

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
- 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

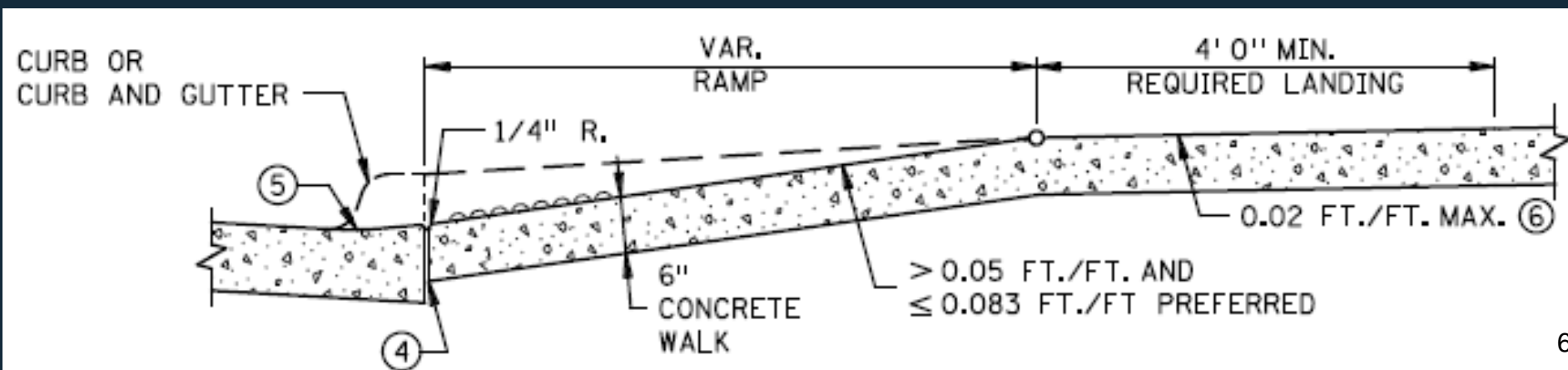


- Minimum 4 foot wide Pedestrian Access Route (PAR) with a maximum cross slope of 2% is required.
- The PAR must be continuous and unobstructed.
- The PAR shall connect accessible elements, spaces and facilities.

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.

