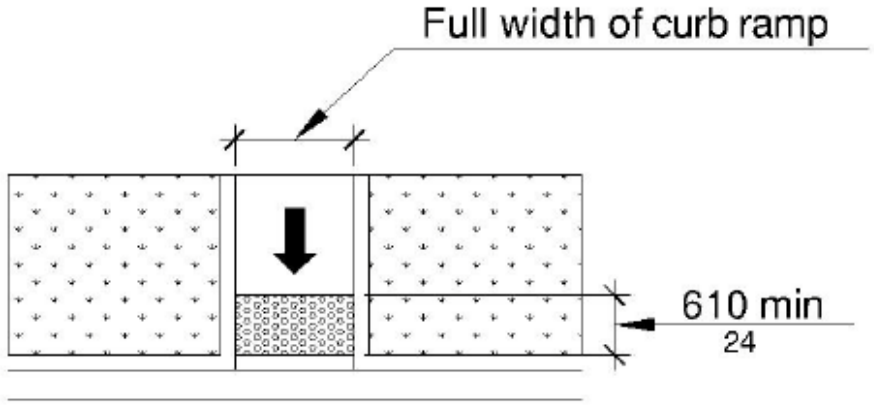
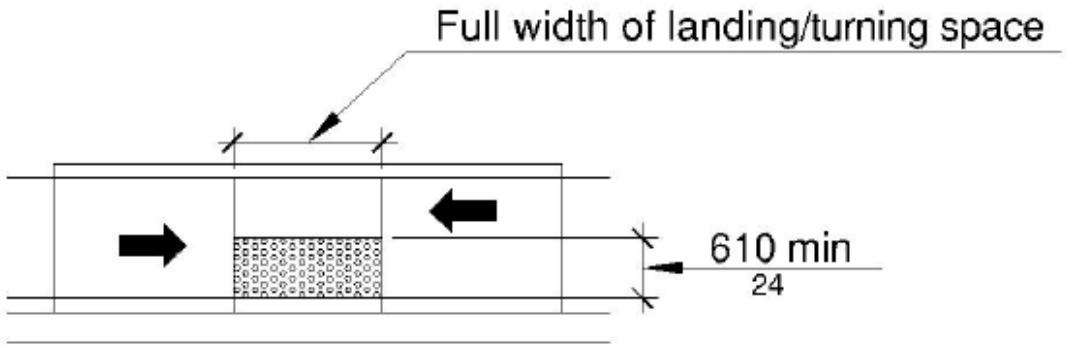


Figure R305.1.4
Size

General – Size



(b) returned curb



(c) parallel

Figure R305.1.4
Size

Placement – Perpendicular Curb Ramps

Grade Break Location	Warning Surface Placement
Where ends of bottom grade break are in front of back of curb	At back of curb
Where ends of bottom grade break are behind back of curb and distance from either end of bottom grade break to back of curb is 5.0’ or less	On ramp run within one dome spacing of bottom grade break
Where ends of bottom grade break to back of curb is more than 5.0’	On lower landing at back of curb

Placement – Perpendicular Curb Ramps

Rows of truncated domes shall be aligned perpendicular to the grade break between curb ramp run and street so wheelchair wheels can “track” between domes

Placement – Perpendicular Curb Ramps

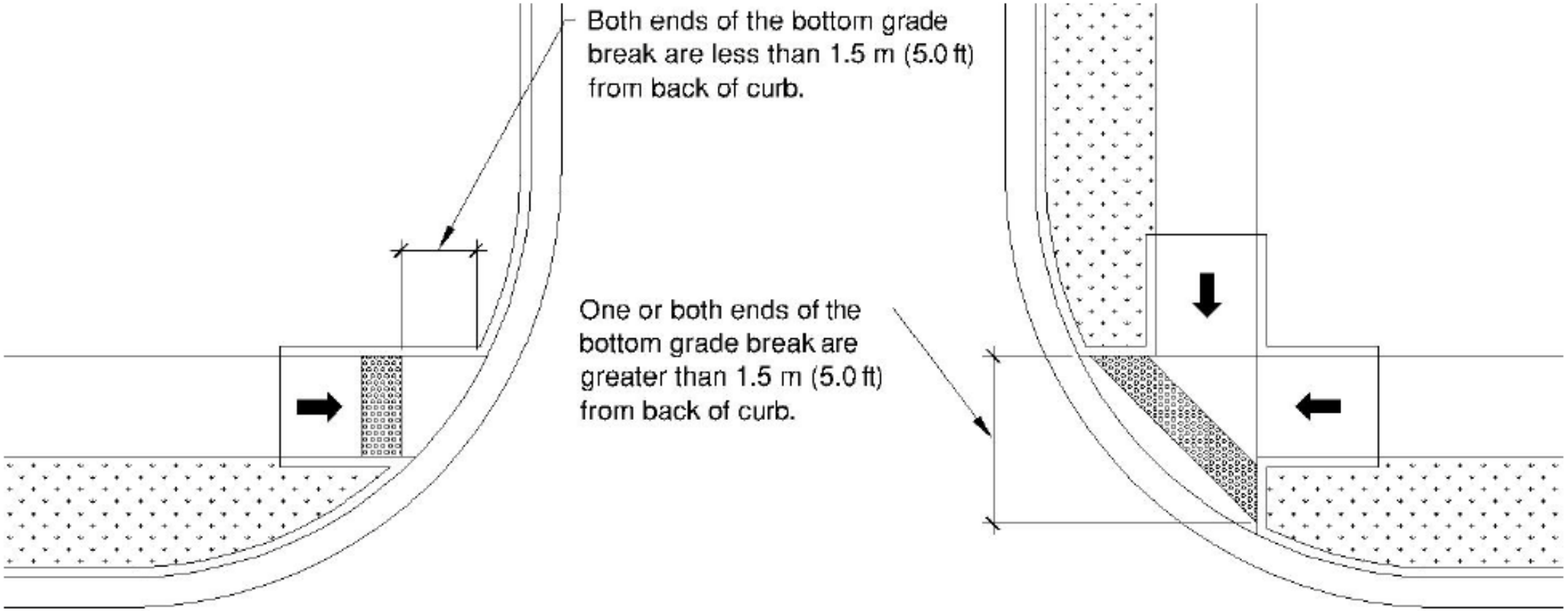


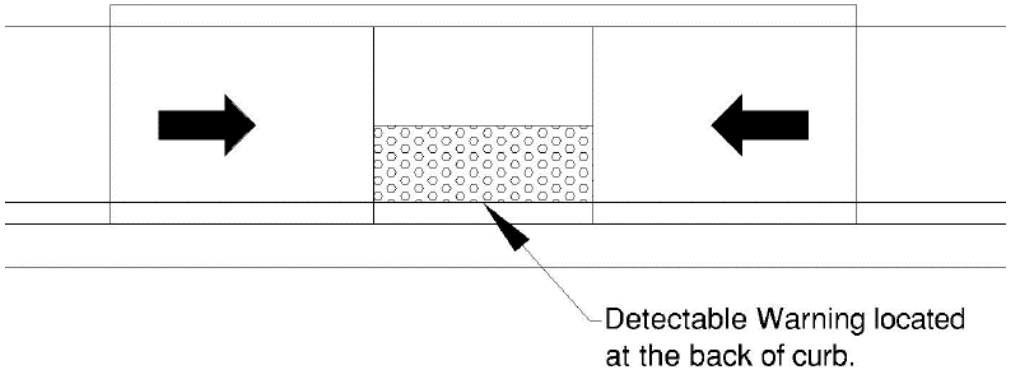
Figure R305.2.1
Perpendicular Curb Ramps

