

Intro



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<http://www.dot.state.mn.us/ada/tools.html>

Your Destination... Our Priority





MnDOT ADA Training

STANDARD PLANS & PAY ITEMS

Your Destination...Our Priority

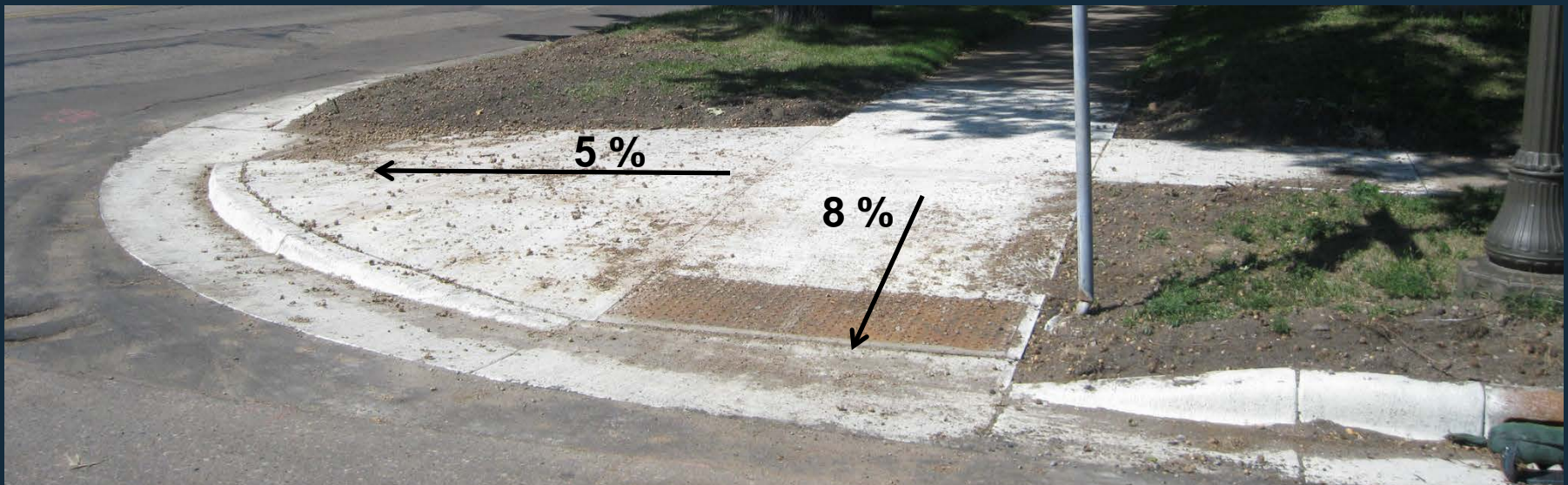


- PROWAG and Curb Ramp Basics
- Standard Plan Sheets
- ADA Pay Items

Curb Ramp/PROWAG Basics



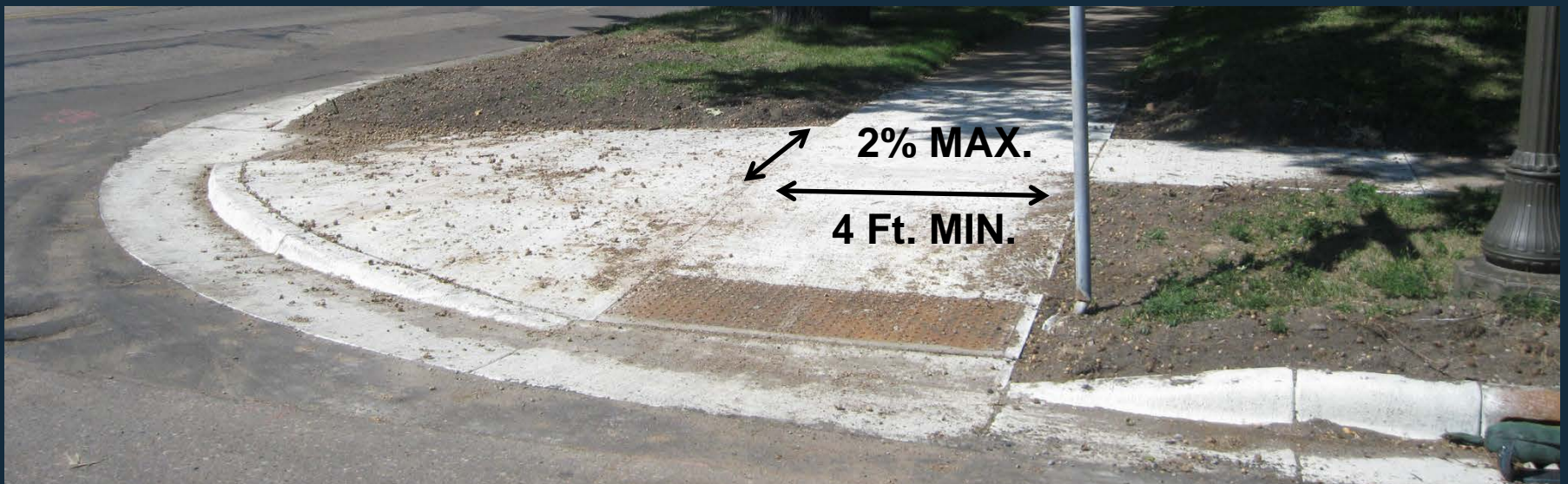
- PROWAG requirements are based on slopes, so curb ramps cannot simply meet a certain length to be compliant.
- A 6 inch high curb does not necessarily mean that a ramp should be 6 foot long; it depends on whether the area behind the ramp slopes up, down or is flat from the top of curb.



Curb Ramp/PROWAG Basics



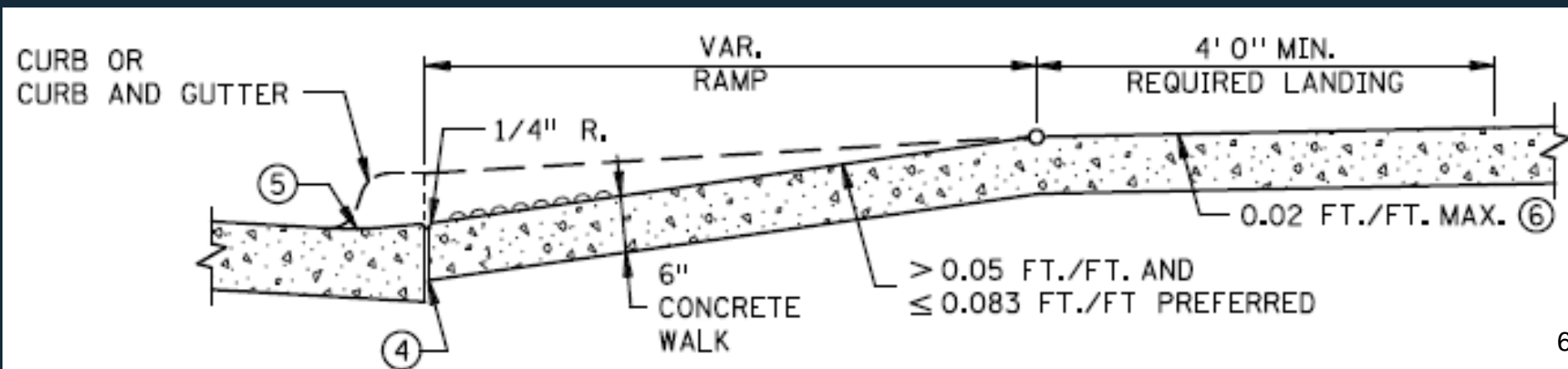
- Minimum 4 foot wide Pedestrian Access Route (PAR) with a maximum cross slope of 2% is required.
- The PAR must be continuous and unobstructed.
- The PAR shall connect accessible elements, spaces and facilities.



Curb Ramp/PROWAG Basics



- If longitudinal slope exceeds 5 percent, or there is a change in direction, landings must be provided on any pedestrian facility.
- Maximum ramp slope is 8.3 percent.
- Maximum length of initial ramp is 15 feet.
- Slopes and dimensions are **absolute**. PROWAG allows no tolerances for exceeding these maximums.

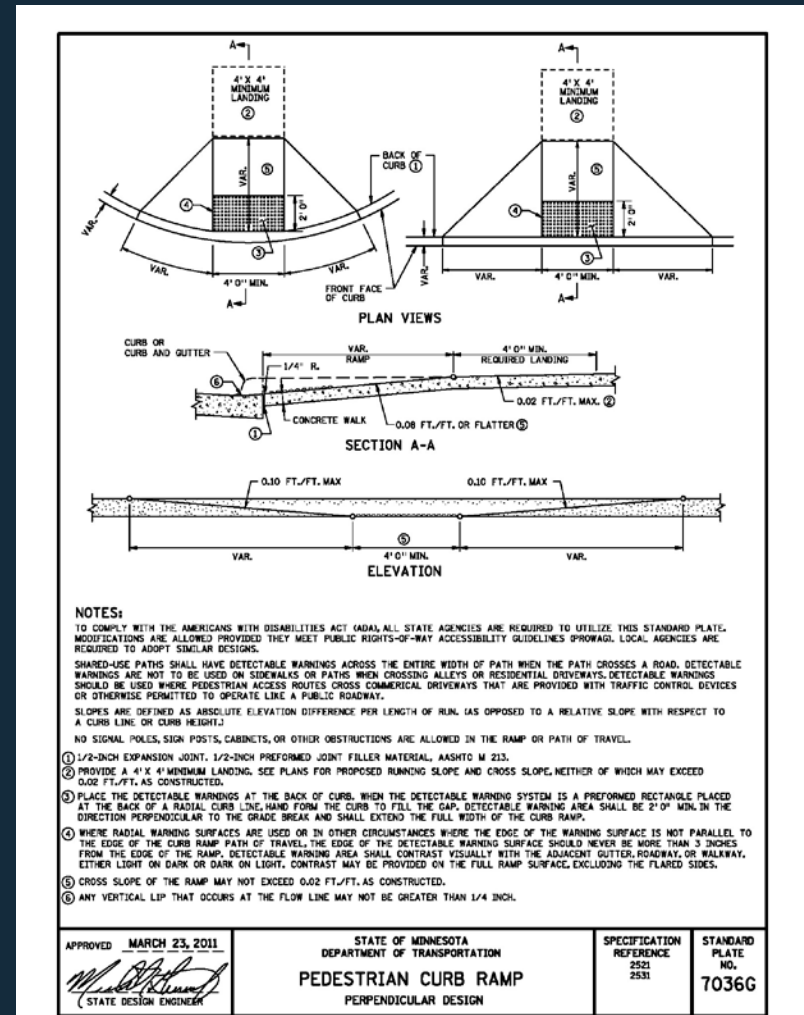


Standard Plate 7036G



Pedestrian Curb Ramp - Discontinued

- 4 ft. by 4 ft. minimum landing with maximum 2% cross slope in all directions **REQUIRED**
- Ramp lengths depend on grades, not dimensions
- Served as the foundation for the Curb Ramp Standard Plans

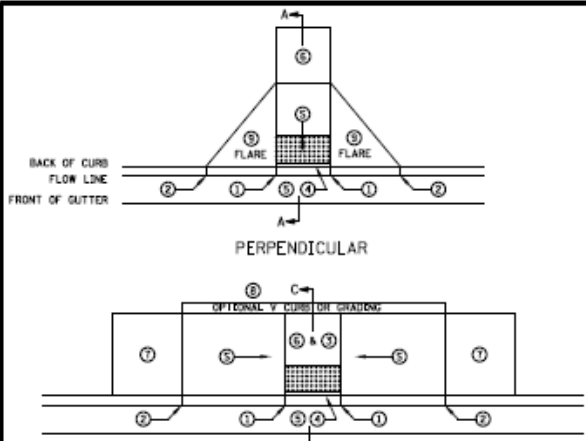


Standard Plans

PLOTTED/REVISED
20-FEB-2012

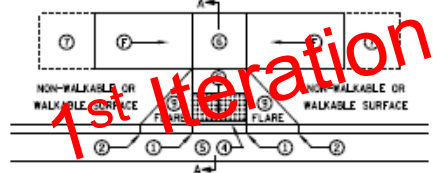
DISTRICT 4, Design Standards
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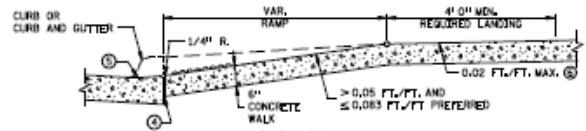


PERPENDICULAR

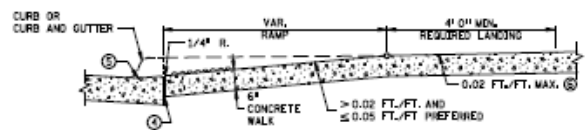
PARALLEL



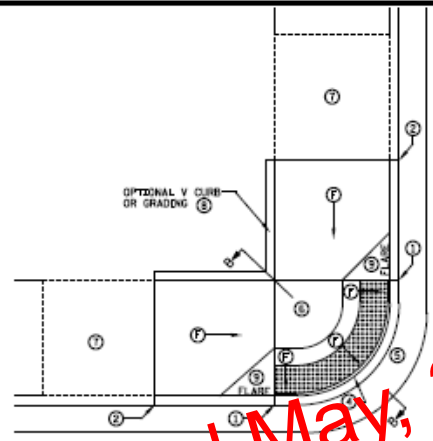
TIERED PERPENDICULAR



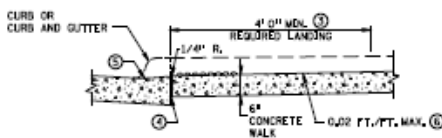
SECTION A-A
PERPENDICULAR/TIERED/DIAGONAL



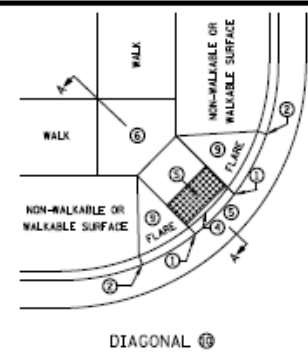
SECTION B-B
FAN



DEPRESSED CORNER



SECTION C-C
PARALLEL/DEPRESSED CORNER



DIAGONAL

1st Iteration Approved May, 2012.

- LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RISING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE.
- INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6" FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE.
- SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30' OF VERTICAL ROSE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.
- CONSTRUCTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS.
- ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL.
- TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS MAY BE CAST SEPARATELY, FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 5 WHEN LANDINGS ARE CAST SEPARATELY.
- ALL SLOPES ARE ABSOLUTE, RATHER THAN RELATIVE TO SIDEWALK/ROADWAY GRADES.
- TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.
- 4" MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MINIMUM OF 24" ON THE PATH OF TRAVEL. SHARP USE PATHS SHALL HAVE DETECTABLE WARNING ACROSS THE ENTIRE WIDTH OF PATH WHEN THE PATH CROSSES A ROAD.
- SEE STANDARD PLATE 7058 AND SHEET 4 OF 5 FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.
- ① 0' CURB HEIGHT.
 - ② FULL CURB HEIGHT.
 - ③ DETECTABLE WARNINGS MAY BE PART OF 4' X 4' LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.
 - ④ 1/2" PREFORMED JOINT FILLER MATERIAL AASHTO M 213, JOINT FILLER SHALL BE PLACED FLUSH WITH THE BACK OF CURB AND ADJACENT SIDEWALK. JOINT SHALL BE FREE OF DEBRIS.
 - ⑤ SEE PEDESTRIAN ACCESS ROUTE CURB AND GUTTER DETAIL FOR INFORMATION ON CONSTRUCTION CURB AND GUTTER AT CURB OPENINGS. SEE SHEET NO. 3 OF 5.
 - ⑥ 4' BY 4' MIN. LANDING WITH MAX. 2.0% SLOPE IN ALL DIRECTIONS.
 - ⑦ IF LONGITUDINAL SLOPE IS GREATER THAN 5.0%, 4' X 4' MIN. LANDING WITH MAX. 2.0% SLOPE IN ALL DIRECTIONS REQUIRED.
 - ⑧ V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. SEE SHEET 5 OF 5.
 - ⑨ SEE SHEET 4 OF 5, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.
 - ⑩ DIAGONAL RAMPS SHOULD ONLY BE USED AFTER ALL OTHER CURB RAMP TYPES HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.

LEGEND	
THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.	
①	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%
②	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%

STANDARD PLAN SHEET NO. 5-297.250 (1 OF 5)	PEDESTRIAN CURB RAMP DETAILS
STANDARD APPROVED NOT APPROVED	
STATE PROJ. NO. ()	SHEET NO. OF SHEETS

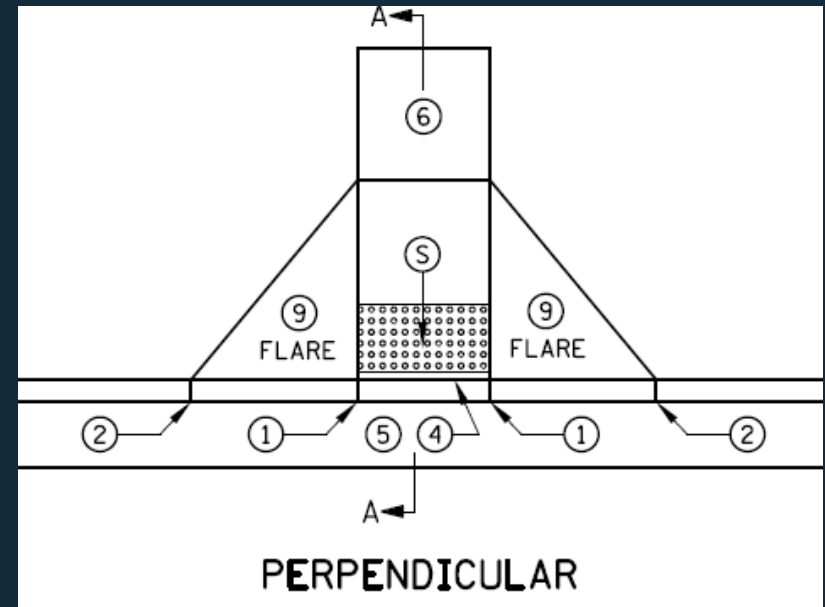
Curb Ramp Types Sheet No. 1



- Perpendicular ramp
- Parallel ramp
- Tiered perpendicular ramp
- Depressed corner
- Fan ramp
- Diagonal ramp (not recommended)

Perpendicular

- Ramp is perpendicular to the curb line.
- Grade break occurs at the top of the ramp and the flow line.



Parallel

- Ramp is parallel to the curb line.
- Landing occurs at the bottom of the ramp.



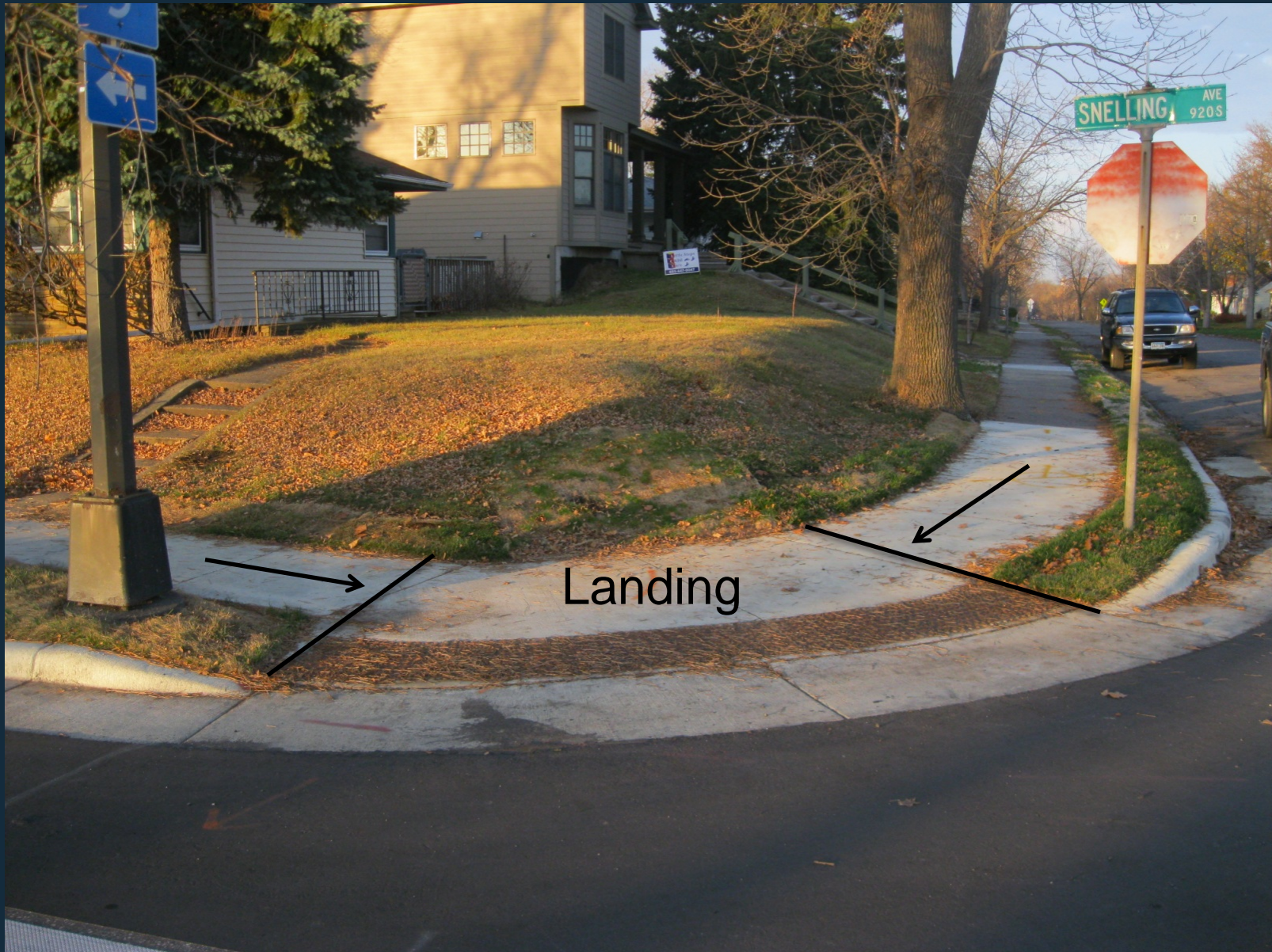
Tiered Perpendicular



- Used where the initial curb ramp cannot make up the elevation difference, so a secondary ramp is needed



Depressed Corner



Fan

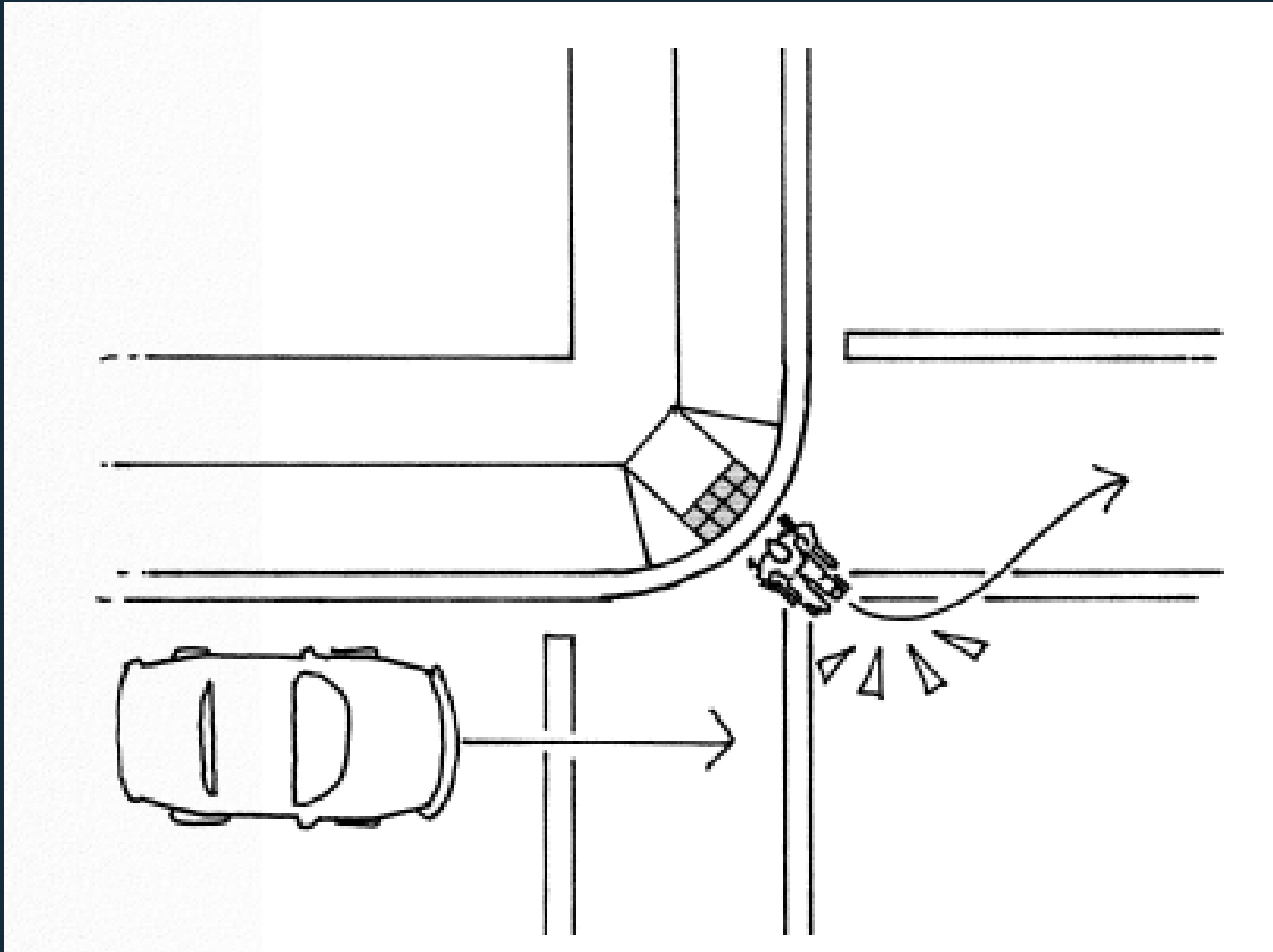


Diagonal Ramp

- Should only be used after all other curb ramp types have been evaluated and deemed impractical