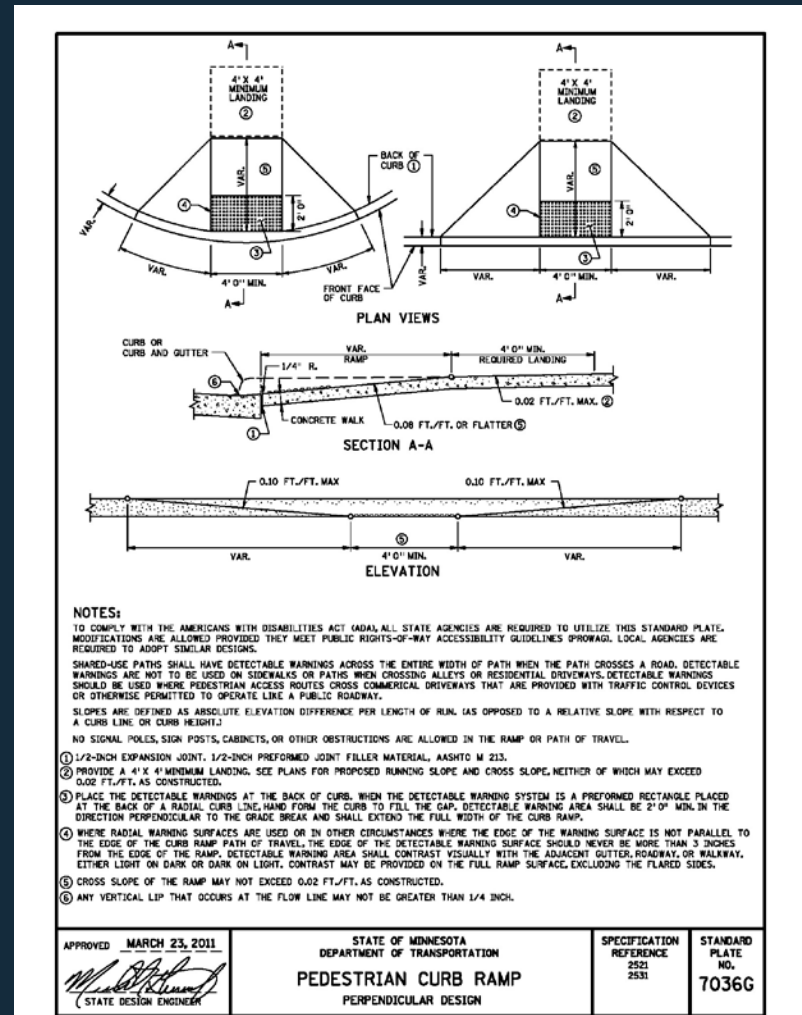


Standard Plate 7036G



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

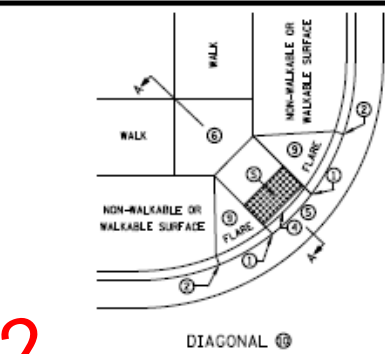
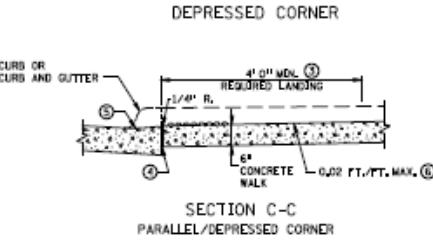
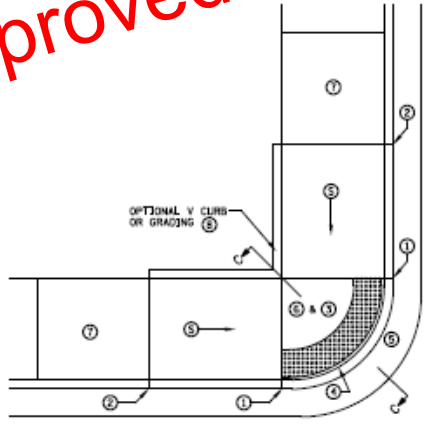
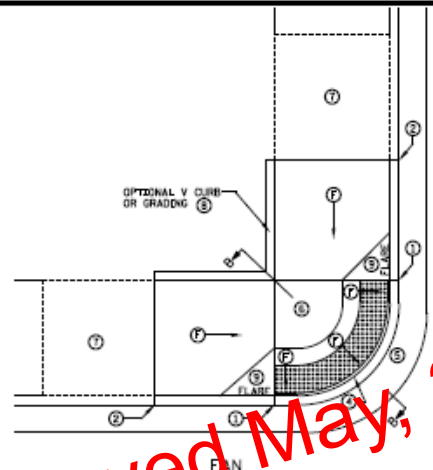
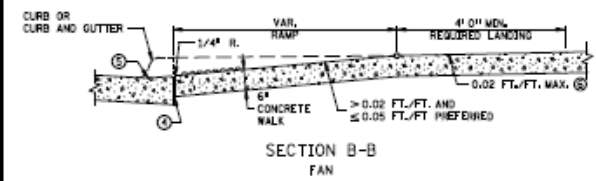
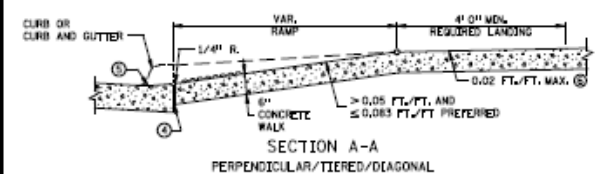
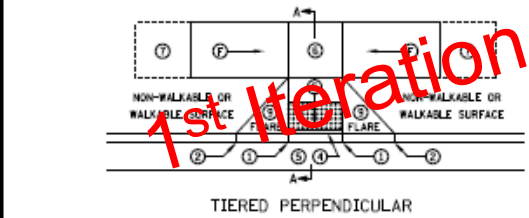
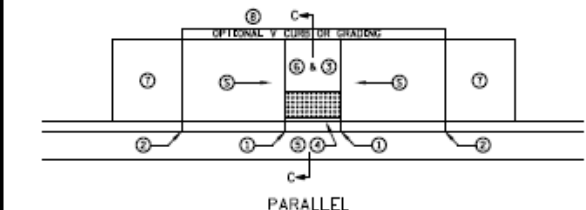
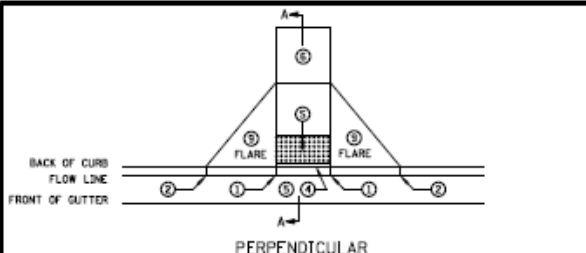


Standard Plans

PLOTTED/REVISED
20-FEB-2012

DISTRICT 4, Design Standards
USER NAME: BROWTTM
PATH & FILENAME: P:\projects\12\12-0550_Standard

FILE NAME:
SPOOL: 12-0550



- 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 RISE 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 CONTIGUOUSLY 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 LANDINGS OUTSIDE OF THE DETECTABLE WARNING AREA.
 - ④ 1/2" PREFORMED JOINT FILLER MATERIAL ASASTO M 213 JOINT FILLER SHALL BE PLACED FLUSH WITH THE BACK OF CURB AND ADJACENT SIDEWALK JOINT SHALL BE FREE OF DEBRIS.
 - ⑤ 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.
 - ⑥ SEE PEDESTRIAN ACCESS ROUTE CURB AND GUTTER DETAIL FOR INFORMATION ON CONSTRUCTING CURB AND GUTTER AT CURB OPENINGS. SEE SHEET NO. 3 OF 5.
 - ⑦ 4' BY 4' MIN. LANDING WITH MAX. 2.0% SLOPE IN ALL DIRECTIONS.
 - ⑧ IF LONGITUDINAL SLOPE IS GREATER THAN 5.0%, 4' X 4' MIN. LANDING WITH MAX. 2.0% SLOPE IN ALL DIRECTIONS REQUIRED.
 - ⑨ V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. SEE SHEET 5 OF 5.
 - ⑩ SEE SHEET 4 OF 5, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.
 - ⑪ 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)
STANDARD APPROVED
NOT APPROVED

