ADA Ramp Construction

Department of Public Works
February 5, 2020
Presented by Jason Koch, PE
Greenfield City Engineer
Agenda

• Opening Statements/Welcome
• PROWAG
• Ramp Anatomy
• Traffic Signals
• Pedestrian Maintenance of Traffic
• Summary & Resources
• Question & Answers
Welcome

• The Americans with Disabilities Act was passed by Congress in 1990 and is the civil rights law for individuals with disabilities

• Twenty percent, or 1 in 5, of Indianapolis residents have some sort of disability

• Indianapolis has a tradition of universal inclusion and physical accessibility, as recognized by the National Organization on Disability

• The ADA is a civil rights law
ADAAG vs. PROWAG

- **Americans with Disabilities Act Accessibility Guidelines (ADAAG)**
- **Public Right-Of-Way Accessibility Guidelines (PROWAG)**
ADAAG

• Developed primarily for buildings & on-site facilities starting in 1991
• It does not address all situations, particularly those that are commonly found in the public right-of-way
• The old ABC INDOT ramps (pre-2016) reflect ADAAG standards, the new standards meet PROWAG
PROWAG

• Draft federal guidelines generally more stringent and directive than ADAAG
• Covers pedestrian features in new or altered public rights-of-way
• Considered best practice for ADA issues
• New INDOT Standard Drawings reflect PROWAG standards
  • https://www.in.gov/dot/div/contracts/standards/drawings/sep19/e/600e/e600%20combined%20pdfs/E604-SWCR.pdf
Pedestrian Access Route (PAR)

- The minimum clear width of a curb ramp, landing, or sidewalk, is 4 feet, excluding curb.
- A 3 foot pinch point is not acceptable.
- Avoid obstructions like street furnishings, utilities, vegetation, signs, etc.
- Infrastructure must be a material that is stable, firm, and slip resistant.
Pedestrian Access Route (PAR)

- The standard minimum clear width is 4 feet for INDOT and PROWAG. DPW uses 5 feet minimum, 6 feet against a curb.

- If sidewalks provide less than 4 feet of clearance, a passing area is required every 200 feet.

- Retrofit projects may require using substandard widths for a portion of the project. These require technical analysis by DPW Engineering.
Pedestrian Access Route (PAR)

Common occurrence of a pole in sidewalk. This is not an accessible route.

Combination of control cabinet, brick wall, trash cans, and poles make this route not accessible.
Pedestrian Access Route (PAR)

Creative use of bump-outs, widened sidewalk and retaining curb make these sites accessible.
Pedestrian Access Route (PAR)

- **Vertical Protrusions**
  - Between 27” and 80” vertically from grade, no protrusion > 4” into sidewalk

- **Think:**
  - Gas meters on buildings
  - Sheet signs
  - Vegetation
  - Car/truck mirrors
  - Parking meters
Pedestrian Access Route (PAR)

• The grade (running slope) of the sidewalk may match the adjacent roadway profile grade.
  – Prior rules had sidewalk grades not able to exceed 5%, even if roadway profile was >5%
  – DPW requires a design exception of grade is >5%

• A sidewalk adjacent to a roadway does not require a landing area or handrail, regardless of the roadway grade.
  – Handrails will still be required where drop-off heights warrant handrail.
Ramp Anatomy

- Slopes
- Detecction
- Turning Space & Clear Space
- Drainage Considerations
Ramp Anatomy – Slopes

TYPICAL CURB RAMP COMPONENTS

- Width
- Grade Break
- Turning Space
- Running Slope
- Cross Slope
- Flared Side
- Flare Slope
- Cross Slope
- Counter Slope
- Clear Space
- Curb Flush with Pavement and Gutter Line
- Detectable Warning Surface
- Pedestrian Street Crossing
- Crosswalk Markings
- Return Curb
- Buffer or other non-walkable surface
- Curb (Typ.)
Ramp Anatomy – Slopes

• The maximum cross slope is 2.0%
  – Pro Tip: Have contractor form up with 1.5% cross slopes

• The maximum ramp running slope is 8.3%
  – Pro Tip: Have contractor form up with 7.8% running slopes

• The maximum counter slope is 5.0%
  – Pro Tip: Where the algebraic difference is > 11% between running slope and counter slope, place the 2’ wide truncated domes at 2% at the interface:
Ramp Anatomy – Slopes

Why this is important:

Proper slopes gives people with mobility disabilities access to public spaces without undue hardship.
Ramp Anatomy - Detection

Truncated Domes:
To warn visually impaired pedestrians of the transition between the sidewalk and the roadway

Key Specifications
- Material must comply with INDOT Spec 905.05
- Must be a contrasting color to adjacent sidewalk
- Must be butt up against the curb at street
- 24” wide ribbon in direction of travel
Ramp Anatomy - Detection

