

Intro



ADA Operations Contact Info

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

Your Destination... Our Priority





MnDOT ADA Training

STANDARD PLANS & PAY ITEMS

Your Destination...Our Priority



- PROWAG and Curb Ramp Basics
- Standard Plan Sheets
- Curb Ramp Types
- 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

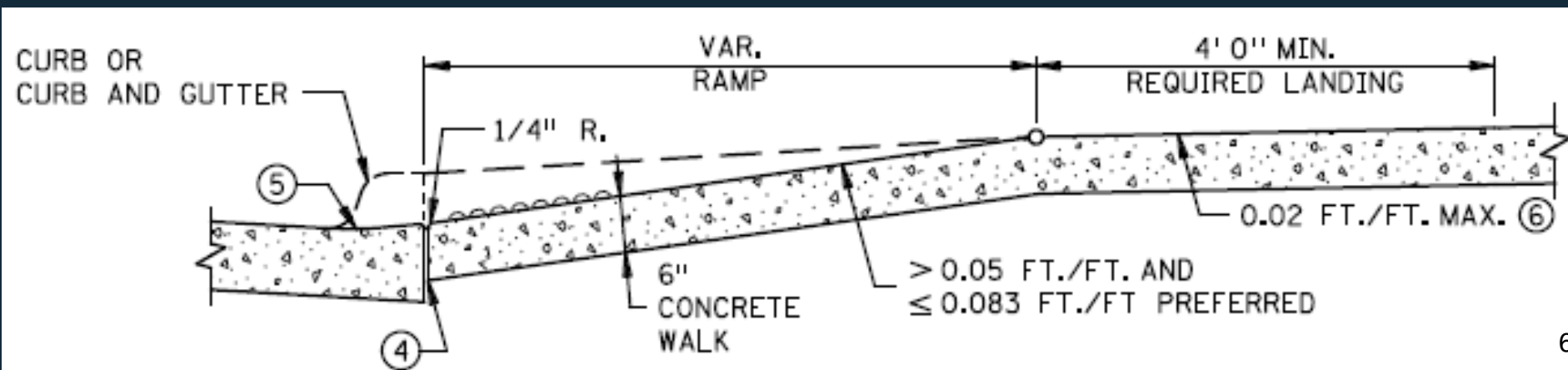


- Minimum 4 foot wide Pedestrian Access Route (PAR) with a maximum cross slope of 2% is required.
- The PAR must be continuous and unobstructed.
- The PAR shall connect accessible elements, spaces and facilities.

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.

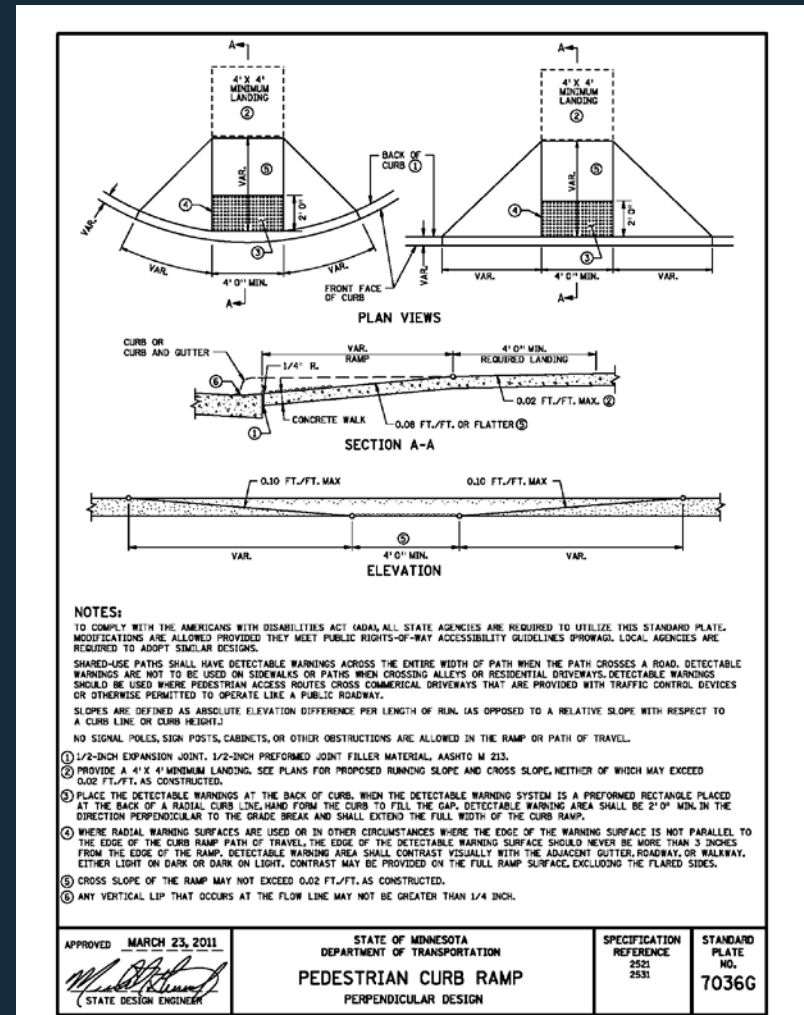


Standard Plate 7036G



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

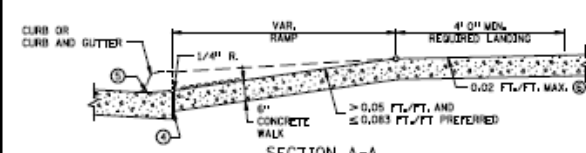
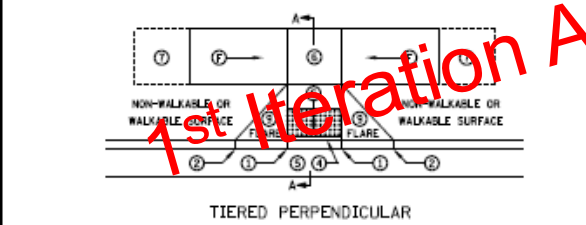
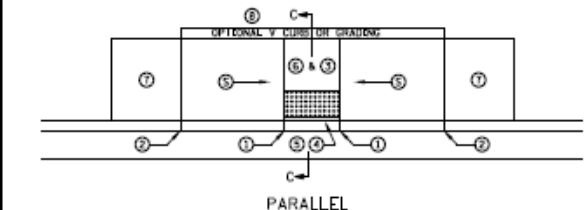
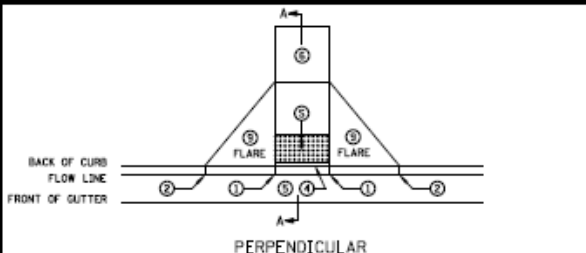


Standard Plans

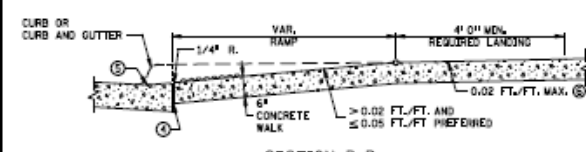
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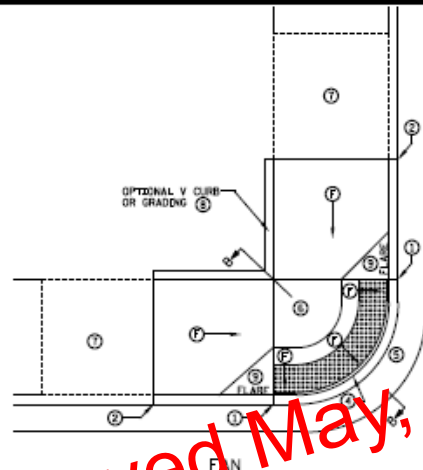
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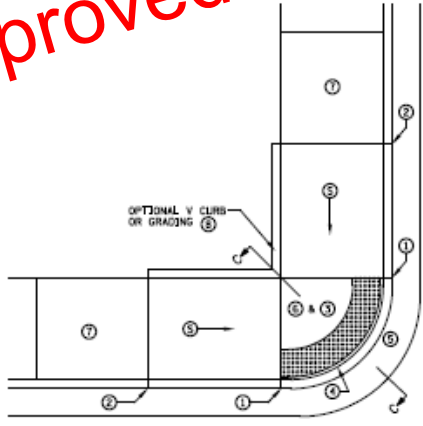
SECTION A-A
PERPENDICULAR/TIERED/DIAGONAL



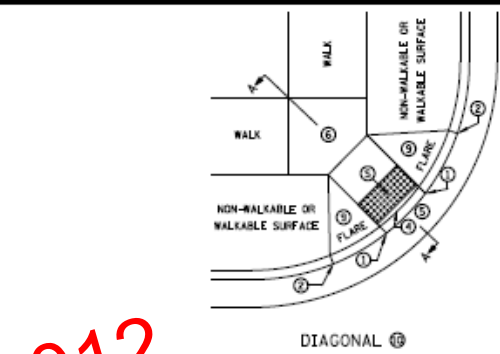
SECTION B-B
FAN



DEPRESSED CORNER



SECTION C-C
PARALLEL/DEPRESSED CORNER



- LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING 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 RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.
- CONSTRUCTION JOINTS SHALL BE CONSTRUCTED ALONG GRADE BREAKS. ALL GRADE BREAKS WITHIN THE RAMP 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. SHARED USE PATHS SHALL HAVE DETECTABLE WARNING ACROSS THE ENTIRE WIDTH OF PATH WHEN THE PATH CROSSES A ROAD.
- SEE STANDARD PLATE 7038 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 LANDINGS OUTSIDE OF THE DETECTABLE WARNING AREA.
 - ④ 1/2" PREFORMED JOINT FILLER MATERIAL (ASTM M 213) JOINT FILLER SHALL BE PLACED FLUSH WITH THE BACK OF CURB AND ADJACENT SIDEWALK JOINT SHALL BE FREE OF DEBRIS. RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB.
 - ⑤ SEE PEDESTRIAN ACCESS ROUTE CURB AND GUTTER DETAIL FOR INFORMATION ON CONSTRUCTING 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

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

1st Iteration Approved May, 2012.

