Universal Access

Meeting Accessibility Requirements in Public Rights of Way

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Roadside and Site Development Unit

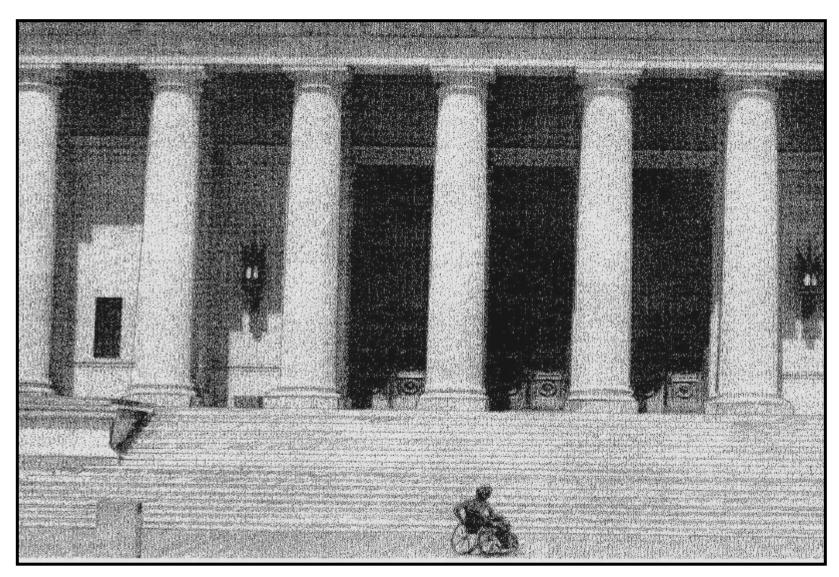
360-705-7242

Kurt Sielbach HQ Design Office 360-705-7937



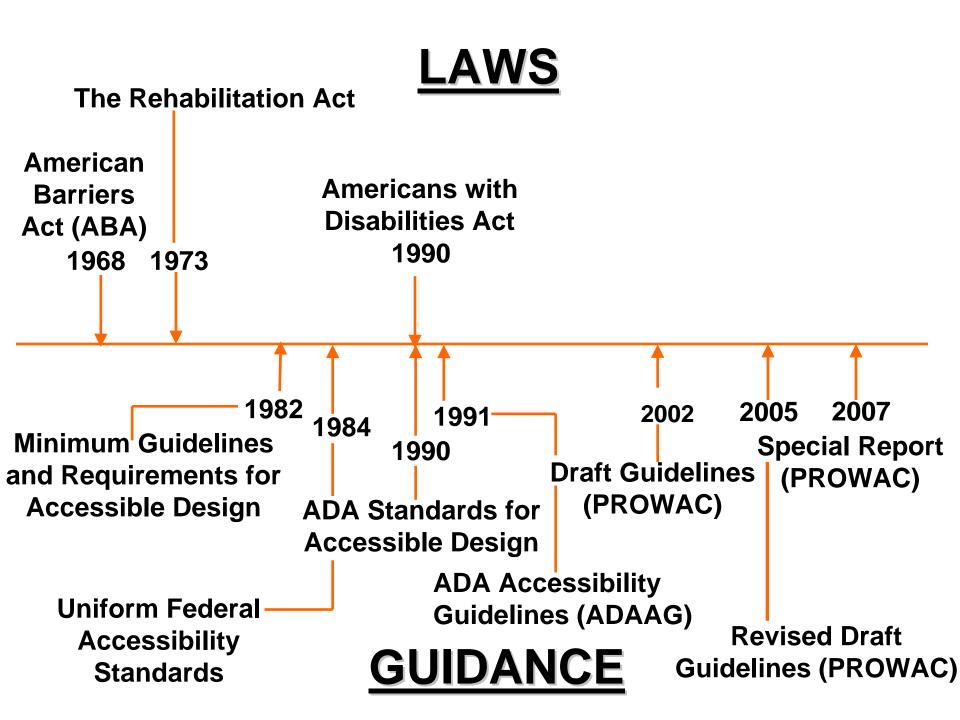
BACKGROUND & & CURRENT ISSUES (WHY ADA EMPHASIS)

Universal Access for All - ADA









<u>Background</u>

- Americans with Disabilities Act (ADA)
 - July 26, 1990
 - Applies to State and Local governments
 - Applies to <u>private business</u> that meet the definition of "public accommodation"
 - Includes those that receive <u>no</u> federal financial assistance
 - New construction and alterations

<u>Background</u>

- ADA Accessibility Guidelines (ADAAG)
 - July 1991 published
 - Sept. 1991 ADAAG for Transportation Facilities
 - July 2004 update
 - Supplement in 2006/2007 (USDOT)

Background

- Public Rights of Way Accessibility Committee (PROWAC)
 - Established 1999
 - Develop recommendations on guidelines for <u>accessible</u> <u>public rights-of-way</u>
 - Draft Guidelines, June 2002
 - Revised Draft Guidelines, Nov. 2005
 - Special Report: Planning and Designing for Alterations,
 July 2007

- Lawsuits around the country
 - Kinney vs. Yerusalim (1993)
 Resurfacing considered alteration
 Resurfacing projects require curb ramps
 - Barden vs. City of Sacramento, CA (2004)
 Make all public sidewalks accessible
 20% annual budget allocated to ADA
 - Recent filing against CALTRAN

- FHWA Emphasis
- WSDOT Implementation
 - Prior to June 2004
 - Change in direction
 - Address Curb Ramps in Preservation Projects (Not BST)
 - Site specific design

- Transition Plan Update 2008
 - Office of Equal Opportunity
 - Assess Accomplishments/ Deficiencies
 - Conduct inventory
 - Develop plan to correct deficiencies
 - Timeline & Funding
 - Goal: Bring all activities & facilities into compliance with ADA Law

Ad Hoc Team

- Focus: Right of way portion of transition plan
- Examine current policy and guidance
- Identify gaps
- Findings: Guidance is conflicting/confusing for application to roadway/roadside design