- Detectable warnings typically extend to the back of curb.
- If the bottom of a perpendicular ramp is in a radius different rules apply.
  - If both ends of the bottom grade break are within 5 feet of the curb place the warnings perpendicular to the ramp
  - If both ends of the bottom grade break are further than 5 feet from the curb, place the warnings at the back of curb.
Ramp Anatomy - Detection

- Detectable warning elements must extend the full width of the ramp.
  - DPW has started using cast iron detectable warnings elements exclusively for new ramp construction. There may still be some retrofit locations that use composites, but we will not typically be using bricks or unit pavers.
Ramp Anatomy – Detection

Correct:  Incorrect:
Ramp Anatomy - Detection

**Grooves & DPW**

Grooves serve as supplementary detectable warning to street crossing and are not directional guidance.

INDOT does not use grooves, but DPW requires them.
Ramp Anatomy - Detection

- INDOT Construction Memo 13-07 allows the omission of ramp grooves.
- DPW Design Memo 2017.04 requires grooves of this INDOT Construction Memo.
- INDOT has allowed DPW to use grooves on Federal Aid Projects.

INDIANA DEPARTMENT OF TRANSPORTATION
Driving Indiana's Economic Growth

CONSTRUCTION MEMORANDUM
13-07

July 17, 2013

TO: District Deputy Commissioners
    District Construction Directors
    District Technical Service Directors
    District Testing Engineers
    District Area Engineers
    District I.P.A Coordinators
    Field Engineers
    Project Engineers/Supervisors
    Office of Materials Management

FROM: Mark A. Miller, Director
      Division of Construction Management

SUBJECT: Transverse Corrugations in Sidewalk Curb Ramps

Questions have arisen regarding the need for ramp grooves, or transverse corrugations, as shown on the curb ramp standard drawings.

The standard drawing 604-SWCR series includes ramp grooves shown as part of each ramp detail. These grooves were intended to serve as detectable warning elements prior to requiring truncated domes. After truncated domes were incorporated into the 604-SWCR series of the standard drawings, the ramp grooves were considered an enhancement and remained. Ramp grooves or corrugations are not required for a curb ramp to be compliant with the Americans with Disabilities Act (ADA). Effective immediately, ramp grooves may be omitted on curb ramps.

For forthcoming revisions to the 604-SWCR series of the standard drawings will include removing callouts to use the ramp grooves and the groove details. In addition the Standard Specifications section 604.03(e) will be revised to remove corrugations from the ramp surface requirements.

MAM/UR/EP

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Ramp Anatomy - Detection

Incorrect:

- Do not groove the wings
- > 2” spaced grooves
- Grooves in wrong location
Ramp Anatomy - Detection

Correct:

Type G Ramp (far side) and Type H Ramp (near side)
Ramp Anatomy – Turning Space & Clear Space

- A turning space and/or clear space must be provided for directional changes at each ramp
  - Turning space is generally at top of ramped surface – to accommodate change of direction
  - Clear space is generally at bottom of ramped surface to adjust travel direction
  - The minimum dimensions of the landing area are 4 ft x 4 ft. Where the landing area is constrained by a curb or other feature the minimum dimensions are 4 ft x 5 ft, with the 5-ft dimension in the direction of travel
Ramp Anatomy – Turning Space & Clear Space

• **Perpendicular Ramps**
  – Default choice on a DPW project unless impractical

Minimum 4’x4’ turning space at the top

Minimum 5’x4’ turning space at the top (curbed)
Ramp Anatomy – Turning Space & Clear Space

When to use flares vs. curbs

- Flares needed when you are within the “walkable” sidewalk area
- Note the turning space at the top of the ramp
- Curbs can be used adjacent to “non-walkable” areas like landscaping beds or grass
Ramp Anatomy – Turning Space & Clear Space

Better

Incorrect
Ramp Anatomy – Turning Space & Clear Space

Incorrect:

No turning space at the top of the ramp
Parallel ramps would be a better solution

No turning space at the top of the ramp
Hard to turn a wheelchair on a slope
Ramp Anatomy – Turning Space & Clear Space

- **Parallel ramps**
  - Turning spaces and clear spaces are generally at bottom of ramped surfaces

![Diagram of Parallel Curb Ramps](image)

**MIDBLOCK CROSSING CURB RAMP**

**PAIRED PARALLEL CURB RAMPS ALONG LARGE RADIUS**
Ramp Anatomy – Turning Space & Clear Space

• **Parallel ramps**
  – Next choice for DPW projects where perpendicular is not possible

Minimum 5’x4’ landing at the bottom (curbed)
Ramp Anatomy – Turning Space & Clear Space

• **One-way-directional perpendicular**
  
  These do not require a landing area because a change in direction at the top of the ramp is not required
Ramp Anatomy – Turning Space & Clear Space