Diagonal Ramp – Least Preferred



Standard Plans

New in 2013: Ramp slope ranges



INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%

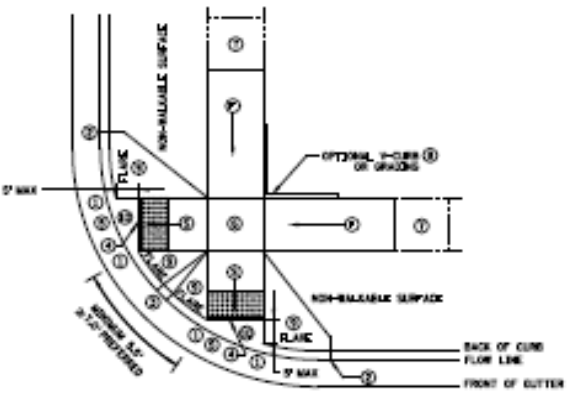


INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%

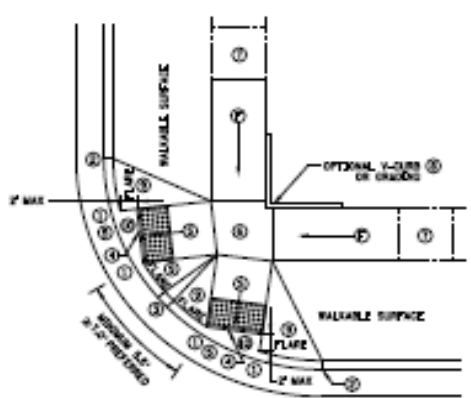
Standard Plans

POSTED/REVISED
DATE/DESCRIPTION

DISTRICT 7, DESIGN DIVISION
DESIGN NAME, DRAWING
PART & FILE NAME, PROJECT NUMBER, AND SHEET NUMBER

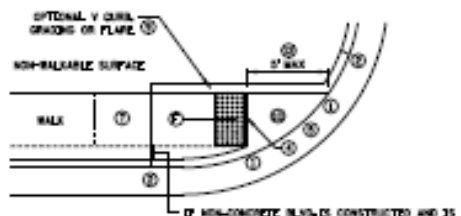


ADJACENT TO NON-WALKABLE SURFACE

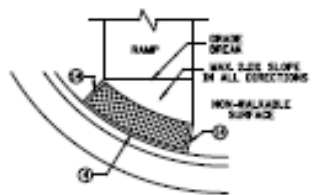


ADJACENT TO WALKABLE SURFACE

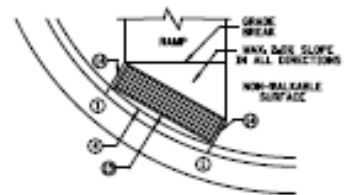
COMBINED DIRECTIONAL



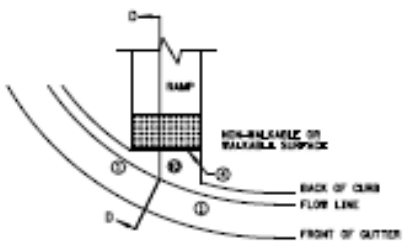
IF NON-CONCRETE BLANK IS CONSTRUCTED AND IS LESS THAN 2' IN WIDTH AT TOP OF CURB TRANSITION HAVE CONCRETE RAMP WIDTH TO ADJACENT BACK OF CURB



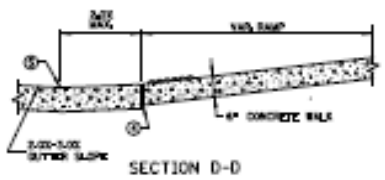
DETECTABLE WARNING SETBACK CRITERIA



ONE-WAY DIRECTIONAL



CURB FOR DIRECTIONAL RAMP



SECTION D-D

- NOTES**
- LANDINGS SHALL BE LOCATED ANTICIPATE THE PEDESTRIAN ACCESS ROUTE CORRECT DIRECTION AT THE TOP OF RAMP THAT HAVE RUNNING SLOPES GREATER THAN 5% AND AT THE APPROACHING WALK OR DRIVEWAY.
 - OPTIONAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 10' FROM THE BACK OF CURB WITH A MINIMUM SETBACK FROM THE PROPOSED CURB.
 - SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30' OF VERTICAL RISE WITH THE LONGITUDINAL SLOPE IS GREATER THAN 5%.
 - CONTRACTOR JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS.
 - ALL GRADE BREAKS WITHIN THE PAIR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL TO DRIVING RAMP AND LANDINGS ARE PROHIBITED.
 - TO DRIVING RAMP AND LANDINGS ARE PROHIBITED.
 - ALL RAMP AND APPROACH RAMP SHALL BE CONSTRUCTED TO SEPARATELY GRADIENT TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRAD.
 - MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMP, GRADE USE PAVES SHALL HAVE DETECTABLE WARNING ACROSS THE ENTIRE WIDTH OF PATH WHEN THE PATH CROSSES A ROAD.
 - WHETHER A SURFACE IS WALKABLE OR NOT SHALL BE DETERMINED BY THE ENGINEER, SEE STANDARD PAVEMENT AND SHEET 4 OF 5 FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.
 - OF CURB HEIGHT.
 - FULL CURB HEIGHT.
 - IF BOTTOM CURB HEIGHT IS PROHIBITED.
 - IF PROPOSED JOINT FALLS MATERIAL HARD TO BE SET, JOINT FELLER SHALL BE PLACED WITHIN THE BACK OF CURB AND ADJACENT SIDEWALK. JOINT SHALL BE PROHIBITED.
 - RECTANGULAR DETECTABLE WARNING SHALL BE SETBACK 3' FROM THE BACK OF CURB, MINIMUM DETECTABLE WARNING SHALL BE SETBACK 10' FROM THE BACK OF CURB.
 - SEE PEDESTRIAN ACCESS ROUTE CURB AND GUTTER DETAIL FOR INFORMATION ON CONSTRUCTING CURB AND GUTTER AT CURB CORNERS. SEE SHEET NO. 3 OF 5.
 - IF BY 4" MIN. LANDINGS WITH MAX 2.0% SLOPE IN ALL DIRECTIONS.
 - IF LONGITUDINAL SLOPE IS GREATER THAN 5%, 4" X 4" MIN. LANDINGS WITH MAX 2.0% SLOPE IN ALL DIRECTIONS REQUIRED.
 - V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LENGTH WITH HEIGHT OF WAY ALLOWED.
 - SEE SHEET 4 OF 5, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLANGES AND RETURNED CURBS.
 - WALK SIDE SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK AND GRADE TO FLOW LINE SHALL BE CONSTRUCTED INTERNAL WITH CURB AND GUTTER.
 - TO BE USED FOR ALL DIRECTIONAL RAMP.
 - GRASS PLACED AT THE BACK OF CURB WITH ALLOWABLE SETBACK CRITERIA IS ENCOURAGED.
 - RECTANGULAR DETECTABLE WARNING MAY BE SETBACK 10' FROM THE BACK OF CURB WITH CORNERS SET 3' FROM BACK OF CURB, IF SETBACK IS EXCEEDED USE RADIAL DETECTABLE WARNING.
 - WHEN NO CONCRETE FLANGES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB MAINTAIN 3" BETWEEN EDGE OF DRIVE AND BACK OF CONCRETE.
 - DETECTABLE WARNING SHALL BE SETBACK 2' MINIMUM WHEN ADJACENT TO WALKABLE SURFACE AND 3' MINIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE.

LEGEND	
①	INDICATED PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 2% MINIMUM AND 5.0% MAXIMUM TO THE PEDESTRIAN SURFACE AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
②	INDICATED PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 5.0% AND LESS THAN 8.0% IN THE PEDESTRIAN SURFACE AND CROSS SLOPE SHALL NOT EXCEED 2.0%.

Standard Plan (SHEET) NO. 5-291.250 (2 OF 10)	PEDESTRIAN CURB RAMP DETAILS
Standard APPROVED NOT APPROVED	
STATE PROJ. NO.	(TH) SHEET NO. OF SHEETS

One Way Directional



**LESS THAN 5% RAMP SLOPE,
LANDING NOT REQUIRED**



Landing required



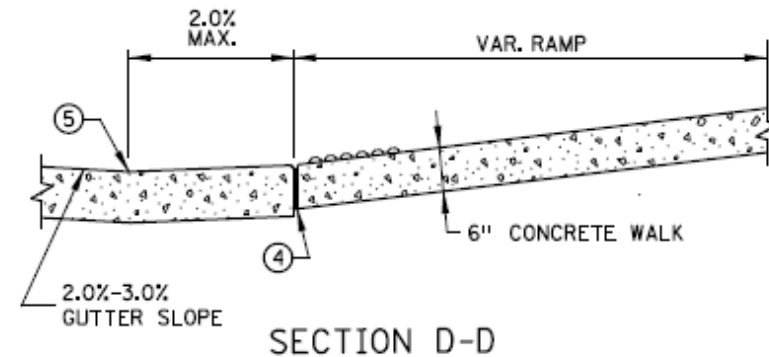
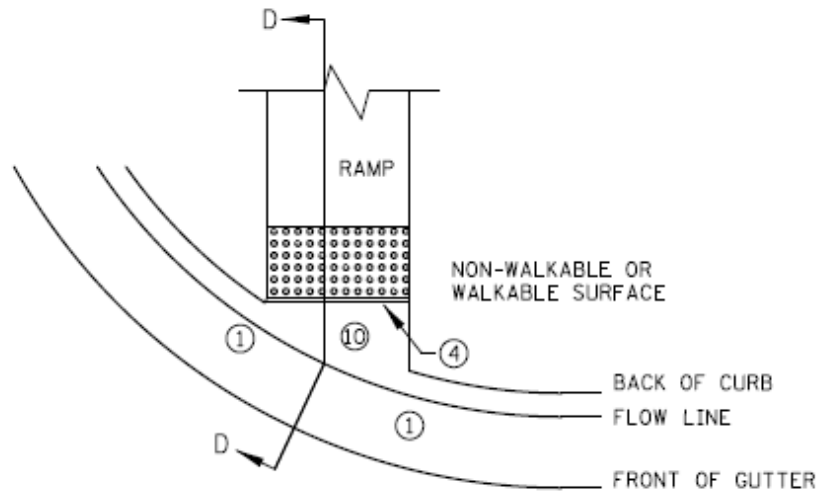
Ramp

Combined Directional



Standard Plans

- When constructing directional ramps, the “triangular” concrete piece shall be poured integral with the curb and gutter (Directional Curb).

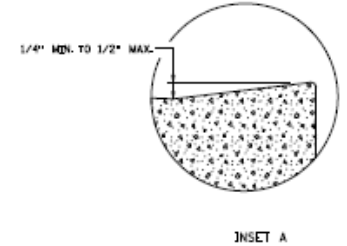
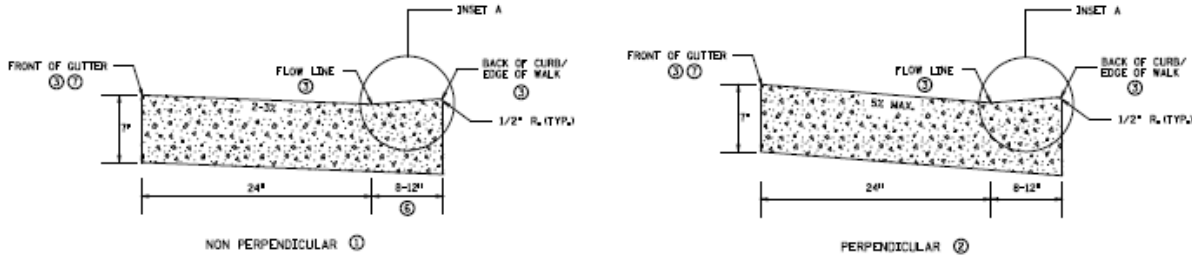


CURB FOR DIRECTIONAL RAMPS ⑪

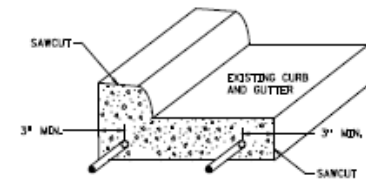
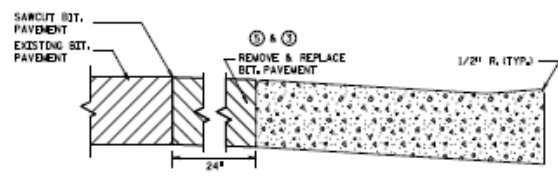
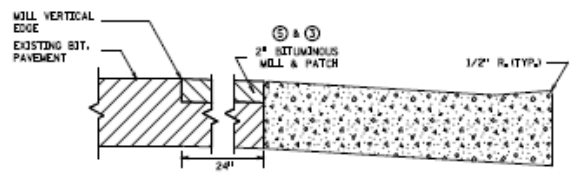
Standard Plans