Standard Plans

New in 2013: Ramp slope ranges



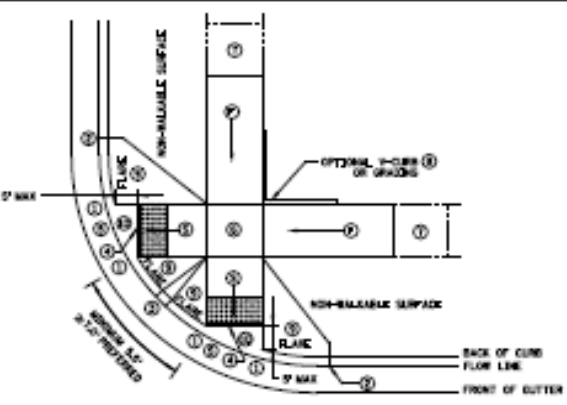
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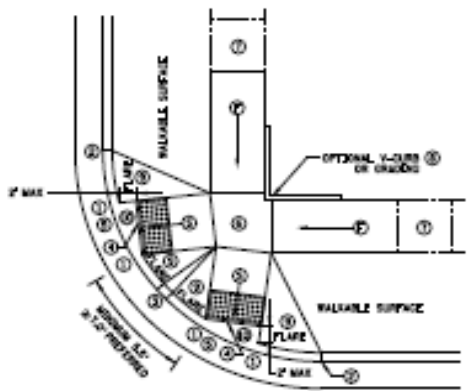
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Standard Plans

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DATE/ISSUE

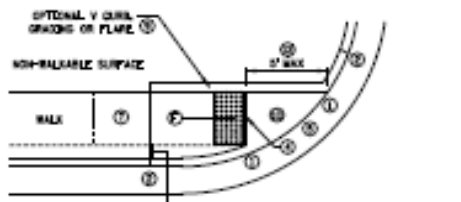


ADJACENT TO NON-WALKABLE SURFACE

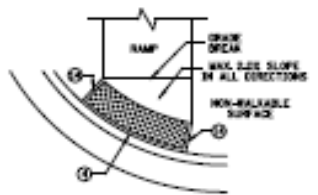


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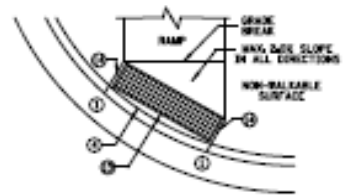
COMBINED DIRECTIONAL



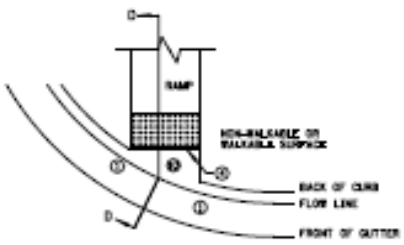
IF NON-CONCRETE SLABS ARE CONSTRUCTED AND 25 FEET FROM 2' IN NORTH AT TOP OF CURB TRANSITION PLATE CONCRETE RAMP WIDTH TO ADJACENT BACK OF CURB



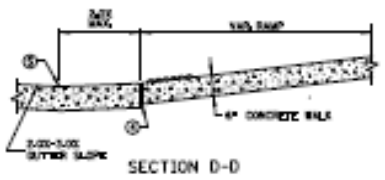
DETECTABLE WARNING SETBACK CRITERIA



ONE-WAY DIRECTIONAL



CURB FOR DIRECTIONAL RAMPS



SECTION D-D

- NOTES**
- LANDINGS SHALL BE LOCATED ANTICIPATE THE PEDESTRIAN ACCESS ROUTE CHANGED DIRECTION AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES SHORTER THAN 5:10 AND AT THE APPROACHING RAMP OR DIVERGENT GRADE.
 - NOTAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 10' FROM THE BACK OF CURB WITH 4" FROM THE EDGE OF CURB USING THE PREPARED DETAIL.
 - SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30' OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5:10.
 - CONTRACTOR JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BRACKS.
 - ALL GRADE BRACKS WITHIN THE PAIR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL.
 - TO DESIGN RAMPS AND LANDINGS AND PROPERLY CONSTRUCTED, LANDINGS MAY BE CAST SEPARATELY, FOLLOW SPECIAL REINFORCEMENT DETAILS ON SHEET 5 WHEN LANDINGS ARE CAST SEPARATELY.
 - ALL SLOPES ARE ABSOLUTE, NOTED WITH RELATIVE TO NORMAL/ROADWAY GRADE.
 - TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.
 - MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS, SIGNED 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 PLATE 7000 AND SHEET 4 OF 5 FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.
 - 1/2" OF CURB HEIGHT.
 - FULL CURB HEIGHT.
 - 1/4" MAXIMUM CURB HEIGHT, IF PREPARED.
 - 1/4" PREPARED JOINT FILLER MATERIAL, HEIGHT 1/4" MINIMUM FILLER SHALL BE PLACED FLUSH WITH THE BACK OF CURB AND ADJACENT WALKABLE SURF SHALL BE PROOF OF CORNER. RECTANGULAR DETECTABLE WARNING SHALL BE SETBACK 3" FROM THE BACK OF CURB. RAMP DETECTABLE WARNING SHALL BE WITHIN 10' FROM THE BACK OF CURB.
 - SEE PEDESTRIAN ACCESS ROUTE CURB AND GUTTER DETAIL FOR INFORMATION ON CONSTRUCTING CURB AND GUTTER AT CURB SPRINGS. SEE SHEET 4 OF 5.
 - 4" BY 4" LANDING WITH MAX 2:10 SLOPE IN ALL DIRECTIONS.
 - IF LONGITUDINAL SLOPE IS GREATER THAN 5:10, 4" BY 4" LANDING WITH MAX 2:10 SLOPE IN ALL DIRECTIONS REQUIRED.
 - IF CURB IS USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LAYOUT WHEN HEIGHT OF WAY ALLOWED.
 - SEE SHEET 4 OF 5, TYPICAL CURB TREATMENT OPTIONS FOR DETAILS ON FLARES AND RETURNED CURBS.
 - WALK SIDE SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BRACKS AND GRAB TO FLOW LINE SHALL BE CONSTRUCTED INTERNAL WITH CURB AND GUTTER.
 - TO BE USED FOR ALL DIRECTIONAL RAMPS.
 - GRABS PLACED AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.
 - RECTANGULAR DETECTABLE WARNING MAY BE SETBACK 3" FROM THE BACK OF CURB WITH CORNERS SET 1" FROM BACK OF CURB, 3" IF SETBACK IS EXCEEDED USE RADIAL DETECTABLE WARNING.
 - WHEN NO CONCRETE PLATES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB MAINTAIN 3" BETWEEN EDGE OF GRADE AND EDGE OF CONCRETE.
 - DETECTABLE WARNING SHALL BE SETBACK 2' MINIMUM WHEN ADJACENT TO WALKABLE SURFACE AND 3' MINIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE.

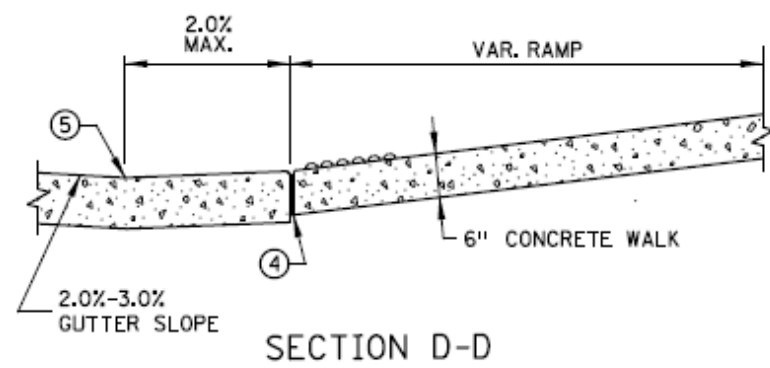
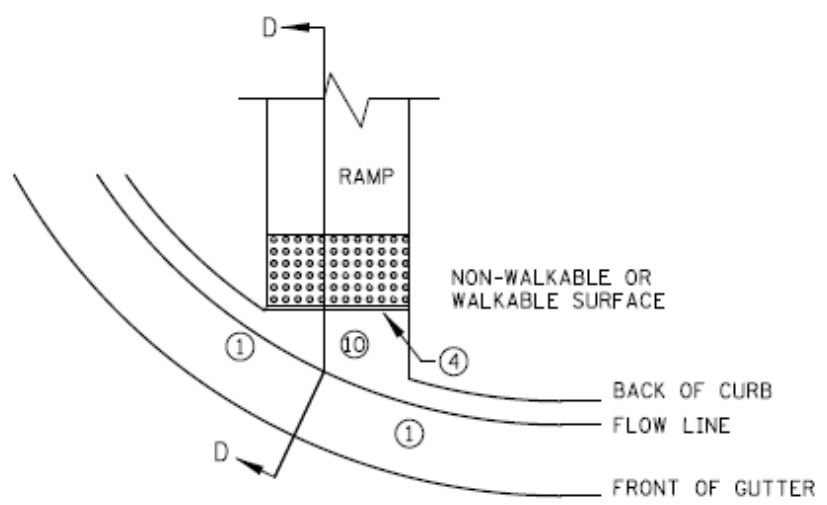
LEGEND	
①	DEICTED PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 1:12 AND 2:12, UNLESS OTHERWISE NOTED. LONGITUDINAL SLOPES UP TO 2:12 ON FLATTER ARE ALLOWED.
②	DEICTED PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2:12 AND LESS THAN 5:10 IN THE DIRECTION NORTH AND CROSS SLOPE SHALL NOT EXCEED 2:10.

DISTRICT 7, Design Services
CSEB NAME, Drawn By
DATE, 11/11/2010, 11:11:11 AM
FILE NAME, 11/11/2010_11:11:11 AM
PROJECT NUMBER, 11/11/2010_11:11:11 AM

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

Standard Plans

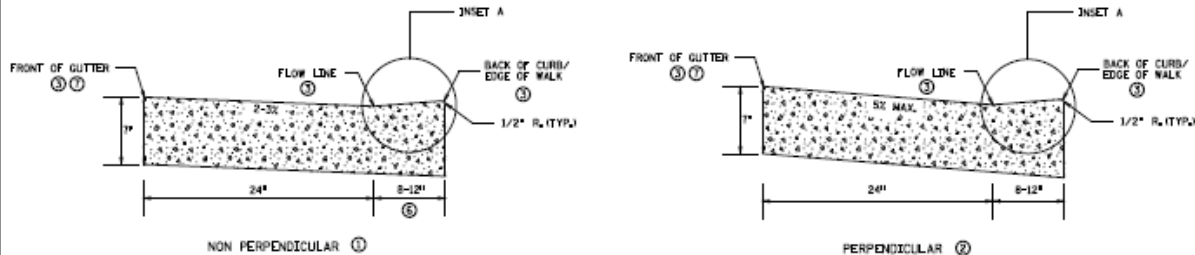
- When constructing directional ramps, the “triangular” concrete piece shall be poured integral with the curb and gutter (Directional Curb).



