## Universal Access

Meeting Accessibility Requirements in Public Rights of Way

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## BACKGROUND

\&
CURRENT ISSUES (WHY ADA EMPHASIS)

## Universal Access for All - ADA





## Background

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


## Background

- 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 accessible public rights-of-way
- Draft Guidelines, June 2002
- Revised Draft Guidelines, Nov. 2005
- Special Report: Planning and Designing for Alterations, July 2007


## Current Issues

- 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


## Current Issues

- FHWA Emphasis
- WSDOT Implementation
- Prior to June 2004
- Change in direction

Address Curb Ramps in Preservation Projects (Not BST)

- Site specific design


## Current Issues

- 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


## Current Issues

- 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


## Current Issues

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


## Current Issues

- 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


## Current Issues

- 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
- Contrasting color


## 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

## Design

- 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


## Design

- 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



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


## Less Common Features

- Ramps
- Stairways
- Elevators
- Over/Under
 Crossings



## Feature: Curb Ramps

ROADWAY ADA DESIGN FEATURES

|  |  | Slopes - 8.33\% = $1 \mathrm{~V} \cdot 12 \mathrm{H}, 2 \%=1 \mathrm{~V} .4 \mathrm{a} \mathrm{H}_{t}$ <br> PAR . Pedestrian Access Route <br> Maximum (Max) - Cannot exceed the value shown after constructed and must accourt for construction tolerances; <br> Minimum (Min) - Cannot be less than the value shown after constructed and must accourt for construction tolerances, <br> Footnotes |
| :---: | :---: | :---: |
| Design Features <br> Element | $\begin{aligned} & \text { e } \\ & \frac{E}{E} \\ & \text { 合 } \end{aligned}$ |  |
| Width | Minimume 4 est |  |
| Cross Slope | Namimam 29 |  |
| Running Slope | Minimum $5 \%$ <br> Мамmarm 8.35 RI | R1 - May be used for Preservation type projects where space is limited: 1) if vertical nise less thar 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 | $\mathrm{N} / \mathrm{A}$ |  |
| Allowable Vertical Lip | $\begin{array}{\|l\|l\|l\|l\|l\|l\|} \hline \text { Dinch } \\ \hline \end{array}$ | D1 - Vertical edge less than or equal to $1 / 2$ inch shall be beveled at 1 V 2 H min. |
| Curb Flare Slope | $\begin{aligned} & \text { Maxmerr 10\% } \\ & \text { CF1 } \end{aligned}$ | CF1 - Measured paralel to the curb |
| Horizontal <br> Encroachment of Ohstruction | Maviman 4 inch <br> HI | H1 - Projection from edge of wall or post, measured 0.5 feet above finished suface |
| Vertical Clear Area | 80 inctes <br> vel | VC1 - No features to be located within the clear area, measured from the finished surace; |
| Counter Slope | Xhaimem 54 |  |
| Landing | Witth - Min. Match Ourb Ramep Width <br> Lengilh - Devralie: 4 feel 1,1 | L1-Min length is 3 ft; |
| Detectable Warning Surface | DWI | DW1 - Install detectable waming surface 8 inch behind face of curo, minimum 2 ft . wide, and ful widith 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


