Today’s Agenda

• Definitions & Acronyms
  – Access Board vs. PROWAAC vs. PROWAG
  – Perpendicular Ramps
  – Parallel Ramps
  – Blended Transitions
Today’s Agenda, continued

• Understanding ADA Requirements
  – Pedestrian Access Route Requirements
    • Continuous Width
    • Passing Spaces
    • Grade
    • Cross Slope
      – Pedestrian Street Crossings
      – Mid-Block Crossings
    • Surfaces
      – Vertical Alignment
      – Vertical Surface Discontinuities
      – Horizontal Openings
      – Flangeway Gaps

• Understanding ADA Requirements
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    • Turning Spaces
    • Running Slope
    • Flared Sides
    • Width
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    • Clear Space
    • Detectable Warning Surface, DWS, Requirements
Today’s Agenda, continued

- Real Life Examples
- Final Acceptance and Documentation

ADA Definitions and Acronyms
Common Terminology…

Access Board:
• An independent Federal Agency charged to develop accessibility guidelines.

PROWAAC:
• Public Right-Of-Way Access Advisory Committee

PROWAG:
• Public Right-Of-Way Accessibility Guidelines
  – Published July 26, 2011

SNPRM:
• Supplementary Notice of Proposed Rulemaking referring to the addition of regulations for Shared Used Paths.
  – Published February 13, 2013

PROWAG Update…

• Final Rule expected to be published by the end of 2013
  – Must be adopted by USDOT and USDOJ to become Federal Standard

• Sign up for updates and newsletter at www.access-board.gov
R302 Pedestrian Access Routes

R105.5 Defined Terms

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

- **Pedestrian Access Route.** A continuous and unobstructed path of travel provided for pedestrians with disabilities within or coinciding with a pedestrian circulation path.
Pedestrian Access Routes…

R105.5 Defined Terms

- **Shared Use Path.** A multi-use path designed primarily for use by bicyclists and pedestrians, including pedestrians with disabilities, for transportation and recreation purposes. Shared use paths are physically separated from motor vehicle traffic by an open space or barrier, and are either within the highway right-of-way or within an independent right-of-way.
Pedestrian Access Routes…

R302.2 Components. Pedestrian access routes shall consist of one or more of the following components:

• Sidewalks and other pedestrian circulation paths, or a portion of sidewalks and other pedestrian circulation paths, complying with R302.3 through R302.7;
• Pedestrian street crossings complying with R302.3 through R302.7 (Unsignalized);
• Curb ramps and blended transitions complying with R302.7 and R304;

Construction Tolerances

R103.1 Conventional Industry Tolerances. Dimensions are subject to conventional industry tolerances except where dimensions are stated as a range.
By specifying the maximum permissible slope, an engineer may miss the opportunity to achieve a lesser and, therefore, more usable slope. Furthermore, field construction based on such a specification may fail to achieve the access that is required, leading to liability for changes that may be costly. **Dimensions noted in accessibility provisions as “maximum” or “minimum” should not, therefore, be considered dimensions for design, because they represent the limits of a requirement.**

**3.1.1 Construction Tolerances**

**PROWAAC Guidelines, November 1999**

Pedestrian Access Routes...

**R302.3 Continuous Width.** Except as provided in R302.3.1 and R302.3.2, the continuous clear width of pedestrian access routes shall be 4.0 ft minimum, exclusive of the width of the curb.

![Diagram of Curb and PAR within Width of Sidewalk]
SIDEBAR!!!!

R302.3 Continuous Width. Except as provided in R302.3.1 (Medians and Refuge Islands) and R302.3.2 (Shared Use Paths), the continuous clear width of pedestrian access routes shall be 4.0 ft minimum, exclusive of the width of the curb.

NOTE: The above drawing is from previously drafted PROWAAC guidelines. There is no such exception in the current draft.

Pedestrian Access Routes...

R302.3.1 Medians and Pedestrian Refuge Islands. The clear width of pedestrian access routes within medians and pedestrian refuge islands shall be 5.0 ft minimum.
Pedestrian Access Routes...

R302.3.2 Shared Use Paths. A pedestrian access route shall be provided for the full width of a Shared Use Path.

Pedestrian Access Routes...

R302.4 Passing Spaces. Where the clear width of pedestrian access routes is less than 5.0 ft, passing spaces shall be provided at intervals of 200.0 ft maximum. Passing spaces shall be 5.0 ft minimum by 5.0 ft minimum. Passing spaces are permitted to overlap pedestrian access routes.
Pedestrian Access Routes…

R302.5 Grade. The grade of pedestrian access routes shall comply with R302.5.