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



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%



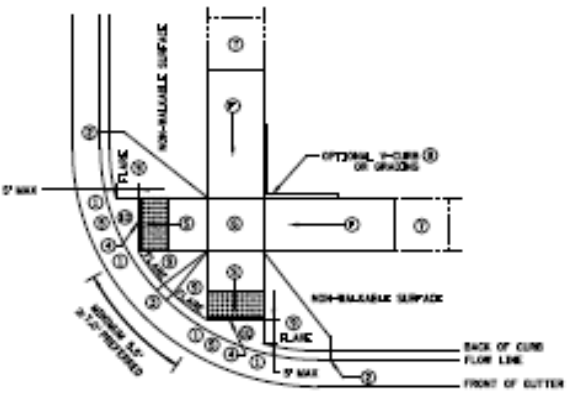
INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%

Standard Plans

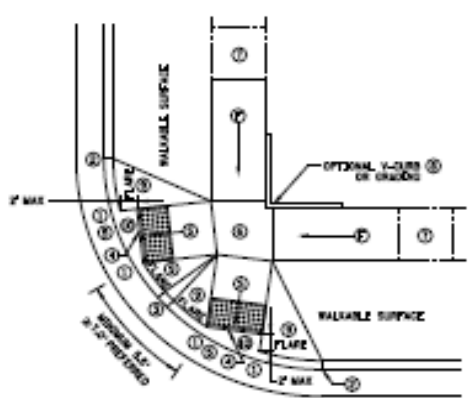
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DATE/NO.

DISTRICT 7, DESIGN DIVISION
DESIGN NAME, DRAWING
PART & FILE NAME, PROJECT NO.

FILE NAME:
PROJECT NO.

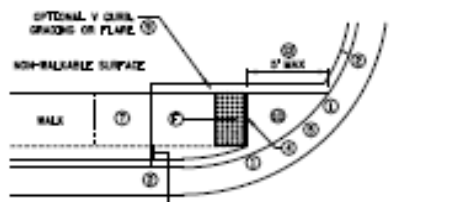


ADJACENT TO NON-WALKABLE SURFACE

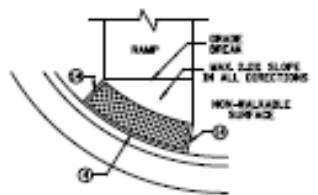


ADJACENT TO WALKABLE SURFACE

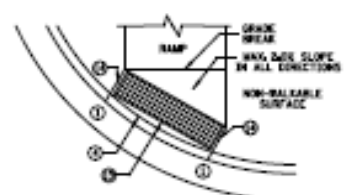
COMBINED DIRECTIONAL



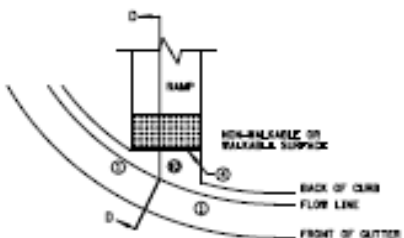
IF NON-CONCRETE BLANK IS CONSTRUCTED AND IS LESS THAN 2' IN WIDTH AT TOP OF CURB TRANSITION HAVE CONCRETE RAMP WIDTH TO ADJACENT BACK OF CURB.