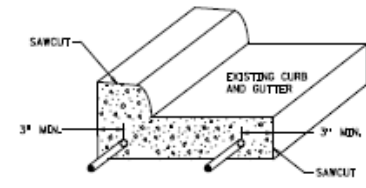
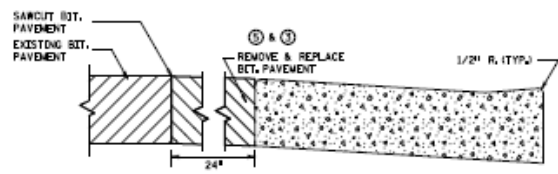
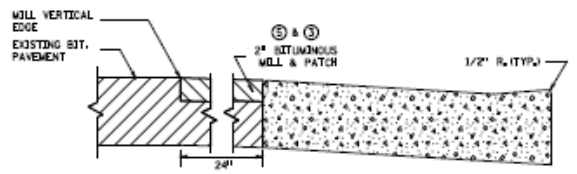
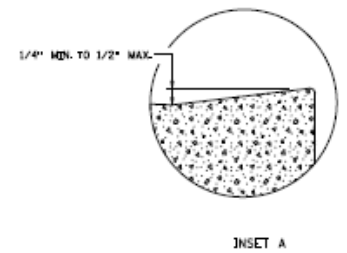
CURB FOR DIRECTIONAL RAMPS ⑪

Standard Plans

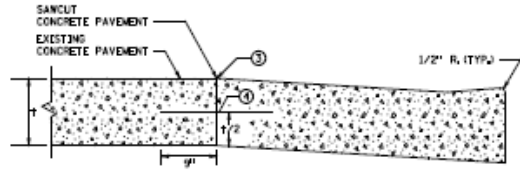
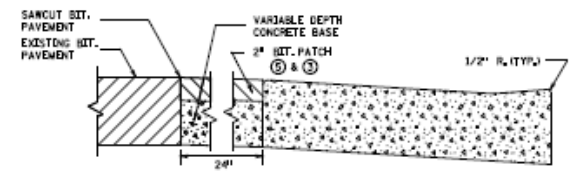
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PEDESTRIAN ACCESS ROUTE
CURB & GUTTER DETAIL



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.
 - FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON PERPENDICULAR TO THE GUTTER FLOW LINE, RAMP TYPES INCLUDED: FANS, DEPRESSED CORNERS, & ONE WAY AND COMBINED DIRECTIONALS.
 - FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED PERPENDICULAR TO THE GUTTER FLOW LINE, RAMP TYPES INCLUDED: PERPENDICULAR, TIRED PERPENDICULAR, PARALLEL, AND DIAGONAL RAMPS.
 - THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4\".
 - DRILL AND GROUT NO. 4 EPOXY-COATED 18\" LONG TIE BARS AT 30\" CENTER TO CENTER INTO EXISTING CONCRETE PAVEMENT.
 - 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.
 - VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS.
 - TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION FOR GUTTER SHALL NOT BE OVERLAP.
 - WHERE PLAN SPECIFIES, DRILL AND GROUT 2 - NO. 4 X 12\" LONG REINFORCEMENT BARS (EPOXY COATED).

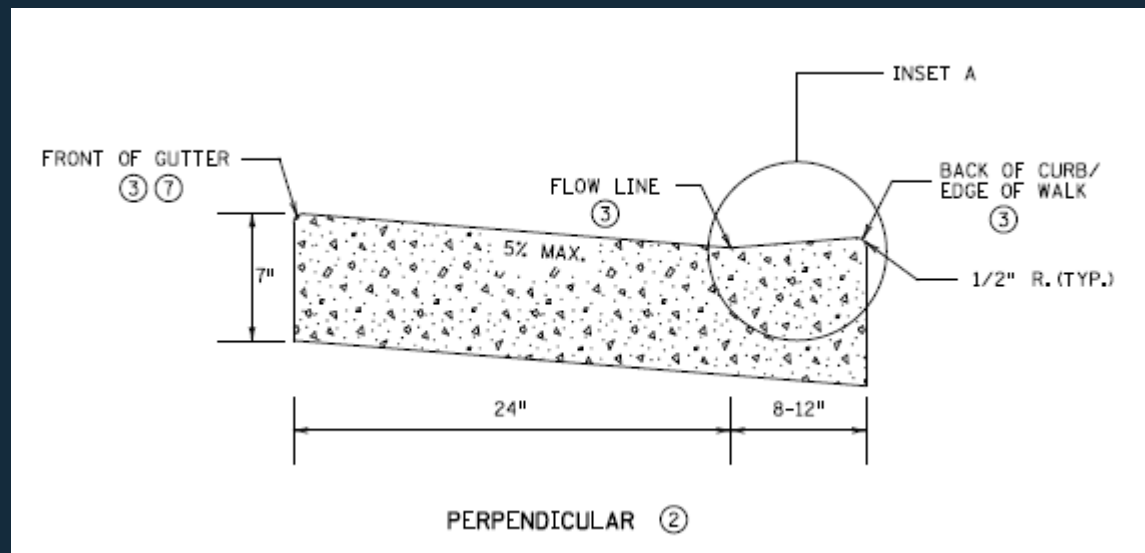
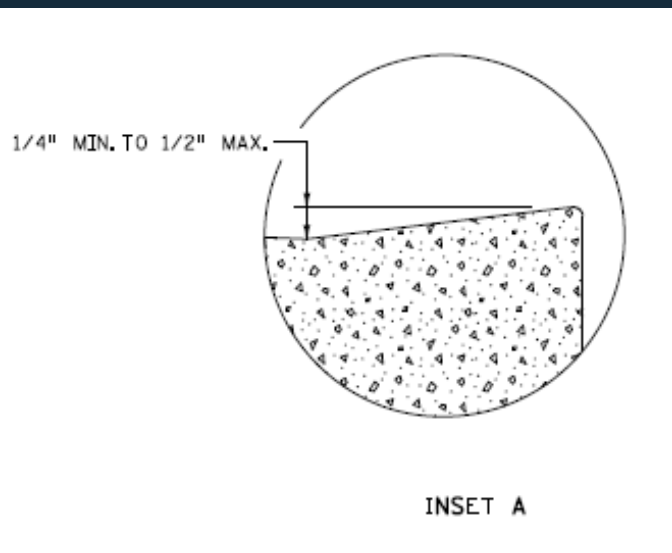
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STANDARD PLAN SHEET NO. 5-297.250 (3 OF 5)	PEDESTRIAN CURB RAMP DETAILS
STANDARD APPROVED NOT APPROVED	
STATE PROJ. NO.	(TH) SHEET NO. OF SHEETS

Curb and Gutter Details

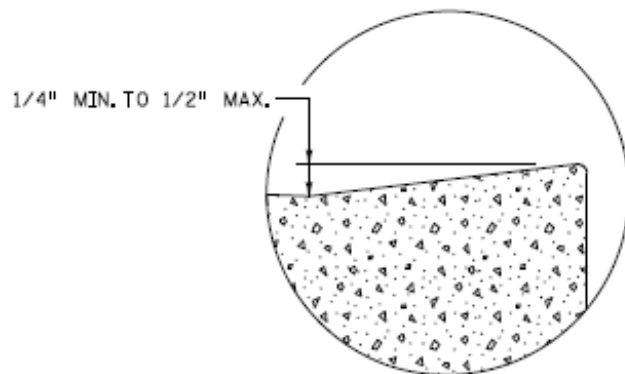


- Always maintain flow line and use modified Pedestrian Access Route curb and gutter sections.
- Perpendicular and parallel ramps can have a maximum 5% gutter slope because the pedestrian's path of travel is perpendicular to the gutter flow line.

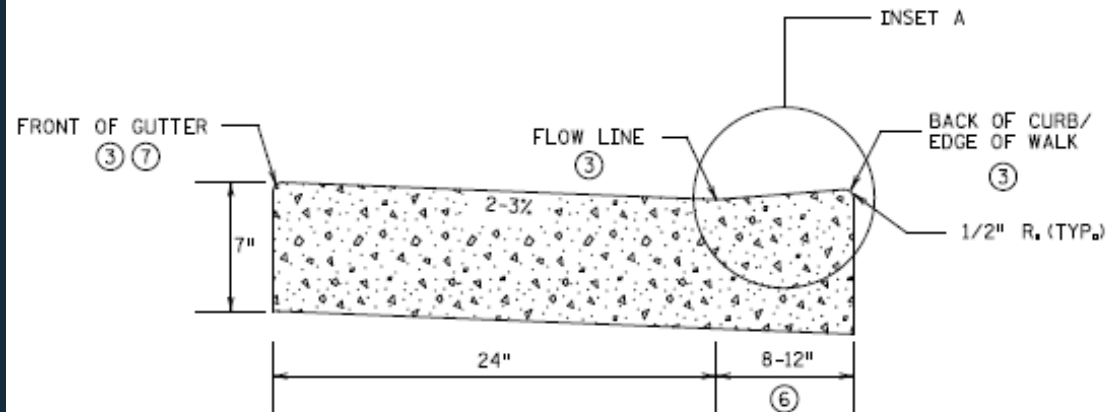


Curb and Gutter Details

- 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%.



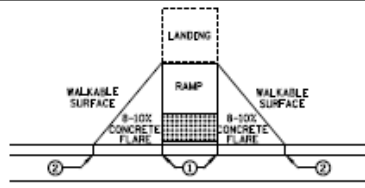
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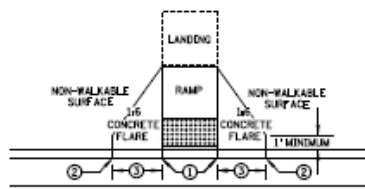
NON PERPENDICULAR (1)

Standard Plans

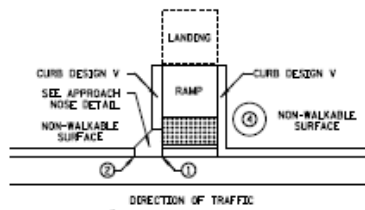
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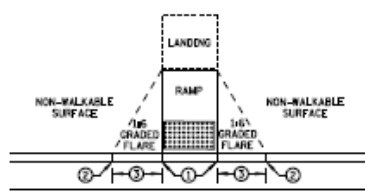
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

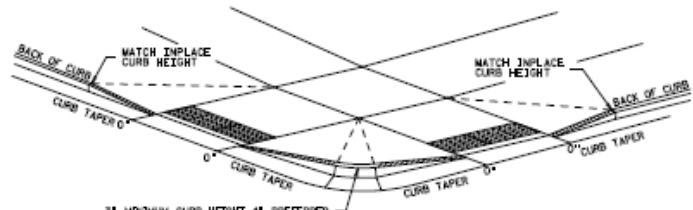


RETURNED CURB



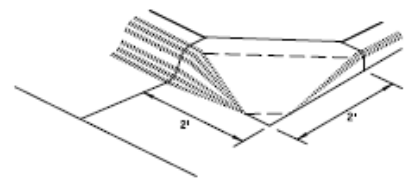
GRADED FLARES

TYPICAL SIDE TREATMENT OPTIONS ③

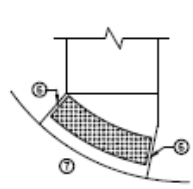


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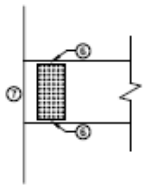
DETECTABLE EDGE WITH
CURB AND GUTTER ③



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 6' LONG MEASURED ALONG THE RAMP FROM THE BACK OF CURB.

- ① 0\"/>
- ② FULL CURB HEIGHT.
- ③ 2\"/>
- 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\"/>
- ⑦ IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 1' 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 INCLUDES DETECTABLE WARNINGS WHENEVER THERE IS ZERO-INCH HIGH CURB. CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3\"/>

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STANDARD PLAN SHEET NO.
5-297.250 (4 OF 5)
STANDARD APPROVED
NOT APPROVED

PEDESTRIAN CURB RAMP DETAILS

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.