Recent Developments

- Defined key terminology
- Table of guidance for key features
- Compare current WSDOT Design Standards
- ADA by Project Types (DRAFT)

Next Steps:

- Clarify/add to Design Manual & Standard
 Plans
- Determine features to be inventoried / conduct inventory
- Work Zones: Develop GSP, Standard Items, Standard Plans for Accessible Route through work zones

- WSDOT Awareness Training
 - Design/Construction Conference
 - PE Meeting
 - PDE Meeting
 - ASDEs and Liaisons for all Region Design and Construction PE Offices, Program Management, Plans, and Local Programs Offices
 - Next 2 months

Types of Pedestrians

- Older Adults
- Children
- Mobility Impairment
- Sensory Impairment
- Cognitive Impairment
- Other Medical Concerns

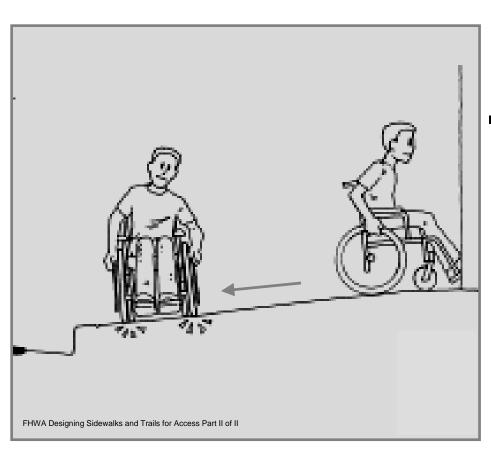
TERMINOLOGY

Pedestrian Access Route

- Sidewalk or paved shoulder.
- Running slope may match roadway grade.
- 2% cross slope required.



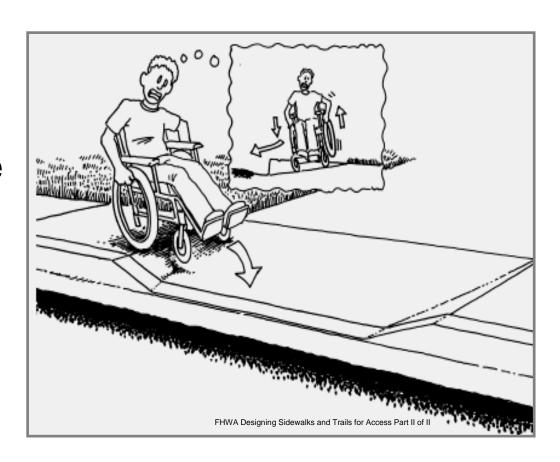
Cross Slope



 Steep cross slopes make the sidewalk difficult for a wheelchair to travel across.

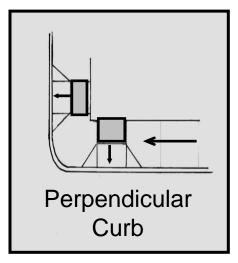
Cross Slope

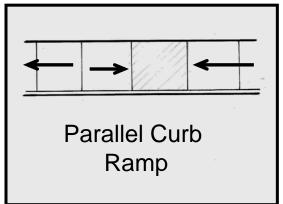
 When cross slopes change rapidly over a short distance, the use of wheelchairs or other types of walking aids becomes extremely unstable.

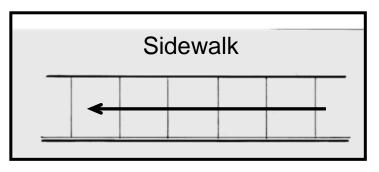


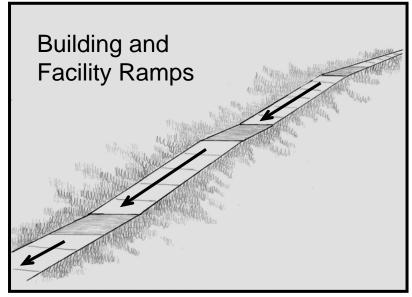
Running Slope

The grade parallel to direction of travel.







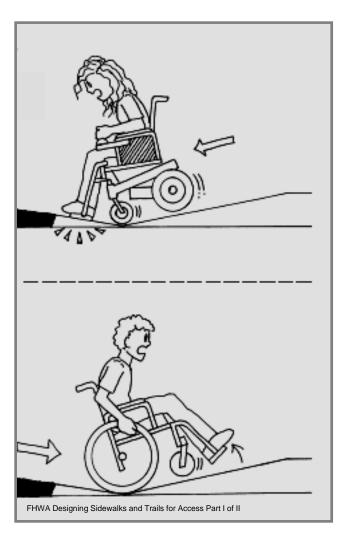


Running Slope

 Allowed to match roadway grade when sidewalk located parallel and adjacent to roadway.



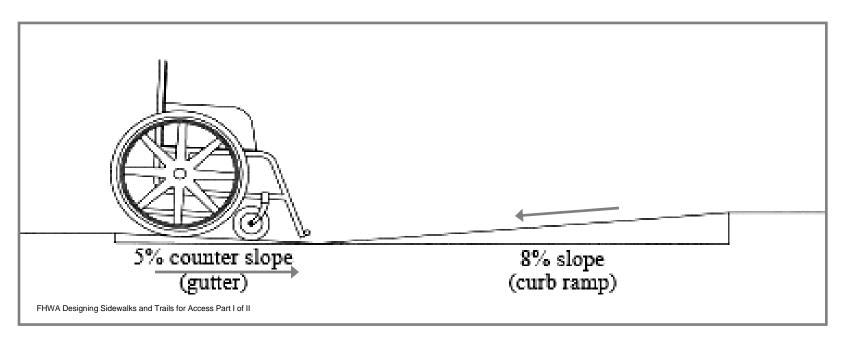
Counter Slope



 Excessive slope difference can cause a wheelchair to flip forward or backward.