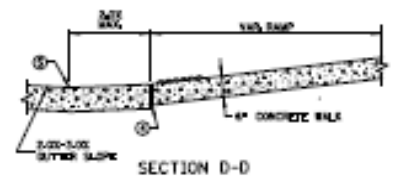
DETECTABLE WARNING SETBACK CRITERIA



ONE-WAY DIRECTIONAL



CURB FOR DIRECTIONAL RAMPS



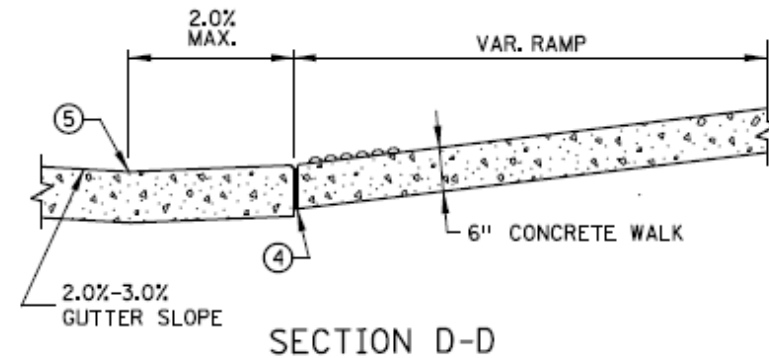
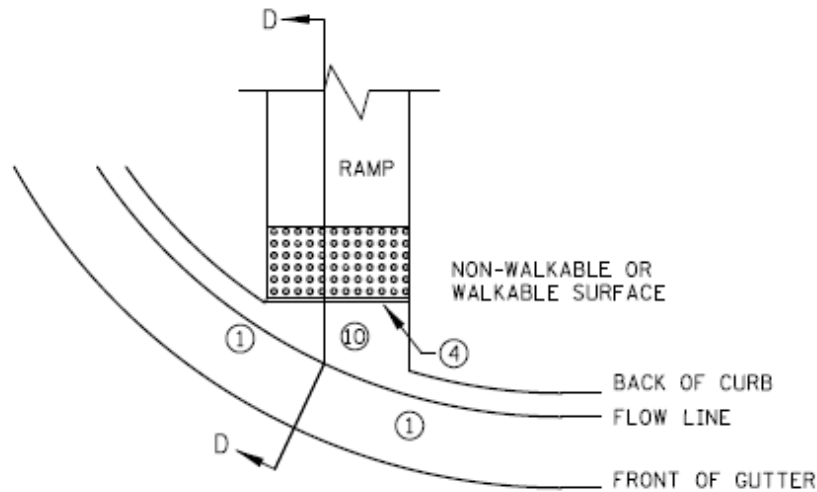
- NOTES**
- LANDINGS SHALL BE LOCATED ANTICIPATE THE PEDESTRIAN ACCESS ROUTE CORRECT DIRECTION AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES SHORTER THAN 5:10 AND AT THE APPROACHING WALK OR DRIVEWAY.
 - OPTIONAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 10' FROM THE BACK OF CURB WITH A MINIMUM SETBACK FROM THE BACK OF CURB AS SHOWN.
 - SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30' OF VERTICAL RISE WITH THE LONGITUDINAL SLOPE IS GREATER THAN 5:10.
 - CONTRACTOR JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS.
 - ALL GRADE BREAKS WITHIN THE PAIR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL.
 - TO DESIGN RAMPS AND LANDINGS ARE PROPOSED, CONSTRUCTION SHALL BE CAST SEPARATELY, FOLLOW SEVERAL REINFORCEMENT DETAILS ON SHEET 5 WITH LANDINGS AND CAST SEPARATELY.
 - ALL SURFERS ARE APPLICABLE, MATTER THAN RELATIVE TO SIDEWALK/DRIVEWAY GRADES.
 - TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.
 - MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS, RAMPS 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 T008 AND SHEET 4 OF 5 FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.
 - OF CURB HEIGHT.
 - FULL CURB HEIGHT.
 - IF BOTTOM CURB HEIGHT IS PROPOSED.
 - IF 1/2\"/>
 - RECTANGULAR DETECTABLE WARNING SHALL BE SETBACK 3\"/>
 - 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\"/>
 - IF LONGITUDINAL SLOPE IS GREATER THAN 5:10, 4\"/>
 - IF V CURB IS 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 RAMPS.
 - GRASS PLACED AT THE BACK OF CURB WITH ALLOWABLE SETBACK CRITERIA IS ENCOURAGED.
 - RECTANGULAR DETECTABLE WARNING MAY BE SETBACK 10\"/>
 - WHEN NO CONCRETE FLANGES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB MAINTAIN 3\"/>
 - DETECTABLE WARNING SHALL BE SETBACK 3\"/>

LEGEND	
①	INDICATED PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5:10 MINIMUM AND 3:30 MAXIMUM TO THE PEDESTRIAN SURF AND THE CROSS SLOPE SHALL NOT EXCEED 2:100.
②	INDICATED PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 5:10 AND LESS THAN 5:10 IN THE PEDESTRIAN SURF AND CROSS SLOPE SHALL NOT EXCEED 2:100.

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

Standard Plans

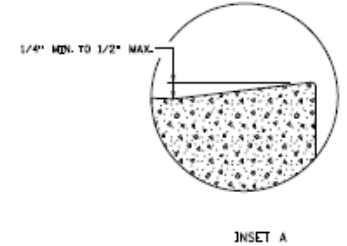
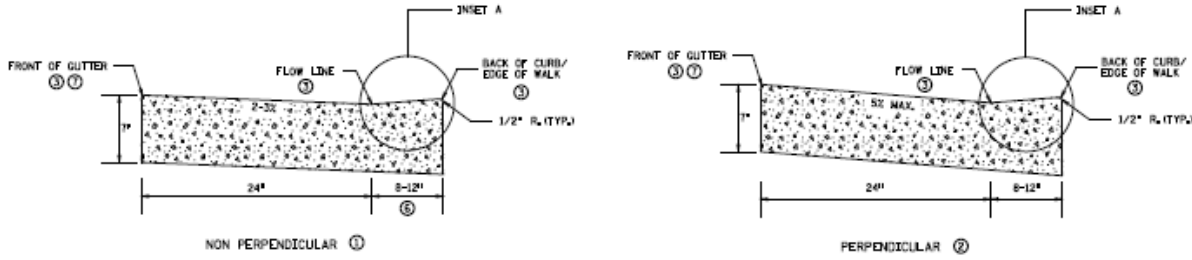
- When constructing directional ramps, the “triangular” concrete piece shall be poured integral with the curb and gutter (Directional Curb).



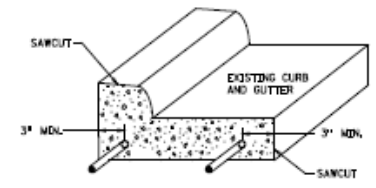
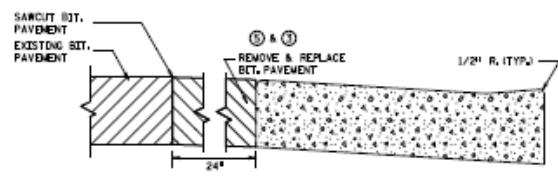
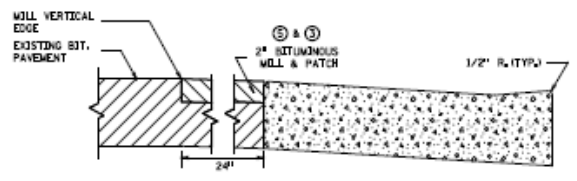
CURB FOR DIRECTIONAL RAMPS ⑪