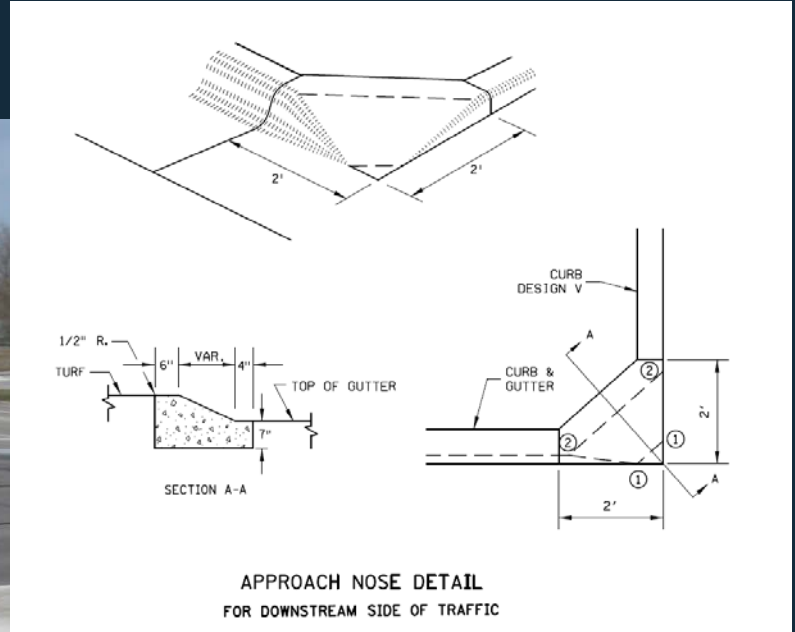
Side Treatments

- 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.



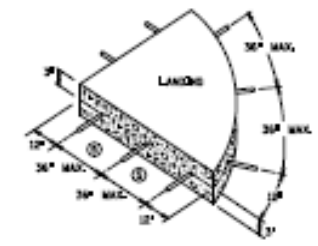
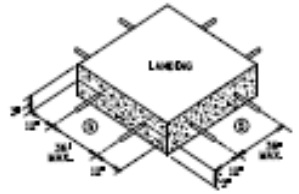
Detectable edge at quadrant

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

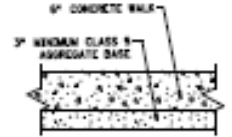


Standard Plan Sheets

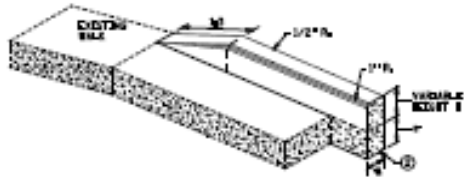
POSTED/REVISED
11/2010/05



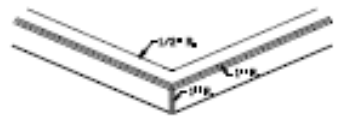
SIDEWALK REINFORCEMENT



TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER

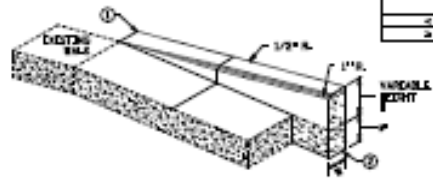


V CURB ADJACENT TO LANDSCAPE CURB WITHIN SIDEWALK LIMITS

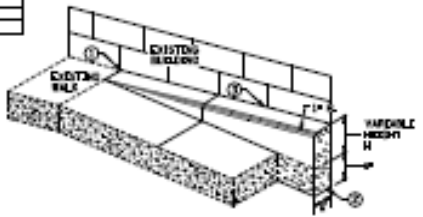


V CURB INTERSECTION

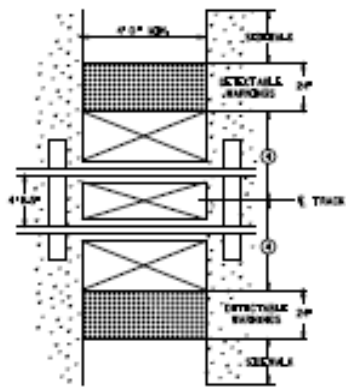
CURB HEIGHT	CURB WIDTH
28"	24"
36"	36"



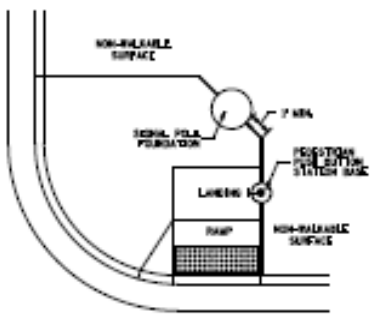
V CURB ADJACENT TO LANDSCAPE CURB OUTSIDE SIDEWALK LIMITS



V CURB ADJACENT TO BUILDING



RAILROAD CROSSING PLAN VIEW



CONCRETE WALK EDGES ADJACENT TO CONCRETE STRUCTURES

- NOTES:
- ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.
 - WHERE FOOT-OF-WAY ALLOWANCE USE OF V CURB SHOULD BE MINIMIZED OR AVOIDED ADJACENT TO OR OVER BURIED UTILITY PIPE OR STRUCTURE.
 - V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN FOOT OF WAY ALLOWS.
 - V CURB NOT TO BE USED SHALL BE A 4" WIDTH AND SHALL MATCH PREVIOUS TOP OF SIDEWALK ELEVATION.
 - END SURFACES AT TRANSITION SECTION SHALL MATCH EXISTING SIDEWALK GRADES.
 - ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.
 - EDGE BETWEEN NEW V CURB AND EXISTING STRUCTURE SHALL BE SEALED AND BOND BEHIND SHALL BE USED BETWEEN EXISTING STRUCTURE AND PLACED V-CURB.
 - EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 18" MAXIMUM FROM THE CENTERLINE OF THE TRACK, WHEN POSITIONING GATES ARE PROVIDED. DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL 24" - 36" FROM THE APPROACHING SIDE OF THE GATE AND.
 - SHALL AND BE SET NO. 4 BRIGHT-COLORED 3/8" LONG (NONPROTRUDING) NAILS AT 36" MAX. SPACING TO CENTER POINT GATES.
 - ⑥ WEDGE QUANTITIES PROVIDED FOR IN PLAN.

DISTRICT 7, Design Services
USER NAME: dswm
PATH & FILENAME: P:\PROJECTS\2010\11\10\11-2010-05-01\11-2010-05-01.dwg

STANDARD PLAN SHEET NO. 5-297.290 (S) OF 53	PEDESTRIAN CURB RAMP DETAILS
STANDARD SPECIFICATION NOT APPROVED	
STATE PROJ. NO.	(TH)) SHEET NO. OF SHEETS

Vertical Face Curb

- V-curb adjacent to building



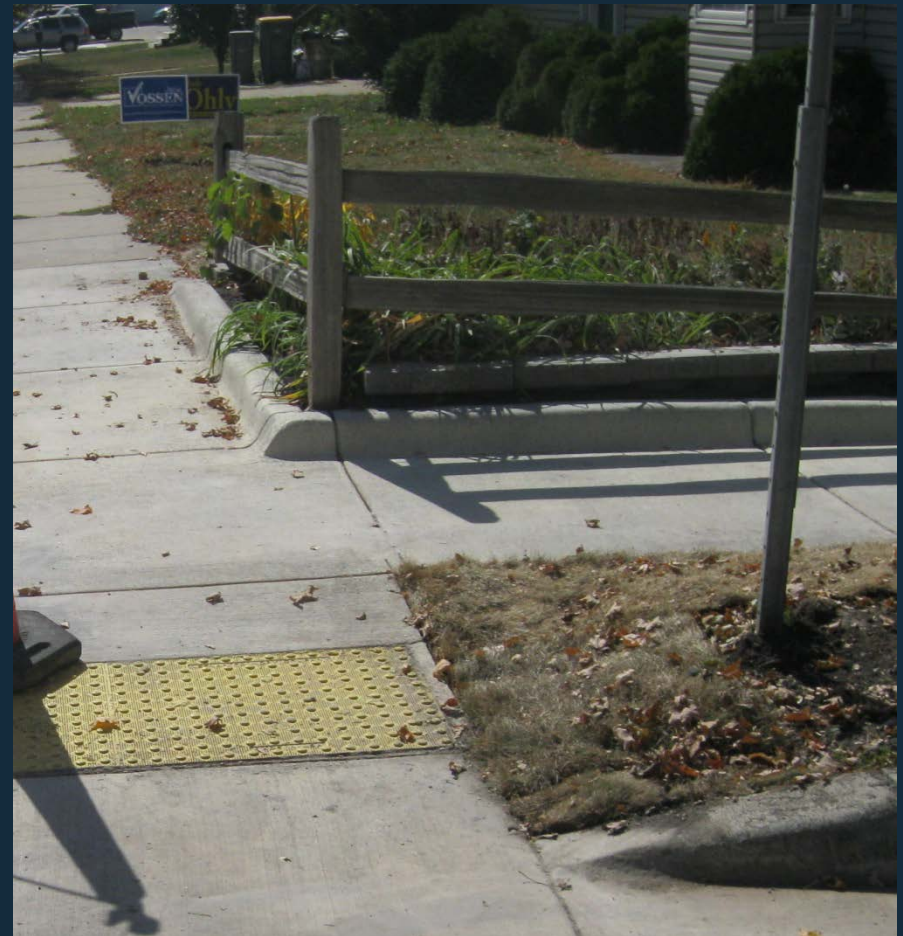
V-Curb

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



V-Curb

- V-curb adjacent to landscape and inside sidewalk limits



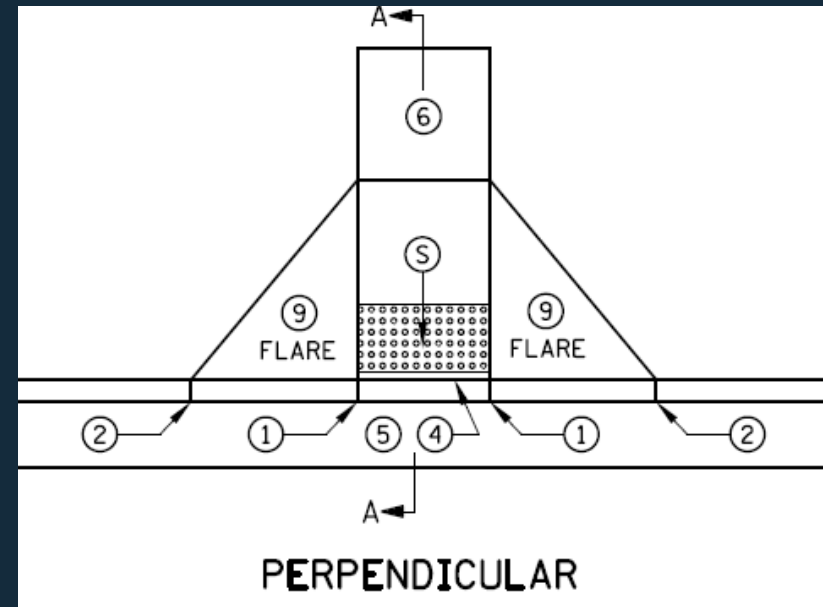
Curb Ramp Types



- Perpendicular ramp
- Parallel ramp
- One-way directional ramp
- Combined directional ramp
- Depressed corner
- Tiered perpendicular ramp
- 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.