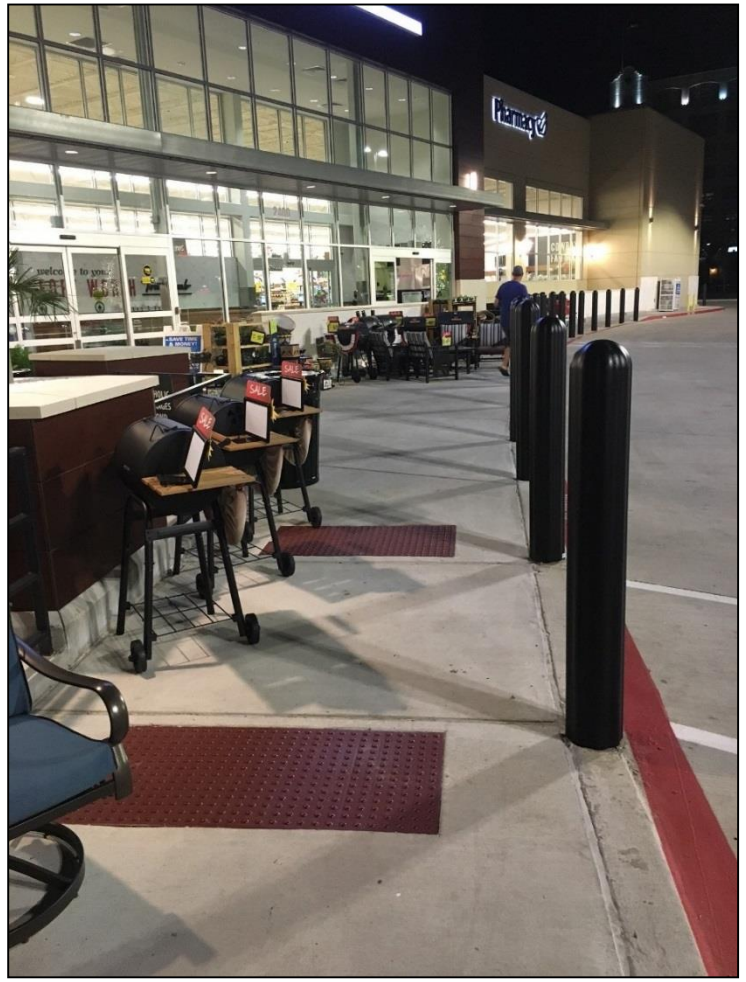
Detectable Warning Surface – Retrofit Installation

Retrofit installation on non-compliant curb ramp

Placement – Parallel Curb Ramps

CORRECT





INCORRECT

Placement – Blended Transitions

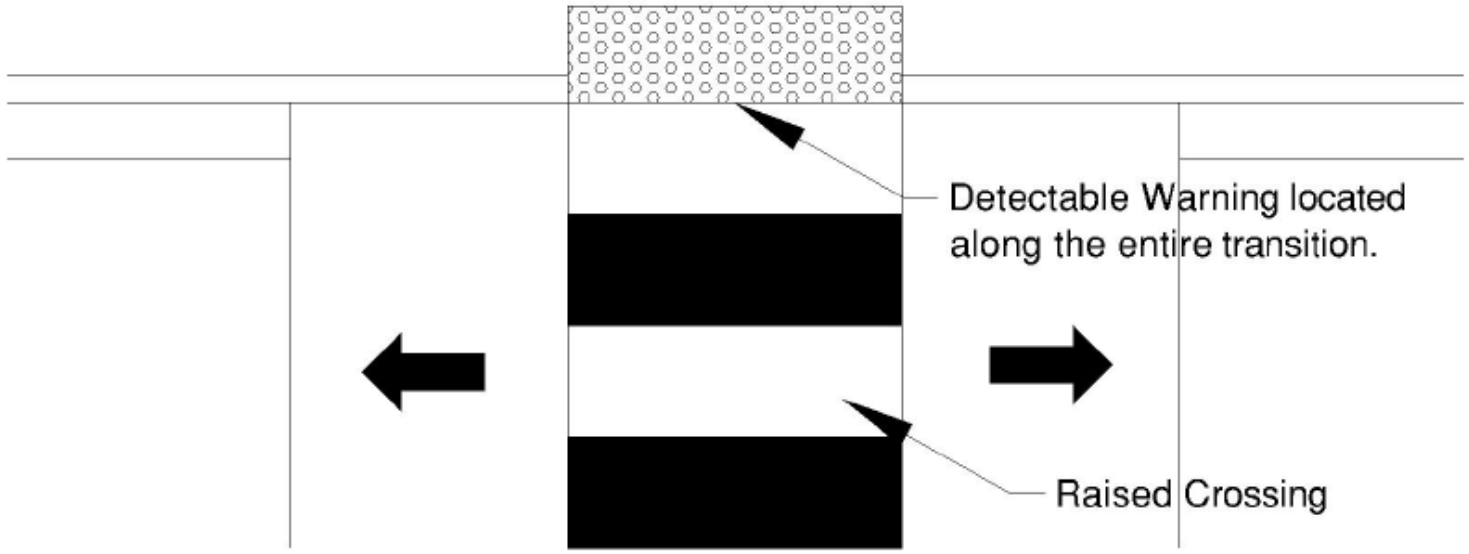


Figure R305.2.3
Blended Transitions

Placement – Blended Transitions

- Need domes along entire length of removed curb
- INCORRECT:

Placement – Pedestrian Refuge Islands

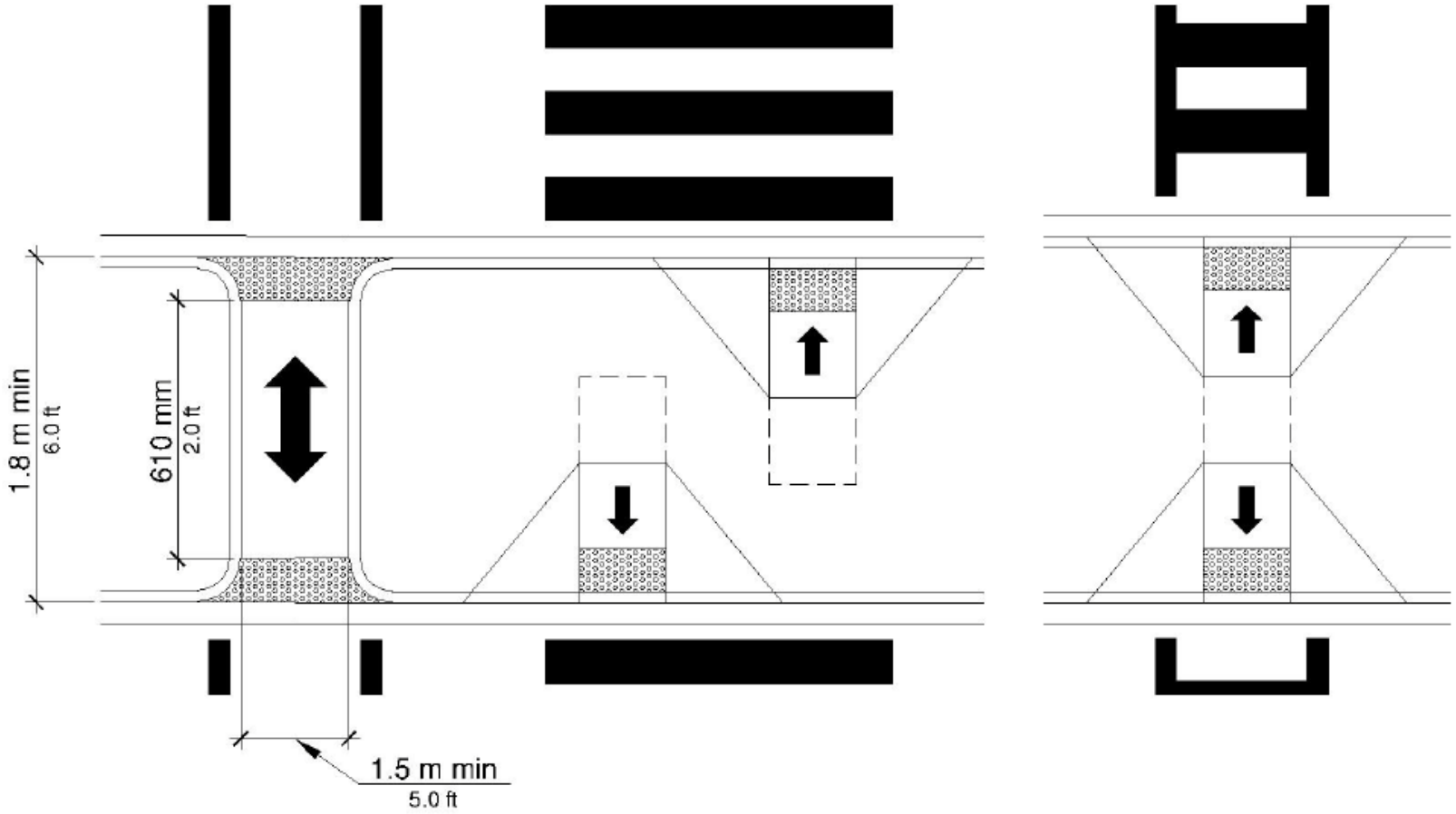


Figure R305.2.4
Pedestrian Refuge Islands

Placement – At-grade Rail Crossings

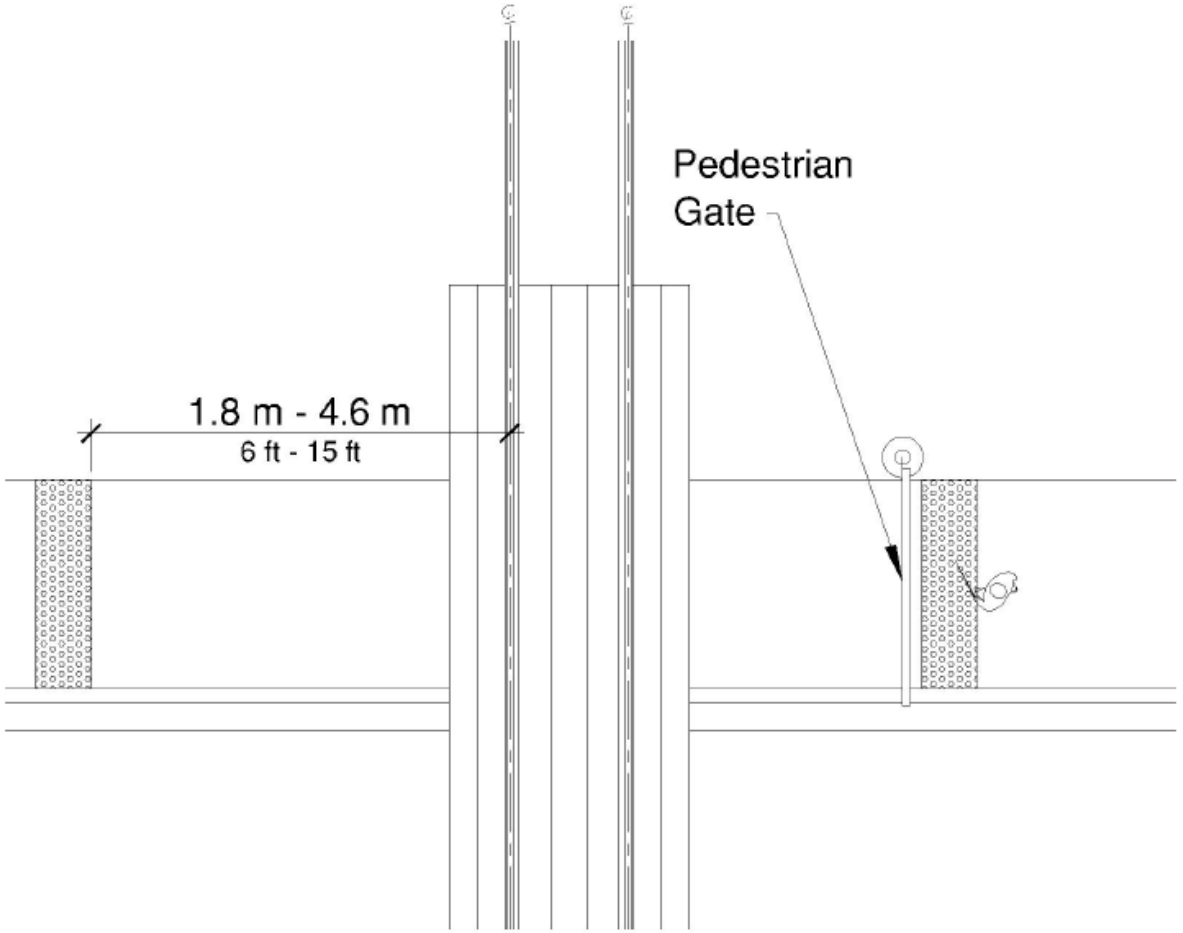


Figure R305.2.5
Pedestrian At-Grade Rail Crossings

Pedestrian Street Crossings

Section R302 / Section R306

Pedestrian Signal Phase Timing

- Must comply with Manual on Uniform Traffic Control Devices (MUTCD) Section 4E.06

- Clearance times must be calculated using a pedestrian walking speed of 3.5 feet/sec or less

Roundabouts - Separation

- Where sidewalks are flush against the curb and pedestrian street crossing is not intended
- Install continuous and detectable edge treatment along street side of sidewalk (e.g., plantings or other defined edges)
- Detectable warning surfaces cannot be used as edge treatment
- If chains, fencing, or rails used for edge treatment, bottom edge must be 15” max. above sidewalk

Roundabouts – Pedestrian Activated Signals

- At roundabouts with multi-lane street crossings, provide a pedestrian activated signal
  - For each multi-lane segment of each pedestrian crossing
  - For each splitter island
  - Channelized right turn lanes

- Pedestrian activated signal must comply with PROWAG Section R209: Accessible Pedestrian Signal and Pedestrian Pushbuttons

Channelized Turn Lanes at Other Signalized Intersections

- At signalized intersections other than roundabouts with pedestrian street crossings, pedestrian activated signals complying with PROWAG R209 shall be provided at pedestrian street crossings at multi-lane channelized turn lanes