Standard Plans

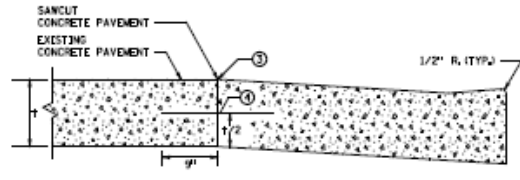
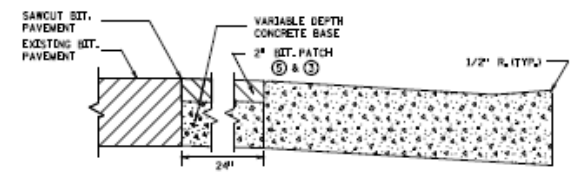
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20-FEB-2013



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

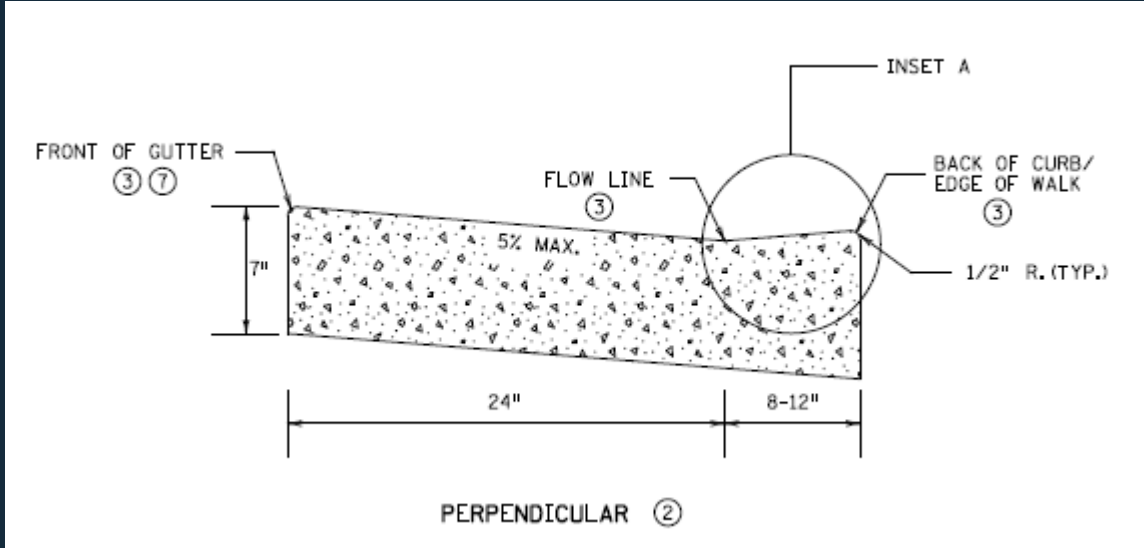
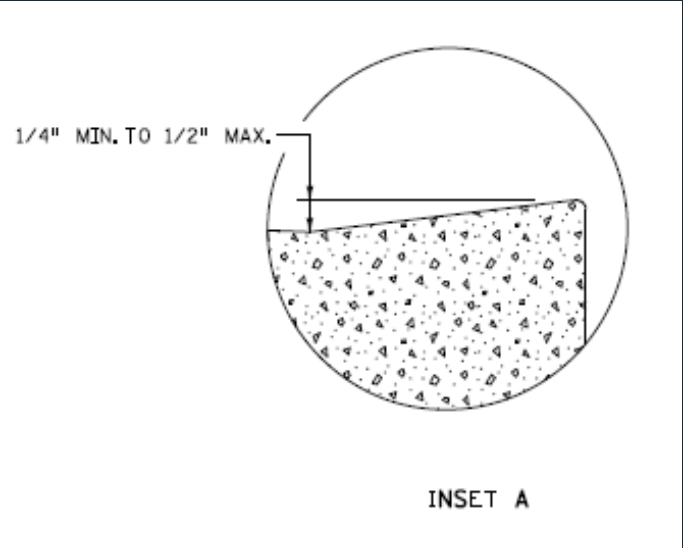
- NOTES:
- POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM.
 - NO PONDING SHALL BE PRESENT IN THE PAR.
 - ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE SHALL NOT BE GREATER THAN 1/4 INCH.
 - ① FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF 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, TIERED 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
USER NAME: BROWWIN
PATH & FILENAME: J:\Projects\2012\2012_0205_3.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

Curb and Gutter Details

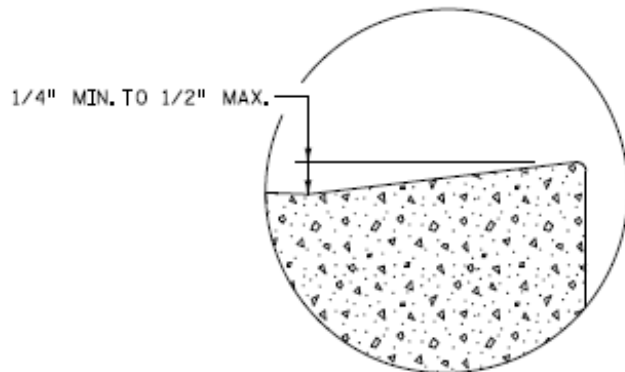
- Always maintain flow line and use modified Pedestrian Access Route curb and gutter sections.
- Perpendicular and parallel ramps can have a maximum 5% gutter slope because the pedestrian's path of travel is perpendicular to the gutter flow line.



