Project Scoping and Design Requirements

SCREEN READABLE VERSION IS IN THE MAKING AND WILL BE MADE AVAILABLE SOON

Spring, 2018
Scoping Overview

- General Scoping Requirements
- MnDOT Project Scoping Requirements
  - MnDOT Scoping Process
  - MnDOT ADA Standards
    - Minimums & Maximums
    - Preferred Metrics and Guidance
    - Comparing MnDOT & PROWAG
- Example Project:
  - TH 95 in Bayport
  - Missed Opportunities
  - TH 14 in Sleepy Eye
  - TH 51 Snelling
General Scoping Requirements

Which of the following project types require the provision of accessible curb ramps, per the Americans with Disabilities Act?

- New Construction
- Reconstruction
- Preservation (Alteration) Projects
- Preventative Maintenance Projects
General Scoping Requirements

Preservation (Alteration) Projects

• Trigger the Alterations Threshold

• Locally Owned Facilities in MnDOT ROW must be updated to MnDOT Standards if Alterations Threshold is met

Preventative Maintenance Projects

• Generally DO NOT require Accessibility improvements

• The combination of two or more maintenance treatments may rise to the level of being an alteration, thereby requiring the inclusion of accessible features
General Scoping Requirements

**Pavement Treatment Types**
(Maintenance vs. Alteration)

### Maintenance

- Chip Seals
- Crack Filling and Sealing
- Diamond Grinding
- Dowel Bar Retrofit
- Fog Seals
- Joint Crack Seals
- Joint repairs
- Pavement Patching
- Scrub Sealing
- Slurry Seals
- Spot High-Friction Treatments
- Surface Sealing

### Alteration

- Addition of New Layer of Asphalt
- Cape Seals
- Hot In-Place Recycling
- Microsurfacing / Thin-Lift Overlay
- Mill & Fill / Mill & Overlay
- New Construction
- Open-graded Surface Course
- Rehabilitation and Reconstruction
General Scoping Requirements

Additional MnDOT Bridge Thresholds

• Preventative Maintenance Projects
  – Bridge Substructure Activities
  – Bridge Superstructure Preservation (Concrete and Steel)
    • Painting
    • Bearing Rehab/Replacement
    • Barrier/Guardrail/Railing Restoration

• Preservation (Alteration) Projects
  – Bridge Deck Overlays – Bridges are roadways for purposes of ADA
  – Bridge Expansion Joint Replacement if potentially impacting adjacent curb ramp
  – Bridge Sidewalk Repairs if Bridge Deck Repairs are part of project
STOP. WAIT…

The ADA only requires *curb ramp* improvements when the threshold is met.

WHAT?

DOES THIS MAKE SENSE?

What about the rest of the infrastructure?
General Scoping Requirements

If minimum requirements drive your project scope, you will end up in a perpetual loop of short-term fixes.

Consider the value in expanding a project’s scope to provide a long-term or permanently accessible solution.

- Improve the Sidewalks/Trails
- Improve Driveways
- Provide APS and APS-Readiness
- Improve crosswalks
Consider the following major goals:

- Providing a system of accessible infrastructure
- Limiting liability (from injuries and discrimination)

Both goals can be achieved by looking for improvement opportunities within roadway projects:

- Opportunities are identified in the Scoping phase
- Look for value in relatively minor Scope additions
- An “added” project expense pays off long-term
General

Curb cuts, sidewalks, APS replacement/readiness SHALL be scoped, designed, and constructed prior to, or at the same time as, the project roadway improvement

Applies to all:

- New construction
- Reconstruction
- Alteration projects
General

When site conditions restrict construction or alteration of the facility to PROWAG minimums:

- PM, design engineer, ADA unit must concur in providing accommodation to the maximum extent feasible
- Document all facilities not meeting minimum requirements
General

All MnDOT projects with pedestrian facilities shall be scoped and designed for a minimum 20-year lifecycle that meets ADA standards and are:

- Constructible
  - Including Tolerances
- Maintainable
  - Maintenance Access Routes
  - Snow Storage
- Usable – for the range of users
# MnDOT ADA Standards

All designs need to be ADA compliant and follow the ADA Standards unless all alternatives have been explored and the results have been documented. While ADA compliance is the minimum standard that must be met, in order to meet the long term objectives, all designs must also be constructable, maintainable, and address the range of pedestrian user needs. The ADA Standards were created to implement best practices and incorporate lessons learned in a manner that provides construction tolerances and meets the long term maintenance and usability needs.

## Curb Ramp Design Criteria

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MIN</th>
<th>MAX</th>
<th>STANDARD</th>
<th>REASON</th>
<th>GUIDANCE</th>
</tr>
</thead>
</table>
| LANDING | 4' X 4' | Varies | 5' X 5' | C & U | 1) Match Pedestrian Access Routes (PAR).  
2) Enlarge landings to achieve perpendicular grade breaks.  
3) Landings should be designed in one continuous plane. |
| RAMP SLOPE | (F) 2.0% | 5.0% | 4.0% | C, M & U | 1) Maintains drainage in gutter.  
2) Blend in better with surrounding terrain.  
3) Reduce removal limits while minimizing v-curb.  
4) For (F) fans, see Curb Ramp Standard Plans S-297.250 Pg 1 of 6 Note 10. |
| (S) 5.0% | 8.3% | 7.0% | C, M & U | 1) Maintains drainage in gutter.  
2) Blend in better with surrounding terrain.  
3) Reduce removal limits while minimizing v-curb.  
4) For (F) fans, see Curb Ramp Standard Plans S-297.250 Pg 1 of 6 Note 10. |
| (F) 2.0% | 5.0% | 4.0% | C, M & U | 1) Maintains drainage in gutter.  
2) Blend in better with surrounding terrain.  
3) Reduce removal limits while minimizing v-curb.  
4) For (F) fans, see Curb Ramp Standard Plans S-297.250 Pg 1 of 6 Note 10. |

Once you have reached the 3" min curb height, the curb height should match PAR height. Show intermediate curb heights when (A) landing elevations are less than the typical curb section or (B) Boulevards are less than 3 feet at the curb ramp or (C) when sidewalk is at back of curb. Avoid inverse sloped boulevards and keep landing above or within an inch of the top of curb to reduce trip hazards. Using an appropriate ramp slope helps maintain the PAR height and provides a very usable pedestrian network, in addition to the guidance seen above.