R302.5.1 Within Street or Highway Right-of-Way. Except as provided in R302.5.3, where pedestrian access routes are contained within a street or highway right-of-way, the grade of pedestrian access routes shall not exceed the general grade established for the adjacent street or highway.

Pedestrian Access Routes…

R302.5.2 Not Within Street or Highway Right-of-Way. Where pedestrian access routes are not contained within a street or highway right-of-way, the grade of pedestrian access routes shall be 5 percent maximum.
Pedestrian Access Routes…

R302.5.3 Within Pedestrian Street Crossings. Where pedestrian access routes are contained within a pedestrian street crossing, the grade of pedestrian access routes shall be 5 percent maximum.

Pedestrian Access Routes…

R302.5.4 Physical Constraints. Where compliance with R302.5.1 or R302.5.2 is not practicable due to existing terrain or infrastructure, right-of-way availability, a notable natural feature, or similar existing physical constraints, compliance is required to the extent practicable.

R302.5.5 Regulatory Constraints. Where compliance with R302.5.1 or R302.5.2 is precluded by federal, state, or local laws the purpose of which is to preserve threatened or endangered species; the environment; or archaeological, cultural, historical, or significant natural features, compliance is required to the extent practicable.
Pedestrian Access Routes…

R302.6 Cross Slope. Except as provided in R302.6.1 and R302.6.2, the cross slope of pedestrian access routes shall be 2 percent maximum.

R302.6.1 Pedestrian Street Crossings Without Yield or Stop Control. Where pedestrian access routes are contained within pedestrian street crossings without yield or stop control, the cross slope of the pedestrian access route shall be 5 percent maximum.

Pedestrian Access Routes…

R302.6.2 Midblock Pedestrian Street Crossings. Where pedestrian access routes are contained within midblock pedestrian street crossings, the cross slope of the pedestrian access route shall be permitted to equal the street or highway grade.
Pedestrian Access Routes…

R302.7 Surfaces. The surfaces of pedestrian access routes and elements and spaces required to comply with R302.7 that connect to pedestrian access routes shall be firm, stable, and slip resistant and shall comply with R302.7.

Pedestrian Access Routes…

R302.7.1 Vertical Alignment. Vertical alignment shall be generally planar within pedestrian access routes (including curb ramp runs, blended transitions, turning spaces, and gutter areas within pedestrian access routes) and surfaces at other elements and spaces required to comply with R302.7 that connect to pedestrian access routes. Grade breaks shall be flush. Where pedestrian access routes cross rails at grade, the pedestrian access route surface shall be level and flush with the top of rail at the outer edges of the rails, and the surface between the rails shall be aligned with the top of rail.
Pedestrian Access Routes…

R302.7.2 Vertical Surface Discontinuities. Vertical surface discontinuities shall be 0.5 in maximum. Vertical surface discontinuities between 0.25 in and 0.5 in shall be beveled with a slope not steeper than 50 percent. The bevel shall be applied across the entire vertical surface discontinuity.

Advisory R302.7.2 Vertical Surface Discontinuities. The allowance for vertical surface discontinuities is for occasional expansion joints and objects such as utility covers, vault frames, and gratings that cannot be located in another portion of the sidewalk outside the pedestrian access route.

Pedestrian Access Routes…

R302.7.3 Horizontal Openings. Horizontal openings in gratings and joints shall not permit passage of a sphere more than 0.5 in in diameter. Elongated openings in gratings shall be placed so that the long dimension is perpendicular to the dominant direction of travel.
Pedestrian Access Routes…

R302.7.4 Flangeway Gaps. Flangeway gaps at pedestrian at-grade rail crossings shall be 2.5 in maximum on non-freight rail track and 3 in maximum on freight rail track.

That’s it for pedestrian access routes

Questions?
R304 Curb Ramps and Blended Transitions

R105.5 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.

- **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.

Perpendicular Ramps...
Perpendicular Ramps…

Parallel Ramps…
Parallel Ramps…

Parallel or Perpendicular?

Both
Blended Transitions…

- Blended transitions are raised pedestrian street crossings, depressed corners, or similar connections between pedestrian access routes at the level of the sidewalk and the level of the pedestrian street crossing **that have a grade of 5 percent or less**. Blended transitions are suitable for a range of sidewalk conditions.
Blended Transition…

Perpendicular? Parallel? Blended Transition?

WHO CARES?
Unfortunately, you do!