Accessible Pedestrian Signals and Pedestrian Pushbuttons

Section R209 / Section R307

General

- Where pedestrian signals are provided at pedestrian street crossings, they must include accessible pedestrian signals and pedestrian pushbuttons complying with Sections 4E.08-4E.13 of the Manual on Uniform Traffic Control Devices (MUTCD)

- Operable parts shall comply with Section R403

General

Accessible Pedestrian Signals (APS) and Pedestrian Pushbutton

Source: Polara.com

Alterations

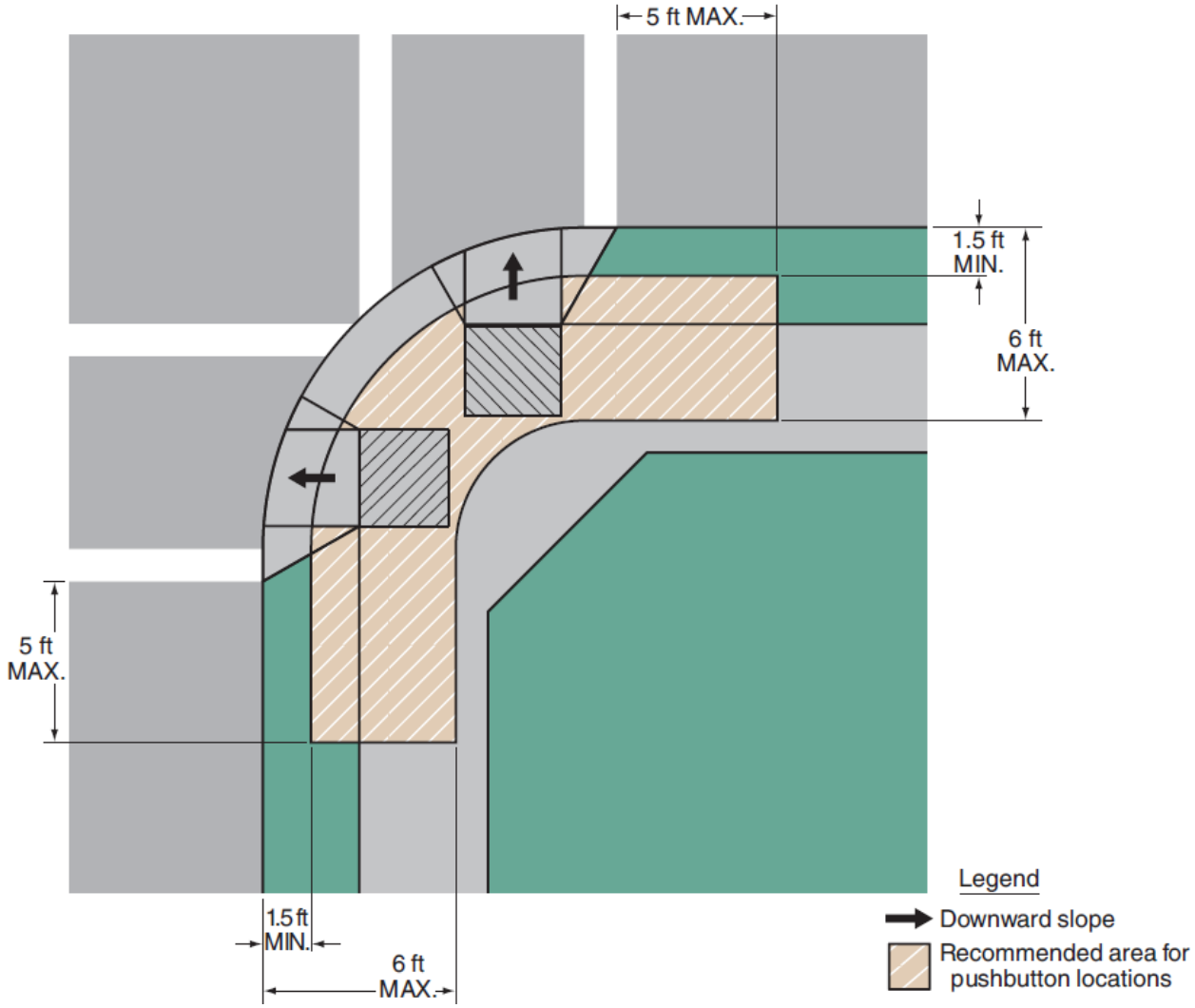
- Existing pedestrian signals must be upgraded to APS when the signal controller and software are altered, or the [pedestrian] signal head is replaced
- PROWAG does not provide definitions of what constitutes a controller or software alteration and there is no guidance currently available from FHWA or DOJ
- The requirement that pushbuttons be upgraded to APS when the controller software is altered will be removed in the final version of PROWAG

Pedestrian Detectors – Location Requirements

- Unobstructed and adjacent to a level all-weather surface to provide access from a wheelchair
- Where there is an all-weather surface, provide a wheelchair accessible route from the pushbutton to the ramp
- Between the edge of the crosswalk line (extended) farthest from the center of the intersection and the side of a curb ramp (if present), but not greater than 5’ from said crosswalk line
- Between 1.5’ – 6’ from edge of curb, shoulder, or pavement. Where physical constraints make it impractical to place a button less than 6’ from curb, 10’ is the max.

Pedestrian Detectors

Figure 4E-3. Pushbutton Location Area



MUTCD 4E.08/
PROWAG R406.3

Pedestrian Detectors

- Pushbutton Orientation
  - Face of button must be parallel to crosswalk to be used

- Pushbutton Mounting Height
  - Measured from top of sidewalk
  - Approximately 3.5’
  - Min: 1.25’
  - Max: 4’