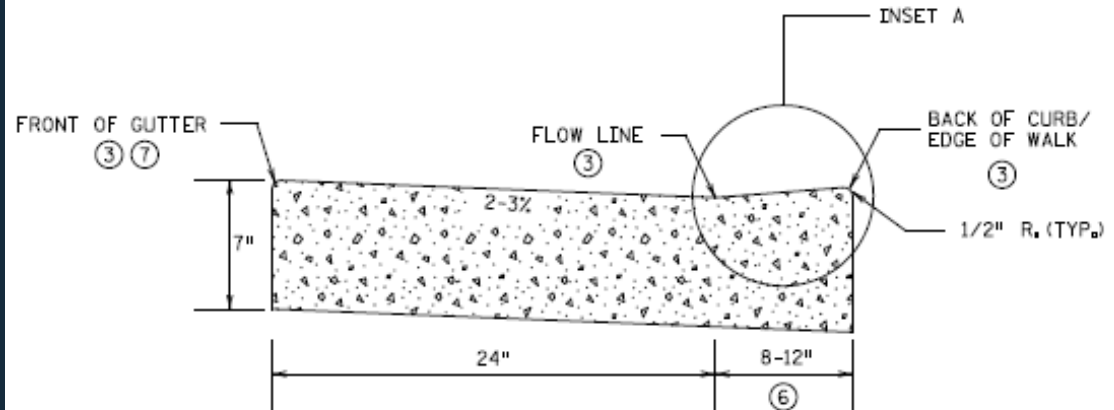
Curb and Gutter Details



- 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%.



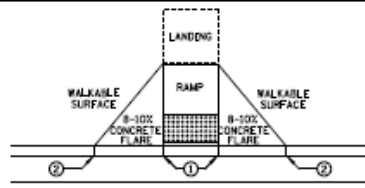
INSET A



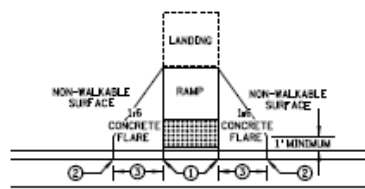
NON PERPENDICULAR ①

Standard Plans

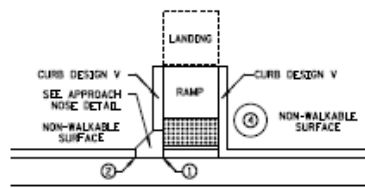
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20/FEB/2013



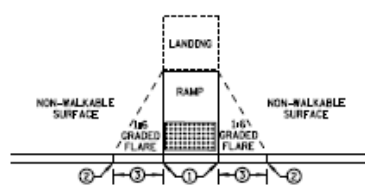
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

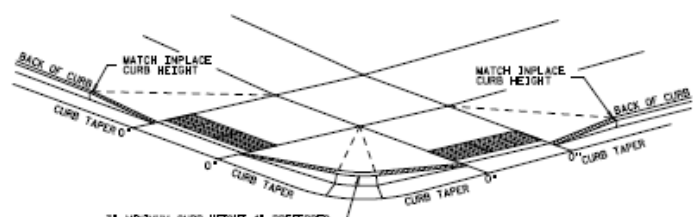


DIRECTION OF TRAFFIC
RETURNED CURB

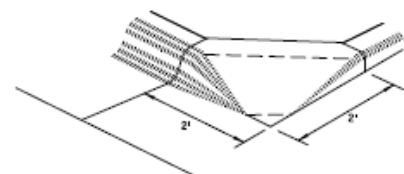


GRADED FLARES

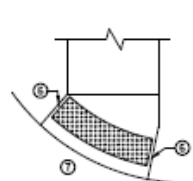
TYPICAL SIDE TREATMENT OPTIONS ③



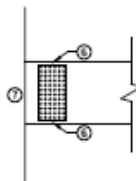
DETECTABLE EDGE WITH
CURB AND GUTTER ⑥



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" 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 DOWNS 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: BOWMAN
PATH & FILENAME: J:\PROJECTS\2012\2012_04_10\stds

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

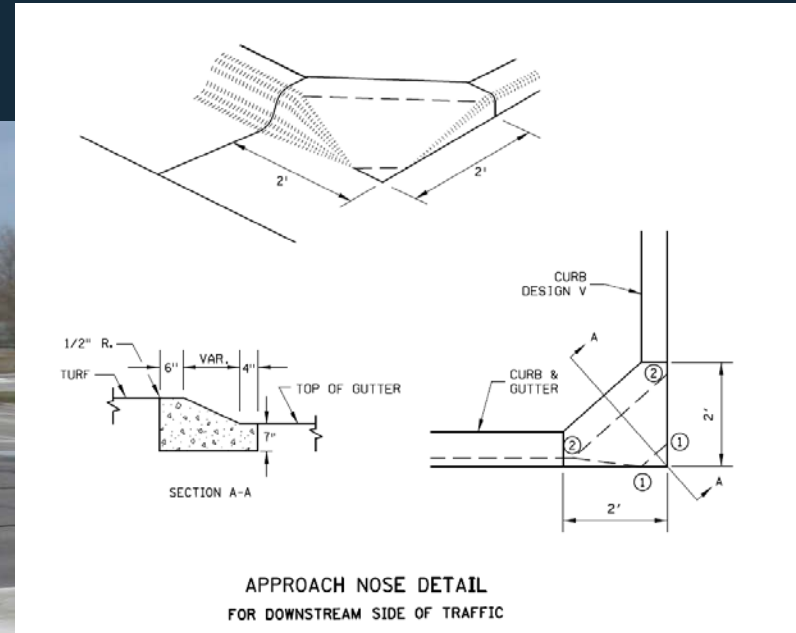


- When adjacent to turf, a 2'-3' concrete flare may be used.