• **Blended Ramps – Perpendicular**
  
  – Use where individual perpendicular ramps are not possible
Ramp Anatomy – Turning Space & Clear Space

- **Blended Ramps - Parallel**
  - Use where individual parallel ramps are not possible
Drainage & Casting Gaps

Why this is needed:

Ramps are used during and after rainfall. Proper drainage around the ramp will keep people who use the ramp from getting muddy and wet and provide proper traction. Ponding water also freezes in the wintertime.
Drainage & Casting Gaps

• Standing water on a ramp is unacceptable
• Designer should have spot elevations in plans; but designer may have only looked at immediate area – you should check the overall topography
• Possible solutions to consider:
  – New installation of inlets or relocation of existing inlets
  – Warping the pavement to drain away from ramp
  – Adjust ramp location – ONLY if it makes sense
• Discuss possible solutions with PM

*This does not count as a solution.

This design may have worked on paper, but perhaps designer missed the larger drainage shed upstream

Warping pavement or adding inlet may solve this
Drainage & Casting Gaps

• Gaps must be ½” or less
  – Expansion joints
  – Drainage structures
  – Tree grates in the “walkable” sidewalk area
Traffic Signals

Why this is needed:

Where a pedestrian actuated traffic signal exists, the push button must be accessible to all users.
Traffic Signals

Location Standards:

• Not greater than 5’ away from the edge of a ramp and crosswalk

• Between 1.5’ and 6’ from the edge of the curb, shoulder, or pavement (*but no greater than 10’*)

• Face of the pushbutton parallel to the crosswalk to be used

• Mounting height of approximately 3.5’, but no more than 4’, above the sidewalk

• Side reach over an obstruction of no more than 10”
Traffic Signals

Figure R406.2 Unobstructed Forward Reach

Figure R406.3 Unobstructed Side Reach
Traffic Signals
Traffic Signals

Other Considerations:

• Signs shall be mounted adjacent to or integral with pedestrian pushbuttons, explaining their purpose and use.

• The positioning of pedestrian pushbuttons and the legends on the pedestrian pushbutton signs shall clearly indicate which crosswalk signal is actuated by each pedestrian pushbutton.

• When adding new pedestrian pushbutton locations, be sure to coordinate with Nathan Sheets to get them on a list for programming.
Pro Tips: Preliminary Layout

Why this is needed:

In Indianapolis, most new ramps are retrofits to the existing sidewalk network. Picking the appropriate ramp in the appropriate location is critical.

Don’t assume the designer made a field visit.

*It is important for RPR to inspect every contractor layout before it is placed.*
Pro Tips: Preliminary Layout

Considerations:

- Is there a larger than normal amount of pedestrian traffic at this location?
- How tall are your curbs?
- Any existing drainage problems?
- Obstructions?

- Ramp vs. Transition
  - Only difference is the need for detectable warnings
  - Ramps only installed at public street intersections
  - Sidewalk transitions are appropriate for:
    - Public alleys
    - Commercial or residential driveways
Maintenance of Traffic

Why this is needed:

We must guide all pedestrians through the work zone safely through effective closures, alternate routing, and temporary facilities.
Maintenance of Traffic

Incorrect:
Maintenance of Traffic

Considerations:

Not all locations are the same. RPR must be able to decide level of accommodation.

Temporary ramps should always be in place where pedestrians have not been detoured to another accessible location.

Pedestrians should be detoured across the street to another accessible route at controlled intersections.

IMUTCD Part 6:
Maintenance of Traffic

• Pedestrian MOT should be shown in the plans
  – Note crossing locations prior to actual closure
  – Address vertical lip caused by milling/ paving

• Barricades should:
  – Be high visibility colors
  – Be detectible by cane
  – Shield both work area and roadway
## Maintenance of Traffic

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<td>Channelizing Devices, Barricades, TTB as Channelizing Devices, Longitudinal Channelizing Devices</td>
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Summary

• Inspectors must continue the effort to have compliant accessible infrastructure built.
• This includes ramps, sidewalks and traffic signal components.
• Pedestrian maintenance of traffic is becoming more and more of an issue.
• If the plans are insufficient, RPRs must fill the gap.
  – Get additional survey if needed
  – Use DPW managers to re-engage the designers
  – Use the Office of Disability Affairs if needed
  – Make the water flow downhill
• Take ownership of your project
Resources

• **INDOT Standard Drawings:**
  [http://www.in.gov/dot/div/contracts/standards/drawings/sep13/e/600e/e600%20combined%20pdfs/E604-SWCR.pdf](http://www.in.gov/dot/div/contracts/standards/drawings/sep13/e/600e/e600%20combined%20pdfs/E604-SWCR.pdf)

• **United States Access Board:**

• **Manual of Uniform Traffic Control Devices:**

• **Department of Public Works:**
Questions?

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