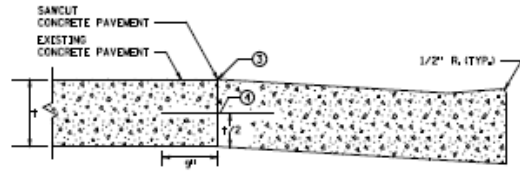
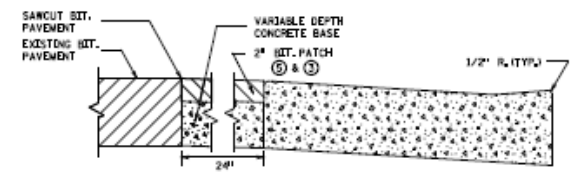
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PEDESTRIAN ACCESS ROUTE
CURB & GUTTER DETAIL



CURB AND GUTTER REINFORCEMENT
FOR USE ON CURB RAMP RETROFITS



PAVEMENT TREATMENT OPTIONS
IN FRONT OF CURB & GUTTER
FOR USE ON CURB RAMP RETROFITS

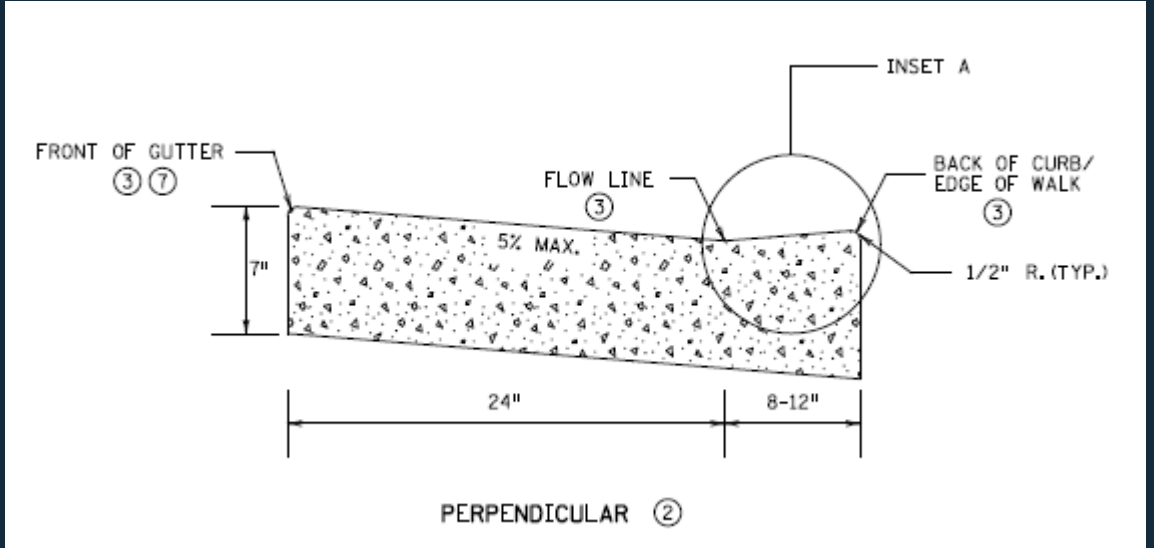
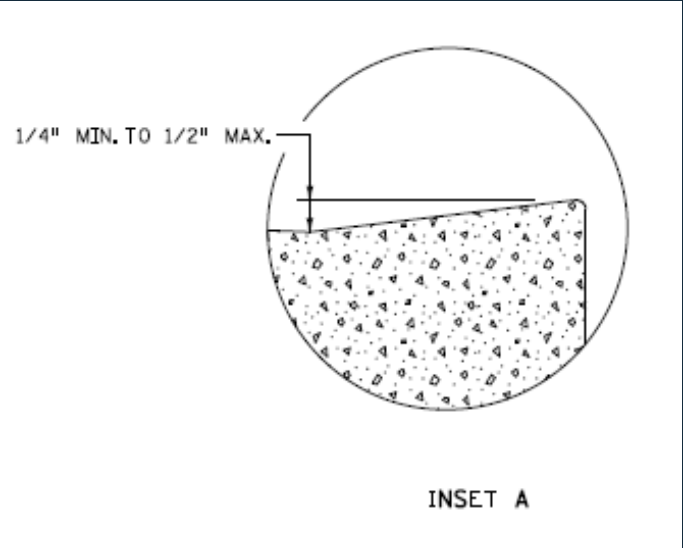
- NOTES:
- POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM.
 - NO PONDING SHALL BE PRESENT IN THE PAR.
 - ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE SHALL NOT BE GREATER THAN 1/4 INCH.
 - ① FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON PERPENDICULAR TO THE GUTTER FLOW LINE, RAMP TYPES INCLUDE FANS, DEPRESSED CORNERS, & ONE WAY AND COMBINED DIRECTIONALS.
 - ② FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED PERPENDICULAR TO THE GUTTER FLOW LINE, RAMP TYPES INCLUDE PERPENDICULAR, TIRED PERPENDICULAR, PARALLEL, AND DIAGONAL RAMP.
 - ③ THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/8\".
 - ④ DRILL AND GROUT NO. 4 EPOXY-COATED 18\" LONG TIE BARS AT 30\" CENTER TO CENTER INTO EXISTING CONCRETE PAVEMENT.
 - ⑤ ELEVATION CHANGE TAKES PLACE FROM THE EXISTING TO NEW FRONT OF GUTTER. PATCH IS USED TO MATCH THE NEW GUTTER FACE INTO THE EXISTING ROADWAY.
 - ⑥ VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS.
 - ⑦ TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION PAR GUTTER SHALL NOT BE OVERLAP.
 - ⑧ WHERE PLAN SPECIFIES, DRILL AND GROUT 2 - NO. 4 X 12\" LONG REINFORCEMENT BARS (EPOXY COATED).

DISTRICT 5, Design Subarea
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STANDARD PLAN SHEET NO. 5-297.250 (3 OF 5)	PEDESTRIAN CURB RAMP DETAILS
STANDARD APPROVED NOT APPROVED	
STATE PROJ. NO.	(TH) SHEET NO. OF SHEETS

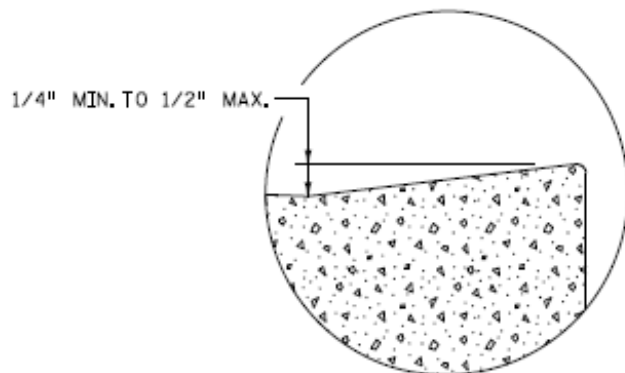
Curb and Gutter Details

- Always maintain flow line and use modified Pedestrian Access Route curb and gutter sections.
- Perpendicular and parallel ramps can have a maximum 5% gutter slope because the pedestrian's path of travel is perpendicular to the gutter flow line.

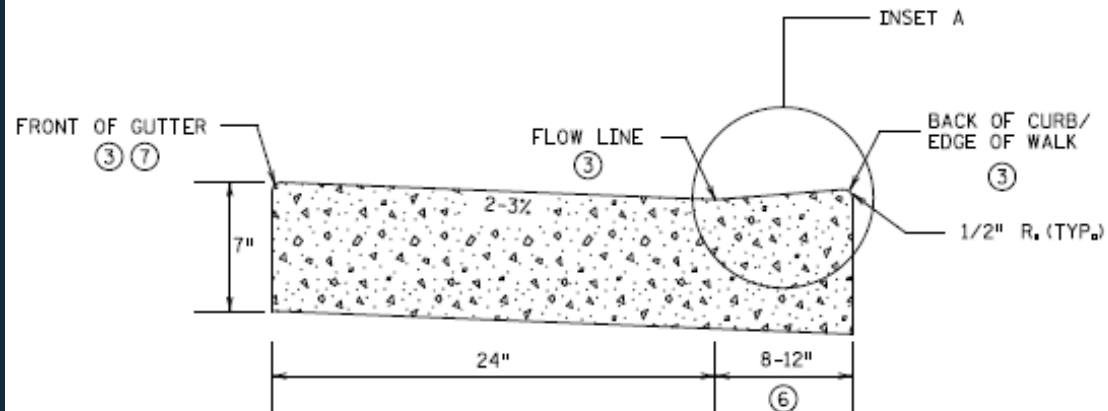


Curb and Gutter Details

- Curb ramp types where the pedestrian's travel is not perpendicular to the gutter flow line (i.e. directional, depressed corners and fan ramps) shall have a flattened gutter slope of 2% to 3%.

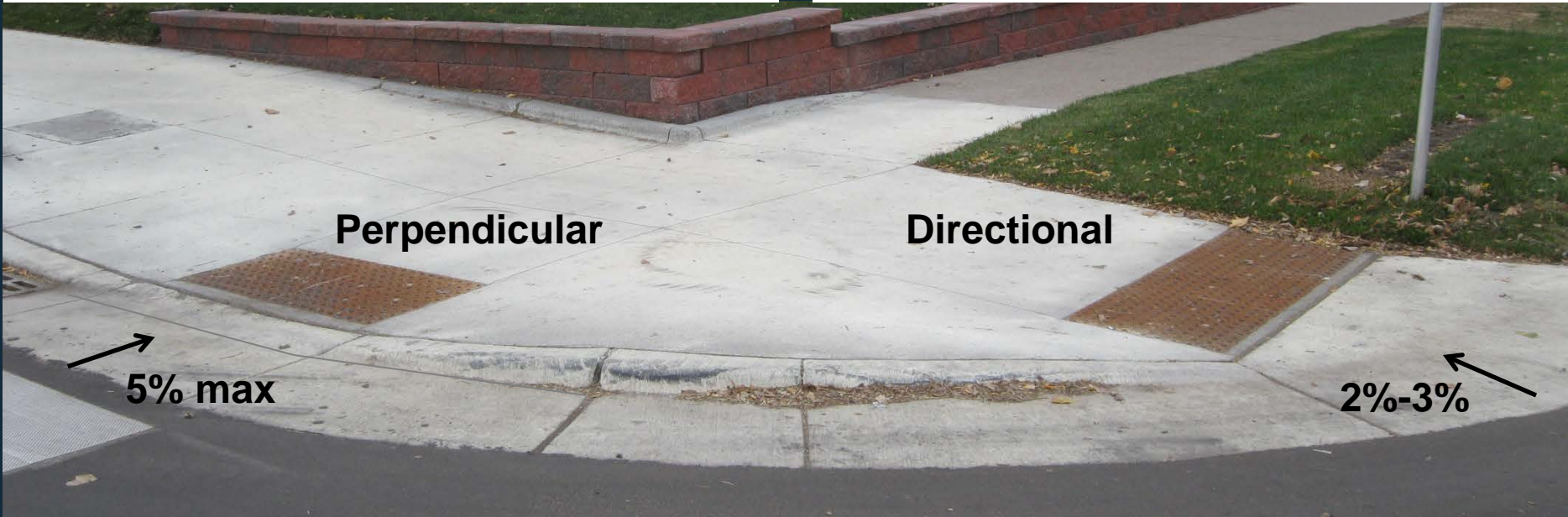
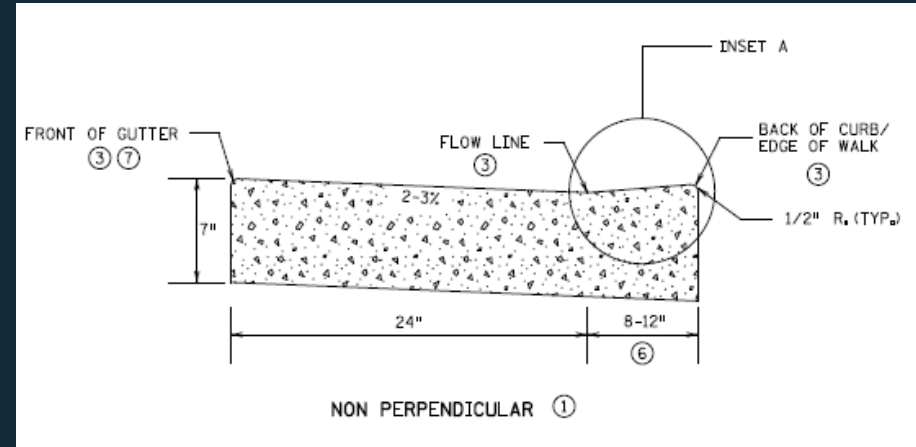
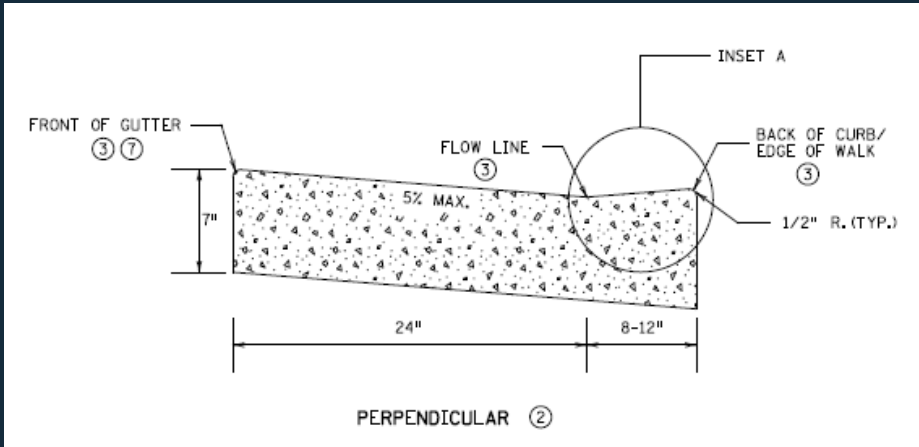


