Avoiding the Wheelchair Rollercoaster and Other “Fun” Accessibility Issues in the Right-of-Way

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Presentation
Objectives/Assumptions

• Brief overview of PROWAG
• Primary design/construction errors for curb ramps (and sidewalks as time permits)
• Questions (Please hold to the end and refer to slide #)

Assumptions
• Attendees have at least a general knowledge of ADA standards/guidelines
• Technical terms and jargon will be used without definition
• Items presented are general in nature for each and apply primarily to alterations
• Focus today is only on curb ramps & PAR per 2011 PROWAG
Public Right-of-Way
Accessible Pedestrian Features

Who are the disabled pedestrians to be accommodated in the right-of-way?

- Non-ambulatory
- Ambulatory with mobility device
- Low vision
- Blind

Disability may be permanent or temporary – access needs are the same!
• PROWAG (Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way) dated July 26, 2011 (still not adopted but is considered “best practice”), provides guidance on design of:
  – Pedestrian Access Routes (PAR)
  – Curb Ramps & Blended Transitions and Detectable Warnings
  – Accessible Pedestrian Signals (APS)
  – Pedestrian Street Crossings
  – Transit Stops and Shelters
  – On-Street Parking
  – Passenger Loading Zones
PROWAG

• PROWAG (Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way) dated July 26, 2011 (still not adopted but is considered “best practice”)

• Local standard – some communities require 5 or 6 foot wide sidewalks (PROWAG requires 4’ with 5’ passing every 200 feet)

FHWA Memo 1/23/06 RE: PROWAG

“. . recommended best practices, and can be considered the state of the practice that could be followed for areas not fully addressed by the present ADAAG standards . .”
Difficult Conditions

Existing conditions that can present problems for designers and contractors:

- **Curb Ramps**
  - Conversion of Single Diagonal Ramp to Multiple
  - Slopes
  - Limited ROW
  - Drainage
  - Utility Structures
  - Others

- **Pedestrian Access Route**
  - Slopes
  - Driveways
  - Trees
  - Obstructions
  - Utility Structures
  - Others

Difficult conditions are assumed to be workable for new construction. Alterations to existing facilities are what presents potential design and construction issues. Need to understand that a ‘cookie cutter’ curb ramp will not fit all, some engineering will be required at most locations.
Curb Ramp Issue – Convert Single Ramp to Multiple

• PROWAG does not permit new diagonal ramps (per R207, except where physical constraint prevent it)

• For blended transitions ("ramps" less than 5% running slope) diagonal or "fan" ramps are discouraged

• Movement to try and provide directional cues to the blind with orientation of ramps and detectable warning (when and how?)
Single Diagonal Ramp
Least Preferred

- Diagonal ramp is a single ramp located at the apex of the corner.

- Problematic:
  - Difficult for blind to determine correct crossing direction and travel direction
  - Need landing at the bottom that is in the street
  - Increased interaction with turning vehicles
  - Drivers can’t tell which direction pedestrians are planning to cross until pedestrian turns.
Common Curb Ramp Errors

1. Excessive slopes (x-slope > 1:50, running > 1:12, flares > 1:10) &/or not providing compliant landing(s)/turning space (TS)
2. Non-compliant detectable warnings (DWP)
3. Drainage/structures
4. Selecting the wrong ramp type
5. Improper grade breaks
6. Obstructions/protrusions
7. Contractor error (“minor” field adjustments)
8. Other

Assumes we all know that a missing ramp is a big error!
1. Excessive slopes (x-slope >1:50, running > 1:12, flares > 1:10) &/or not providing compliant landing(s)/turning space (TS)
   - Extreme flare slopes (not really flares)
   - Ramp cross slope
   - Top landing and/or TS > 2% (often = ramp slope)
Curb Ramp Issue –
1. Excessive Slopes

Requirement – max. 10% slope flare
New ramps often have a “rolled” edge with 15-20% slope tapers.

SOLUTION:
Redo with 10% tapers
Curb Ramp Issue – 1. Excessive Slopes

Requirement – x-slope of top landing/TS and ramp 2% max.
Slopes = sidewalk running slope (>4%).

SOLUTION: Reconstruct ramp and PAR approaches to provide ≤2% x-slope ramp and level TS.
Curb Ramp Issue – 1. Excessive Slopes

Requirement – level TS, good drainage
No level TS, evidence of ponding

SOLUTION: Parallel ramp with drainage
Curb Ramp Issue –
1. Excessive Slopes

Requirement – level TS/landing
8% slope (= ramp slope)

SOLUTION:
Parallel ramp with drainage
Common Curb Ramp Errors

2. Non-compliant detectable warnings (DWP)
   – DWP not full width of ramp (48” min.)
   – Poor placement
   – Not 24” minimum depth
   – No color contrast to PAR
Curb Ramp Issue –
2. Non-Compliant DWP

DWP not full width of ramp (48” min.)

SOLUTION: Install wider DWPs
Curb Ramp Issue – 2. Non-Compliant DWP

Two perpendicular blended transitions without detectable edge between them.

SOLUTION: Redesign
Curb Ramp Issue –
2. Non-Compliant DWP

Single blended transition with DWP oriented incorrectly and doesn’t meet 24” depth requirement.