## Ramp Width

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MIN</th>
<th>MAX</th>
<th>STANDARD</th>
<th>REASON</th>
<th>GUIDANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>4'</td>
<td>Varies</td>
<td>6' min</td>
<td>6' min Commercial Area Match Trail Width</td>
<td>M &amp; U</td>
<td>Match PARs.</td>
</tr>
</tbody>
</table>

## Ramp Length

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MIN</th>
<th>MAX</th>
<th>STANDARD</th>
<th>REASON</th>
<th>GUIDANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3'</td>
<td>15'</td>
<td>4' min</td>
<td>6' max</td>
<td>C &amp; U</td>
<td>Construction can build a minimum 2.5' ramp if necessary.</td>
</tr>
</tbody>
</table>

## Landing & Ramp Cross Slope

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MIN</th>
<th>MAX</th>
<th>STANDARD</th>
<th>REASON</th>
<th>GUIDANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>POSITIVE FLOW</td>
<td>2.0%</td>
<td>1.0% min</td>
<td>1.5% max</td>
<td>C</td>
<td>Steep trails and side landings use 0.5% cross slope.</td>
</tr>
</tbody>
</table>

## Gutter Flowline

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MIN</th>
<th>MAX</th>
<th>STANDARD</th>
<th>REASON</th>
<th>GUIDANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>POSITIVE FLOW</td>
<td>2.0%</td>
<td>1.0% min</td>
<td>1.5% max</td>
<td>C</td>
<td>Maintain positive drainage, flowline with radial domes should have a continuous grade, show tabling of curb and gutter with adequate construction limits if existing flowline is over 3%. If 2-3%, state designer intent to obtain &lt;3% with note on plan.</td>
</tr>
</tbody>
</table>

## Roadway Cross Slope

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MIN</th>
<th>MAX</th>
<th>STANDARD</th>
<th>REASON</th>
<th>GUIDANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>POSITIVE FLOW</td>
<td>5.0%</td>
<td>1.0% min</td>
<td>5.0% max</td>
<td>C &amp; U</td>
<td>Used when adjusting flowline, maintain positive drainage to edge of road and do not exceed 5%.</td>
</tr>
</tbody>
</table>

(1) Design to the nearest minimum half foot increment, one-foot increment (preferred) for all ADA and APS Applications.  
(2) When inverse grades are present, minimize the elevation change of the PAR unless proven necessary to maintain drainage.  
(3) With regards to curb grading, see Curb Ramp Standard Plans S-297.250 Pg 1 of 6 Note 7. Talk with property/land owners to find out which treatment they would prefer.  
(4) With regards to multiple ramp designs at a quadrant, see Curb Ramp Standard Plans S-297.250 Pg 2 of 6 Note 4. The "bump" typically happens when ramp separation is minimal on a combined directional and no (or narrow) boulevard is present. In these instances, a Fan/Depressed Corner will alleviate this problem and provide better maintainability and usability. 7 min. separation between ramps should be achieved in areas with concrete boulevards while 5.5' min. separation applies for areas with grass boulevards.  
(5) Flowlines need a 2' minimum freeboard to doorways. (2' below threshold i.e. depressed corners must not be used when adjacent to corner doorways at buildings).  

* C for Constructability, M for Maintainability, U for Usability.
# MnDOT ADA Standards

## APS Design Criteria

<table>
<thead>
<tr>
<th>Item</th>
<th>Min</th>
<th>Max</th>
<th>Standard</th>
<th>Reason*</th>
<th>Guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Push Button Station Setback</td>
<td>1.5</td>
<td>10'</td>
<td>4' MIN URBAN, 6'-8' MIN RURAL, 9.5' MAX</td>
<td>M</td>
<td>Push button setback measured from the back of curb (urban) or edge of roadway (rural) at outside zero point.</td>
</tr>
<tr>
<td>Push Button from Initial Ramp Grade Break or Back of Walk</td>
<td>0.75</td>
<td>-</td>
<td>2' MIN</td>
<td>C &amp; U</td>
<td>Place push button 2' min from edge of landing to provide usable push button access. 6' MAR takes priority over this criteria.</td>
</tr>
<tr>
<td>Maintenance Access Route (MAR)</td>
<td></td>
<td>-</td>
<td></td>
<td>M &amp; U</td>
<td>Move push button to back of landing when 6'/MAR cannot be achieved. Talk with local agencies to understand their snow and ice maintenance requirement widths.</td>
</tr>
<tr>
<td>Push Button Offset from Outside Edge of Crosswalk</td>
<td>0</td>
<td>5'</td>
<td></td>
<td>U</td>
<td>When the push button is offset from the edge of crosswalk a walkable flare is preferred over 2 graded flare so users who depart from the push button will traverse a concrete surface. Distance is measured perpendicularly from extension of crosswalk.</td>
</tr>
<tr>
<td>Push Button Separation</td>
<td>10'</td>
<td>-</td>
<td>10.5' MIN</td>
<td>C</td>
<td>Must meet minimum MAR criteria at pork chop islands.</td>
</tr>
</tbody>
</table>

*C for Constructability, M for Maintainability, U for Usability.

1. A levelled landing shall be adjacent to all push buttons.
2. Keep all push buttons outside of sidewalk PARs. Push buttons shall not be in the middle of shared-use paths. Allowable push button encroachment: 2' on 10' wide trails and 1' on 8' wide trails if needed.
3. When sidewalk is at the back of curb, the push button should be placed toward the back of walk. Typically placed at 8' - 9.5' from the back of curb.
4. When installing new signal poles, it is preferred to get them out of the way so as to not obstruct the pedestrian facilities. When in congested quadrants (i.e. downtown corridors), APS push buttons on signal poles are preferred although new signal poles need thorough underground utility coordination.
# MnDOT ADA Standards