INSET A



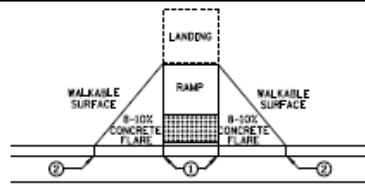
NON PERPENDICULAR ①

Curb and Gutter Details

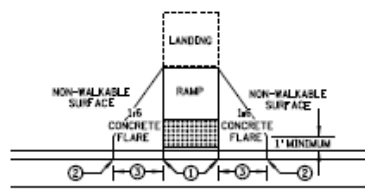


Standard Plans

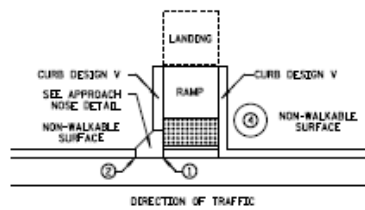
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20/FEB/2013



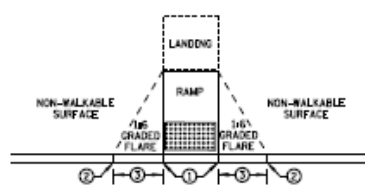
PAVED FLARES ADJACENT TO WALKABLE SURFACE



PAVED FLARES ADJACENT TO NON-WALKABLE SURFACE

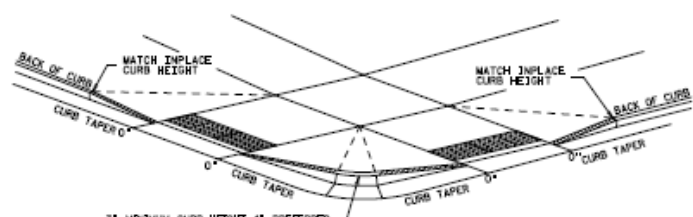


RETURNED CURB

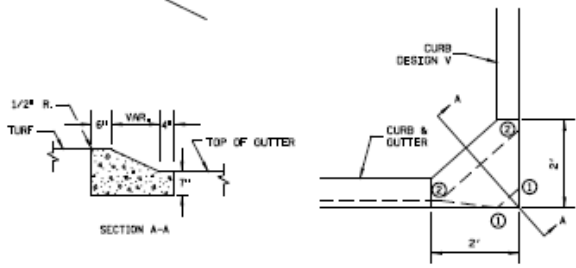
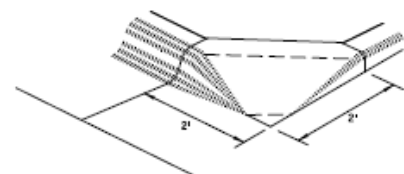


GRADED FLARES

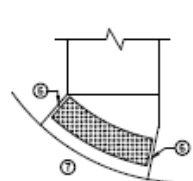
TYPICAL SIDE TREATMENT OPTIONS ③



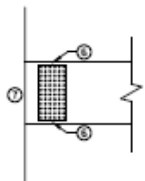
DETECTABLE EDGE WITH CURB AND GUTTER ③



APPROACH NOSE DETAIL FOR DOWNSTREAM SIDE OF TRAFFIC



RADIAL DETECTABLE WARNING



RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

NOTES:
SEE STANDARD PLATE 1038 AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.
WHETHER A SURFACE IS WALKABLE OR NOT SHALL BE DETERMINED BY THE ENGINEER.
CONCRETE FLARE LENGTHS ADJACENT TO NON-WALKABLE SURFACES SHOULD BE LESS THAN 8' LONG MEASURED ALONG THE RAMP FROM THE BACK OF CURB.

- ① 0" CURB HEIGHT.
- ② FULL CURB HEIGHT.
- ③ 2' - 3' FLARE.
- ④ IMMOVABLE OBJECT OR OBSTRUCTION.
- ⑤ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED ON ALL RAMP AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.
- ⑥ WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY, MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
- ⑦ IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 3" FROM THE EDGE OF ROADWAY TO PROVIDE VISUAL CONTRAST.
- ⑧ ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS WHEREVER THERE IS ZERO-INCH HIGH CURB, CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3" OF THE EDGE OF THE DETECTABLE WARNINGS AND UNIFORMLY RISES TO A 3-INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TAPER AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILITY STANDARDS.

DISTRICT 4, Design Standards
USER NAME: BSW/TAH
FILE NAME: 6250_A_40000
PATH & FILENAME: J:\PROJECTS\6250_A_40000

STANDARD PLAN SHEET NO. S-297.250 (4 OF 5)	PEDESTRIAN CURB RAMP DETAILS		
STANDARD APPROVED NOT APPROVED	STATE PROJ. NO.	(TH)	SHEET NO. OF SHEETS

Side Treatments

- When adjacent to pavement, flares shall be constructed at 8-10% max slope.
- When adjacent to turf, 1:6 graded flare is generally preferred.



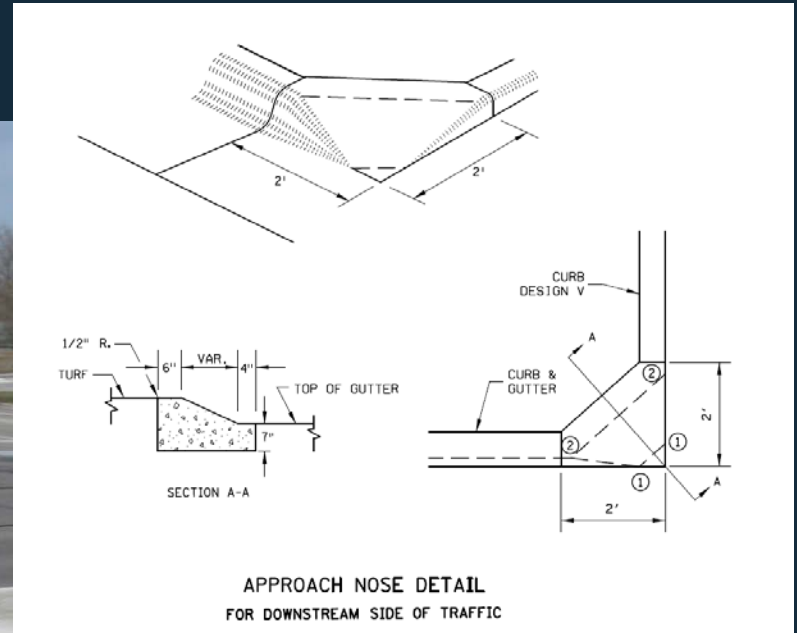
Side Treatments

- When adjacent to turf, a 2'-3' concrete flare may be used.



Side Treatments

- Approach nose detail for downstream side of traffic.



Detectable edge at quadrant

- All constructed curbs must have continuous detectable edge for the visually impaired.

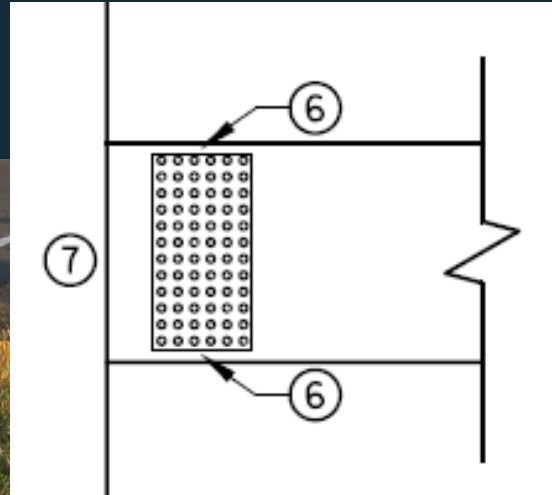


Detectable edge at quadrant

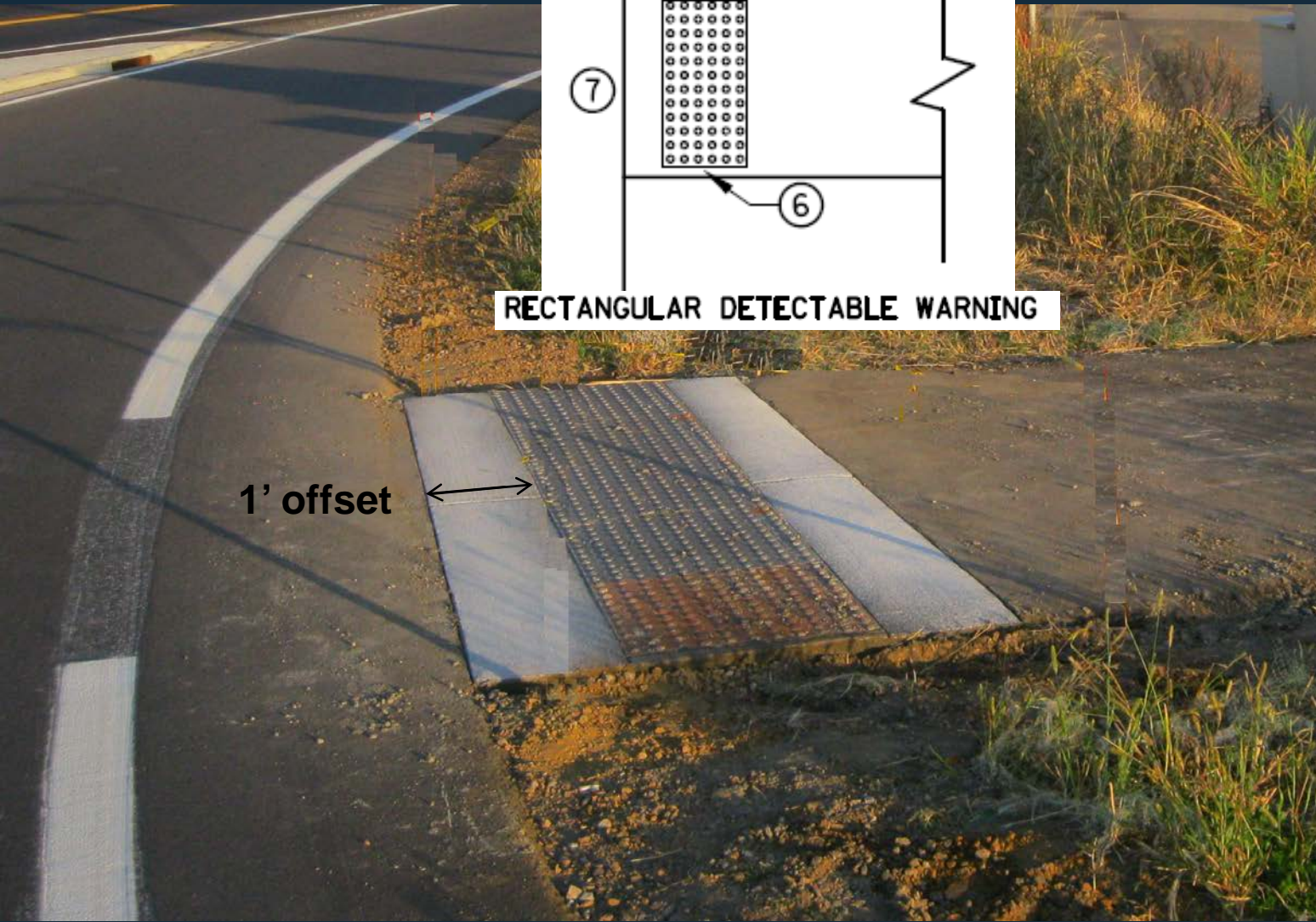
- Curb transitions are considered a detectable edge when the taper starts within 3" of the edge of truncated domes.