One Way Directional



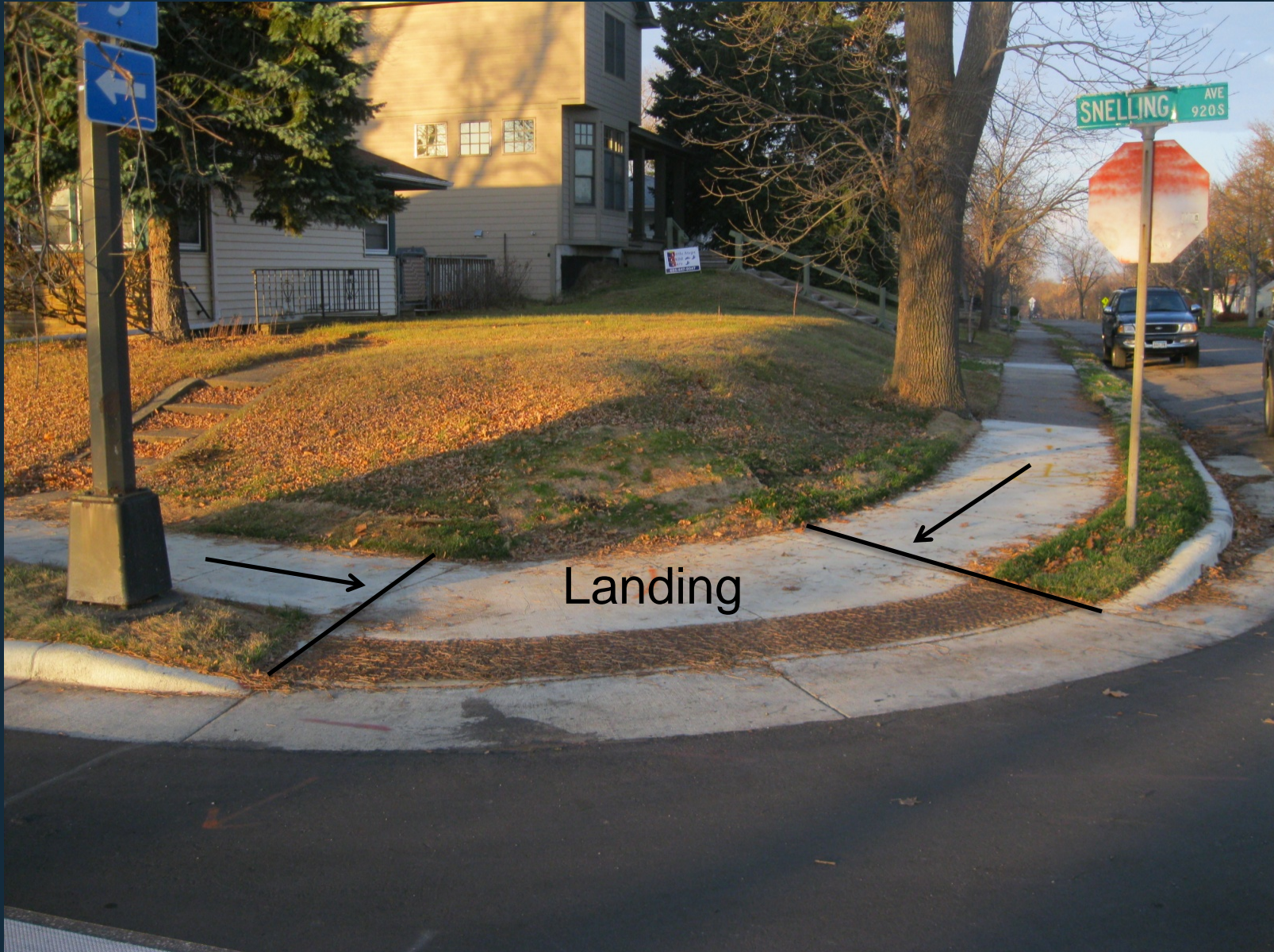
**LESS THAN 5% RAMP SLOPE,
LANDING NOT REQUIRED**



Combined Directional



Depressed Corner



Tiered Perpendicular

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



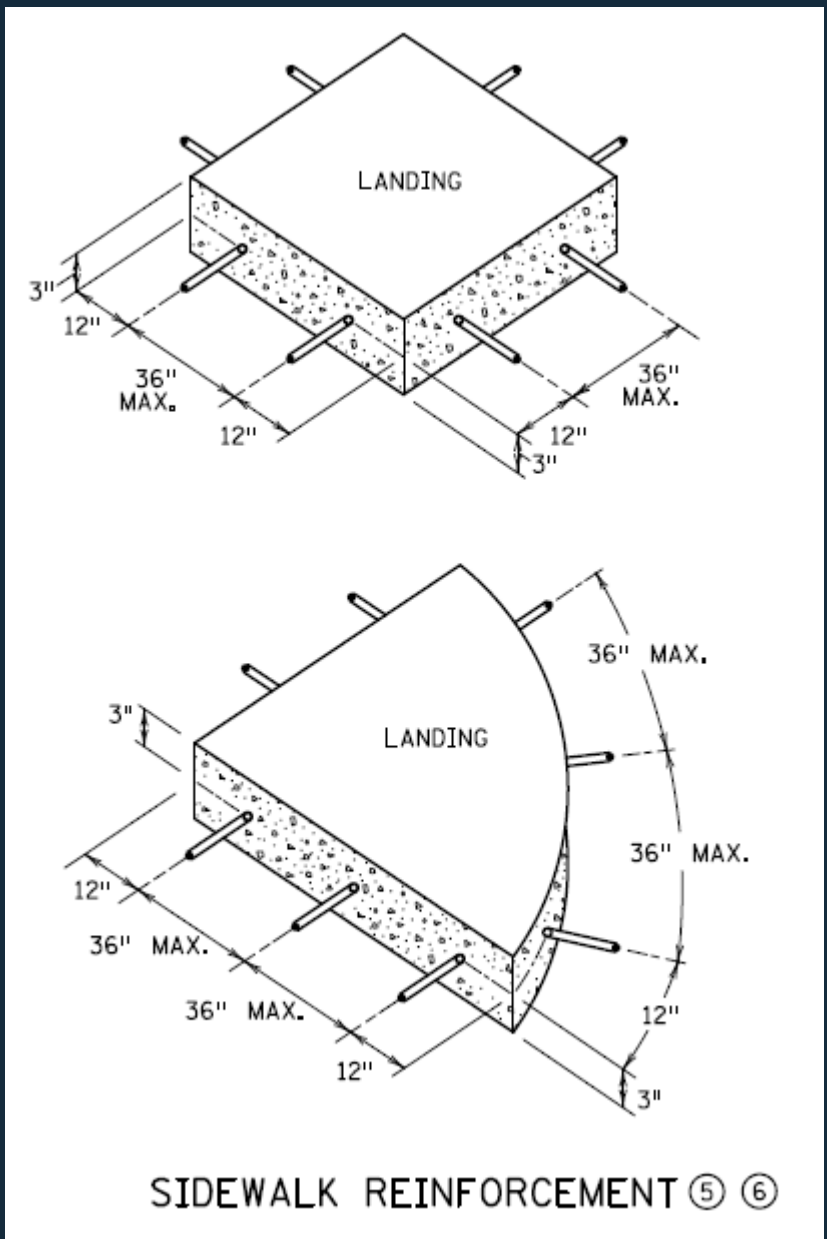
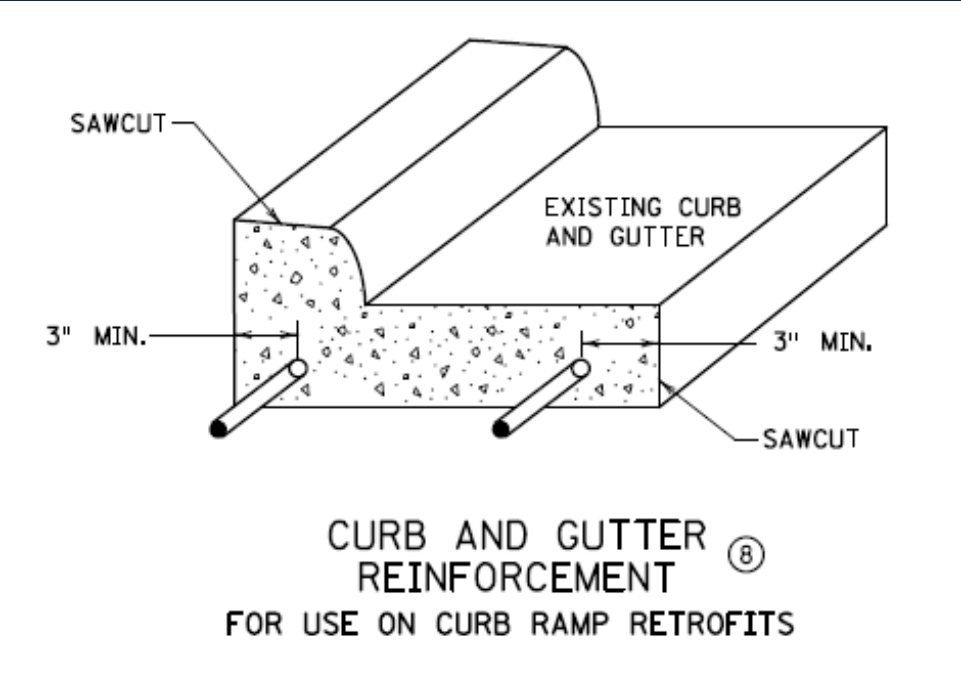
Fan