Counter Slope

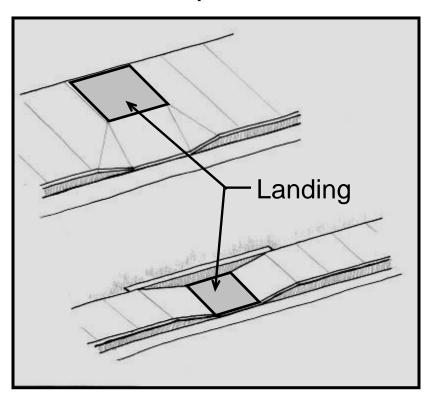
 The gutter slopes counter to the slope of the curb ramp to promote drainage.



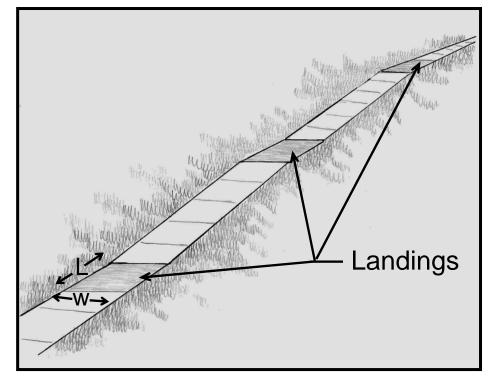
Landing

Area that needs to be Level (0 to 2% both directions)