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

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

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

Turning Spaces

R304.2.1 Turning Space (Perpendicular). A turning space 4.0 ft minimum by 4.0 ft minimum shall be provided at the top of the curb ramp and shall be permitted to overlap other turning spaces and clear spaces. Where the turning space is constrained at the back-of-sidewalk, the turning space shall be 4.0 ft minimum by 5.0 ft minimum. The 5.0 ft dimension shall be provided in the direction of the ramp run.
Turning Spaces

Turning Space?
Turning Space or Landing?
R304.3.1 Turning Space (Parallel). A turning space 4.0 ft minimum by 4.0 ft minimum shall be provided at the bottom of the curb ramp and shall be permitted to overlap other turning spaces and clear spaces. If the turning space is constrained on 2 or more sides, the turning space shall be 4.0 ft minimum by 5.0 ft. The 5.0 ft dimension shall be provided in the direction of the pedestrian street crossing.
There are no turning space requirements for blended transitions.

Must maintain a 4 foot Pedestrian access route.
R304.2.2 Running Slope (Perpendicular). The running slope of the curb ramp shall cut through or shall be built up to the curb at right angles or shall meet the gutter grade break at right angles where the curb is curved. The running slope of the curb ramp shall be 5 percent minimum and 8.3 percent maximum but shall not require the ramp length to exceed 15.0 ft.

Perpendicular Ramp
Running Slope

R304.3.2 Running Slope (Parallel). The running slope of the curb ramp shall be in-line with the direction of sidewalk travel. The running slope of the curb ramp shall be 5 percent minimum and 8.3 percent maximum but shall not require the ramp length to exceed 15.0 ft minimum.

Parallel Ramps
R304.4.1 Running Slope (Blended Transition). The running slope of blended transitions shall be 5 percent maximum.

Blended Transition
If < 5% Slope

Perpendicular Ramp
If > 5% Slope
Flared Sides

R304.2.3 Flared Sides (Perpendicular). Where a pedestrian circulation path crosses the curb ramp, flared sides shall be sloped 10 percent maximum, measured parallel to the curb line.

Advisory R304.2.3 Flared Sides. The flared sides are part of the pedestrian circulation path, but are not part of the pedestrian access route. Curb ramps whose sides have returned curbs provide useful directional cues where they are aligned with the pedestrian street crossing and are protected from cross travel by landscaping, street furniture, chains, fencing, or railings.
Flared Sides...

Do these flares need to be flatter than 10:1?
No. The flairs are not part of the circulation path.

Flared Sides...

Are these required to be returned curbs, i.e., vertical?

?
Flared Sides…

Are flairs even needed?

Flared Sides…

Do these flares need to be flatter than 10:1?

Yes. The flairs are part of the circulation path.
Common Requirements

**R304.5.1 Width.** The width of curb ramps and blended transitions shall comply with 304.5.1.1 or 304.5.1.2, as applicable. If provided, flared sides of curb ramp runs and blended transitions shall be located outside the width of the curb ramp run or blended transition.

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Common Requirements

**R304.5.1.1 Pedestrian Circulation Paths Other Than Shared Use Paths.** In pedestrian circulation paths other than shared use paths, the clear width of curb ramp runs, blended transitions, and turning spaces shall be 4.0 ft minimum.

**R304.5.1.2 Shared Use Paths.** In shared use paths, the width of curb ramps runs and blended transitions shall be equal to the width of the shared use path.
Common Requirements

**R304.5.2 Grade Breaks.** Grade breaks at the top and bottom of curb ramp runs shall be perpendicular to the direction of the ramp run. Grade breaks shall not be permitted on the surface of ramp runs and turning spaces. **Surface slopes that meet at grade breaks shall be flush.**

![Diagram of grade break](image)

Common Requirements

**R304.5.3 Cross Slope.** The cross slope of curb ramps, blended transitions, and turning spaces shall be 2 percent maximum. At pedestrian street crossings without yield or stop control and at midblock pedestrian street crossings, the cross slope shall be permitted to equal the street or highway grade.

![Diagram of cross slope](image)
Common Requirements

**R304.5.4 Counter Slope.** The counter slope of the gutter or street at the foot of curb ramp runs, blended transitions, and turning spaces shall be 5 percent maximum.

This Standard results in a 5.2% Counter Slope.
Common Requirements

R304.5.5 Clear Space. Beyond the bottom grade break, a clear space 4.0 ft minimum by 4.0 ft minimum shall be provided within the width of the pedestrian street crossing and wholly outside the parallel vehicle travel lane.

Detectable Warning Surfaces

R305.1.1 Dome Size. The truncated domes shall have a base diameter of 0.9 in minimum and 1.4 in maximum, a top diameter of 50 percent of the base diameter minimum and 65 percent of the base diameter maximum, and a height of 0.2 in.