## Sidewalk Design Criteria

<table>
<thead>
<tr>
<th>Item</th>
<th>MIN</th>
<th>MAX</th>
<th>Standard</th>
<th>Reason*</th>
<th>Guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landing</td>
<td>5' x 5'</td>
<td>VARIES</td>
<td>-</td>
<td>C &amp; U MATCH PARs, enlarge landings to achieve perpendicular grade breaks.</td>
<td></td>
</tr>
<tr>
<td>Sidewalk Cross Slope</td>
<td>POSITIVE FLOW</td>
<td>2.0%</td>
<td>1.8% MAX 1.0% MIN</td>
<td>C</td>
<td>For steep sidewalk running slopes greater than 5%, flatter cross-slopes should be used 0.8% typical.</td>
</tr>
<tr>
<td>Sidewalk Running Slope</td>
<td>5.0%</td>
<td>VARIES</td>
<td>-</td>
<td>C, M &amp; U</td>
<td>For sidewalk running slopes, the max. running slope is 5% (unless roadway grade is steeper).</td>
</tr>
<tr>
<td>Sidewalk Ramp Slope</td>
<td>5.0%</td>
<td>0.3%</td>
<td>7.0%</td>
<td>C, M &amp; U</td>
<td>Only for sidewalk not adjacent to roadway. A landing is needed for every 30° of vertical rise with compliant handrails on both sides of ramp. For building access, ramp slopes are 5% max. unless covered.</td>
</tr>
<tr>
<td>Sidewalk Offset and Taper</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>M &amp; U</td>
<td>Maximum offset is 1/2 the width of the ramp. On Curb ramp retrofit projects the min. sidewalk taper is 1:12 with 1:5 being preferred. However the min. taper for sidewalk reconstruction projects is 1:10.</td>
</tr>
<tr>
<td>Sidewalk Width</td>
<td>5'</td>
<td>VARIES</td>
<td>-</td>
<td>M &amp; U</td>
<td>1) Based on context and volume of users. 2) Talk with local partners to understand snow and ice maintenance requirements. 3) Recommend 10' min measured from back of curb for commercial areas with doorways at back of walk.</td>
</tr>
<tr>
<td>Sidewalk Width at Back of Curb (Non-Commercial Areas)</td>
<td>5'-6'</td>
<td>VARIES</td>
<td>6' MIN 8' PREFERRED</td>
<td>M &amp; U</td>
<td>The sidewalk minimums of 5'-6' should only be used if there are no driveway, lighting or sign impacts present with in the sidewalk.</td>
</tr>
<tr>
<td>Sidewalk Paved Boulevard Slope</td>
<td>POSITIVE FLOW</td>
<td>8%</td>
<td>1.0% MIN 5.0% MAX</td>
<td>M &amp; U</td>
<td>Slopes greater than 8% can become tripping hazards for user traversing the curb and sloped boulevard. Adjust centerline road profile or flatten the shoulder/parking lane to raise the curb line to achieve desired boulevard slope.</td>
</tr>
<tr>
<td>Paved Boulevard Width</td>
<td>3' MIN</td>
<td>-</td>
<td>1/2 BLVD WIDTH TO 1/3 PAR WIDTH</td>
<td>M &amp; U</td>
<td>For example a 3' sidewalk at a min. should have 6' wide par with a 1' wide boulevard.</td>
</tr>
<tr>
<td>Grass Boulevard Width</td>
<td>3' MIN</td>
<td>-</td>
<td>4' FOR 4' HIGH CURB 6' FOR 6' HIGH CURB</td>
<td>M &amp; U</td>
<td>When the boulevard width is less than 3', it should be paved.</td>
</tr>
<tr>
<td>Par Width</td>
<td>4' MIN</td>
<td>VARIES</td>
<td>6' MIN ADJ. TO BUILDINGS 2/3 PAR MIN TO 1/3 BLVD</td>
<td>M &amp; U</td>
<td>PAR width adjacent to buildings should be 6' min. to allow for a 1' buffer to the building and doorways. The 6' min. PAR takes priority over 2/3 PAR width to 1/3 boulevard criteria.</td>
</tr>
</tbody>
</table>

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# MnDOT ADA Standards

## Driveway Design Criteria

<table>
<thead>
<tr>
<th>Item</th>
<th>Min</th>
<th>Max</th>
<th>Standard</th>
<th>Reason*</th>
<th>Guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apron Length</td>
<td>18&quot;</td>
<td>-</td>
<td>6' for 0' curb height, 4' for 4' curb height</td>
<td>U</td>
<td>Add one foot of driveway apron length for every inch of designed curb height if Right-of-Way (ROW) allows.</td>
</tr>
<tr>
<td>Commercial Apron Slope</td>
<td></td>
<td></td>
<td>1.0%</td>
<td>1.0% Min 8.0% Max</td>
<td>U Design adequate slope for PAR to match designed curb height, maintain consistent PAR elevation and limit the sidewalk roller coaster effect.</td>
</tr>
<tr>
<td>Residential Apron Slope</td>
<td></td>
<td></td>
<td>1.2%</td>
<td>U</td>
<td></td>
</tr>
<tr>
<td>PAR Height (0° C&amp;G)</td>
<td>0°</td>
<td>6&quot;</td>
<td>1’ Min, 4’ Preferred</td>
<td>M &amp; U</td>
<td>1) Minimize sidewalk roller coaster effect. 2) Desirable to keep PAR elevation continues or at least in the upper half of curb height. 3) Do not introduce unnecessary elevation changes into the PAR. 4) Standard criteria do not apply to parallel driveway. Recommend to not have consecutive parallel driveway in a series.</td>
</tr>
<tr>
<td>PAR Height (4° C&amp;G)</td>
<td>0°</td>
<td>4&quot;</td>
<td>2’ Min, 4’ Preferred</td>
<td>M &amp; U</td>
<td></td>
</tr>
<tr>
<td>PAR Cross Slope</td>
<td>0.5%</td>
<td>2.0%</td>
<td>1.0% Min 1.5% Max</td>
<td>C, M &amp; U</td>
<td></td>
</tr>
<tr>
<td>Sidewalk Running Slope (PAR) at Driveway Transitions</td>
<td>2.0%</td>
<td>5.0%</td>
<td>4.0% Max</td>
<td>C, M &amp; U</td>
<td>Can match roadway slope if roadway profile is &gt;5%</td>
</tr>
<tr>
<td>Pedestrian Access Route (PAR)</td>
<td>4</td>
<td>Varies</td>
<td>5’ Min</td>
<td>C &amp; U</td>
<td>Preferred to match sidewalk/brail widths</td>
</tr>
<tr>
<td>Back of Curb Height at Driveway Apron</td>
<td>2'</td>
<td>3'</td>
<td>1'</td>
<td>M &amp; U</td>
<td>1) Refer to Sidewalk &amp; Driveway Standard Plan 5-239.254. 2) DW Curb Type 2 can be used to maintain drainage in gutter flowline at negative driveways. 4' curb height is preferred in sidewalk fill areas and in areas adjacent to negative driveways sloping downward from the roadway. 3) Only use DW Curb Type 2 with garage doors at back of walk or minor usage driveways like railroad access along tracks.</td>
</tr>
</tbody>
</table>

*C for Constructability, M for Maintainability, U for Usability.
## Crosswalk

*Uncontrolled and signalized intersections

**Uncontrolled or signalized

<table>
<thead>
<tr>
<th>Walkway Location &amp; Function</th>
<th>Desirable Grade</th>
<th>Maximum Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Running</td>
<td>Cross</td>
</tr>
<tr>
<td>Crosswalk with YIELD or STOP sign</td>
<td>&lt;5% or max. extent feasible</td>
<td>&lt;1.5% or max. extent feasible</td>
</tr>
<tr>
<td>Crosswalk without YIELD or STOP sign*</td>
<td>&lt;5% or max. extent feasible</td>
<td>&lt;1.5% or max. extent feasible</td>
</tr>
<tr>
<td>Midblock crossing**</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>
Crosswalk Reconstruct

Eliminating crown with milling operations would have adversely reduced pavement thickness at center.

Reconstructed crosswalk to taper from crowned section on approach road to full superelevation matching highway profile before crosswalk.