Does Not Meet Requirements


## Example Perpendicular

## Meets Requirements



Does Not Meet Requirements


## Example Perpendicular

Does Not Meet Requirements


## 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


## Example Parallel

## Does Not Meet Requirements



## 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: <br> Driveways

| Roadway ADA Design Features |  |  |
| :---: | :---: | :---: |
|  |  | General Notes: |
|  |  | Slopes - $8.33 \%=1 \mathrm{~V}: 12 \mathrm{H} ; 2 \%=1 \mathrm{~V} .48 \mathrm{H}$; <br> PAR - Pedestrian Access Route |
| Design Features |  | Maximum (Max) - Cannot exceed the value shown after corstructed and must account for construction tolerances; <br> Minimum (Min) - Cannot be less than the value shown after corstructed and must account for construction tolerances; <br> ** NOTE BR1: Applies to pedestrian ramos for bridges, pedestrian bridges and undercrossings. sites such as rest areas, park \& ride lots, transit facilities, shared-use paths and "meandering" pedestrian access routes findependent horizortal and vertical alignment from the roachravi) Footnotes |
| Width | Desirable: Sarse as sidicwalk widh <br> Minimume 3 fost W2 | W2 - At the top of driveway apron provide a min 3 feet wide PAR with a $2 \%$ max cross slope |
| Cross Slope | $\begin{aligned} & \text { Maximum: } 2 \% \\ & \mathrm{C} 1 \end{aligned}$ | C1 - Provide a $2 \%$ max cross slope at the top of onveway apron for a min 3 feet wide PAR; |
| Running Slope | R2 | R2 - Allowed to match the grade of the foadway grade when located parallel and adjacent to the road |
| Max Vertical Rise | N/A |  |
| Allowable Vertical Lip | $\begin{aligned} & 1 / 4 \mathrm{inch} \\ & \mathrm{D1} \end{aligned}$ | D1 - Vertical edge less than or equal to $1 / 2$ inch shall be beveled at 1 V .2 H min. |
| Curb Flare Slope | $\begin{aligned} & \text { Maxinum: } 10 \% \\ & \text { CFI } \end{aligned}$ | CF1 - Measured perallel to the curb |
| Horizontal Encroachment of Obstruction | Maximum: 4 inch <br> HI | H1 - Projection from edge of wall or post, measured 0.5 feet above finished sufface |
| Vertical Clear Area | 80 inctes <br> VCl | VC1 - No features to be located within the clear area, measured from the finished surface; |
| Counter Slope | N/A |  |
| Landing | N/A |  |
| Detectable <br> 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

| ROADWAY ADA DESIGN FEATURES |  |  |
| :---: | :---: | :---: |
| Design Features | 关 | General Notes: <br> Slopes - $8.33 \%=1 \mathrm{~V}: 12 \mathrm{H} ; 2 \%=1 \mathrm{~V}: 48 \mathrm{H}$; <br> PAR - Pedestrian Access Route <br> Maximum (Max) - Cannot exceed the value shown after constructed and must account for construction tolerances, <br> Minimum (Min) - Cannot be less than the value shown after constructed and must account for construction tolerances; <br> Footnotes |
| Width | Desinable: 10 feet <br> Minimam: 4 feet W3 | W3 - Provide a min 4 feet wide PAR with a $2 \%$ max cross slope; |
| Cross Slope | $\begin{aligned} & \text { Maximm. } 2 \% \\ & \mathrm{C} 2, \mathrm{C} 3 \end{aligned}$ | C2 - Provide a min 4 feet wide PAR with a $2 \%$ max cross slope; <br> C3 - Max 5\% at crossing locations without stop control (mid-block) |
| Running Slope | Maxinnmi 5\% |  |
| Max Vertical Rise | N/A |  |
| Allowable Vertical Lip | $1 / 4$ inch <br> D1 | D1 - Vertical edge less than or equal to $1 / 2$ inch shall be beveled at $1 \mathrm{~V}: 2 \mathrm{H}$ min. |
| Curb Flare Slope | N/A |  |
| Horizontal <br> Encroachment of Obstruction | Maximumr 4 inch <br> 111 | H1 - Projection from edge of wall or post, measured 0 5 feet above finished surface |
| Vertical Clear Area | 80 inches VCl | VC1 - No features to be located within the clear area, measured from the finished surface; |
| Counter Slope | Maximum 5\% |  |
| Landing | N/A |  |
| Detectable <br> Warning Surface | DW2, DW3 | DW2 - Install detectable warning sufface 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 shouider, <br> 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


Does Not Meet Standards


## Examples of Crosswalks

## Meets Standards

Does Not Meet Standards


## Examples of Crosswalks

Meets Standards


Does Not Meet Standards


## Curb Extensions



## Feature: <br> Island/Medians

Roadway ADA Design Features

|  |  | General Notes: <br> Slopes - $833 \%=1 \mathrm{~V} \cdot 12 \mathrm{H} ; 2 \%=1 \mathrm{~V} \cdot 48 \mathrm{H}$; <br> PAR - Pedestrian Access Route <br> Maximum (Max) - Cannot exceed the value shown after constructed and must account for construction tolerances; <br> Minimum (Min) - Cannot be less than the value shown after constructed and must account for construction tolerances; <br> Footnotes |
| :---: | :---: | :---: |
| Design Features <br> Element |  |  |
| Width | Mininum width 5 feet <br> Mininum length: 6 feet |  |
| Cross Slope | Maximam: $2 \%$ |  |
| Rumning Slope | Maximam: $5 \%$ |  |
| Max Vertical Rise | V3 | V3 - Desirable 3 inch vertical rise for a curb ramp located in an island; |
| Allowable Vertical Lip |  | 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 | Maximam: 4 inch <br> HI | H1 - Projection from edge of wall or post, measured 0.5 feet above firished surface |
| Vertical Clear Area | $\begin{aligned} & 80 \text { inches } \\ & \mathrm{VCl} \end{aligned}$ | VC1 - No features to be located within the clear area, measured from the finished surface; |
| Counter Slope | Maximam 5\% |  |
| Landing | See Curb Rarap if raised |  |
| Detectable <br> 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; <br> DW3 - End waming surface prior to entering a traveled lane; |