Curb Ramps

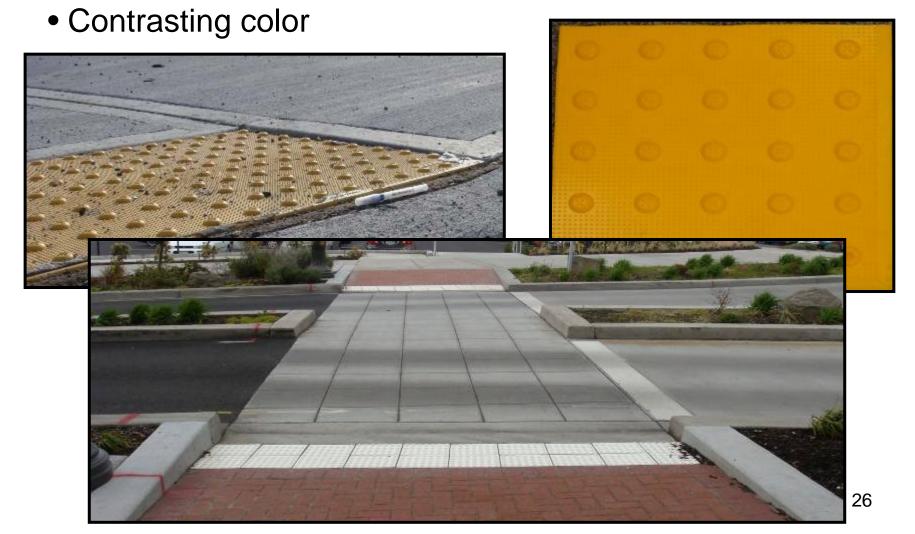


Building and Facility Ramps

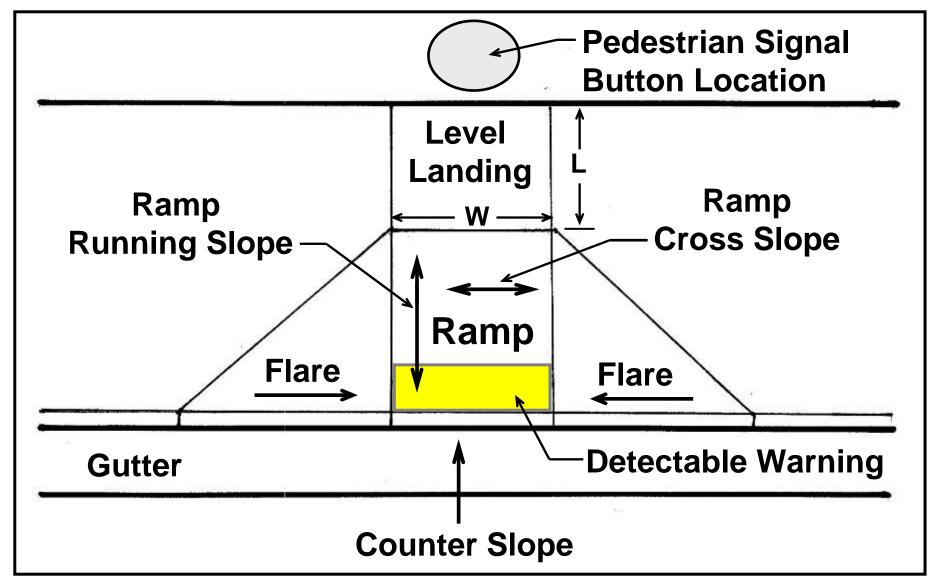


Detectable Warning Surface

Located at the bottom of ramp parallel to curb

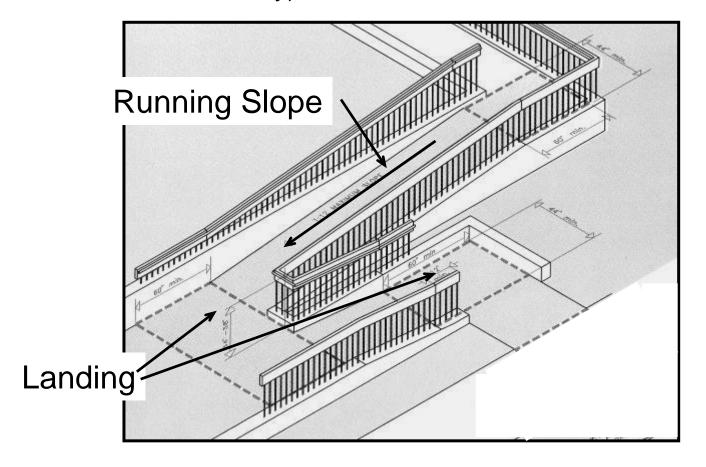


Curb Ramp



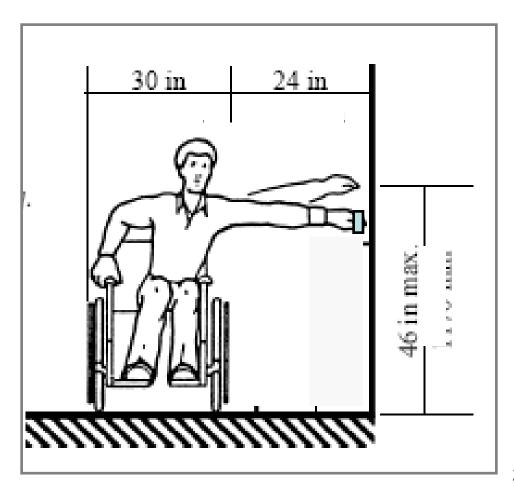
Building & Facility Ramp

Applies to bridges, pedestrian bridges and undercrossings; sites such as rest areas, park and ride lots, transit facilities; shared-use paths and meandering pedestrian access routes (independent horizontal and vertical alignment from the roadway).



Maximum Reach

 Pedestrian signal button at controlled crossings.



DESIGN CONSIDERATIONS

<u>Design</u>

Design Manual 1025.04(6)

- Improvement Projects Pedestrian needs to be addressed
- Preservation Projects "Alteration"

Use of Standard Plans

Make site specific (evaluate)

Design for Constructability

- Min. = Min. and Max. = Max
- Be aware of construction tolerance

<u>Design</u>

Documentation

- Inventory existing conditions
- Document deficiencies/decisions
- Maximum Extent Feasible

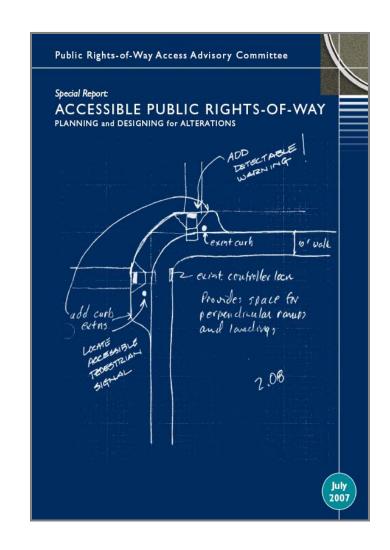
Develop Traffic Control Plans

- Determine Pedestrian users in project area
- Alternate Pedestrian Access Route through Work Zones.

Resource

PROWAC

- Special Report:
 Planning and
 Designing for
 Alterations, July 2007
- Link on Design Office website



Common Pedestrian Features

Curb ramps

Driveways

Crosswalks





- •Identified Pedestrian Access Route
- Pedestrian Crossings (Audio/Visual)

Less Common Features

- Ramps
- Stairways
- Elevators
- Over/Under Crossings





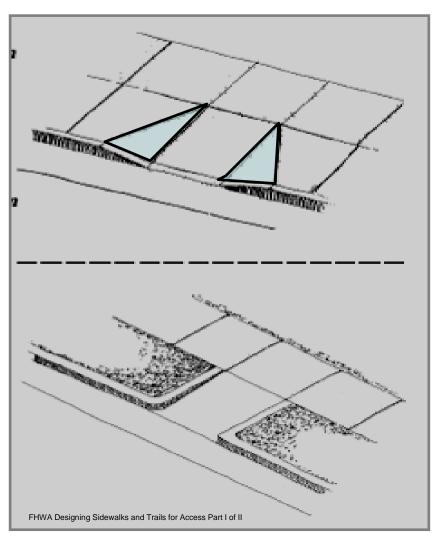
Feature: Curb Ramps

KOADW	AY ADA DESIGN F		
		General Notes:	
B / B /		Slopes - 8.33% = 1V.12H; 2% = 1V.48H; PAR - Pedestrian Access Route	
Design Features Element	Curb Ramp	Maximum (Max) - Cannot exceed the value shown <u>after</u> constructed and must account for construction tolerances; Minimum (Min) - Cannot be less than the value shown <u>after</u> constructed and must account for construction tolerances; Footnotes	
Width	Minimum: 4 feet		
Cross Slope	Maximum 2%		
Running Slope	Minimum 5% Maximum 8.3% RI	R1 - May be used for Preservation type projects where space is limited: 1) if vertical rise less than 3 inches, Slope can be between 10% and 12.5%; 2) if vertical rise less than 6 inches, Slope can be between 8.3% and 10%;	
Max Vertical Rise	N/A		
Allowable Vertical Lip	L/4 inch	D1 - Vertical edge less than or equal to 1/2 inch shall be beveled at 1V:2H min.	
Curb Flare Slope	Maximum: 10% CF1	CF1 - Measured parallel to the curb	
Horizontal Encroachment of Obstruction	Maximum 4 inch	H1 - Projection from edge of wall or post, measured 0.5 feet above finished surface	
Vertical Clear Area	80 inches	VC1 - No features to be located within the clear area, measured from the finished surface;	
Counter Slope	Maximum 5%		
Landing	Width - Min. Match Curb Ramp Width Length - Desmable: 4 feet 1,1	L1 - Min length is 3 ft;	
Detectable Warning Surface	DWI	DW1 - Install detectable warning surface 6 inch behind face of curb, minimum 2 ft. wide, and full width of the curb ramp;	

Types of Curb Ramps

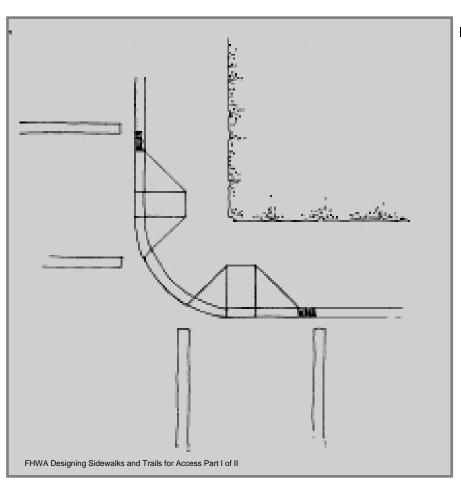
- Perpendicular
- Parallel
- Combination (Perpendicular and Parallel)
- Diagonal

Perpendicular Curb Ramp



- Flares provide transition between ramp and sidewalk. Design to prevent tipping.
- Returned curbs can be used when ramp is outside walkway, such as a planting strip ramp.