Result: crosswalk running slope < 5%
Bridge Overpass & Crosswalk Design

- Use 5% max. outflow gutter
- Remove curb box
- Extend curb taper to eliminate reverse grade boulevard
- Match centerline profile grade through crosswalk

Centerline Profile

5% Match C Profile
2% (Before)
Bridge Overpass & Crosswalk Design

- Mainline: typical cross slope from centerline to point of curvature (PC)
- Hwy ramp: typical cross slope from centerline to point of tangent (PT) on entrance ramp
- Same difference in elevations at centerline is made up through inside radius at flowline
Extend curb taper to eliminate reverse grade boulevard

(S) Ramp with 5% max. output gutter

Table crosswalk 2% Max.
Crosswalk Reconstruct

BEFORE
**Crosswalk Reconstruct**

**AFTER**

Proposed to build roadway at 2% from centerline to outside edge of crosswalk.

To reduce profile grade of the roadway approach, field call increased crosswalk slope to 5%.
Crosswalk Reconstruct

Could have extended removals on the south side to table crosswalk and swapped the 1.3% existing section with the 5% section through the crosswalk.
Crosswalk Reconstruct

Extending removals and raising flowline elevations into the adjacent driveway could have improved/reduced the 10.5% apron slope.
Differences between PROWAG and MnDOT

Pedestrian Access Route (PAR) Width
- PROWAG: 4’ Min (Must provide 5’x5’ passing spaces every 200’ if width <5’)
- MnDOT: 5’ Min

Rail Road Flangeway Gap
- PROWAG: 2.5” Max (Non-Freight Rail) and 3” Max (Freight Rail)
- MnDOT: Did not adopt this PROWAG requirement (conflicts with available products and industry standards)

Detectable Warning Setback at Rail Road Crossings
- PROWAG - 6’-15’ from nearest rail
- MnDOT – 12’ – 15’ at freight rail, AREMA minimum standards

Roundabouts & Multi-Lane Free-Right Turn Guidance
- MnDOT excluded PROWAG’s Signalization requirements (more study needed)
ADA Design Overview

- Levels of ADA Design
- ADA Plan Review Checklists
- ADA Design Memo
- ADA Pay Items
- PAR Alignment and Profile
Levels of ADA Design – Level 1
Curb Ramps

- Curb ramps typically built with the ADA standard plans
- ADA quantities are in tabulations only
- No control points
- Typically used in residential areas with grass boulevards
Levels of ADA Design – Level 1
Curb Ramps

<table>
<thead>
<tr>
<th>CROSS STREET</th>
<th>CORNER LOC.</th>
<th>STATION</th>
<th>LOC.</th>
<th>REMOVE CONCRETE WALK</th>
<th>REMOVE CURB BOX</th>
<th>MILL &amp; PATCH BITUMINOUS PAVEMENT</th>
<th>DRILL AND GROUT REINF BAR (EPOXY COATED)</th>
<th>CONCRETE WALK</th>
<th>CONCRETE CURB AND GUTTER</th>
<th>TRUNCATED DOMES</th>
<th>SITE RESTORATION</th>
<th>RAMP TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SQ FT</td>
<td>EACH</td>
<td>LIN FT</td>
<td>EACH</td>
<td>SQ FT</td>
<td>LIN FT</td>
<td>SQ FT</td>
<td>SQ FT</td>
<td>RADIUS</td>
</tr>
<tr>
<td>36TH AVE EAST</td>
<td>N</td>
<td>48+12.425</td>
<td>LT</td>
<td>110</td>
<td>39</td>
<td>8</td>
<td>150</td>
<td>30</td>
<td>10</td>
<td>10</td>
<td>1</td>
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<tr>
<td></td>
<td>S</td>
<td>47+72.093</td>
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<td>50</td>
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<td>6</td>
<td>155</td>
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<td>W</td>
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<td>90</td>
<td>34</td>
<td>8</td>
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Levels of ADA Design – Level 1
Curb Ramps

RIGHT OF WAY TABULATIONS

<table>
<thead>
<tr>
<th>CROSS STREET</th>
<th>REFERENCE POINT</th>
<th>CORNER LOCATION</th>
<th>TEMPORARY EASEMENT DIMENSIONS MEASURED FROM (1) &amp; (2)</th>
<th>REMARKS</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>T.H. 1</td>
<td>SW</td>
<td>20 10 40 5 5</td>
<td>PROTECT SIGN</td>
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<td>5TH ST S</td>
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<td>30 5 40 10</td>
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<td>00.217</td>
<td>NW</td>
<td>20 10 50 5 5</td>
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<tr>
<td>4TH ST S</td>
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<td>SW</td>
<td>20 5 30 15</td>
<td>PROTECT INPLACE RETAINING WALL</td>
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<td></td>
<td>00.280</td>
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<tr>
<td>2ND ST S</td>
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<td>SW</td>
<td>45 5 20 5</td>
<td>CLEAN CUT SPRINKLER &amp; CAP ABOVE GROUND</td>
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<tr>
<td>(C)</td>
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<td>NE</td>
<td>30 5 30 3</td>
<td>HOMEOWNER WILL REPLACE LANDSCAPING</td>
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<td>CO RD 34</td>
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<td>40 5 35 5</td>
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<td></td>
<td>00.455</td>
<td>NE</td>
<td>30 5 30 5</td>
<td></td>
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</table>

1 WHEN INTERSECTING WALK IS PRESENT
2 WHEN NO INTERSECTING WALK IS PRESENT
Levels of ADA Design – Level 2
Curb Ramps

- Complicated ADA designs that differ from the ADA standard plans
- One X,Y control point needed per outside edge of curb ramp
- 20’ scale ADA detail sheet
- ADA Standard Legend
- Signalized intersections are always Level 2 designs at a minimum
Levels of ADA Design – Level 2
Curb Ramps

ADA Standard Legend required for all level 2 and 3 ADA designs
Levels of ADA Design – Level 2
Curb Ramps
Levels of ADA Design – Level 3
Curb Ramps

• Complicated designs that are vertically constrained (i.e. doorway or step/alcove tie-ins)
• Existing 3% or greater curb ramp flow line
• Significant horizontal or vertical changes to the existing curb line
• X,Y,Z’s needed around the radius at gutter flowline
• One X,Y,Z per initial landing
• One X,Y,Z per vertical constraint
• Designer Intent (contractor friendly terms)
• Steep topography
Levels of ADA Design – Level 3
Curb Ramps

MATCH LANDING TO BOTTOM
OF EXISTING STEP

BUILDING
Levels of ADA Design – Level 3
Curb Ramps

Pork chops and medians are considered level 3 designs.
Levels of ADA Design – Level 3
Curb Ramps

ADA design calculations are required for all level 3 quadrants. They are not to be included in the plan set but are helpful for the ADA reviewers (see ADA Plan Review Checklist) and may be sent to construction as supplemental sheets.
Levels of ADA Design – Level 3
Curb Ramps
Levels of ADA Design – Level 1

Sidewalks

- Sidewalk quantities are shown in tabulations only
- No control points or sidewalk plan sheets needed
- Sidewalks built with typical sections
Levels of ADA Design – Level 2