Detectable Edge with out C&G



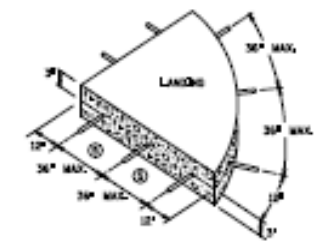
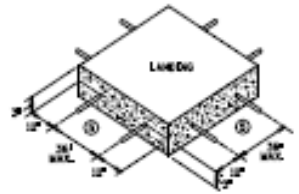
RECTANGULAR DETECTABLE WARNING



1' offset

Standard Plan Sheets

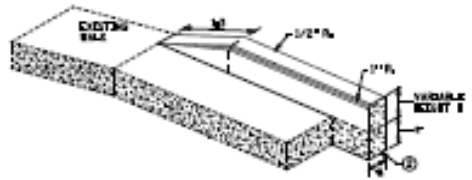
POSTED/REVISED
DATE/DATE



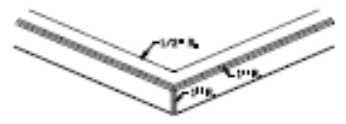
SIDEWALK REINFORCEMENT (B)



TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER

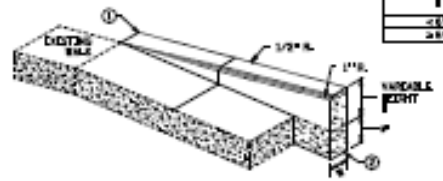


V CURB ADJACENT TO LANDSCAPE CURB WITHIN SIDEWALK LIMITS

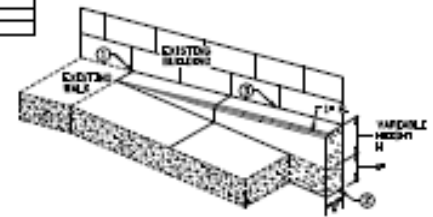


V CURB INTERSECTION

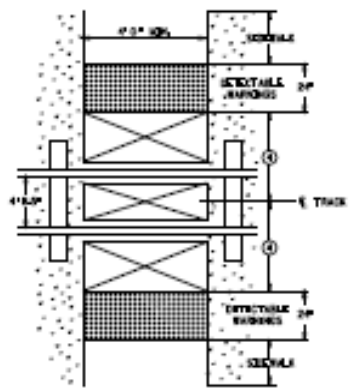
CONCRETE CURB DESIGN V	
CURB HEIGHT	CURB WIDTH
2'-0"	2'-0"
2'-6"	2'-6"



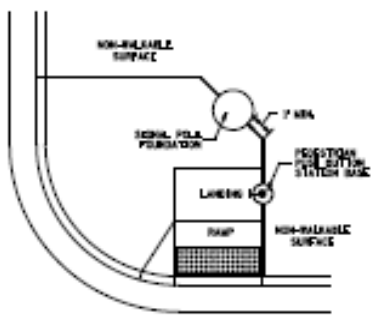
V CURB ADJACENT TO LANDSCAPE CURB OUTSIDE SIDEWALK LIMITS



V CURB ADJACENT TO BUILDING



RAILROAD CROSSING PLAN VIEW



CONCRETE WALK EDGES ADJACENT TO CONCRETE STRUCTURES

- NOTES:
- 1. ALL V CURB CONSTRUCTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.
 - 2. WHERE RIGHT-OF-WAY ALLOWS, USE OF V CURB SHOULD BE MODIFIED OR OMOVED ADJACENT TO RAMP OR SLOPING WALKWAY PARALLEL TO STRUCTURE.
 - 3. V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. V CURB NOT TO BE PLACED SHALL BE A 1/2" WIDTH AND SHALL MATCH PREVIOUS TOP OF SIDEWALK ELEVATION.
 - 4. END TYPERS BY TRANSPORTATION SHALL WATER DISPLACE SIDEWALK BRICKS.
 - 5. ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.
 - 6. CURB BETWEEN RAMP V CURB AND DISPLACE STRUCTURE SHALL BE SEALED AND WOOD BRICKS SHALL BE USED BETWEEN EXISTING STRUCTURE AND PLACED 1/2" CURB.
 - 7. EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 18" MAXIMUM FROM THE CENTERLINE OF THE TRACK, WHEN FOUNDATION GATES ARE PROVIDED. DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL, 18" - 24" FROM THE APPROACHING SIDE OF THE GATE AND.
 - 8. SHALL AND ABOUT 1/2" A SPOT-COATED 18" LONG REINFORCEMENT BARS AT 30" MAX. SPACING TO DETECTABLE GATES.
 - 9. MINIMUM QUANTITIES PROVIDED FOR IN PLAN.

DRAWING NO. 5-297.290 (S) OF 50
DATE 11/11/11
DESIGNED BY: J. J. JENSEN
CHECKED BY: J. J. JENSEN
DATE 11/11/11

MINNESOTA DEPARTMENT OF TRANSPORTATION STATE PROJECT NO. (TH)) SHEET NO. OF SHEETS	PEDESTRIAN CURB RAMP DETAILS
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Vertical Face Curb

- V-curb adjacent to building



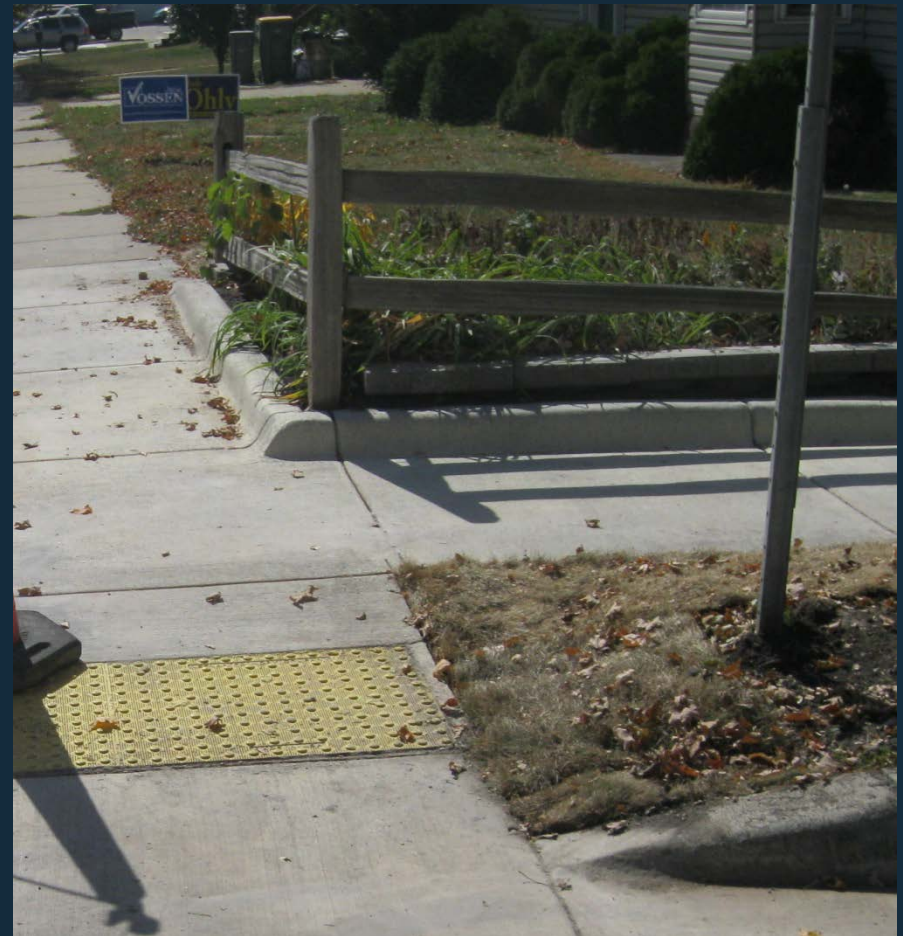
V-Curb

- V-curb adjacent to landscape and outside sidewalk limits (preferred)



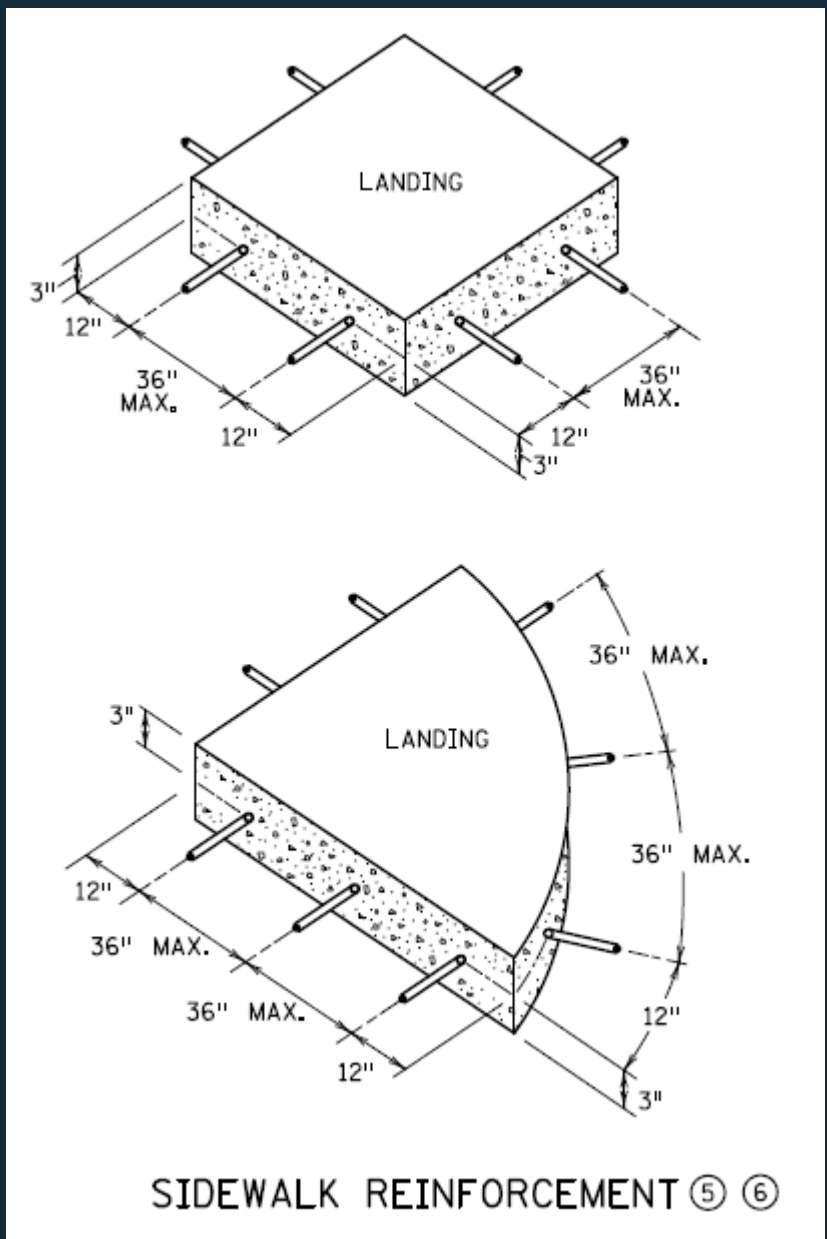
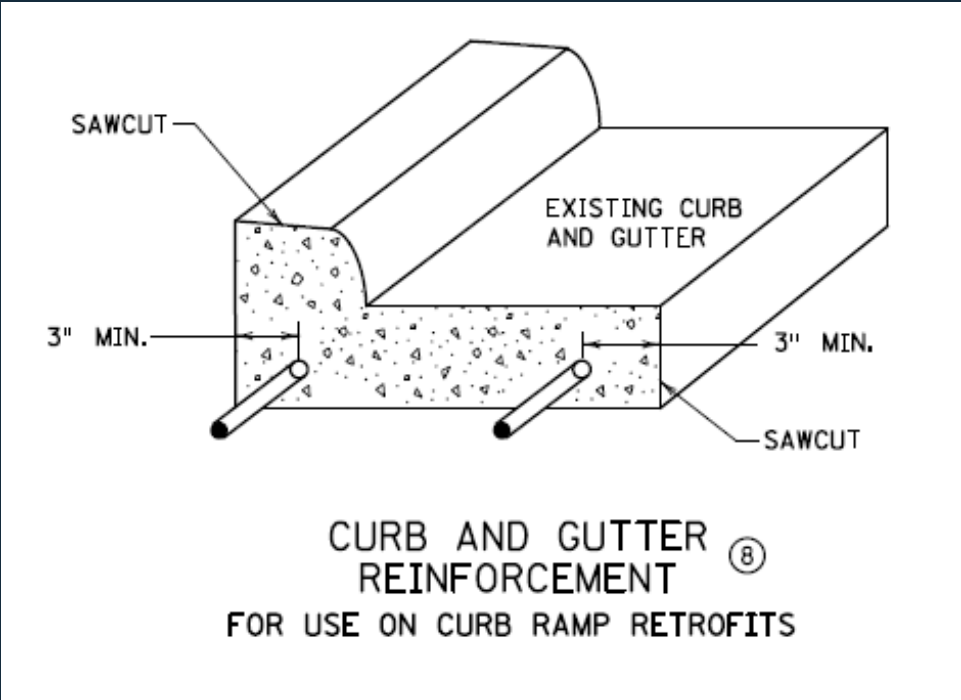
V-Curb