Perpendicular Curb Ramp

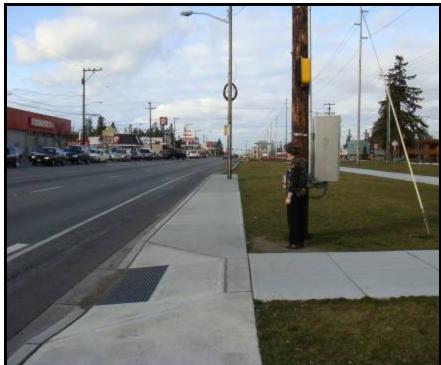


 Two perpendicular curb ramps with a level landing maximizes access for pedestrians at intersections – optimum design.

Examples Perpendicular

Meets Requirements





Example Perpendicular

Meets Requirements





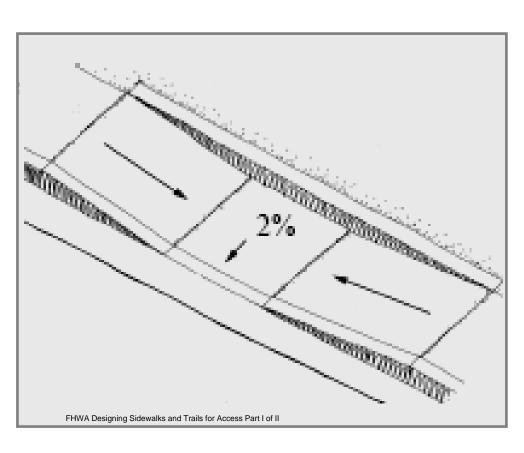
Example Perpendicular

Does Not Meet Requirements





Parallel Curb Ramp



 Works well on narrow sidewalks but requires users continuing on sidewalk to negotiate two ramps.

Example Parallel

Meets Requirements



Meets Requirements



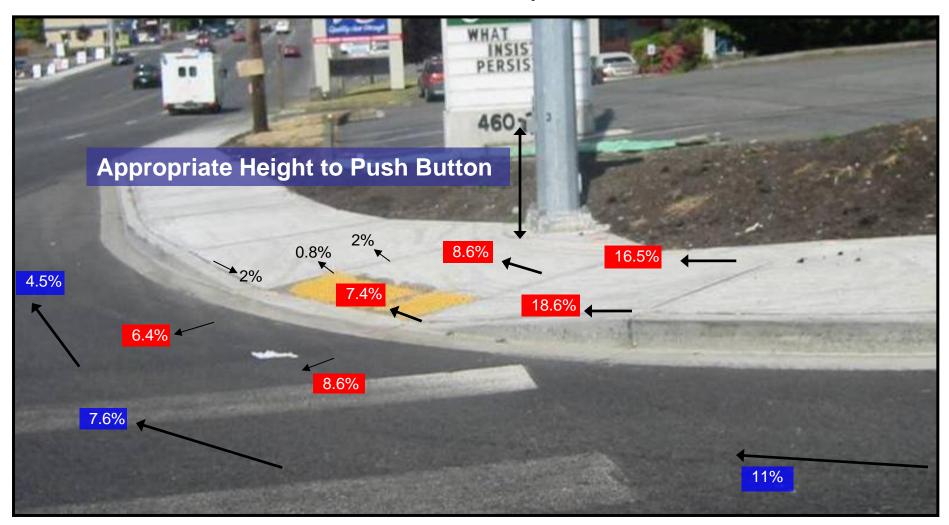
Example Parallel

Meets Requirements



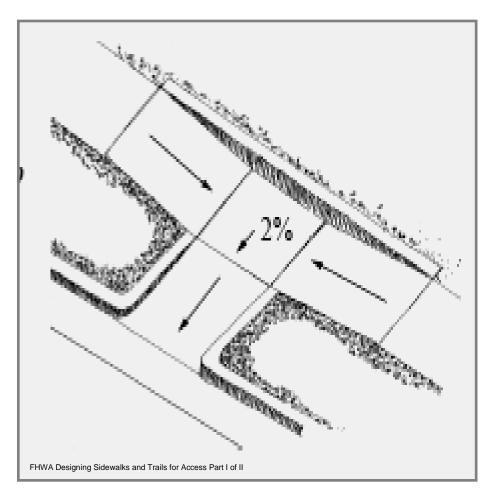
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Example Parallel



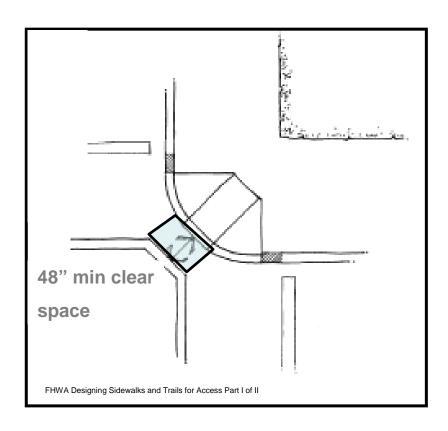
Combination Curb Ramp

 A creative way to avoid steep curb ramps and still provide a level landing.



Diagonal Curb Ramp

• If diagonal curb ramps are used, a 48 inch clear space (outside traveled way) required.