Sidewalks

• Horizontal changes of existing sidewalk alignment
  – Sidewalk width changes including sidewalk taper sections
• 20’-50’ scale construction plan sheet
Levels of ADA Design – Level 3

Sidewalks
Levels of ADA Design – Level 3 Sidewalks

- Complicated designs that are vertically constrained (i.e. doorway or alcove tie-ins)
- Sidewalk profiles are required when a broken boulevard is used. (Typ. Downtown corridors)
- Curb and gutter profiles or super elevation sheets are used in conjunction with the sidewalk profiles
- One X,Y,Z and designer intent description per vertical constraint included on the 20’-30’ scale sidewalk plan sheet
- Label paved boulevards slopes greater than 5% at any doorway cross-section
Levels of ADA Design – Level 3

Sidewalks
Survey Accuracy within 0.10’ horizontal and 0.05’ vertical shall be used for all Level 2 and 3 designs.
# ADA Plan Review Checklist #1

## CURB RAMPS

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Guide</th>
<th>L 1</th>
<th>L 2</th>
<th>L 3</th>
<th>Comment (if not checked)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Followed <a href="#">ADA Project Design Guide</a> (PDG) and <a href="#">Curb Ramp Guidelines</a></td>
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<td><img src="" alt=" " /></td>
<td><img src="" alt=" " /></td>
<td><img src="" alt=" " /></td>
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</tr>
<tr>
<td>2</td>
<td>Followed <a href="#">preferred Curb Ramp Design</a>, <a href="#">APS Design</a>, <a href="#">Sidewalk Design</a>, and <a href="#">Driveway Design Criteria</a></td>
<td></td>
<td><img src="" alt=" " /></td>
<td><img src="" alt=" " /></td>
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<tr>
<td>3</td>
<td>Utilized <a href="#">ADA Standard Legend</a></td>
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<tr>
<td>4</td>
<td>Show MnDOT and local agencies (city/county) Right-of-Way</td>
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<td><img src="" alt=" " /></td>
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<tr>
<td>5</td>
<td>All Surface Utilities (Shown + Field Verified)</td>
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<td><img src="" alt=" " /></td>
<td><img src="" alt=" " /></td>
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<td>6</td>
<td>20' (preferred) or 30' scale ADA details to fit an entire intersection on ONE sheet</td>
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<td><img src="" alt=" " /></td>
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<td>7</td>
<td>Determine Crossing Locations. Conferr with <a href="#">Pedestrian Crossing Facilitation tech memo</a></td>
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<td>Pick Curb Ramp Types</td>
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<td><img src="" alt=" " /></td>
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<tr>
<td>9</td>
<td>Existing flowlines from 2-3% need a construction note stating to table the flowline to less than 2% either on the Tabs for level 1's or on the ADA details for 2 and 3's.</td>
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### ADA Plan Review Checklist #1

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<th>No.</th>
<th>Description</th>
<th>Status</th>
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<td>10</td>
<td>Existing flow line's over 3% need to be labeled &amp; include X, Y, Z or profile that brings the flow line to compliance</td>
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<tr>
<td>11</td>
<td>Show Crosswalk and Push Button Locations, including push button table from <a href="#">Signal Guidance</a>.</td>
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<tr>
<td>12</td>
<td>For APS pushbuttons located on signal poles, include the APS Pole Mounting Adaptor with a note in the signal plans</td>
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<tr>
<td>13</td>
<td>For APS pushbuttons located on existing pedestals, ensure 3 saddle adaptors are labeled in the Plan for each pedestal</td>
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</tr>
<tr>
<td>14</td>
<td>Designer Intent (Contractor Friendly Terms) and X, Y, Z needed for all vertically constrained tie-ins</td>
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<tr>
<td>15</td>
<td>Specify all non-compliant components to nearest foot and whole percent (slopes and ramp lengths)</td>
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</tr>
<tr>
<td>16</td>
<td>Directional curb shown properly (built integral with the curb and gutter)</td>
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<tr>
<td>17</td>
<td>Curb removals at least 5' – 10' away from outside edge of ramps. Sidewalk removals at least 10' – 15' from initial landings with transition panel tie-in.</td>
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## ADA Plan Review Checklist #1

<table>
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<tr>
<th>SIDEWALK</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
<th>Comment (if not checked)</th>
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<tr>
<td>19 Preliminary Sidewalk Profile</td>
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<tr>
<td>20 Preliminary Curb &amp; Gutter Profile</td>
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<tr>
<td>21 Doorway Details (tie-in)</td>
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<td>![ ]</td>
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<td>![ ]</td>
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<tr>
<td>23 Driveway Table for Establishing Construction Limits</td>
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<td>![ ]</td>
<td>![ ]</td>
<td>![ ]</td>
</tr>
<tr>
<td>24 All Surface Utilities Shown on Sidewalk Plan Sheets (Proposed &amp; Existing)</td>
<td>![ ]</td>
<td>![ ]</td>
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<tr>
<td>25 20' - 50' Scale Construction Plan Sheets showing sidewalk work limits.</td>
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<td>![ ]</td>
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<tr>
<td>26 20' - 30' Scale Sidewalk Plan Sheets showing half/full block depending on complexity incl. curb ramps on each end.</td>
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*Click here to submit to MnDOT Operations-ADA*
## ADA Plan Review Checklist #2

### CURB RAMPS

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<th>L 3</th>
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<td>CHECK ALL ADA PAY ITEMS BEING USED</td>
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<td>ADA Concrete Walk</td>
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<td></td>
<td>ADA Concrete Curb &amp; Gutter</td>
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<td></td>
<td>Mill and Patch Bituminous Pavement</td>
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<td>Remove and Replace Bituminous Pavement</td>
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<td>Site Restoration</td>
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<td></td>
<td>Drill and Grout Reinforcement Bars</td>
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<tr>
<td>2</td>
<td>Radial Domes are used whenever the domes are placed at the back of curb (label radius). These radial domes must be tabbed out separately from the rectangular domes</td>
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<td>Typical Sections Shown in Plan</td>
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<td>4</td>
<td>Note for all initial Landings to be poured separately, language matching the ADA special provisions from 1803 (requires Drill &amp; Grout Reinf Bars)</td>
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# ADA Plan Review Checklist #2

<table>
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<th>Standard Plates, Standard Plans</th>
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<tr>
<td>7</td>
<td>Show Striping or Outline of Striping on ADA Detail Sheet</td>
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<tr>
<td>8</td>
<td>X, Y for Push Buttons Stations, New Signal Poles, and Zero Height Curb</td>
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<tr>
<td>9</td>
<td>Survey control/Datum shown in Plan</td>
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<tr>
<td>10</td>
<td>X, Y, Z or radius and profile for all Curb &amp; Gutter modifications</td>
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<tr>
<td>11</td>
<td>Landscape/Construction Plans show a compliant joint detail</td>
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<tr>
<td>12</td>
<td>ADA Design Calculation</td>
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**SIDEWALK**