- V-curb adjacent to landscape and inside sidewalk limits



Standard Plan Sheets

New in 2013: Reinforcement Details





Traditional Vs. ADA Pay Items

TRADITIONAL PAY ITEMS

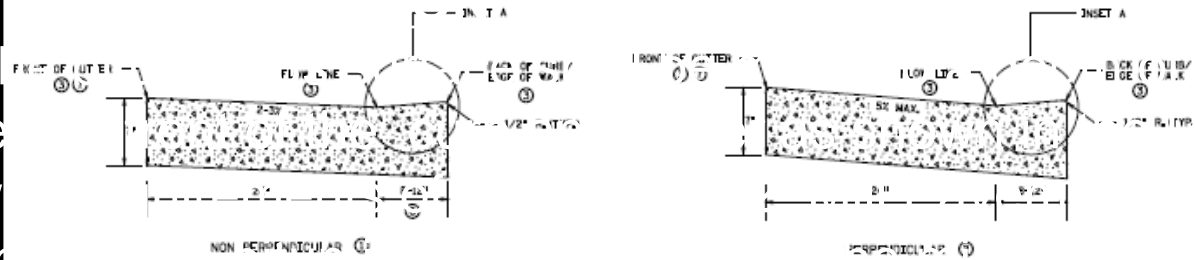
REMOVE BITUMINOUS PAVEMENT
REMOVE CURB AND GUTTER
REMOVE CONCRETE WALK
TRUNCATED DOMES
SAWING BITUMINOUS PAVEMENT
SAWING CONCRETE WALK
BITUMINOUS PATCHING MIXTURE
CONCRETE CURB & GUTTER B624
CONCRETE CURB & GUTTER B424
AGGREGATE SURFACING CLASS 5
CONCRETE CURB DESIGN V4
CONCRETE CURB DESIGN V6
4" CONCRETE WALK
6" CONCRETE WALK
COMMON EXCAVATION
COMMON BORROW
SUBGRADE PREPARATION
SELECT TOPSOIL BORROW
SODDING TYPE LAWN

ADA PAY ITEMS

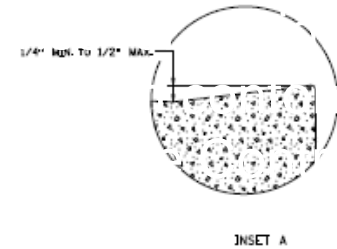
REMOVE AND REPLACE BITUMINOUS PAVEMENT
REMOVE CURB AND GUTTER
REMOVE CONCRETE WALK
TRUNCATED DOMES
MILL AND PATCH BITUMINOUS PAVEMENT
CONCRETE CURB AND GUTTER
CONCRETE WALK
CONCRETE CURB DESIGN V
SITE RESTORATION

- ADA pay items allow less time tracking quantities in the field and more time ensuring a quality product

Mill and Patch Bit. Pavement



PEDESTRIAN ACCESS ROUTE
CURB & GUTTER DETAIL



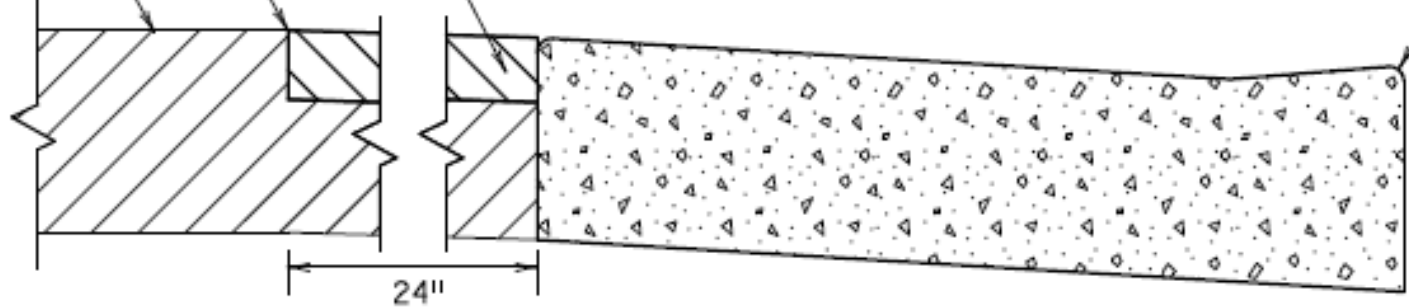
MILL VERTICAL
EDGE (5) & (3)

SAWCUT BOT.
PAVEMENT (5) & (3)

MILL VERTICAL
EDGE
EXISTING BIT.
PAVEMENT

(5) & (3)
2" BITUMINOUS
MILL & PATCH

1/2" R. (TYP.)

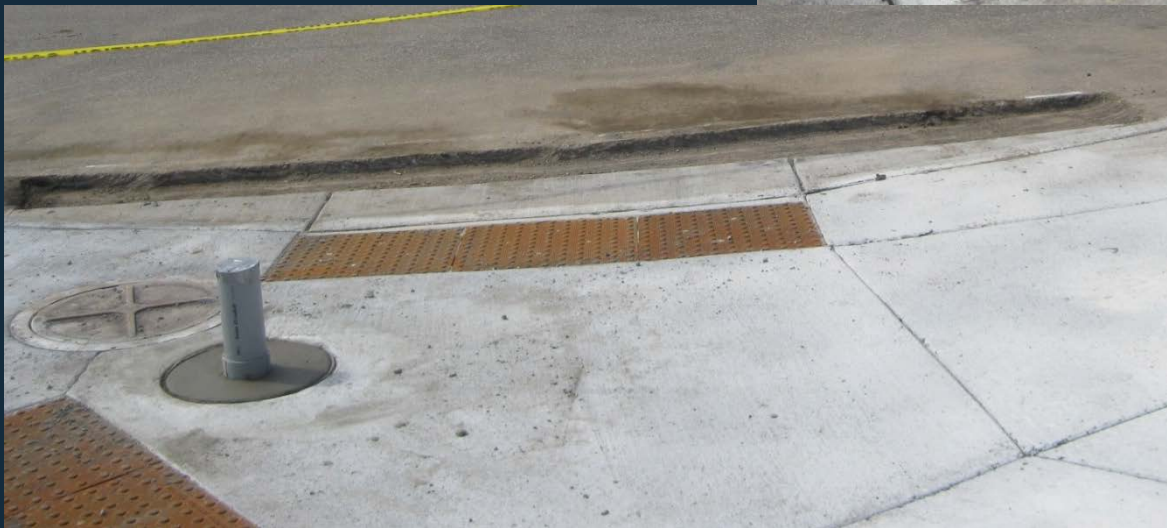


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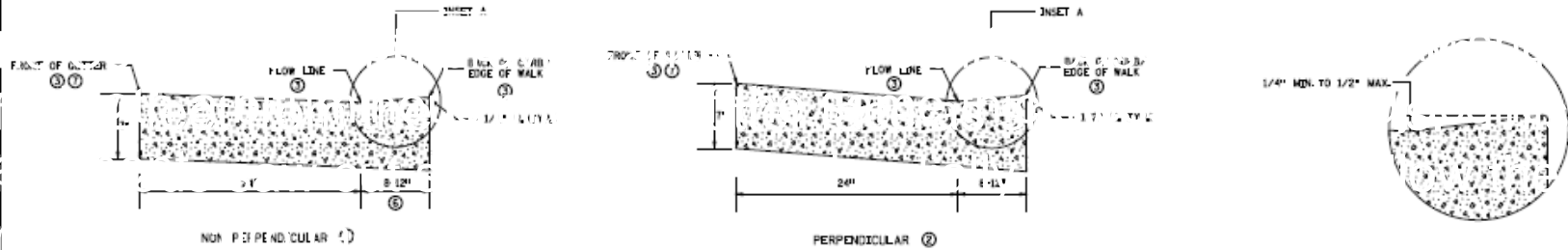
NOT APPROVED	STATE PROJ. NO.	(TH)	SHEET NO.	OF	SHEETS
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Mill and Patch Bit. Pavement

- (2232) Mill and patch bit. pavement – Lin Ft
 - Compacted bit surface to be finished flush with gutter face ($\frac{1}{4}$ " tolerance)



Remove and Replace Bit. Pavement



PEDESTRIAN ACCESS ROUTE
CURB & GUTTER DETAIL

WILL VERTICAL
EDGE

⑤ & ③

SAWCUT BIT.
PAVEMENT

⑤ & ③

SAWCUT

EXISTING CURB

SAWCUT BIT.
PAVEMENT
EXISTING BIT.
PAVEMENT

⑤ & ③

REMOVE & REPLACE
BIT. PAVEMENT

1/2" R. (TYP.)

24"

DISTRICT 5, Design Standards
 USER NAME: BROWTTIN
 PATH & FILENAME: J:\M\10157769\10157769_3.dwg
 FILE NAME:
 2500_3.dwg

Remove and Replace Bit. Pavement



- (2104) Remove & Replace Bit. Pavement – Lin Ft



- **Compacted bit surface to be finished flush with gutter face ($\frac{1}{4}$ " tolerance)**

Concrete Curb & Gutter



CONSTRUCTION REQUIREMENTS

Curb and Gutter – The curb and gutter shall be constructed as detailed in the Plan. The transition from the existing curb to the new curb and gutter section shall occur within 5 feet of the curb and gutter construction begins. The gutter inslope shall be as detailed in the Plans.

08/11/2011

WILL VERTICAL
EDGE
EXISTING SIT.
PAVEMENT

SUBMIT SIT.
PAVEMENT
EXISTING SIT.
PAVEMENT

DISTRICT 5, Design Services
USER NAME: BROWNTON
PARTY & FILENAME: J:\2011\0811\08110811\08110811.dwg

FILE NAME:
20110811.dwg

EXISTING CURB
AND GUTTER

3" MIN.
SAWCUT

AND GUTTER REINFORCEMENT (6)
CURB RAMP RETROFITS

THE SLOPE FROM THE EXISTING TO THE PROPOSED
NEW PAV.
THE FLOW LINE SHALL NOT BE GREATER THAN
THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON
LOW LINE RAMP TYPES INCLUDED FANS, DEPRIVED
TO DIRECTIONALS.
THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED
LOW LINE RAMP TYPES INCLUDED PERPENDICULAR,
AND DIAGONAL RAMP.
CONTINUITIES GREATER THAN 1/4".
SPACED 18" LONG TIE BARS AT 30" CENTER TO
PAVEMENT.
FROM THE EXISTING TO NEW FRONT OF CENTER,
NEW GUTTER FACE INTO THE EXISTING ROADWAY.
CURB APPLICATIONS.
CONSTRUCTED FLUSH WITH PROPOSED
NEW GUTTER SHALL NOT BE OVERLAP.
GROUT 2 - NO. 4 X 12" LONG REINFORCEMENT

CURB RAMP DETAILS

SHEET NO. OF SHEETS

Concrete Curb & Gutter Provision



If the gutter flow line in front of the proposed curb ramps exceeds 2.0 percent slope, the flow line should be adjusted to allow a flatter slope in front of the curb ramps, but still provide positive drainage.

The Contractor must consult with the Engineer before modifying any flow line that will result in the cross slope of the adjacent bituminous patching (i.e. running slope of crosswalk) exceeding 5 percent.



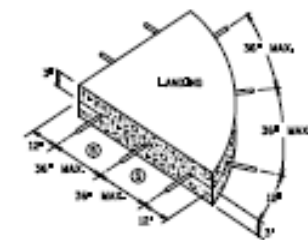
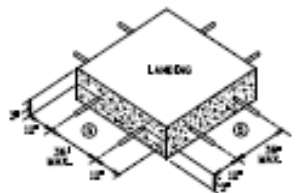
Concrete Curb & Gutter



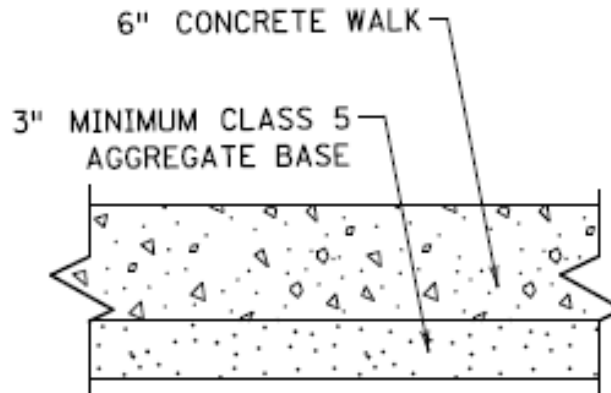
- **(2531) Concrete Curb and Gutter – Lin Ft**
 - No specific curb height pay items are specified in the plan. Simply match existing curb height at removal limit and transition into PAR curb and gutter at the pedestrian ramps.