R305.1.2 Dome Spacing. The truncated domes shall have a center-to-center spacing of 1.6 in minimum and 2.4 in maximum, and a base-to-base spacing of 0.65 in minimum, measured between the most adjacent domes.

Check the manufacture product information. Make sure they meet ADA Standards.
Detectable Warning Surfaces

Complies with Federal and State requirements

- ADA www.access-board.gov
- ADAAG www.fhwa.dot.gov
- Caltrans compliant per a88a specification www.dot.ca.gov/hq/oppd/access/access.htm
- USDOT www.dot.gov
- FHWA www.fhwa.dot.gov
For full industry standards visit: www.accesstile.com/standards

Check the manufactures product information. Make sure they meet ADA Standards

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Detectable Warning Surfaces

**R305.1.3 Contrast.** Detectable warning surfaces shall contrast visually with adjacent gutter, street or highway, or pedestrian access route surface, either light-on-dark or dark-on-light.

**Lee’s Summit PSP5 - Modification of Section 2300 of the APWA Standard Specifications**

2301.9 Detectable Warnings …

3. Color for all surfaces options shall be ‘brick red’.
Detectable Warning Surfaces

**R305.1.4 Size.** Detectable warning surfaces shall extend 2.0 ft minimum in the direction of pedestrian travel. At curb ramps and blended transitions, detectable warning surfaces shall extend the full width of the ramp run (excluding any flared sides), blended transition, or turning space.

Whoops…
Detectable Warning Surfaces

Advisory R305.2 Placement. Some detectable warning products require a concrete border for proper installation. The concrete border should not exceed 2 in. Where the back of curb edge is tooled to provide a radius, the border dimension should be measured from the end of the radius.

Detectable Warning Surfaces

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

1. Where the ends of the bottom grade break are in front of the back of curb, detectable warning surfaces shall be placed at the back of curb.
Detectable Warning Surfaces

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

2. Where the ends of the bottom grade break are behind the back of curb and the distance from either end of the bottom grade brake to the back of curb is 5.0 ft or less, detectable warning surfaces shall be placed on the ramp run within one dome spacing of the bottom grade break.

3. Where the ends of the bottom grade break are behind the back of curb and the distance from either end of the bottom grade brake to the back of curb is more than 5.0 ft, detectable warning surfaces shall be placed on the lower landing at the back of curb.
Detectable Warning Surfaces

R305.2.2 Parallel Curb Ramps. On parallel curb ramps, detectable warning surfaces shall be placed on the turning space at the flush transition between the street and sidewalk.
Detectable Warning Surfaces

R305.2.3 Blended Transitions. On blended transitions, detectable warning surfaces shall be placed at the back of curb. Where raised pedestrian street crossings, depressed corners, or other level pedestrian street crossings are provided, detectable warning surfaces shall be placed at the flush transition between the street and the sidewalk.

That’s all that’s to it!

Let’s take a look at how are we doing?...
Turning Space…

FAIL!

Turning Space…
Turning Space…

ADA compliance may not equate to pretty!

Running Slopes…
Flared Sides…

Flared Sides…

LEE'S SUMMIT MISSOURI
Flared Sides...

Width...
Cross-Slope…

SIDEBAR!!!

MEASURING GUIDELINES

To Aid in Furnishing Evidence of Completed Remedial Actions to DOJ
SIDEBAR!!!

Curb Ramp

Cross-Slope...
Curb Return…

Curb Return…
Detectable Warning Surface…

LEES SUMMIT
MISSOURI

Detectable Warning Surface…

LEES SUMMIT
MISSOURI
Detectable Warning Surface…

Detectable Warning Surface…
In addition to ADA requirements, sometimes it’s better to think beyond…

Now What?...

Think beyond the existing
Make it Better…

Think beyond the existing

Make it Better…

Think beyond the existing
Make it Better…

Think beyond Minimum Requirements

Lee's Summit, Missouri

Make it Better…

Think beyond Minimum Requirements

Lee's Summit, Missouri
What about this?...
Final Acceptance and Documentation

Perpendicular Ramp

1. Turning Space
2. Running Slope
3. Flared Sides
4. Width
5. Grade Breaks
6. Cross Slope
7. Counter Slope
8. Clear Space
9. Detectable Surface
   1. Domes
   2. Color
   3. Size
   4. Location
Final Acceptance and Documentation

Do We Really Mean It?...

YES!
Mid-Block

Final Acceptance and Documentation

City of Lee's Summit
ADA Curb Ramps Inspection
Mid-Block Crossing Level

City of Lee's Summit
ADA Curb Ramps Inspection
Mid-Block Crossing Record
Corner Ramps

Final Acceptance and Documentation
Questions