Landing

Standard Plan Sheets

New in 2013: Reinforcement Details

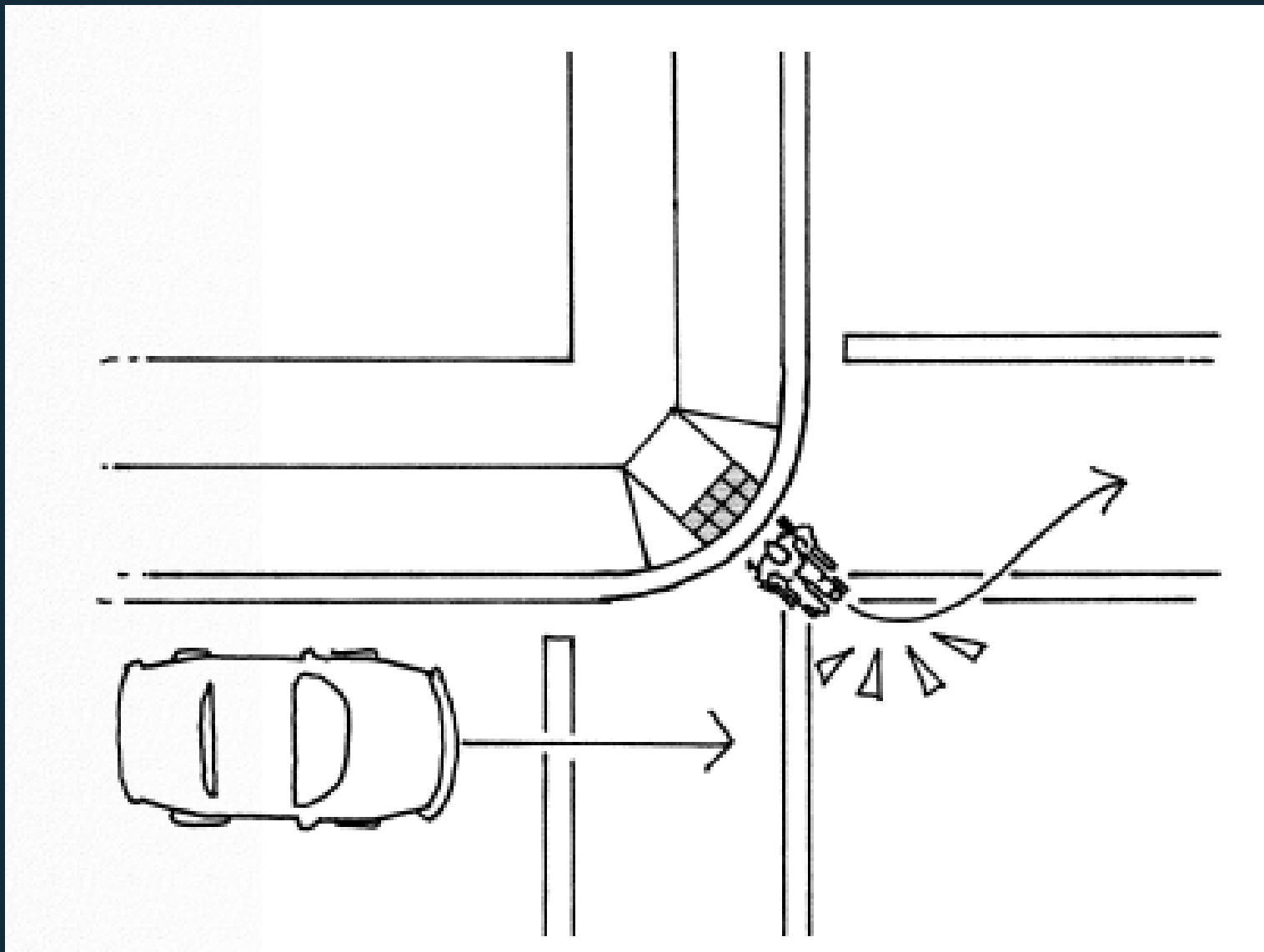


Diagonal Ramp

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



Diagonal Ramp – Least Preferred



Traditional Vs. 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

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

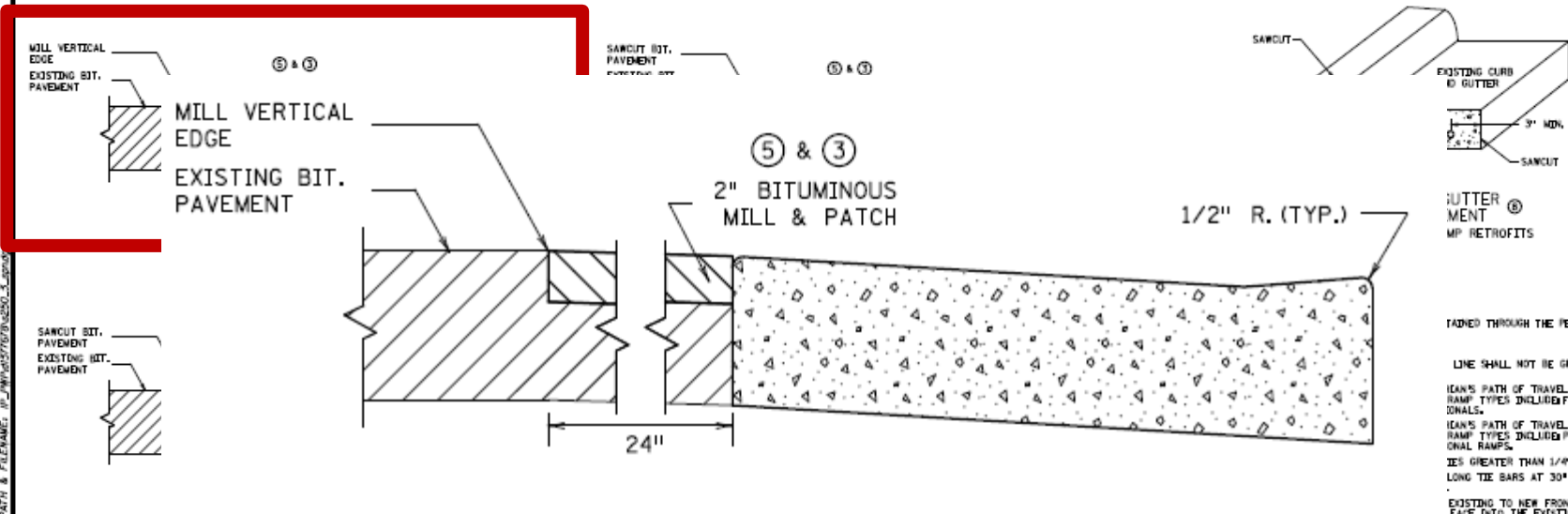
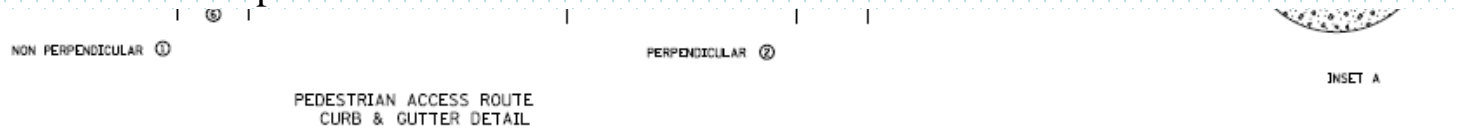
Mill and Patch Bit. Pavement



S-1.1

Construction Requirements

The bituminous surface shall be milled to a depth of 2 inches for a width of 2 feet in front of the face of the curb. The compacted surface shall be at a level resulting in the edges/joints between the surface and the gutter face/existing bituminous roadway are less than 1/4 inch vertically.



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

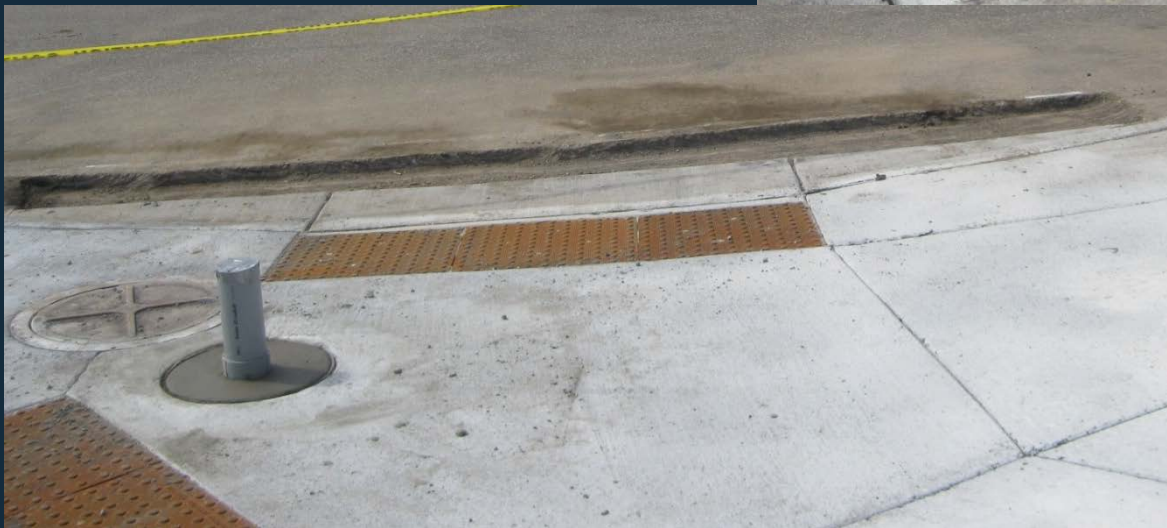
- ⑤ VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS.
- ⑥ TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION. PAIR GUTTER SHALL NOT BE OVERLAP.
- ⑦ WHERE PLAN SPECIFIES, DRILL AND GROUT 2 - NO. 4 X 12" LONG REINFORCEMENT BARS (EPOXY COATED).

DISTRICT 4, Design Standards
 USER NAME: Brown
 PATH & FILENAME: J:\Projects\2010\2010_S\2010_S.dwg

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

Mill and Patch

- (2232) Mill and patch bit. pavement – Lin Ft

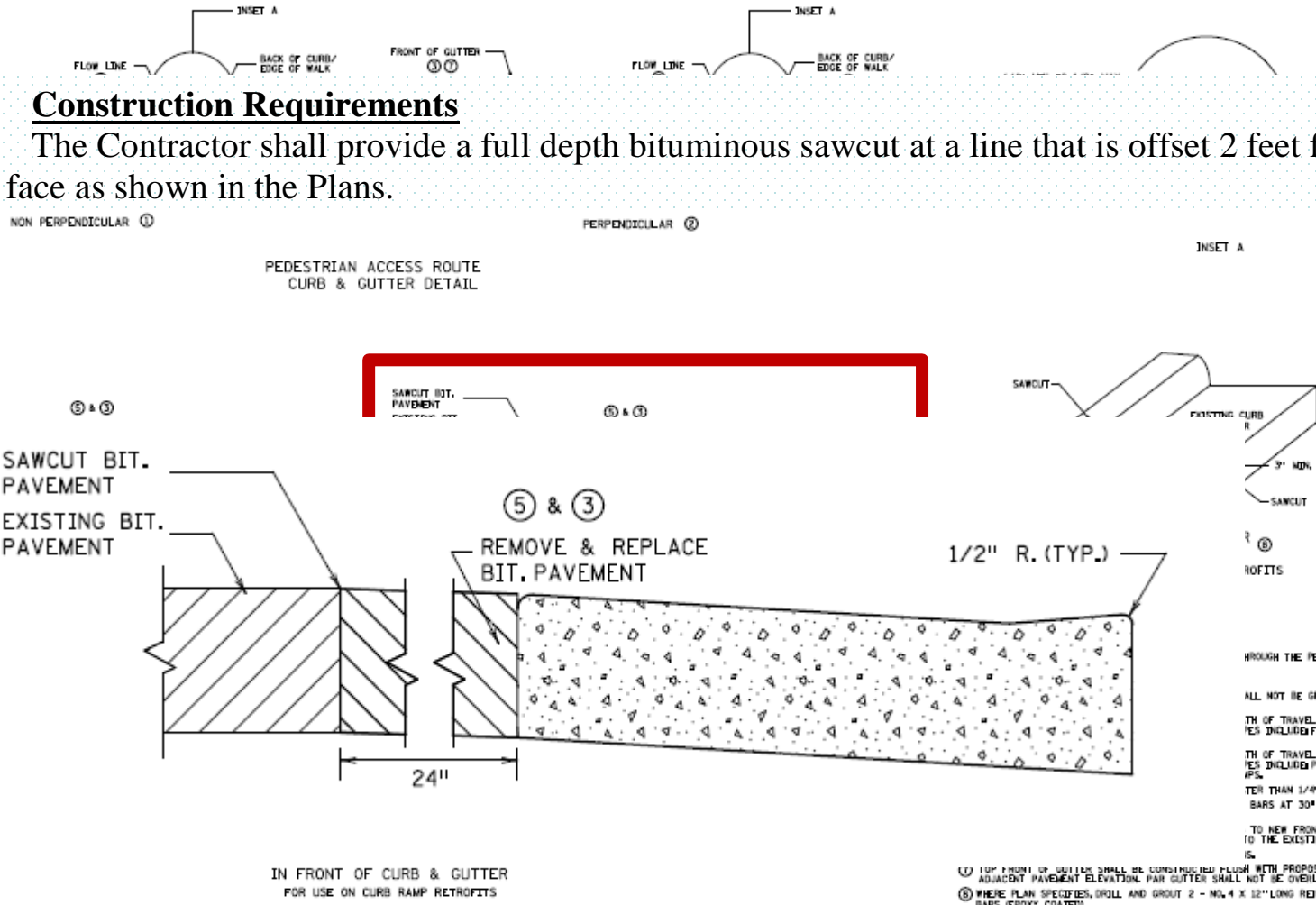


Remove and Replace Bit. Pavement



S-1.1 Construction Requirements

The Contractor shall provide a full depth bituminous sawcut at a line that is offset 2 feet from the proposed gutter face as shown in the Plans.