SOLUTION:
Install properly
Curb Ramp Issue –
2. Non-Compliant DWP

Poor color contrast, not full depth, and bad grade break

SOLUTION: Reinstall contrasting color DWP

DWs AT WHITE HOUSE
Curb Ramp Issue – 3. Drainage

Water ponds in flowline of curb ramp

SOLUTION: Reconstruct
Curb Ramp Issue – 4. Selecting the Wrong Type

SOLUTION: Combo ramp may allow for drainage and level TS where ROW is constrained

Combination Ramp
Curb Ramp Issue – 5. Improper Grade Breaks

Grade break MUST be perpendicular to path of travel

SOLUTION: Reconstruct with compliant grade break
Curb Ramp Issue –
6. Obstructions/Protrusions

SOLUTION: Something has to be moved
Curb Ramp Issue – 7. Contractor Errors

- Need to eliminate the “I’ve been doing this for 30 years” mentality
- Suggested that the designer provide as much guidance as possible in difficult situations – detailed grades with tight tolerances
  - Not OK to label drawings at maximums (2% cross slope or 8.33% running slope)
  - Provide tighter guidelines with some allowance for field adjustments (1.5% ± 0.5%). Be sure your grade tolerances don’t conflict!! 2% is only ¼” per foot! Suggest design as flat as possible to provide drainage!
  - Clearly outline penalty for non-compliance (tear out and start over) because once it is accepted it is YOUR problem

SOLUTION: Detailed plans, training, and $$$
Curb Ramp Issue – 8. Other

ADA regulations state that when a sidewalk approaches an intersection a curb ramp is required.

“Curb ramp to nowhere”

SOLUTION: Don’t build ramps where no ped facilities are present

There are no ped facilities here – no curb ramp needed
Curb Ramp Summary

- There are an infinite number of curb ramp configurations, many of which will require more thought and design effort than a “typical” situation might allow.
- Be sure to know what you are dealing with when constructing a curb ramp to make it compliant! Don’t try to make a situation fit a standard detail.
- Make sure the contractor understands the importance of making it compliant and the repercussions of not making it so!!
- Continue to seek assistance with peers – chances are someone has run into a similar situation at some time.
Pedestrian Access Route (PAR)

- 48” min. width, continuous PAR is reserved for pedestrians and must be clear of obstructions and protruding objects.
Common PAR Errors

1. Excessive slopes (x-slope >1:50 &/or not providing compliant turning space (TS) at all changes of direction (~ >45 degrees)
2. Driveways!!!!
3. Level changes
4. Obstructions/protrusions
5. Utility structures
6. Other
PAR Issues – Slopes

• The running slope of the PAR may match, BUT NOT EXCEED, that of the adjacent roadway. (PROWAG 2011 change)
• Not going to spend time due to variability.
• Cross slopes of PAR are biggest slope issue!
Excessive cross slopes greatly impact users of mobility devices.

**SOLUTION:**
Reconstruct, may need retaining
2% slope = ¼” per foot. If you have a 4% cross slope on an 8’ walk, you need to raise the walk edge at least 2”. Where you have a 6” curb this would equal two, 4” curbs.
At noncompliant driveways, sidewalk users encounter:

- Steep Cross slopes
- Rapid grade change at driveway flare
PAR Issues – Driveways

• This 7% running slope driveway is a 7% sidewalk cross slope! This could easily cause a wheelchair user to tip!

**SOLUTION:** Reconstruct sidewalk through the driveway
PAR Issues – Driveways

- Here is an extreme condition – driveway rollercoaster. Common in older residential areas, though not this extreme.
PAR Issues – Driveways

- Sidewalk needs to be built through the driveway, not the other way, to maintain compliant cross slopes! Various options exist – as with curb ramps you need to be flexible and creative!
PAR Issues – Level Changes/Gaps

Can be caused by a variety of means, trees are very common cause

SOLUTION: Varies
A thorough self-evaluation is needed. Minor changes can be beveled by grinding.

**SOLUTION:**
Grinding for small changes
Look for opportunities to at least make things better and safer for all users, such as temporary patches.
PAR Issues – Level Changes/Gaps

**SOLUTION:** Temporary fixes for safety hazards

*Before*

*After*
Obstructions that block or reduce the PAR to under 48” are problematic. Can include:

- Utilities
PAR Issues – Obstructions

Obstructions that block or reduce the PAR to under 48” are problematic. Can include:

• Overhanging vegetation
PAR Issues – Obstructions

Obstructions that block or reduce the PAR to under 48” are problematic. Can include:

• Signs
PAR Issues – Obstructions

Some fixes are easier than others, but may be dependent on available space/ROW, property owners are often willing to provide easement to save trees.

SOLUTION:
Add bypass if ROW is available.
PAR Issues – Utility Structures

Horizontal openings no more than $\frac{1}{2}$ inch in the direction of travel. Can include trench drains, catch basins, manhole covers, tree grates, etc.

**SOLUTION:**
Use compliant structures, adapt existing
PAR Issues – Utility Structures

Need to use compliant covers, make corrective actions, etc.

Use of Wire Mesh Screen

Use of Straps Welded to Existing Grate
PAR Issues – Other Issues

Can be:
• Signs (MUTCD requires 7’ height to bottom)
• Flower baskets
• Pole- or wall-mounted objects
Conclusions

Need to prioritize curb ramp and sidewalk corrections based on several factors:

• Presence of community facilities (schools, etc.)
• Routes from residential areas to services
• Community input, especially a demonstrated use by disabled users

Most older communities have literally millions of $ of curb ramp and sidewalk corrections needed, money just isn’t there, which makes prioritization and public input critical!
Accessible Sidewalks Video Series
Presented by the US Access Board

4 Parts
Part I: Design Issues for Pedestrians who use Wheelchairs
Part II: Design Issues for Pedestrians with Ambulatory Impairments
Part III: Design Issues for Pedestrians with Low Vision
Part IV: Design Issues for Pedestrians who are Blind

Questions??