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.



Vertical Face Curb

- V-curb adjacent to building



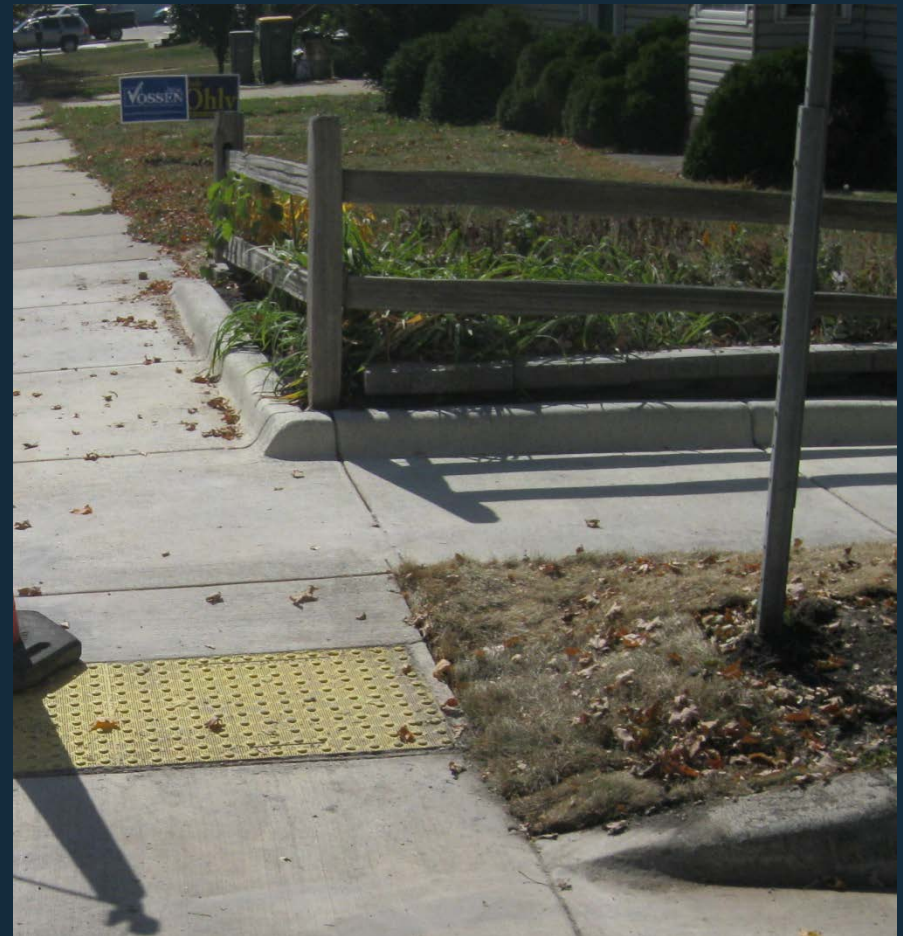
V-Curb

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



V-Curb

- V-curb adjacent to landscape and inside sidewalk limits