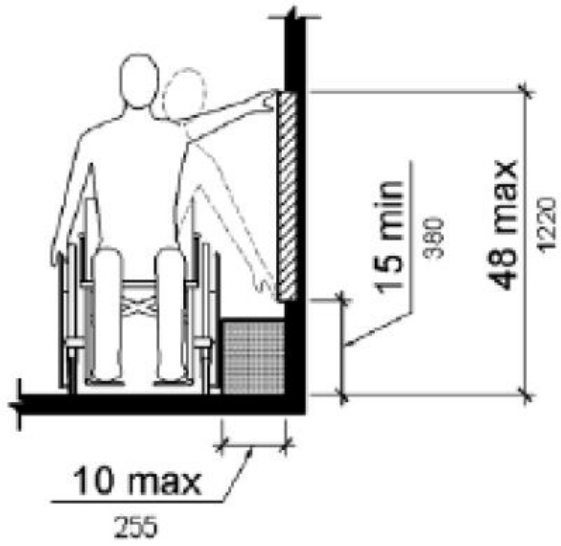


Figure 308.3.1 Unobstructed Side Reach

MUTCD 4E.08/
PROWAG R406.3

Pedestrian Detectors

Incorrect pushbutton orientation

Pedestrian Detectors – Pushbutton Separation

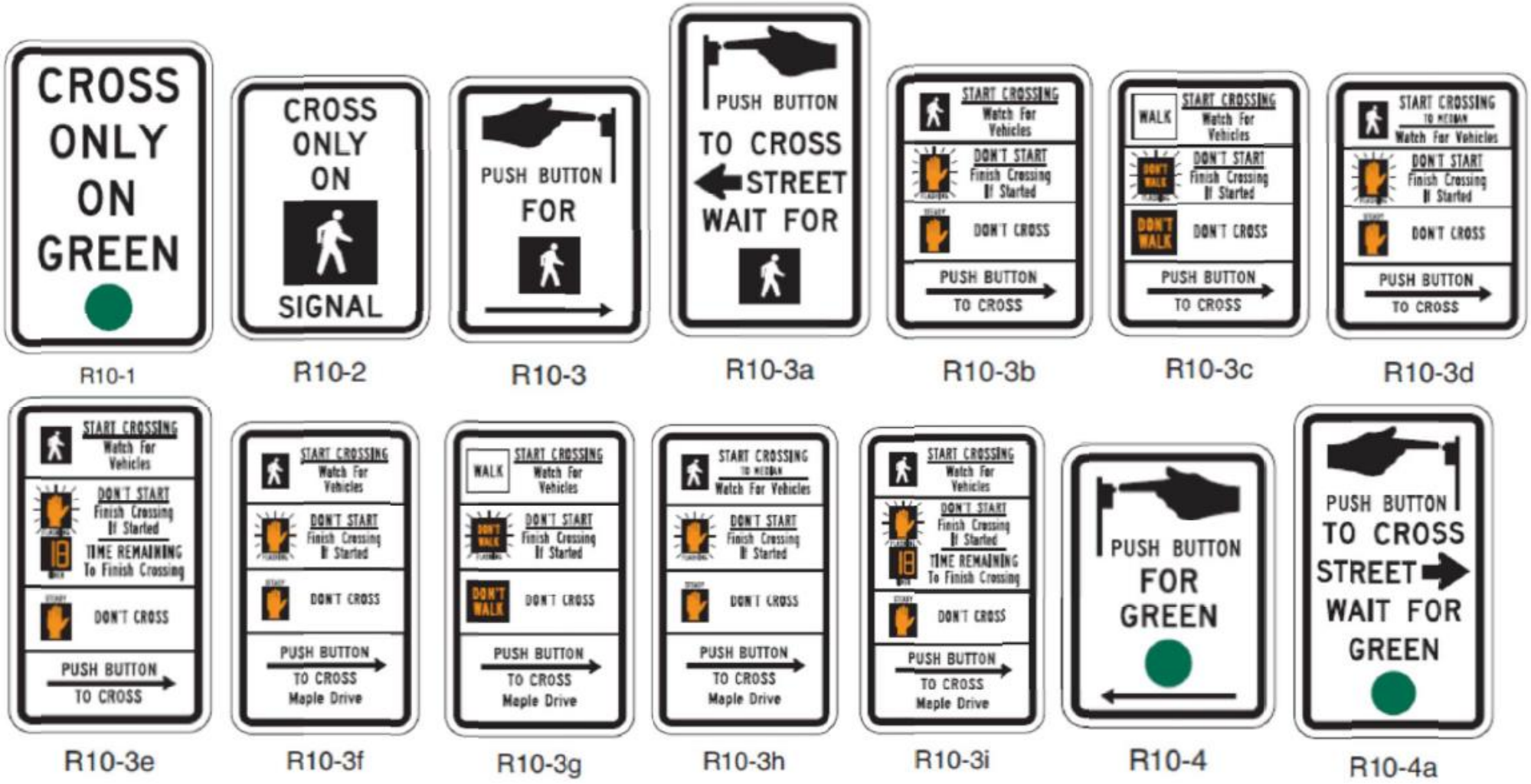
- Where two pushbuttons are provided on same corner they should be separated by a distance of 10’
- Where there are physical constraints on a particular corner that make a 10’ separation impractical, the pushbutton may be placed closer together or on the same pole
- If pushbuttons are placed less than 10’ apart or on same pole, each pushbutton must have:
  - Locator tone
  - Tactile arrow
  - Speech walk message of the WALKING PERSON (symbolized WALK) indication
  - Speech pushbutton information message

Pedestrian Detectors – Pushbutton Signs

- Must be mounted adjacent or integral with the pedestrian pushbuttons, explaining their purpose and use
- Positioning and legends on sign must clearly indicate which signal is actuated by each pedestrian pushbutton
- If additional crossing time is provided by mean of an extended pushbutton press, and PUSH BUTTON FOR 2 SECONDS FOR EXTRA CROSSING TIME (R10-32P) plaque must be displayed

Not clear which crossing direction each button is serving

Pedestrian Detectors – MUTCD Pushbutton Signs



Pedestrian Detectors – Pushbuttons in Medians

If the pedestrian clearance time at an actuated signal is sufficient only to cross from curb or shoulder to a median of sufficient width for pedestrians to wait, an additional pedestrian detector shall be provided in the median

MUTCD
4E.08 / 4E.09
4E.11 - 4E.13

Pedestrian Detectors

- Pilot Lights – See MUTCD

- APS Operations – See MUTCD
  - Walk Indications
  - Tactile Arrows and Locator Tones
  - Extended Pushbutton Press Features

Pedestrian Detectors – Pushbutton Diameter

- Requirement was in 2005 Draft Version of PROWAG Section R306.3.3 Size and Contrast.
- Deleted it from the later versions to prevent duplication and potential conflict and were relying on MUTCD (2009) which was reported to include it.
- Inadvertently left out of MUTCD (2009), but is anticipated to be included in the MUTCD expected to be released in the fall.

Reach Ranges

Section R406

Pedestrian Detectors

- Pushbutton Side Reach
  - An obstruction shall be permitted between the clear space and the element where the depth of the obstruction is 10” max.

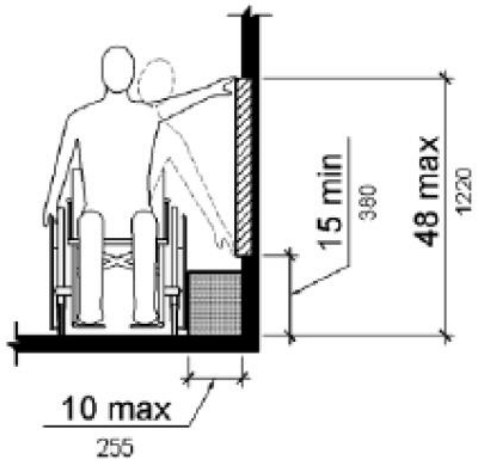


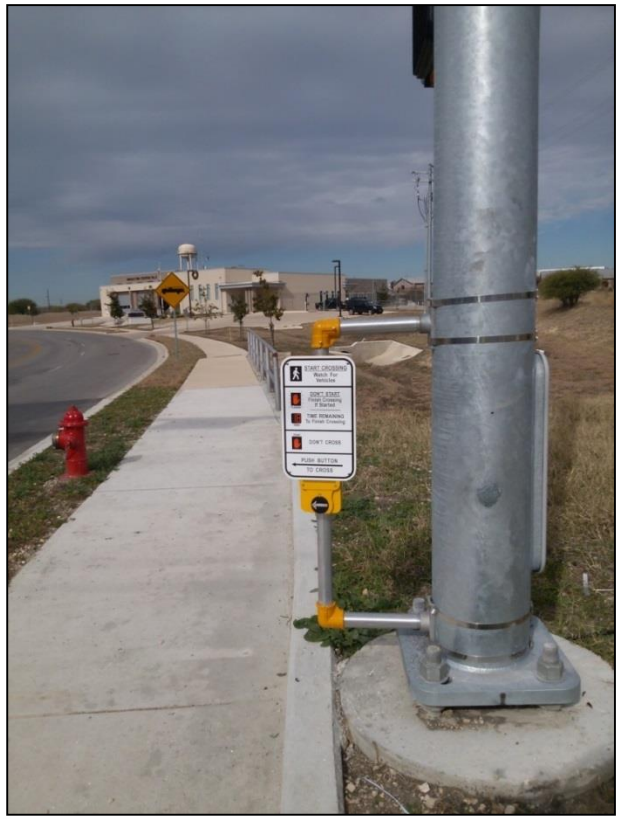
Figure 308.3.1 Unobstructed Side Reach

Pedestrian Detectors

No access to clear space

MUTCD 4E.08/
PROWAG R406.3

Pedestrian Detectors – Pushbutton Extenders



Operable Parts

Section R403

General

- Operable part locations
- Accessible pedestrian signal and pushbuttons
- Parking meters and parking pay stations that serve accessible parking spaces