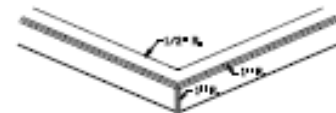
Concrete Walk



SIDEWALK REINFORCEMENT ①

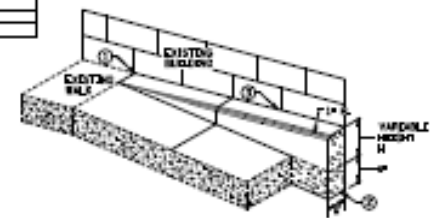


TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER

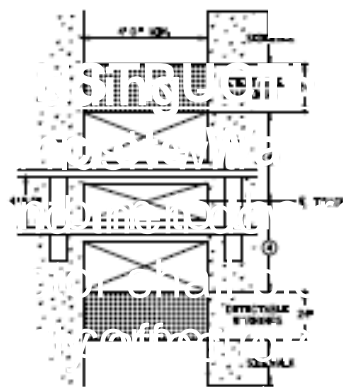


V CURB INTERSECTION

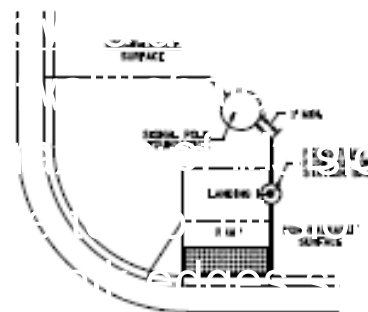
DESIGN V
USE WITH
2"
6"



V CURB ADJACENT TO BUILDING



RAILROAD CROSSING PLAN VIEW



CONCRETE WALK EDGES ADJACENT TO CONCRETE STRUCTURES

NOTES

1. ALL EXISTING DETECTOR POINTS SHALL MATCH EXISTING WALK JOINTS.
2. ALL V CURBS SHALL BE 12" HIGH AND 6" WIDE. ALL V CURBS SHALL BE CONCRETE OR METAL AS NOTED AT TOP OF SLOPING WALKWAY. FINISH TO BE PROVIDED.
3. V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIGHTS WHEN POINT OF WAY ALLOWS.
4. ALL V CURBS SHALL BE PLACED WITHIN THE WALKWAY.
5. END SURFACES AT TRANSITION SECTION SHALL NOT BE PLACED OUTSIDE SIDEWALK EDGES.
6. ALL V CURBS SHALL MATCH BOTTOM OF ADJACENT WALK.
7. DETECTOR POINTS SHALL BE PLACED AT THE CENTERLINE OF THE WALK AND SHALL BE 12" FROM THE CURB TO THE DETECTOR POINT.
8. CURB OF DETECTABLE WARNING SURFACES SHALL BE PLACED 18" AWAY FROM THE CENTERLINE OF THE WALK. WHEN PROVISIONS ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES AND OUTSIDE THE WALK.
9. ALL WALK EDGES SHALL BE 12" HIGH AND 6" WIDE. APPROXIMATE BARS AT 36" MAX. SPACING TO DETECTOR POINTS.
10. REINFORCING QUANTITIES PROVIDED FOR IN PLAN.

MINNESOTA (MNDOT) No. 5-297.290 03 OF 50
 DESIGN APPROVED
 NOT APPROVED

PEDESTRIAN CURB RAMP DETAILS

STATE PROJ. NO. (TH) SHEET NO. OF SHEETS

POSTED/REVISED DATE

DESIGNED BY: Design Services
 DRAWN BY: LAM
 CHECKED BY: J. LAM
 DATE: 11/11/03

SCALE: AS SHOWN

Concrete Walk

- **(2521) Concrete Walk**

If common borrow requirements exceed 8 CY (CV) at any individual site/quadrant, than the common borrow required at that location specifically required for in the Plan shall be paid for at \$20/CY (CV).



Concrete Walk

- **(2521) Concrete Walk – Sq Ft**

This work shall consist of constructing Concrete Walk including necessary Subgrade Preparation, Aggregate Base, and Grading. (Sq Ft price includes the area of walk under the truncated domes).



Concrete Walk

• (2531) Truncated Domes-Sq. Ft.

The Contractor shall select a truncated dome product from the approved products list.

Standard Plate No. 7038A

All truncated dome systems shall be placed in strict accordance with the recommendations of the manufacturer.

RECTANGULAR PLATES

RADIAL PLATES

SECTION A-A TRUNCATED DOME

TYPICAL RADIAL TRUNCATED DOME PLATES			
RADIUS (FEET)	LONG CHORD WIDTH (INCHES)	SQ. FT. PER PLATE	PLATES REQUIRED FOR 50 DEGREE TURN
10	23-1/2	3.53	8
15	18-13/16	2.93	15
15	23-1/2	3.67	12
20	18-13/16	3.00	20
20	18-7/8	2.98	20
25	20-1/2	3.28	23
25	23-9/16	3.77	20
30	22-5/8	3.65	25
35	22	3.56	30

NOTES:

DETECTABLE WARNING SURFACES SHALL FOLLOW THE PUBLIC RIGHTS-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG).

DETECTABLE WARNING SURFACES SHALL BE PLACED ON A SQUARE OR RADIAL GRID PATTERN.

DETECTABLE WARNING SURFACES ARE REQUIRED:

- ON RAMP, LANDING, OR BLUNDED TRANSITIONS PROVIDE A FLUSH PEDESTRIAN CONNECTION TO THE ROADWAY.
- WHERE PEDESTRIAN ACCESS ROUTES CROSS COMMERCIAL DRIVEWAYS OTHERWISE PERMITTED TO OPERATE LIKE A PUBLIC ROADWAY.
- AT PEDESTRIAN ROADWAY CROSSINGS.

ON RAIL PLATFORMS WHERE BOARDING EDGES ARE NOT PROTECTED, DETECTABLE WARNING SHALL EXTEND:

- A MINIMUM OF 24" IN THE DIRECTION OF TRAVEL.
- THE FULL WIDTH OF THE RAMP, LANDING, OR BLUNDED TRANSITION WITHIN 5' OF FULL WIDTH ON EITHER END.
- THE FULL LENGTH OF THE PUBLIC USE AREA OF A RAIL PLATFORM.

DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH ADJACENT CUTTER, ROADWAY, OR WALKWAY, EITHER A LIGHT-ON-DARK OR DARK-ON-LIGHT, CONTRAST MAY BE PROVIDED ON THE FULL RAMP SURFACE EXCLUDING THE FLARED SIDES.

FOR MW/DOT PROJECTS, SEE MW/DOT'S APPROVED/QUALIFIED PRODUCT LIST.

DETECTABLE WARNING SURFACE SHALL BE PAID FOR AS TRUNCATED DOMES BY THE SQUARE FOOT.

ALL TRUNCATED DOME SYSTEMS SHALL BE PLACED IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER.

- CENTER TO CENTER DOME SPACING: 1.6" MINIMUM, 2.4" MAXIMUM.
- BASE TO BASE DOME SPACING: 0.65" MINIMUM.
- DOME BASE TO PLATE EDGE SPACING: 0.35" MINIMUM, 0.75" MAXIMUM.
- SPACING VARIES ON RADIAL PLATES.
- TYPICAL WIDTHS AVAILABLE: 12", 18", 24", 30", 36". CHECK WITH MANUFACTURERS FOR AVAILABLE WIDTHS.
- ON RADIAL PLATE, RADIUS DEFINED AT BACK OF CURB.
- TYPICAL RADII: CHECK WITH MANUFACTURERS FOR AVAILABLE RADII.

APPROVED AUGUST 23, 2010

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

DETECTABLE WARNING SURFACE
TRUNCATED DOMES

SPECIFICATION REFERENCE
2531

STANDARD PLATE NO.
7038A

Concrete Curb Design V



CONCRETE CURB DESIGN V

CURB HEIGHT H	CURB WIDTH W
< 6"	4"
≥ 6"	6"

< 6"

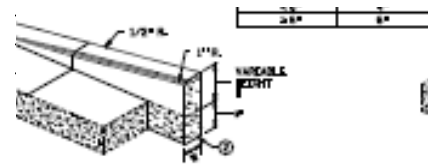
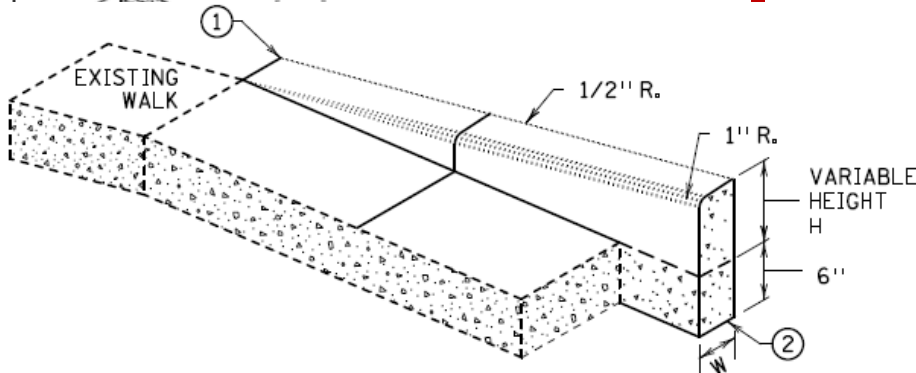
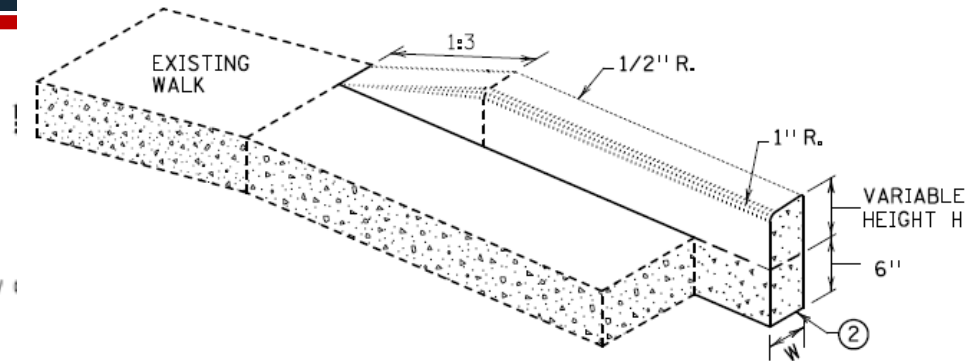
≥ 6"

4"

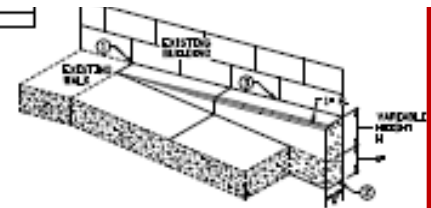
6"



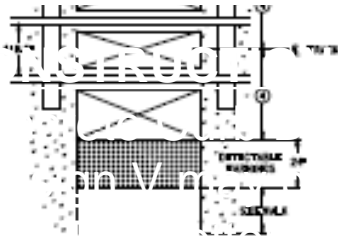
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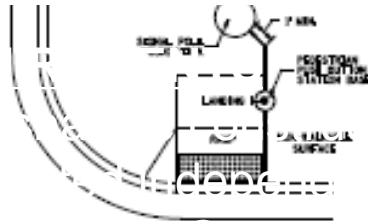
Y CURB ADJACENT TO LANDSCAPE OR SIDEWALK LIMITS



Y CURB ADJACENT TO BUILDING



RAILROAD CROSSING PLAN VIEW



CONCRETE WALK EDGES ADJACENT TO CONCRETE STRUCTURES

NOTES

- ALL V CURB CONSTRUCTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.
- WHERE RIGHT-OF-WAY ALLOWANCE OF V CURB SHOULD BE MINIMIZED OR ZERO, ADJACENT CURB OR SLOPING SIDEWALK PARALLEL IS PREFERRED.
- V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWANCE IS SUFFICIENT TO DO SO.
- END TAPER BY TRANSITION SECTION SHALL WATER DISPLACE GENERAL GRADE.
- ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.
- IF CURB IS TO BE USED AS A CURB FOR A SIDEWALK, IT SHALL BE SEALED AND FINISHED TO MATCH THE SIDEWALK SURFACE AND PLACED IN-PLACE.
- EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 18" MAXIMUM FROM THE CENTERLINE OF THE CURB WHEN PAVEMENT DATA HAS PROVIDED.
- SEE PLAN FOR CURB LOCATION AND DETAIL FOR CURB TO BE USED AS A CURB FOR A SIDEWALK.
- SMALL AND GREAT IN-LA SPOKE-CENTRIC 3/8" LONG REINFORCEMENT BARS AT 30" MAX. CENTER TO CENTER SPACING.
- MINIUM QUANTITIES PROVIDED FOR IN PLAN.

MINNESOTA DEPARTMENT OF TRANSPORTATION
DESIGN APPROVED
DATE: 10/15/10

PEDESTRIAN CURB RAMP DETAILS

STATE PROJ. NO.

(TH) SHEET NO. OF SHEETS

DESIGNED BY: Design Services
DRAWN BY: J. J. JENSEN
CHECKED BY: J. J. JENSEN
DATE: 10/15/10

Concrete Curb Design V

- (2531) Concrete Curb Design V – Lin Ft

Any additional material beyond the edge of the concrete curb Design V, height shall be provided for as per Section 201.01. Max. to be constructed shall be determined by the Engineer.



Site Restoration



- **(2575) Site Restoration - Each**
 - This work consists of site grading and the turf establishment adjacent to pedestrian facilities as detailed in the Plans.
 - Intended for areas where pedestrian ramps are being built, typically in a quadrant of two intersecting roadways



Site Restoration



- **(2575) Site Restoration - Each**

At the time of construction, all areas that are disturbed as a result of the Plan work and such and gutter construction including but not limited to curb ramp, curb and gutter, and sidewalk/trail construction shall be seeded and stabilized in accordance with the Plans, Specifications, and Special Provisions. The slope of the sidewalk surface shall be 1.0% maximum. The maximum height of the curb shall be 4" which shall be achieved using select topsoil borrow if necessary.



Questions?



ADA Training Module: Standard Plans & Pay Items

Your Destination...Our Priority