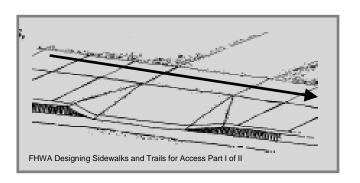




Feature: Driveways

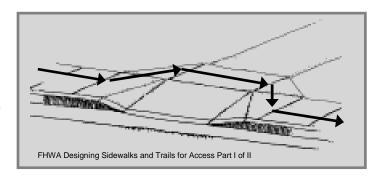
	Roadway ADA D	Design Features
		General Notes: Slopes - 8.33% = 1V:12H; 2% = 1V:48H; PAR - Pedestrian Access Route
Design Features	Driveway Crossing	Maximum (Max) - Cannot exceed the value shown <u>after</u> constructed and must account for construction tolerances; Minimum (Min) - Cannot be less than the value shown <u>after</u> constructed and must account for construction tolerances; ***NOTE BR1: Applies to pedestrian ramps for bridges, pedestrian bridges and undercrossings, sites such as rest areas, park & ride lots, transit facilities, shared-use paths and "meandering" pedestrian access routes (independent horizontal and vertical alignment from the roadway) Footnotes
Width	Desirable; Same as sidewalk width Minimum: 3 feet W2	W2 - At the top of driveway apron provide a min 3 feet wide PAR with a 2% max cross slope
Cross Slope	Maximum: 2% C1	C1 - Provide a 2% max cross slope at the top of driveway apron for a min 3 feet wide PAR;
Running Slope	R2	R2 - Allowed to match the grade of the roadway grade when located parallel and adjacent to the road
Max Vertical Rise	N/A	
Allowable Vertical Lip	1/4 inch	D1 - Vertical edge less than or equal to ½ inch shall be beveled at 1V:2H min.
Curb Flare Slope	Maximum: 10%	CF1 - Measured parallel to the curb
Horizontal Encroachment of Obstruction	Maximum: 4 inch	H1 - Projection from edge of wall or post, measured 0.5 feet above finished surface
Vertical Clear Area	80 inches VC1	VC1 - No features to be located within the clear area, measured from the finished surface;
Counter Slope	N/A	
Landing	N/A	
Detectable Warning Surface	N/A	

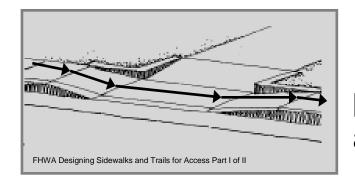
Access Across a Driveway



Wide Sidewalk – retain a level pedestrian access route

Narrow sidewalk – jog sidewalk to create level pedestrian access route





Parallel crossing to provide level pedestrian access route

Examples of Driveways

Meets Standards





Examples of Parallel Driveways

Meets Standards

Does Not Meet Standards

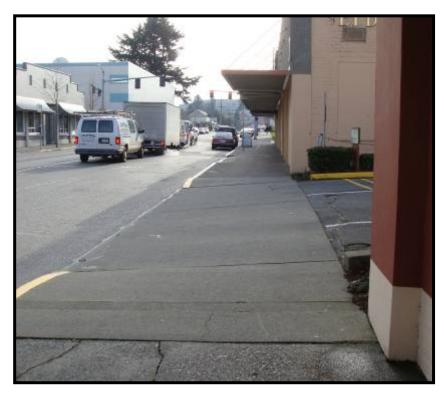




Examples of Driveways

Does Not Meet Standards



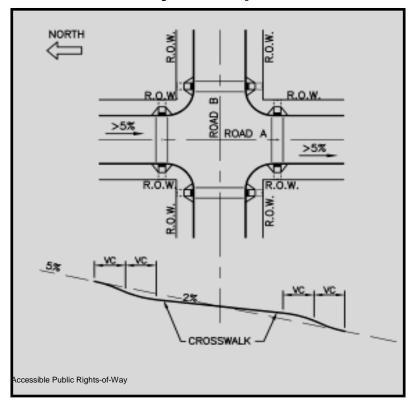


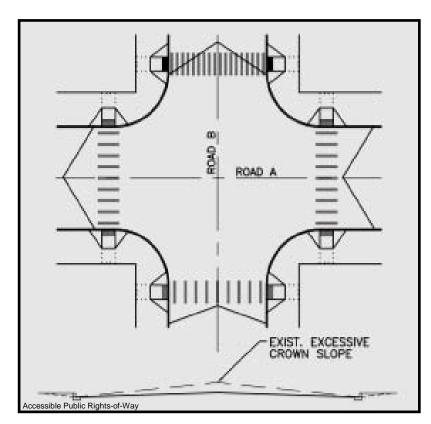
Feature: Crosswalks

	1	ROADWAY ADA DESIGN FEATURES
		General Notes: Slopes - 8.33% = 1V:12H; 2% = 1V:48H; PAR - Pedestrian Access Route
Design Features	Crosswalk	Maximum (Max) - Cannot exceed the value shown <u>after</u> constructed and must account for construction tolerances; Minimum (Min) - Cannot be less than the value shown <u>after</u> constructed and must account for construction tolerances; Footnotes
Width	Desirable: 10 feet Minimum: 4 feet W3	W3 - Provide a min 4 feet wide PAR with a 2% max cross slope;
Cross Slope	Maximum: 2% C2, C3	C2 - Provide a min 4 feet wide PAR with a 2% max cross slope; C3 - Max 5% at crossing locations without stop control (mid-block)
Running Slope	Maximum: 5%	
Max Vertical Rise	N/A	
Allowable Vertical Lip	1/4 inch DI	D1 - Vertical edge less than or equal to ½ inch shall be beveled at 1V:2H min.
Curb Flare Slope	N/A	
Horizontal Encroachment of Obstruction	Maximum: 4 inch	H1 - Projection from edge of wall or post, measured 0.5 feet above finished surface
Vertical Clear Area	80 inches VC1	VC1 - No features to be located within the clear area, measured from the finished surface;
Counter Slope	Maximum 5%	
Landing	N/A	
Detectable Warning Surface	DW2, DW3	DW2 - Install detectable warning surface on paved shoulders at the following locations: 1) If a pedestrian signal (ped heads) with a marked crosswalk is at the intersection; 2) When a separated pedestrian path intersects a paved shoulder; DW3 - End warning surface prior to entering a traveled lane;