Clear Space

- Clear space required at all operable part

- Clear space must comply with R404

Height

- Operable parts must be placed within one or more of the reach ranges specified in R406

Operation

- Must be operable with one hand
- Shall not require tight grasping, pinching, or twisting of the wrist
- Force required to activate must be 5 pounds max.

Clear Spaces

Section R404

General

Where required:

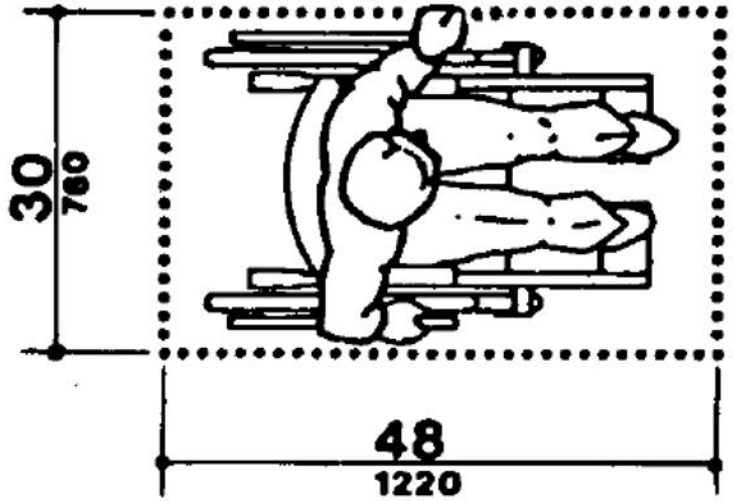
- Operable parts
- Benches
- Within transit shelters

Surfaces

- Must comply with R302.7
- Running slope: May match grade of adjacent pedestrian access route
- Cross slope: 2% max.

Size

- 2.5’ min. x 4.0’ min.



(a)
Clear Floor Space

Fig. 4
Minimum Clear Floor Space for Wheelchairs
(ADAAG)

Position

- Positioned for either forward or parallel approach to an element
- Forward reach cannot be over an obstruction (e.g., signal pole base)
- Pedestrian push buttons and clear spaces must be designed for a parallel approach
- Best Practice: Center push button in clear space

Approach

One full unobstructed side of a clear space shall adjoin a pedestrian access route or adjoin another clear space

Maneuvering Space

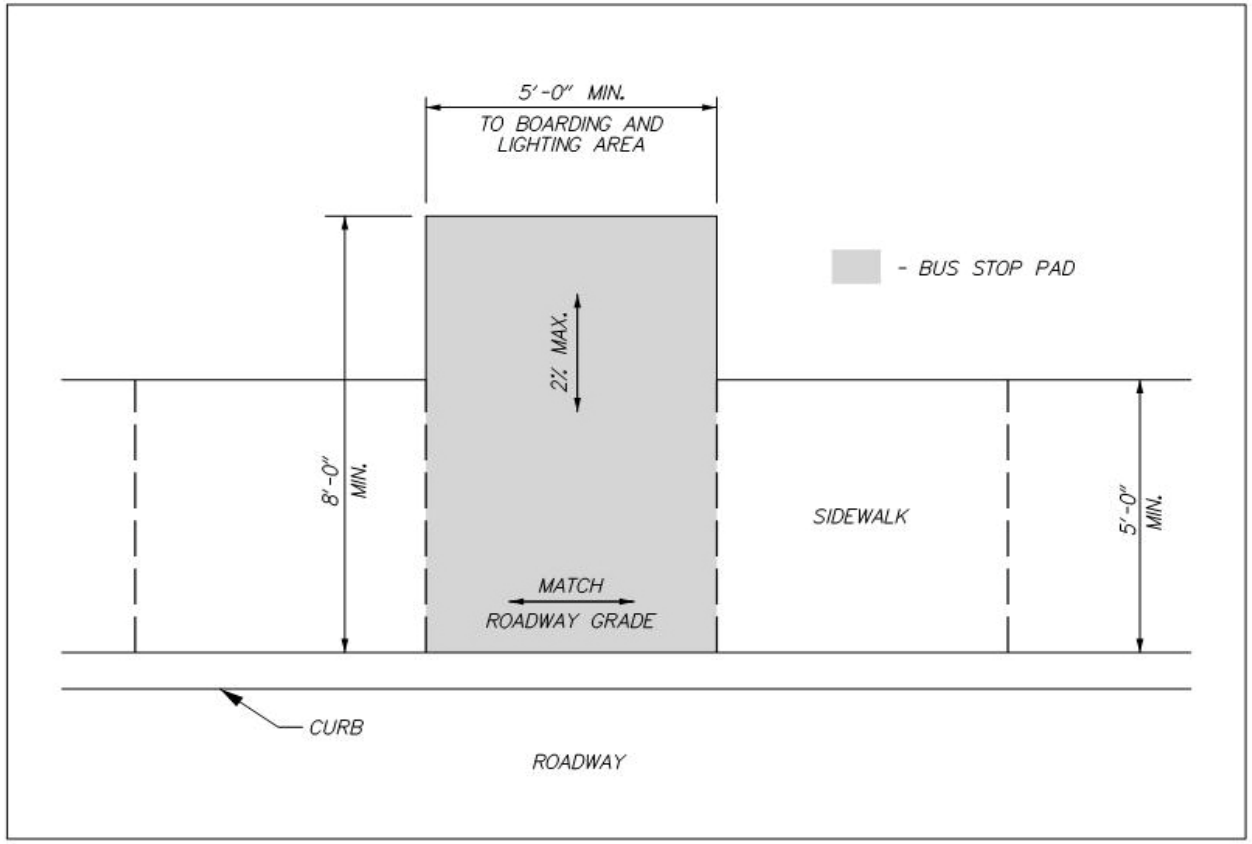
Where clear space is confined on all or part of three (3) sides, additional maneuvering space must be provided

Approach	Width	Depth
Forward	3.0’	2.0’
Parallel	5’	1.25’

Transit Stops and Transit Shelters

Section R308

Boarding and Alighting Areas



Required boarding and alighting area

Missing boarding and alighting area

Connection

Boarding and alighting areas shall be connected to streets, sidewalks, or pedestrian circulation paths by pedestrian access routes complying with R302