DISTRICT 4, Design Standards
 USER NAME: BROWITT
 PATH & FILENAME: J:\M\10157676\2500_3.dwg
 FILE NAME: 2500_3.dwg

- ① 1/2" FRONT OF GUTTER SHALL BE CONSIDERED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION. PAIR GUTTER SHALL NOT BE OVERLAPPED.
- ② WHERE PLAN SPECIFIES, DRILL AND GROUT 2 - NO. 4 X 12" LONG REINFORCEMENT BARS (EPOXY COATED).

THROUGH THE PEDESTRIAN
 ALL NOT BE GREATER THAN
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 TH OF TRAVEL IS ASSUMED
 YES INCLUDED PERPENDICULAR,
 IF C
 TER THAN 1/4",
 BARS AT 30" CENTER TO
 TO NEW FRONT OF GUTTER,
 TO THE EXISTING ROADWAY.
 IS.

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

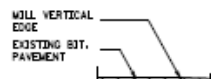
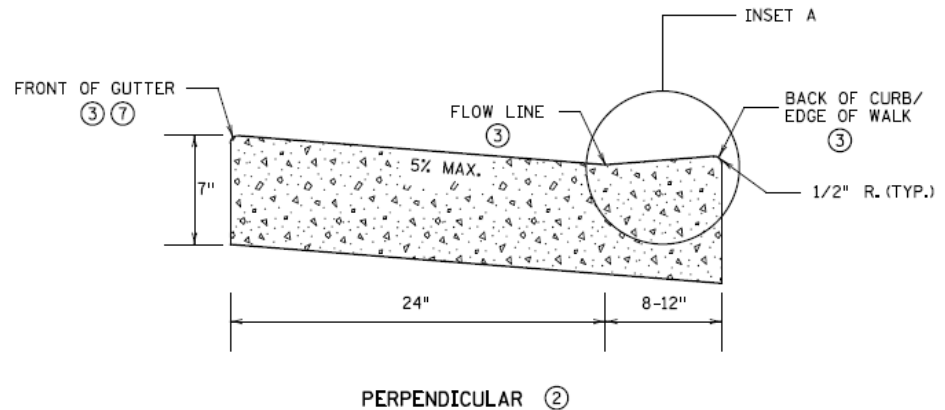
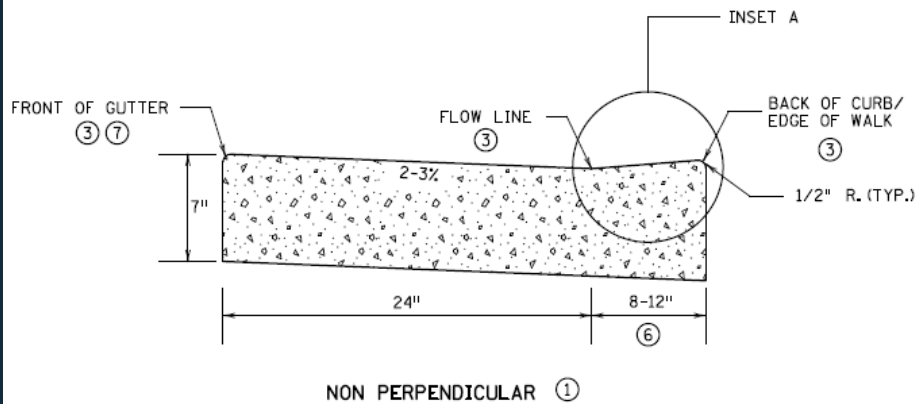
Remove and Replace Bit. Pavement



- (2104) Remove & Replace Bit. Pavement – Lin Ft
 - Compacted bit surface to be finished flush with gutter face ($\frac{1}{4}$ " tolerance)

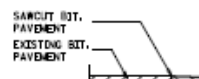


Concrete Curb & Gutter



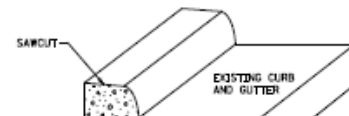
⑤ & ③
2" BITUMINOUS
WILL & PATCH

1/2" R. (TYP.)



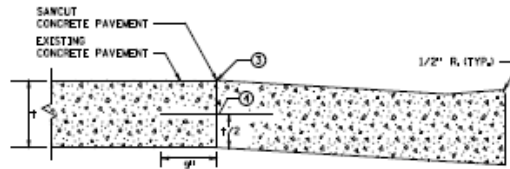
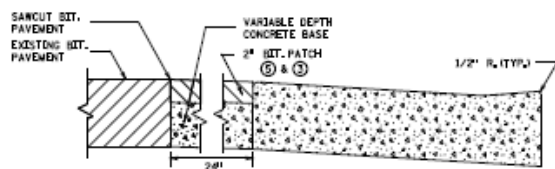
⑤ & ③
REMOVE & REPLACE
BET. PAVEMENT

1/2" R. (TYP.)



CS 1.1 Construction Requirements

The Contractor must form, at a minimum, the top 1½ inches of the gutter face. The Contractor shall not use the existing roadway edge as a form for the top 1½ inches of the gutter face unless approved by the Engineer. Transition from the existing curb and gutter section to the new curb and gutter section shall occur within 3 feet of the point where the curb and gutter construction begins.



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.
- FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED PERPENDICULAR TO THE GUTTER FLOW LINE, RAMP TYPES INCLUDED: FANS, DEPRESSED CORNERS, & ONE WAY AND COMBINED DIRECTIONALS.
- FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED PERPENDICULAR TO THE GUTTER FLOW LINE, RAMP TYPES INCLUDED: PERPENDICULAR, TIERED PERPENDICULAR, PARALLEL, AND DIAGONAL RAMPS.
- THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4".
- DRILL AND GROUT NO. 4 EPOXY-COATED 18" LONG TIE BARS AT 30" CENTER TO CENTER INTO EXISTING CONCRETE PAVEMENT.
- 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.
- VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS.
- TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION FOR GUTTER SHALL NOT BE OVERLAP.
- WHERE PLAN SPECIFIES, DRILL AND GROUT 2 - NO. 4 X 12" LONG REINFORCEMENT BARS (EPOXY COATED).

DISTRICT 5, Design Standards
USER NAME: BROWTTN
PATH & FILENAME: J:\Projects\2016\20160201\20160201_01

STANDARD PLAN SHEET NO.
5-297.250 (3 OF 5)
STANDARD APPROVED
NOT APPROVED

PEDESTRIAN CURB RAMP DETAILS

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

Concrete Curb & Gutter Provision



- **Construction requirements cont.**

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 slope of the adjacent bituminous patching exceeding 5 percent

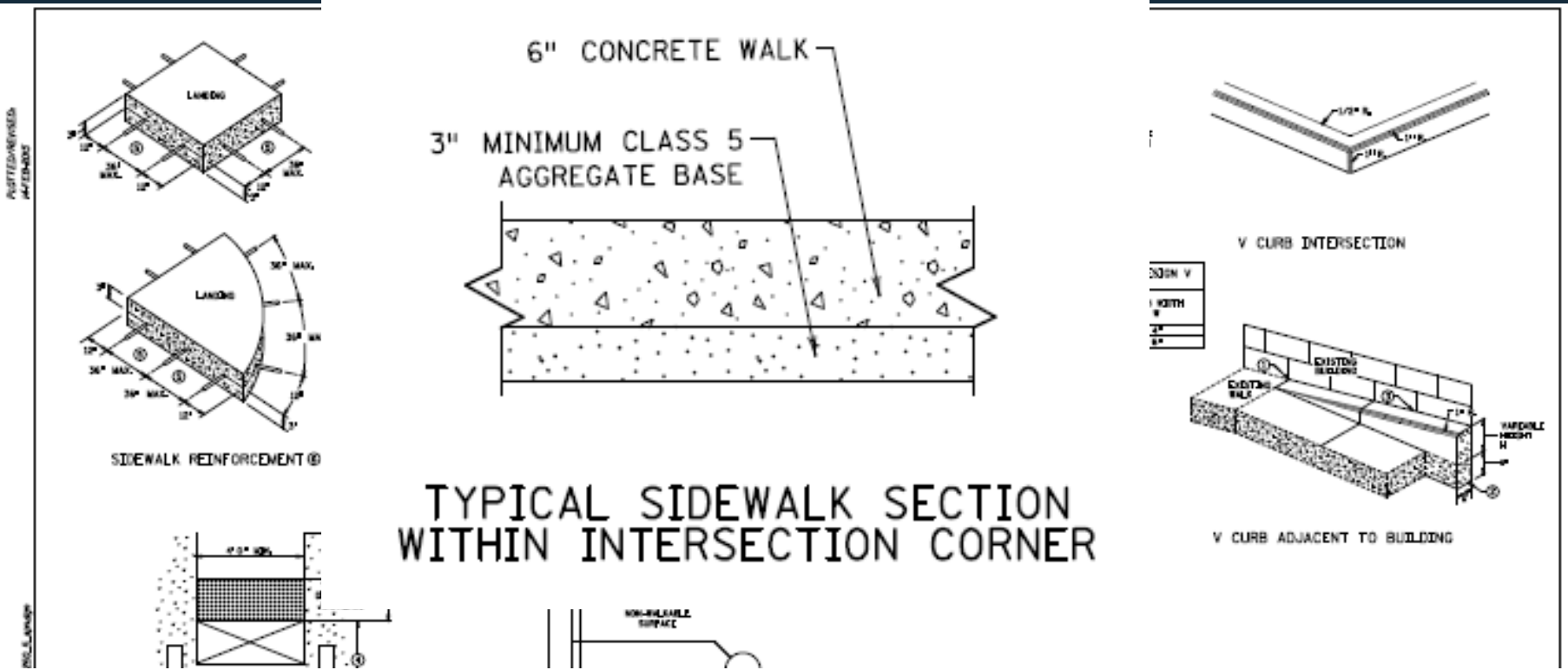


Concrete Curb & Gutter

- **(2531) Concrete Curb and Gutter – Lin Ft**
 - This work shall consist of constructing concrete curb and gutter and the necessary aggregate base.
 - 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



TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER

Grading – If not otherwise detailed in the Plan, all fill sections shall be graded flush with the top of walk for a minimum 18" from the edge of walk and then down at a maximum 1:3 slope to existing terrain. The Contractor shall blend in the toe of fill slope and adjacent areas so as not to adversely affect drainage.

To avoid corner breaks, all walk edges shall be formed and constructed perpendicular to the back of curb and gutter sections and concrete structures for a one foot minimum distance.