Crosswalks

Constraint - Excessive Roadway Slope





Mill surface to 2% crown

Examples of Crosswalks

Meets Standards







Examples of Crosswalks

Meets Standards

Does Not Meet Standards





Examples of Crosswalks

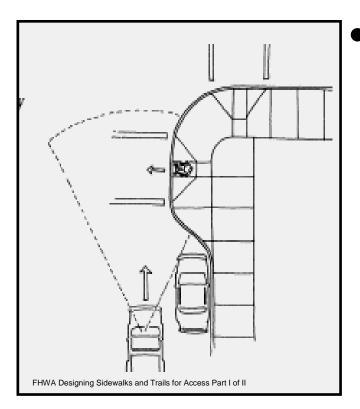
Meets Standards







Curb Extensions



Shortens distance to travel between curbs

 Curb extensions improve visibility between pedestrians and motorists.

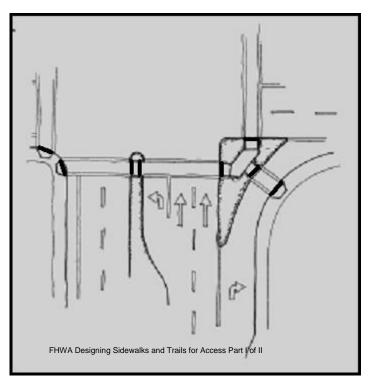


Feature: Island/Medians

Roadway ADA Design Features

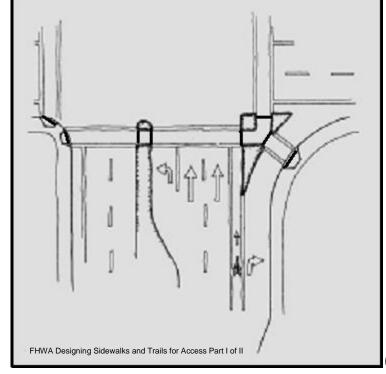
		General Notes:
	22	Slopes - 8.33% = 1V:12H; 2% = 1V:48H; PAR - Pedestrian Access Route
Design Features	Crossing Through Island/ Median	Maximum (Max) - Cannot exceed the value shown <u>after</u> constructed and must account for construction tolerances; Minimum (Min) - Cannot be less than the value shown <u>after</u> constructed and must account for construction tolerances; Footnotes
Width	Minimum width: 5 feet Minimum length: 6 feet	
Cross Slope	Maximum: 2%	
Running Slope	Maximum; 5%	
Max Vertical Rise	N/A V3	V3 - Desirable 3 inch vertical rise for a curb ramp located in an island;
Allowable Vertical Lip	1/4 inch.	D1 - Vertical edge less than or equal to ½ inch shall be beveled at 1V:2H min.
Curb Flare Slope	N/A	
Horizontal Encroachment of Obstruction	Maximum: 4 inch Hi	H1 - Projection from edge of wall or post, measured 0.5 feet above finished surface
Vertical Clear Area	80 inches VC1	VC1 - No features to be located within the clear area, measured from the finished surface;
Counter Slope	Maximum 5%	
Landing	See Curb Ramp if raised	
Detectable Warning Surface	DW1, DW3	DW1 - Install detectable warning surface 6 inch behind face of curb, minimum 2 ft. wide, and full width of the curb ramp; DW3 - End warning surface prior to entering a traveled lane;

Corner & Median Island Crosswalks



Ramped corner island, cut through median

Cut through corner island and median



Corner Island Crosswalk Examples

Good cut through w/ exception



Good raised island



Median Island Crosswalk Example

Good cut through w/ exception



Feature: Landings

Noau	way ADA Design I	
		General Notes:
		Slopes - 8.33% = 1V:12H; 2% = 1V:48H;
Design Features	Ď.	PAR - Pedestrian Access Route Maximum (Max) - Cannot exceed the value shown <u>after</u> constructed and must account for construction tolerances; Minimum (Min) - Cannot be less than the value shown <u>after</u> constructed and must account for construction tolerances;
↓ Element	Landing	Footnotes
Width	See Other References Below	
Cross Slope	Maximum: 2%	
Running Slope	Maximum: 2%	
Max Vertical Rise	N/A	
Allowable Vertical Lip	1/4 inch	D1 - Vertical edge less than or equal to ½ inch shall be beveled at 1V:2H min.
Curb Flare Slope	N/A	CF1 - Measured parallel to the curb
Horizontal Encroachment of Obstruction	Maximum: 4 inch	H1 - Projection from edge of wall or post, measured 0.5 feet above finished surface
Vertical Clear Area	80 inches VC1	VC1 - No features to be located within the clear area, measured from the finished surface;
Counter Slope	N/A	
Landing	N/A	
Detectable Warning Surface	N/A	