Connection

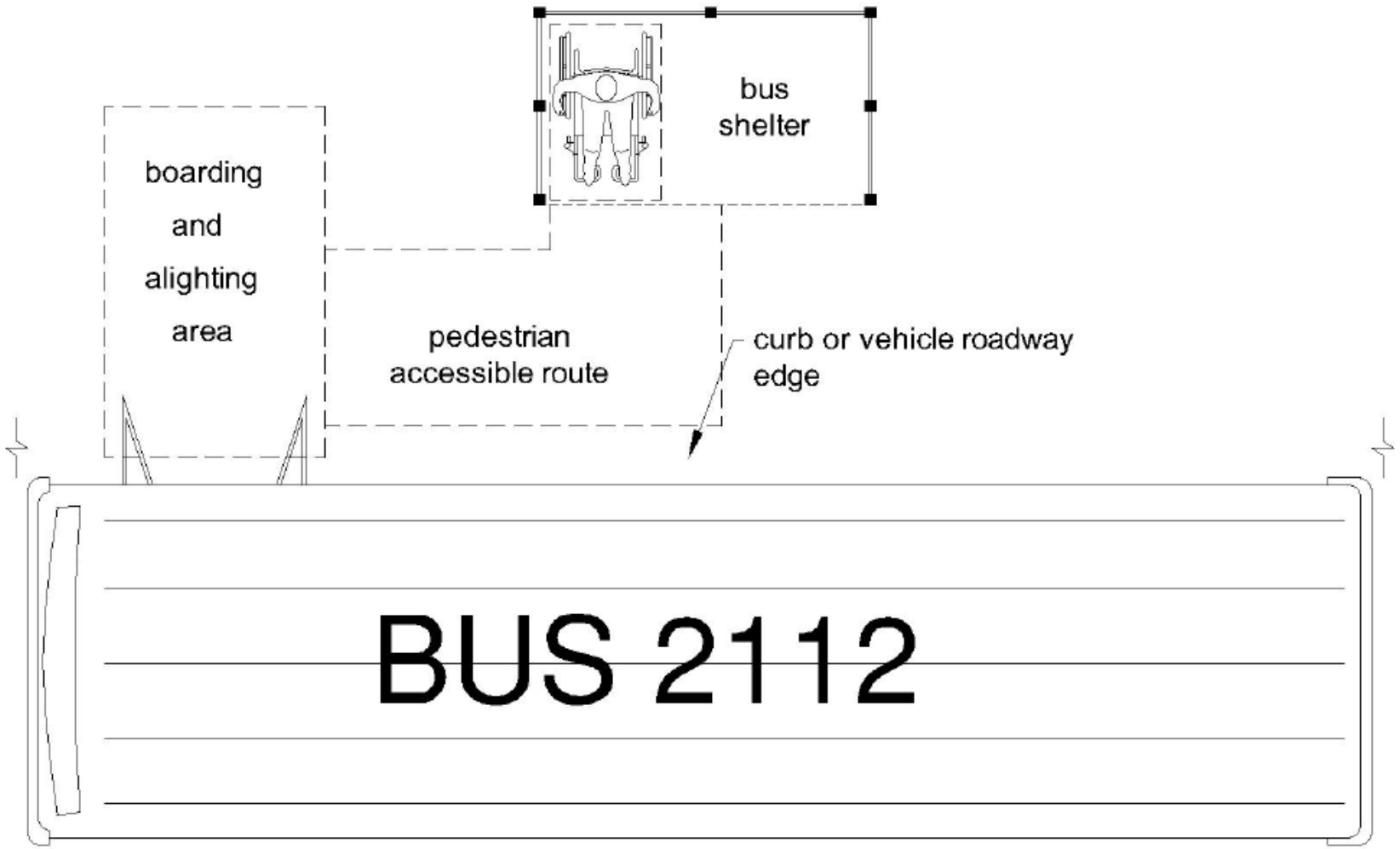


Figure R308.1.3.2
Connection

Benches

- At least 50%, but no less than one, of benches at each location shall provide clear space complying with R404 adjacent to the bench
- Clear space shall be located either at one end of the bench or shall not overlap the area within 1.5’ from the front edge of the bench
- Benches at tables are not required to comply

Pedestrian Signs

- Signs that provide directions, warnings, or other information for pedestrians only are required to comply with 410
  - Pedestrian route signs along an historic trail
  - Sidewalk closure and pedestrian detour signs
  - Tourist information signs

- Signs provided for motorists and pedestrians (e.g., highway and street name signs) are not required to comply

Beach Access Routes

Scoping

- Can be permanent or removable
- Not required where pedestrian access to the beach is not permitted
- One (1) access route for each ½ mile of beach shoreline
- Number of access routes is not required to exceed the number of pedestrian access points to the beach
- Must be located to coincide with or be located in the same general area as pedestrian access point to the beach

Beach Access Routes

Source: tvm.com.mt

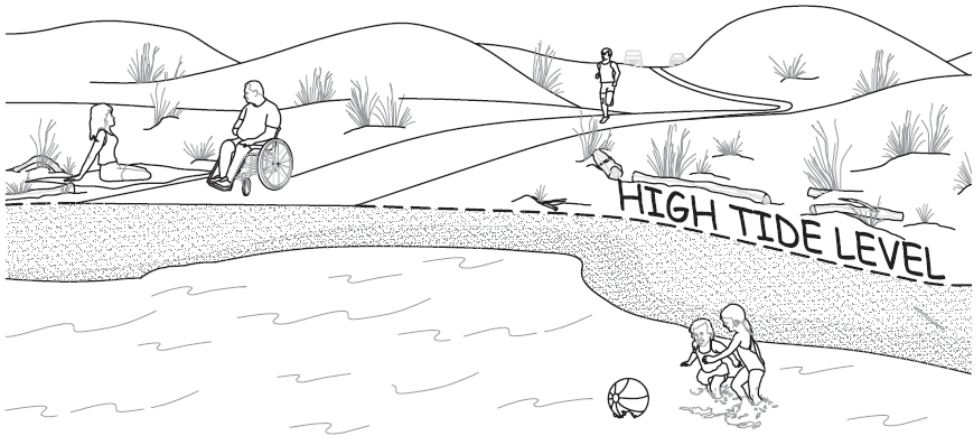
Source: mobi-mat-chair-beach=access-dms.com

General

- Connections
- Surface
- Clear Width
- Obstacles
- Openings
- Slopes
- Resting Intervals
- Protruding Objects
- Dune Crossings

Connections

- High tide level at tidal beaches
- Mean high water level at river beaches
- Normal recreation water level at lake, pond, and reservoir beaches



Surface

- Beach access routes and resting intervals must be firm and stable

Clear Width

- 60 inches min.
- Exception: Permanent beach access routes may be reduced to 48 inches min. at dune crossings
- Where gates/barriers installed to control beach access, gates/barriers should permit passage of beach wheelchairs

Source: ablemagazine.co.uk

Source: sadgururocks.com

Obstacles

- Surface = asphalt, concrete, wood: ½ in. vertical discontinuity max.

- Surface ≠ asphalt, concrete, wood: 1 in. vertical discontinuity max.

Openings

- Openings in surfaces must not allow passage of a sphere more than ½ inch in diameter

- Elongated openings should be places so that the long dimension is perpendicular, or as close as possible, to the dominant direction of travel

Running Slope

- Resting intervals required at top and bottom of each segment for slopes steeper than 5%

Running Slope of Beach Access Route Segment		Maximum Length of Segment
Steeper than	But not Steeper than	
1:20 (5%)	1:12 (8.33%)	50 feet (15 m)
1:12 (8.33%)	1:10 (10%)	30 feet (9 m)

Cross Slope

- Surface = asphalt, concrete, wood: 1:48 (2.08%) max.
- Surface ≠ asphalt, concrete, wood: 1:20 (5%) max., when necessary for drainage

Resting Intervals - Size

- 60 inches min. x 60 inches min.