<table>
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<tr>
<th></th>
<th>Final Sidewalk Profile</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
<th>Comment (if not checked)</th>
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<tbody>
<tr>
<td>13</td>
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<tr>
<td>14</td>
<td>Final Curb &amp; Gutter Profile</td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Click here to submit to MnDOT Operations-ADA]
### ADA Design Memo

**Guidance on filling out the memo is available at**

### ADA Design Memo

<table>
<thead>
<tr>
<th>Number of Quadrants (no APS)</th>
<th>Number of Quadrants (with APS/PB)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sidewalk/Trail Work on MnDOT Right-of-Way?**
- [ ] Yes
- [ ] No

*Click here for sidewalk/driveway measurement method.*

**NOTE: Sidewalk work does not include 6” walk that is part of curb ramps**

**Any ADA-governed (curb ramps, sidewalks, driveways, etc) facilities work deferral?**
- [ ] Yes
- [ ] No

#### Number of Non-compliant Curb Ramps
- Ramp slope > 8.3%:
- Landing slope > 2.0%:
- Pedestrian Access Route (PAR) is less than 4 ft:

#### Number of Non-Compliant Curb Ramps due to Roadway
- Inslope/Crosswalk Slope > 5%:
- Flowline Grade > 2%

#### Number of Curb Ramps w/ Existing Flowline
- between 2% - 3% w/ Note:
- > 3% w/ Profiles or x,y,z's:

**Total number of Push Buttons:**

**Number of Push Buttons that don’t meet standards**
- Offset/Setback/Separation/Landing Criteria:
- < 6 ft Maintenance Access Route (MAR):
- Button < 2 ft from grade break and back of walk:

**State the number of non-compliant elements in Plans:** •
Attach documentation along with alternatives considered for the non-compliant design elements. Include mitigation steps taken and reason(s) why it still can't be compliant.

Example of documentation includes but is not limited to: Design plans with calculations, review and analysis of ADA field walk recommendations, emails, photographs, correspondences with public/local agency, etc.

ZIP THE FILE TOGETHER BEFORE UPLOADING!

Rename the zipped file to the Project SP # then upload the file to the link below:

If ANY ped ramps are proposed to be excluded from the project, include ALL compliance checklist forms in the zipped attachment for existing curb ramps to verify compliance.

☐ I certify that the information entered on this form and the submitted compliance checklist forms are accurate to the best of my knowledge and were completed by me or under my direct supervision.

Submit to ADA Compliance
# ADA Pay Items

**TRADITIONAL PAY ITEMS**
- Remove Curb and Gutter
- Remove Bituminous Pavement
- Remove Concrete Walk
- Sawing Bituminous Pavement
- Sawing Concrete Walk
- Bituminous Patching Mixture
- Concrete Curb & Gutter B624
- Concrete Curb & Gutter B424
- Aggregate Surfacing Class 5
- Concrete Curb Design V4
- Concrete Curb Design V6
- 4" Concrete Walk
- 6" Concrete Walk
- Common Excavation
- Common Borrow
- Subgrade Preparation
- Select Topsoil Borrow
- Sodding Type Lawn

**ADA PAY ITEMS**
- Remove and Replace Bituminous Pavement
- Mill and Patch Bituminous Pavement
- Remove Concrete Walk
- Concrete Curb and Gutter
- Concrete Walk
- Concrete Curb Design V
- Site Restoration
Due to adding sidewalks and driveways to the previous curb ramp only projects, there has been issues with paying for Aggregate Base and Site Restoration. Sometimes roadways are altered more than 2’ linear patch in front of gutter so flexibility will be required in the pay item.

- (2104) Remove and Replace Bituminous Pavement (ADA) – Change from LF to SF
- (2232) Mill and Patch Bituminous Pavement (ADA) – Change from LF to SF
- (2575) Site Restoration – Keep by the EACH for curb ramp only jobs. Add payment by SF item for all jobs including sidewalks and driveways.
(2521) Concrete Walk (ADA)– Remove incidental Aggregate Base and have designers comp and include pay item for 3" of Aggregate Base by the CV under all new concrete curb ramp areas for all projects.

(2531) Curb and Gutter (ADA) – same recommendation as 2521 Concrete Walk (ADA)

This will clear up confusion from incidental Aggregate Base on curb ramps and paying for it under Sidewalks/Driveways. Designers should include Aggregate Base CV pay item so construction can use as needed.

Plan (P) quantities should not be used due to varying field conditions.
Designer direction for sidewalks and driveways:

- Use traditional pay items for 4" concrete walk, 6" and 8" driveway pavement.
- Compute 3" Aggregate Base CV for all new concrete areas. Plan (P) quantity should not be used due to unknown soil and aggregate base conditions - especially in intermittent sidewalk replacement areas.
- Calculate grading quantities (common excavation, embankment) whenever there is brand new sidewalk where none currently exist or whenever existing sidewalk replacement width, alignment, or profile changes.
PAR Alignment
PAR Alignment
PAR Alignment
PAR Alignment

- Can be used if offset is less than or equal to half the ramp width and an adequate sidewalk taper is used
- 1:3 min. with 1:5 preferred
- 1:10 min for full sidewalk reconstruction projects
PAR Alignment

Does the picture below look usable and maintainable?

Travel path of able-bodied individual

Travel path for wheelchair user

Vertical bump in path
PAR Profile

Minimize “Roller coaster” effect
Bituminous Pedestrian Facilities

- Bituminous should be paved in two 1.5” lifts at a min.
- 2% max. cross-slope is rarely achieved when only one bituminous lift is used
Bituminous Pedestrian Facilities

- 2% max. cross-slope
- 5% max. running slope
Bituminous Pedestrian Facilities
Bituminous Pedestrian Facilities
ADA Hydraulics
• To be used when the existing catch basin is 1’ or less from the edge of pedestrian ramp or within the path of travel of an APS push button.