Examples of Landings

Meets Requirements



Does Not Meet



Feature: Building & Facility Ramps

	Roadway ADA Desig	gn Features
		General Notes: Slopes - 8.33% = 1V:12H; 2% = 1V:48H; PAR - Pedestrian Access Route
Design Features Light State of the state of	Building & Facilities Ramp ***	Maximum (Max) - Cannot exceed the value shown after constructed and must account for construction tolerances; Minimum (Min) - Cannot be less than the value shown after constructed and must account for construction tolerances; **NOTE BR1: Applies to pedestrian ramps for bridges, pedestrian bridges and undercrossings sites such as rest areas, park & ride lots, transit facilities, shared-use paths and "meandering" pedestrian access routes (independent horizontal and vertical alignment from the roadway) Footnotes
Width	Desirable: 4 feet Minimum: 3 feet W1	W1 - Provide a 3 feet min clear width between handrails;
Cross Slope	Desirable: 1.5% Maximum: 2%	
Running Slope	Desirable: 5% Maximum: 8.3% R1	R1 - May be used for Preservation type projects where space is limited: 1) if vertical rise less than 3 inches, Slope can be between 10% and 12.5%;2) if vertical rise less than 6 inches, Slope can be between 8.3% and 10%;
Max Vertical Rise	Maximum: 30 inches VI, V4	V1 - Between landings; V4 - Ramp runs greater than 6 inches in height or vertical rise shall have handrails
Allowable Vertical Lip	1/4 insh	D1 - Vertical edge less than or equal to 1/2 inch shall be beveled at 1V:2H min.
Curb Flare Slope	N/A	CF1 - Measured parallel to the curb
Horizontal Encroachment of Obstruction	Maximum: 4 inch	H1 - Projection from edge of wall or post, measured 0.5 feet above finished surface
Vertical Clear Area	80 inches	VC1 - No features to be located within the clear area, measured from the finished surface;
Counter Slope	N/A	
Landing	Width - Min. Match Ramp Width	L2 - Provide a 3 feet min clear width between handralls; L3 - Min 5 feet by 5 feet level landing where a change in direction between runs occurs; L4 - Landings are required at the top and bottom of each ramp run and every 30 inch vertical ris
Detectable Warning Surface	N/A	

Building & Facility Ramps



Feature: Pedestrian Access Route

	Roadway ADA De	
	70	General Notes: Slopes - 8,33% = 1V:12H, 2% = 1V:48H, PAR - Pedestrian Access Route
Design Features	Pedestrian Access Route	Maximum (Max) - Cannot exceed the value shown <u>after</u> constructed and must account for construction tolerances; Minimum (Min) - Cannot be less than the value shown <u>after</u> constructed and must account for construction tolerances; Footnotes
Width	Desirable: 5 feet W4 Minimum: 4 feet	W4 - If width is less than 5 ft. provide passing areas 5 ft, wide by 5 ft long, at 200 ft. max intervals
Cross Slope	Maximum: 2%	
Running Slope	Maximum: 5% R1	R1 - May be used for Preservation type projects where space is limited: 1) If vertical rise less tha 3 inches, Slope can be between 10% and 12.5%, 2) If vertical rise less than 6 inches, Slope can be between 8.3% and 10%;
Max Vertical Rise	V2	V2 - Allowed to match the grade of the roadway grade when located parallel and adjacent to the road;
Allowable Vertical Lip	1/4 inch	D1 - Vertical edge less than or equal to 1/2 inch shall be beveled at 1V:2H min.
Curb Flare Slope	N/A	
Horizontal Encroachment of Obstruction	Maximum: 4 inch	H1 - Projection from edge of wall or post, measured 0.5 feet above finished surface
Vertical Clear Area	80 inches VC1	VC1 - No features to be located within the clear area, measured from the finished surface;
Counter Slope	N/A	
Landing	N/A	
Detectable Warning Surface	DW2, DW3	DW2 - Install detectable warning surface on paved shoulders at the following locations: 1) If a pedestrian signal (ped heads) with a marked crosswalk is at the intersection; 2) When a separated pedestrian path intersects a paved shoulder; DW3 - End warning surface prior to entering a traveled lane;

Pedestrian Access Route Examples

Meets w/ exception



Does not meet



Feature: Sidewalk

Roadway ADA Design Features

Roadway ADA Design Features		
Design Features		General Notes: Slopes - 8.33% = 1V:12H; 2% = 1V:48H; PAR - Pedestrian Access Route Maximum (Max) - Cannot exceed the value shown after constructed and must account for construction tolerances; Minimum (Min) - Cannot be less than the value shown after constructed and must account for
Element	Sidewalk	construction tolerances; Footnotes
Width	Desirable: 5 feet Minimum: 4 feet W4	W4 - If width is less than 5 ft. provide passing areas 5 ft. wide by 5 ft long, at 200 ft. max. intervals
Cross Slope	Maximum: 2%	
Running Slope	Maximum: 5% R2	R2 - Allowed to match the grade of the roadway grade when located parallel and adjacent to the road
Max Vertical Rise	V2	V2 - Allowed to match the grade of the roadway grade parallel and adjacent to the road;
Allowable Vertical Lip	1/4 inch	D1 - Vertical edge less than ½ inch shall be beveled at 1V:2H min.
Curb Flare Slope	N/A	
Horizontal Encroachment of Obstruction	Maximum: 4 inch	H1 - Projection from edge of wall or post, measured 0.5 feet above finished surface
Vertical Clear Arca	80 inches	VC1 - No features to be located within the clear area, measured from the finished surface;
Counter Slope	N/A	
Landing	N/A	
Detectable Warning Surface	N/A	

Sidewalk Examples



- Running slope may match roadway grade.
- 2% cross slope required.



Sidewalk Examples

Meandering sidewalk must meet ADA requirements



Sidewalk Examples

Obstructions





CONSTRUCTION CONSIDERATIONS

Construction

- Traffic Control Plans
 - Alternate Pedestrian Access Route through Work Zone
 - Consider all disabilities
 - Be aware of users in project area

Alternate Pedestrian Access Route Not Addressed



Alternate Pedestrian Access Routes



- Temporary curb ramps
- Temporary sidewalks



Alternate Pedestrian Access Routes

- Guide visually impaired
- Adequate signing





Alternate Pedestrian Access Route





Construction

- Tolerances
- Surfacing depths and slopes
- Construction forming/pouring

IN CLOSING

Areas to Focus On

- Inventory project area
- Determine deficiencies
- Correct in design
- Document decisions
- Address accessible route through work zone
- Potential changes coming

Coming Soon

- Design Manual & Standard Plan updates
- Work Zone: GSP, Standard Items, Standard Plans for Accessible Route through work zones
- Documentation guidelines for "Maximum Extent Feasible"
- Recommended inventory process
- Direction for outside R/W use

<u>Useful Web Sites</u>

- http://www.wsdot.wa.gov/eesc/design/roadside/
- http://ite.org/accessible/PROWAAC/PROWAAC_SpecialReport.pdf
- http://www.access-board.gov/news/sidewalkvideos.htm

Questions?

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