## Corner \& Median Island Crosswalks



## Corner Island Crosswalk Examples

Good cut through w/ exception


Good raised island


## Median Island Crosswalk Example

Good cut through w/ exception


## Feature: Landings

Roadway ADA Design Features

|  |  | General Notes: <br> Slopes - 833\% = 1V.12H; $2 \%=1 \mathrm{~V} 48 \mathrm{H}_{1}$ <br> PAR - Pedestrian Access Route <br> Maximum (Max) - Cannot exceed the value shown after constructed and must account for construction tolerances; <br> Minimum (Min) - Cannot be less than the value shown after constructed and must account for construction tolerances; |
| :---: | :---: | :---: |
| Design Features | $\frac{\text { or }}{E}$ |  |
| Width | See Other <br> References Below |  |
| Cross Slope | Maximume 2\% |  |
| Running Slope | Maxinumer 2\% |  |
| Max Vertical Rise | N/A |  |
| Allowable Vertical Lip | $\left\lvert\, \begin{aligned} & 1 / 4 \text { inch } \\ & \text { D1 } \end{aligned}\right.$ | D1 - Vertical edge less than or equal to $1 / 2$ inch shall be beveled at $1 \mathrm{~V}: 2 \mathrm{H}$ min. |
| Curb Flare Slope | N/A | CF1 - Measured parallel to the curb |
| Horizontal Encroachment of Obstruction | Maximum 4 inch H1 | 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 <br> Warning Surface | N/A |  |

## Examples of Landings

Meets Requirements


Does Not Meet


## Feature: Building \& Facility Ramps

Roadway ADA Design Features


## Building \& Facility Ramps



## Feature: Pedestrian Access Route

Roadway ADA Design Features

|  |  | General Notes: <br> Slopes - $8.33 \%=1 \mathrm{~V}: 12 \mathrm{H}, 2 \%=1 \mathrm{~V} .4 \mathrm{BH}$, <br> PAR - Pedestrian Access Route <br> Maximum (Max) - Cannot exceed the value shown after constructed and must aocount for construction tolerances; <br> Minimum (Min) - Cannot be less than the value shown after constructed and must account for construction tolerances; <br> Footnotes |
| :---: | :---: | :---: |
| Design Features |  |  |
| Width | Dessable: 5 fest W4 <br> 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 | Maximume 5\% R1 | R1 - May be used for Preservation type projects where space is limited: 1) If vertical rise less thar 3 inches, Slope can be between $10 \%$ and $12.5 \%$ 2) If vertical fise less than 6 inches, Slope can be between $8.3 \%$ and $10 \%$; |
| Max Vertical Rise | V2 | V2 - Allowed to match the grade of the roactway grade when located parallel and acjacent to the road; |
| Allowable Vertical Lip |  | D1 - Vertical edge less than or equal to $1 / 2$ inch shall be beveled at $1 \mathrm{~V}: 2 \mathrm{H} \mathrm{min}$. |
| Curb Flare Slope | N/A |  |
| Horizontal <br> Encroachment of Obstruction | Maximum: 4 inch <br> H1 | H1 - Projection from ecge of wall or post, measured 0.5 feet above finished surface |
| Vertical Clear Area | $\begin{aligned} & 80 \text { inches } \\ & \mathrm{VCl} \end{aligned}$ | 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, <br> DW3 - End waming surface prior to entering a traveled lane; |

## Pedestrian Access Route Examples

Meets w/ exception


Does not meet


## Feature: Sidewalk

Roadway ADA Design Features


## 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


## Useful Web Sites

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


## Questions?

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Visit our website at:
http://www.wsdot.wa.gov/eesc/design/roadside/