• When constructing new catch basins or relocating existing catch basins, the new structures should be located 10’ min away from the edge of ramp.
• ADA Safe grates have approximate 50% less hydraulic capacity compared to the standard grate.
• “Helper” structures should be used when added capacity is needed.
ADA Hydraulics

- A standard plate is in the process of being created for ADA Safe Grate.
- The interim procedure is to include the ADA safe grate detail in the plan.
- Openings in ground and floor surfaces, such as grates, are limited in width to prevent passage of a ½” diameter sphere.
ADA Hydraulics

- Catch basins with curb boxes must be outside the pedestrian ramp and curb taper
- A “helper” structure should be added upstream whenever a curb box is removed at a low point
ADA Safe Tree Grates
Example: TH 95 (3rd St N) in Bayport

Proposed Project, Bayport

3rd St N & 2nd Ave N
Example: TH 95 (3rd St N) in Bayport

TH 95 (3rd St N) & 2nd Ave N
Example: TH 95 (3rd St N) in Bayport

TH 95 (3rd St N) & 2nd Ave N
Example: TH 95 (3rd St N) in Bayport

TH 95 (3rd St N) & 2nd Ave N
Example: TH 95 (3rd St N) in Bayport

TH 95 (3rd St N) & 2nd Ave N
Example: TH 95 (3rd St N) in Bayport

Notes from Field Walk:

- Combined directional, Level 3 due to steep grades, existing 2" lip at east ramp
- Catch basins OK
- Vertly flow direction
- Raise flowline approx. 6" (Flasher: Serial #: J-321729-102)
- Recommend raising centerline 2.5", i.e. no mill, talk with materials
- Combined directional, Level 1
- For Flashers: Talk to Melissa and Kaare
- Flasher, Serial #: J-321729-101
- Level 3 ramp, meet tie-ins by lowering SW while raising road and curb & gutter features. Total height gain summary:
  - Road raising: 1'
  - Adding steps: 1'
  - Possible city street adjustment: 11'
- Existing staircase:
  - Add two (2) steps to base (via lowering SW)
  - Extend railing
- Verify drainage. Due to curb line raise add structure approx. 30' north from existing structure
- Raise or relocate catch basin, ADA safe grate needed.
  - Make this point the high point, and use gutter-out to maximize height gain
  - Possibly bump-out west side
  - 8% road inslope existing
  - Existing curb height: 6'
  - East ramp existing slope: 14%

Either combined directional as shown above, or depressed corner as shown below (see which design works best with NW quadrant design); mount PB on pole if depressed corner used. Remove curb box on west side either way. Level 2.
Example: TH 95 (3rd St N) in Bayport
Example: TH 95 (3rd St N) in Bayport

Combined directional, Level 3 due to steep grades, existing 2" lip at east ramp

Relocate light pole

Verify flow direction

Raise flowline aprox. 6"

4%

Catch basins OK

Flasher: Set J-321729-1

Recommend raising centerline 2.5", i.e. no mill, talk with materials

SW Corner
Example: TH 95 (3rd St N) in Bayport

SE Corner
Example: TH 95 (3rd St N) in Bayport

- **Update topo with existing walk**
- **Recommend raising centerline 2.5", i.e. no mill, talk with materials**
- **Combined directional, Level 1**

SE Corner
Example: TH 95 (3rd St N) in Bayport

NW Corner
Example: TH 95 (3rd St N) in Bayport

- Catch basins OK
- Flasher: Serial #: J-321729-102

Level 3 ramp, meet tie-ins by lowering SW while raising road and curb & gutter features.
Total height gain summary:
- Road raising: 1'
- Adding steps: 1'
- Possible city street adjustment: 11"

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- Add two (2) steps to base (via lowering SW)
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- Raise or relocate catch basin, ADA safe grate needed.
- Make this point the high point, and use gutter-out to maximize height gain
- Possibly bump-out west side
- 8% road inslope existing
- Existing curb height: 6"
- East ramp existing slope: 14%

Verify drainage. Due to curb line raise add structure approx. 30' north from existing structure

NW Corner
Example: TH 95 (3rd St N) in Bayport

NE Corner
Example: TH 95 (3rd St N) in Bayport

- Safe grade needed.
  - Make this point the high point, and use gutter-out to maximize height gain
  - Possibly bump-out west side
  - 8% road inslope existing
  - Existing curb height: 6"
  - East ramp existing slope: 14%

For Flashers:
Talk to Melissa and Kaare

NE Corner

Add PB station here if using combined directional

Either combined directional as shown above, or depressed corner as shown below (see which design works best with NW quadrant design); mount PB on pole if depressed corner used. Remove curb box on west side either way. Level 2.
Summary

The intersection of 3<sup>rd</sup> St N and 2<sup>nd</sup> Ave N will require:

- Level 1 Curb Ramp (SE corner) and Level 2 Curb Ramp (NE corner)
- Two Level 3 Design Curb Ramps due to existing steep slopes
- Roadway Profile to be raised (~2.5”)
- Curb & Gutter Reconstruction, Sidewalk Reconstruction, Stairway and Railing modifications (NW corner)
- Relocated Catch Basin and ADA Grate (NW corner)
- TH 95 School crossing improvements: Pedestrian Crossing Flashers (NW and NE corners) and push button (NE corner)
- Relocated Light Pole and Raised Curb Flowline (SW corner)
- Temporary Construction Easements?
Missed Opportunities – Curb Ramp Only

• Original project scope
  – Mill and Overlay requiring pedestrian ramp upgrades
  – Bump outs were constructed due to narrow sidewalks, steep side streets and doorway matches
  – City was not interested in bump outs but understood the need for compliance

• Sidewalk deficiencies were deferred
  – Cross slope issues
  – Poor condition
Missed Opportunities – Curb Ramp Only

- Sidewalk settlement and tripping hazards
Missed Opportunities – Curb Ramp Only

Jefferson Ave
- Pic # 2577
- XS 2.5%
- XS 3.5%
- XS 5.5%
- XS 8.5%
- XS 10%
- XS 11.8%
- Drainage issues on mainline xing ramp

Madison Ave
- Pic # 2837, 2636
- XS 3.5%
- XS 4%
- XS 4.5%
- XS 5%
- Drainage issues mainline xing ramp (typical for most here built too flat, rate landing, introduce 5% ramp) Pic # 2547
- Pic # 2597
- XS 4.5%
- XS 4%
- XS 4.5%
- XS 4%
- XS 5%
- XS 5%
- XS 5%
- Drainage issues on mainline xing ramp

Monroe Ave
- Pic # 2598
- XS 4%
- XS 4%
- XS 4%
- XS 4%
- XS 4%
- XS 4%
- XS 5%
- XS 5%
- XS 5%
- Drainage issues Pic # 2630

Jackson Ave
- Pic # 2586, 3345
- XS 6.5%
- XS 4.5%
- XS 3.5%
- XS 2.5%
- drainage issues

Pic # 2597
- XS 2.5%
- XS 3.5%
- XS 5.5%
- XS 8.5%
- XS 10%
- XS 11.8%
- Drainage issues on mainline xing ramp
Missed Opportunities – Curb Ramp Only

- Missed opportunity!
  - Curbs should have been modified during the overlay to correct sidewalk cross slopes
  - Modifying curbs/fixing sidewalks will cause:
    - Curb ramp rework
    - Overlay rework
Post Project

– City has identified trip hazards as a major issue, residents & business owners would like improvements
– Evaluated sidewalk confirming condition and excessive cross slopes
– Moving and raising curb line (Priority “A”) was needed to correct cross slope deficiencies
Priority A Sidewalks

- Priority A sidewalks and driveways are constructed adjacent to the back of curb and require curb line replacement, relocation and/or raising the curb line to provide an accessible sidewalk.