Resting Intervals - Slope

- Surface = asphalt, concrete, wood: 1:48 (2.08%) max.
- Surface ≠ asphalt, concrete, wood: 1:20 (5%) max., when necessary for drainage

Protruding Objects

- Must comply with Section 307 of the Architectural Barriers Act Accessibility Guidelines

Dune Crossings

- Where slope is steeper than 1:20 (5%), handrails complying with Section 505 of the Architectural Barriers Act Accessibility Guidelines and curbs/barriers shall be provided

- Curbs/barriers must not allow passage of a sphere more than 2 inches in diameter, where any portion of the sphere is within 2 inches of the crossing surface

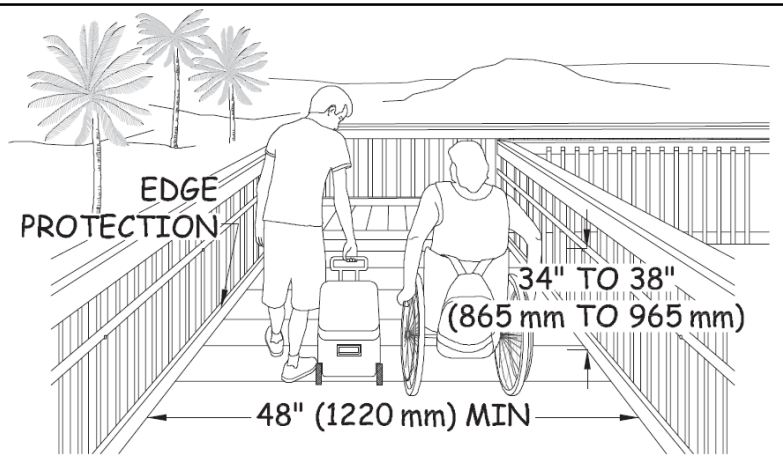


Figure 32—Minimum width and handrail height requirements for dune crossings.

Conditions for Exceptions

- Where the following conditions do not permit full compliance, compliance is required to the extent practicable:
  - Terrain
  - Prevailing construction practices
  - Fundamental alteration of the purpose or function of facility
  - Existing laws (e.g., Endangered Species Act, National Historic Preservation Act, Wilderness Act, etc.)

Design Considerations

Group Breakout Sessions

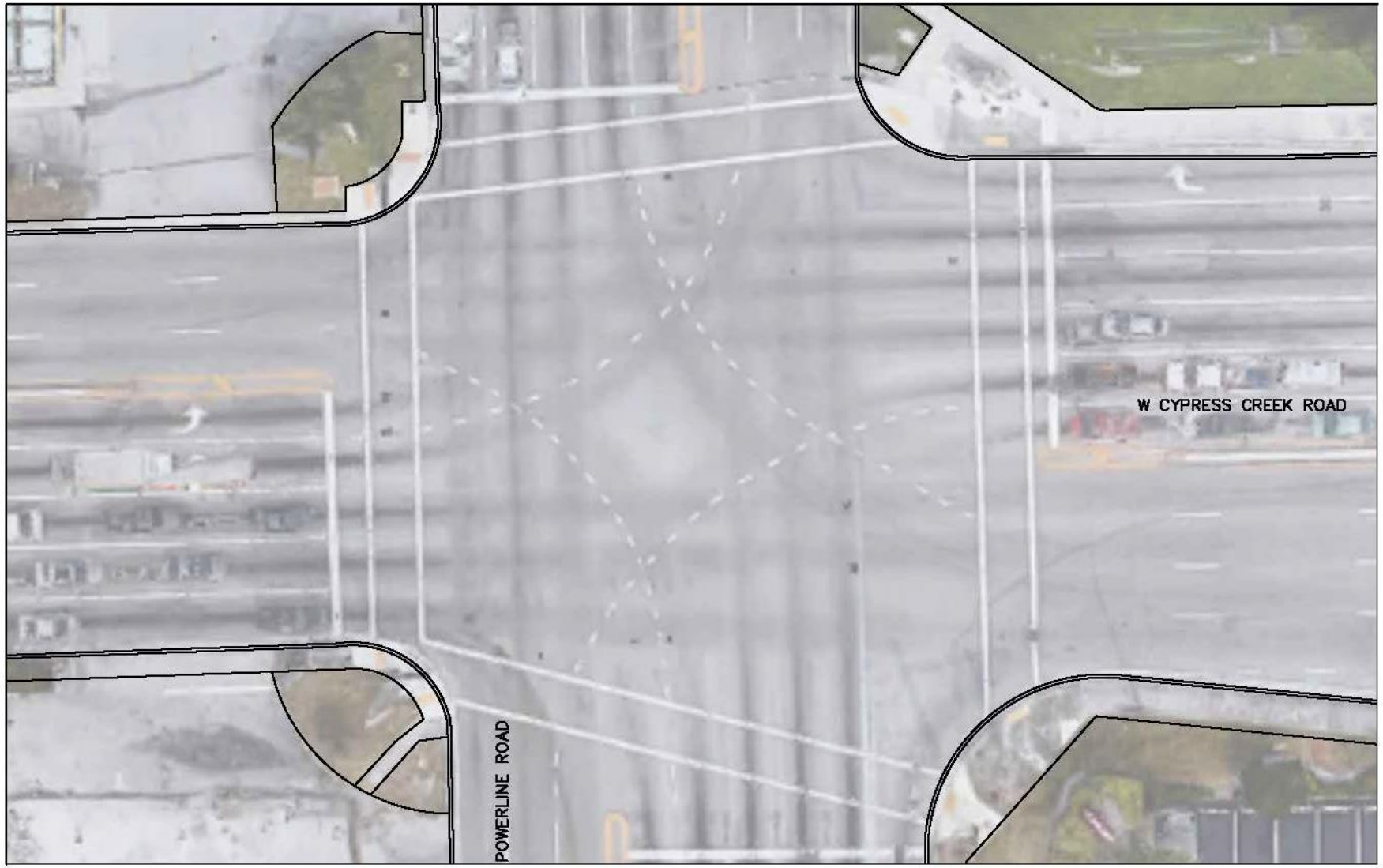
- Spend 10 minutes at each station

- Discuss with your groups:
  - Compliance issues
  - Existing constraints
  - Possible design solutions

Hollywood Boulevard @ 20th Avenue

Las Olas Boulevard @ SE 8th Avenue

Cypress Creek Road (NW 62nd Street) @ Powerline Road (SR 845)



Dixie Highway (SR 811) @ SE 4th Street

Douglas Road (NW 89th Avenue) @ Johnson Street

ADA Transition Plan Technical Assistance

- January 16, 2019: Data Collection & Data Management for Public Rights-of-Way

- February 13, 2019: Public Outreach, Transition Plan Implementation, Transition Plan Progress Monitoring, and Website Compliance

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ADA Transition Plan – Technical Assistance Training #1: Transition Plan Roadmap, Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights-of-Way (PROWAG), and Other Technical Resources

November 15, 2018