RAILROAD CROSSING
PLAN VIEW

CONCRETE WALK EDGES ADJACENT
TO CONCRETE STRUCTURES

- OPPOSITE THE EDGE OF THE WALK FROM THE APPROACHING SIDE OF THE GATE AND
- ① SHALL AND SHIRT NO. 4 BOSTON-COATED 3P LANE REINFORCEMENT BARS AT 3P MAX. SPACING TO CORNER SPOTS QUARTERS
- ② WALK QUANTITIES PROVIDED FOR IN PLAN

MINNESOTA DOT NO. 5-297.250 (S OF 50)	PEDESTRIAN CURB RAMP DETAILS
STATE PROJ. NO.	(TH)) SHEET NO. OF SHEETS

FILE NAME:
SUBDRAWING

2521 Concrete Walk ADA Landings



S-3.1 CONSTRUCTION REQUIREMENTS

(A) **Concrete Walk** – The walk shall be constructed as detailed in the Plan and conform to the requirements of MnDOT 2521, Walks.

To avoid corner breaks, all walk edges shall be formed and constructed perpendicular to the back of curb and gutter sections and concrete structures for a one foot minimum distance.

All existing signs shall be salvaged and reinstalled as directed by the Engineer or as indicated in the Plan.

(B) **Grading** – If not otherwise detailed in the Plan, all fill sections shall be graded flush with the top of walk for a minimum 18 inches from the edge of walk and then down at a maximum 1:3 slope to existing terrain. The Contractor shall blend in the toe of fill slope and adjacent areas so as not to adversely affect drainage.

(C) **Landings** – An initial landing is the first required landing of a pedestrian ramp. All initial landings required at the top of a ramped sloped surface (>2% longitudinal slope), shall be formed and placed separately in an independent concrete pour. This does not include initial landings placed at roadway grade such as depressed corners, parallel ramps, rural flat landings, or flat cut-throughs. Secondary landings consist of all landings beyond the initial landing. These secondary landings do not require a separate landing pour.

Wet casting or drill and grouting of dowel bars will be required in accordance with the details shown in Standard Plan 5-297.250 Sheet 5 of 5. These bars may be either smooth or deformed and shall be installed with 2" minimum concrete cover.

When not accounted for in the Plan, payment for these bars will be made under Item 2301.602 (Drill & Grout Reinforcement Bar (Epoxy Coated)) by the Each at the Predetermined Price of \$ 10.00 per bar furnished and installed. All necessary subgrade preparation and aggregate base placement for the entire ramp construction limit shall be done before the initial landing is constructed at each location.

S-3.2 METHOD OF MEASUREMENT

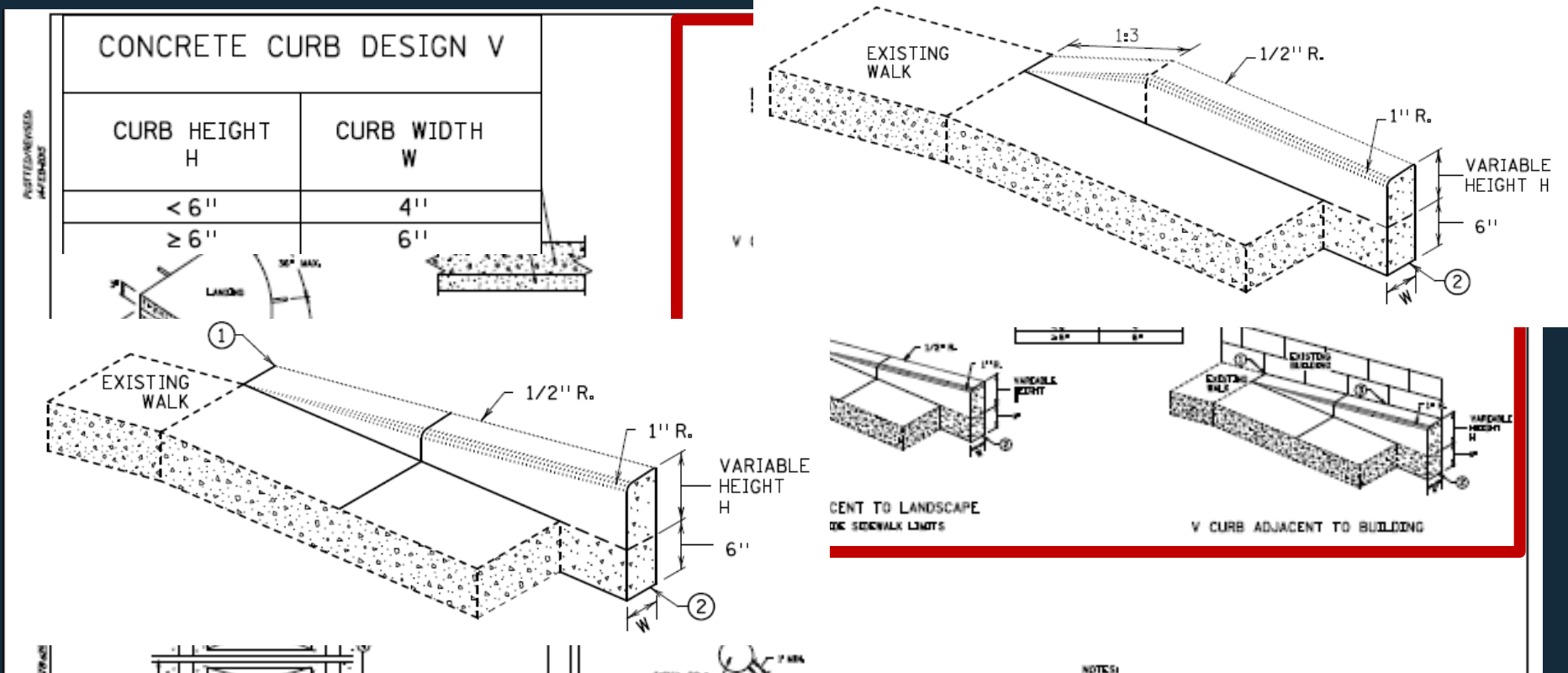
Concrete Walk

- **(2521) Concrete Walk – Sq Ft**

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 Curb Design V



S-1.1

Construction Requirements

The Concrete Curb Design V shall be constructed as detailed in the Plan. Concrete Curb Design V may be constructed independent of or integral to the adjacent sidewalk. The bottom elevation of the V Curb shall match the bottom elevation of the adjacent sidewalk slab. When the Concrete Curb Design V is constructed independent of the sidewalk, the portion of the Concrete Curb Design V that will have new concrete walk placed against it shall be clean so as to maximize bonding between the walk and V curb.

Concrete Curb Design V

- **(2531) Concrete Curb Design V – Lin Ft**

The locations requiring the use of Concrete Curb Design V, and the height of the Concrete Curb Design V 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**

If not otherwise detailed in the Plan, all cut section side slopes shall be finished graded flush from the top of concrete surface at a maximum 1:6 slope up to 5 feet from the edge of walk, or straight graded to the existing ground elevation 5 feet from the edge of the walk.



Site Restoration



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

Site Grading – All areas adjacent to newly constructed walk and top of curb shall be graded flush with the top of walk and top of curb. All stockpiled topsoil must be replaced within the same quadrant from which it was stripped. The minimum depth of topsoil shall be 4” which shall be achieved using select topsoil borrow if necessary.



Site Restoration



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

Any topsoil borrow that is required and not accounted for in the Plan shall be Select Topsoil Borrow paid at \$45/CY (LV).

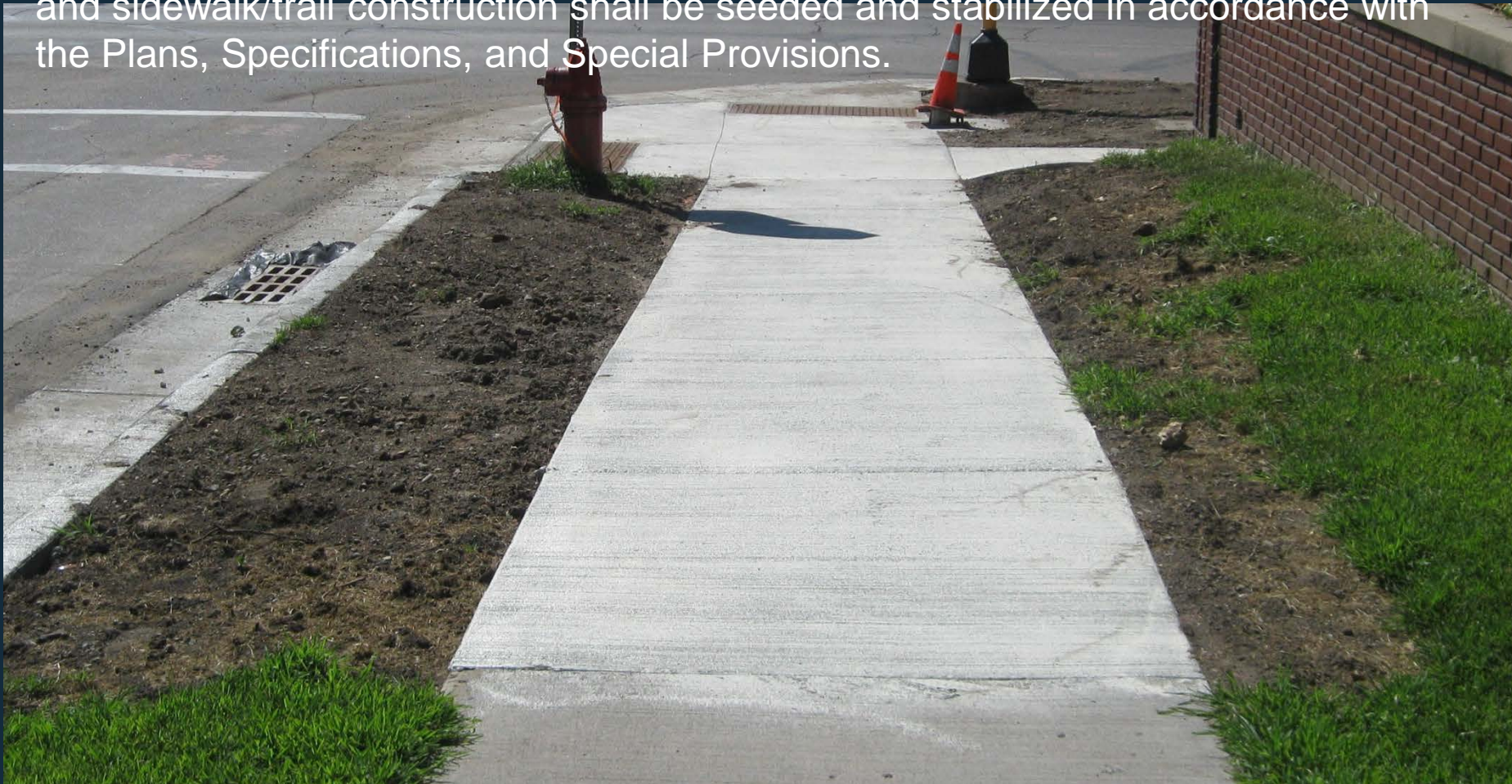


Site Restoration



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

Turf Establishment – All areas that are disturbed as a result of concrete walk and curb 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.



Questions?



ADA Training Module: Standard Plans & Pay Items

Your Destination...Our Priority