- Reconstructing curb lines on preservation projects maintains roadway drainage and the roadway surface integrity.
Priority A Sidewalks

• All Priority A sidewalks shall be completed on alteration level projects in order to avoid missing any opportunities to substantially complete the Transition Plan.
Example: TH 14 (Main St) in Sleepy Eye

Mill & Overlay, Sleepy Eye
Sleepy Eye Case Study

• Original project scope
  – BOC overlay
  – ADA Improvements
    ✓ Curb ramps required
    ✓ Sidewalk as needed

• Issues
  – Steep sidewalk cross slopes in a downtown cross section with fixed doorway tie-in elevations
Sleepy Eye Case Study

• Sidewalk Evaluation:
  – Results showed needs for curb modifications
  – Priority A
Sleepy Eye Case Study

- Exceeded allowable paved boulevard cross slopes in areas (> 8%)
- PAR width adjacent to face of buildings did not meet minimums in areas (< 6 ft)
- Did not meet preferred balance of PAR to boulevard (2/3 PAR, 1/3 boulevard width)
- Ramps didn’t work at some quadrants and have no construction tolerances
Sleepy Eye Case Study

- North Side of TH 14
  - 2 blocks
  - Move curb towards centerline by 2 feet
  - Lift gutter flowline 3 inches
  - 7’ PAR, 5’ boulevard achieved

- South Side of TH 14
  - 2 - half blocks
  - No curb move
  - Lift gutter flowline 3 inches
  - 6’ PAR, 4’ boulevard achieved
Sleepy Eye Case Study

- Power of the Delta
  - Additional quantities for Priority A:
    ✓ Sawcutting Pavement
    ✓ Pavement Removal
    ✓ Curb Removal
    ✓ B624 Curb (Modified)
    ✓ Reinforcement
    ✓ 4” Walk
    ✓ Agg. Base
    ✓ Storm Drainage Work

<table>
<thead>
<tr>
<th></th>
<th>Curb, Walk, Reinforcement, etc.</th>
<th>Drainage</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Side</td>
<td>$30,372</td>
<td>$28,933</td>
<td>$59,305</td>
</tr>
<tr>
<td>South Side</td>
<td>$12,189</td>
<td>$5,335</td>
<td>$17,524</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$42,560</strong></td>
<td><strong>$34,268</strong></td>
<td><strong>$76,828</strong></td>
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</table>
Example: Snelling Ave (TH 51) in St. Paul

Mill & Overlay, St. Paul
Snelling Ave Mill & Overlay

Significant curb replacement with a Mill & Overlay (PRIORITY A)

- Useful for modifying flowline elevations locations and tying-in to doorways and other vertical constraints

Project Specifics:

- Approximate 20 blocks densely urban area
- Mill and Overlay with pedestrian reconstruction (preservation plus)
- “Road Diet” – shift curbs 2’ in on each side (this was being done already for new lighting installations, and long bump outs for BRT purposes)
Snelling Ave Mill & Overlay

<table>
<thead>
<tr>
<th>Project type</th>
<th>M &amp; O with Pedestrian Reconstruction</th>
<th>Full Reconstruction</th>
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</thead>
<tbody>
<tr>
<td>Total Cost</td>
<td>8.5M</td>
<td>20M</td>
</tr>
<tr>
<td>Price/Block</td>
<td>425K*</td>
<td>1M</td>
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</tbody>
</table>

The concrete flatwork accounted for $120K a block, or $2.4M to the total project.

Actual ADA cost: $600K + $750K = $1.35M

$1.2M Sidewalk

60% (or $750K) recommended by ADA for replacement based on deficiencies

$2.4M Flatwork + Gravel

$600K Curb Ramps

$600K Sidewalk Enhancement
Scoping Minimum ADA Following Federal Requirements

<table>
<thead>
<tr>
<th>Year</th>
<th>Pre-2010</th>
<th>2010</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
</table>

ANOTHER PROJECT UPCOMING IN 2019!
The MnDOT Scoping Process

Project Managers are required to identify all accessible pedestrian facility needs in the scoping phase of project development:

• ADA Unit Field Walk
  ➢ Identify facility types, ROW needs, utilities, obstructions, and necessary coordination with local jurisdictions

• Right-of-way needs to meet MnDOT ADA requirements
  ➢ Preliminary Plans should include enough ADA design to generate dependable construction limits and allow sufficient time to acquire ROW and easements

• Budget to meet MnDOT ADA requirements
  ➢ Use industry norms for cost estimates of items needed for achieving accessibility
Field Walk (Assessing the needs)

- Identify what facilities and upgrades will meet the needs of all users
  - Curb Ramps: Install where needed and upgrade when existing ramps do not meet minimum requirements
  - Sidewalk (and Driveway) Improvements
  - Accessible Pedestrian Signal (APS) Upgrades
  - Roadway Modifications (Curb Line Modification, Tabling, Grade Mitigation, Structure Relocation, Crosswalks)
  - Maintenance Access Routes (MAR)
- Identify utilities and obstructions for relocation
- Determine necessary coordination with local jurisdictions
Right-of-Way

- Additional ROW will often be required at quadrants and along sidewalks and driveways to meet Accessibility Standards.
- Identification of ROW needs and easements shall occur at scoping or shortly after.
- Exceptions to requiring ROW:
  - Buildings or other permanent structures with durable concrete footings.
  - Environmental Risks (vary by jurisdiction).
  - Significant Utility Relocations (Mains for water/sewer/storm/gas, communications vaults, large electrical distribution lines).
Design

• Pedestrian facilities in new construction, reconstruction, and alteration projects are required to meet the following design requirements:
  - ADA Project Design Guide
  - MnDOT Standard Plate 7038A
  - MnDOT Standard Plans
  - MnDOT Road Design Manual
  - MnDOT LRFD Bridge Design Manual
  - MnDOT Tech Memos

• When the requirements are silent on an aspect of accessible design, designers will consult PROWAG

• In the event MnDOT requirements cannot be met, PROWAG minimums may be used
Design

• Driveways and curb ramps need individual design to set reasonable construction limits

• Temporary construction easements can be established by acquiring uniform widths along a corridor

  ➢ Adjacent turf areas should have a minimum 5’ easement from back of walk

  ➢ Adjacent paved areas should have a minimum 2’ to set forms, allow for compaction, and eliminate trip hazards
Design

- Turf boulevards should be 6’ minimum to facilitate simple design
  - 8-10’ encouraged for snow storage and improved tree planting
  - If 4’ is maximum achievable, consider 4” curb height
- Sidewalks at back of curb should have minimum 7’ width
  - 8’ encouraged at driveways and curb ramps
  - Sidewalks adjacent to storefronts should have minimum 6’ PAR and constructed with 2/3 PAR to 1/3 boulevard ratio
Questions?