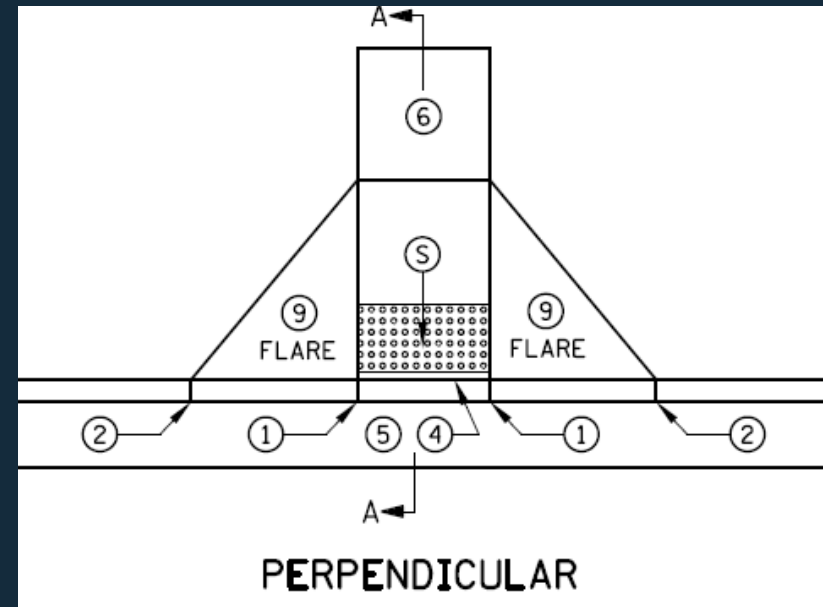
Curb Ramp Types



- 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

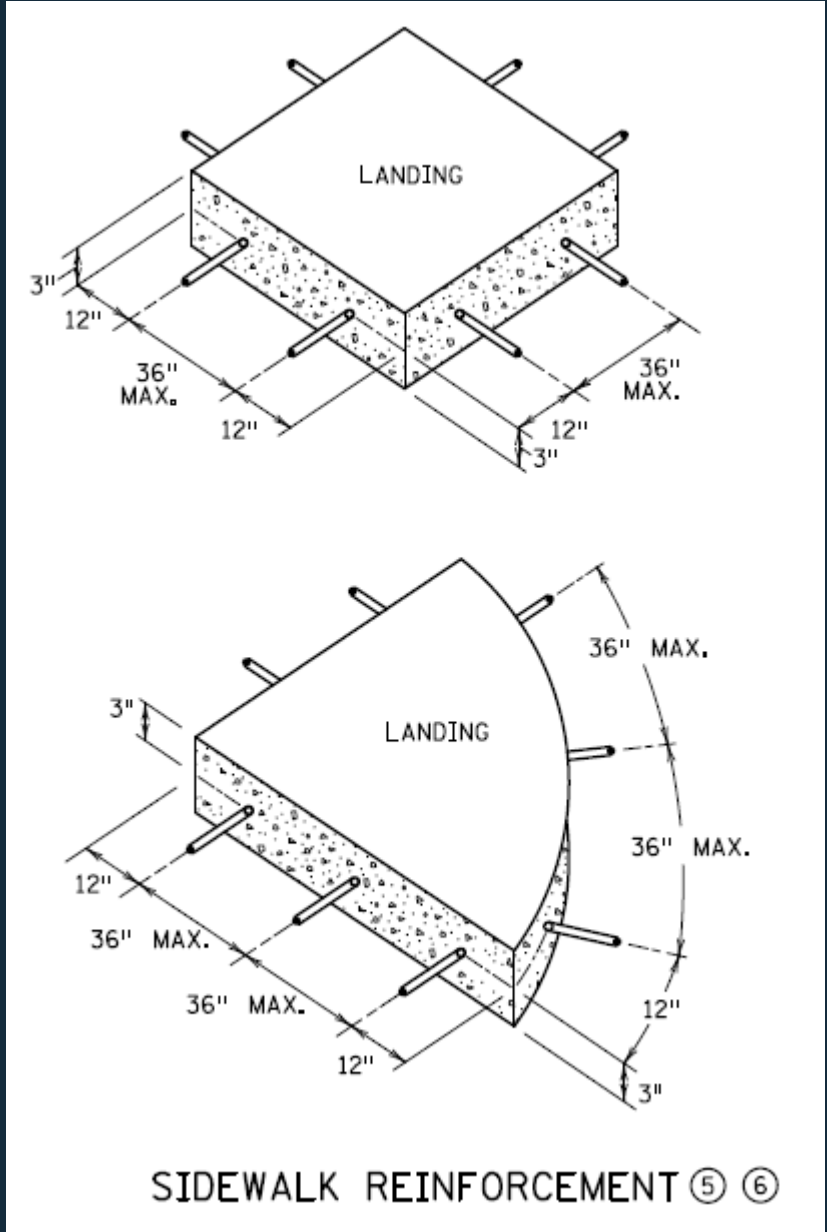
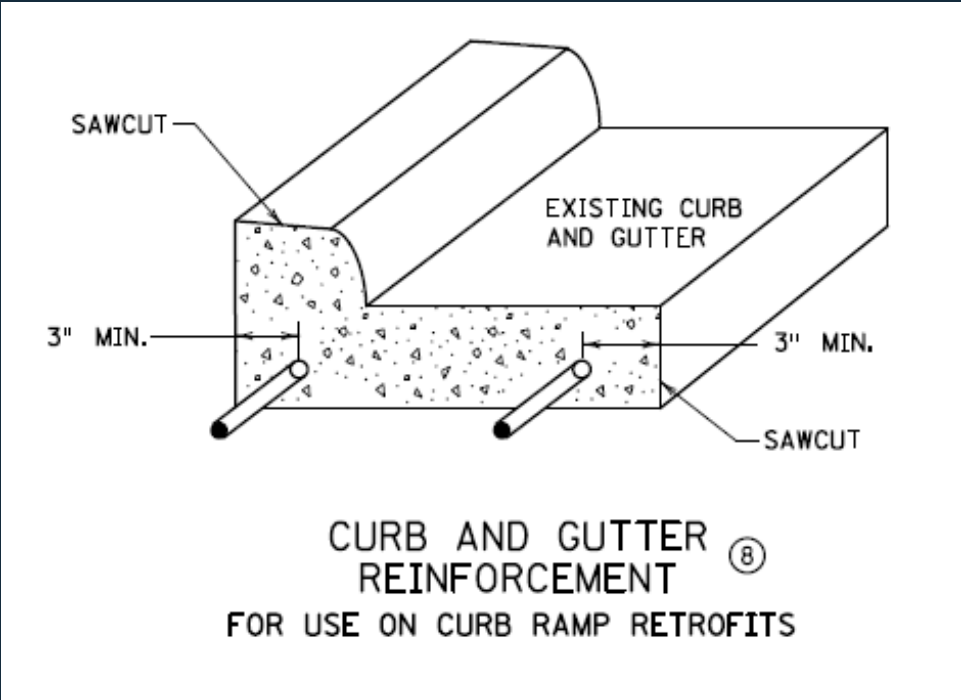


Fan



Standard Plan Sheets

New in 2013: Reinforcement Details

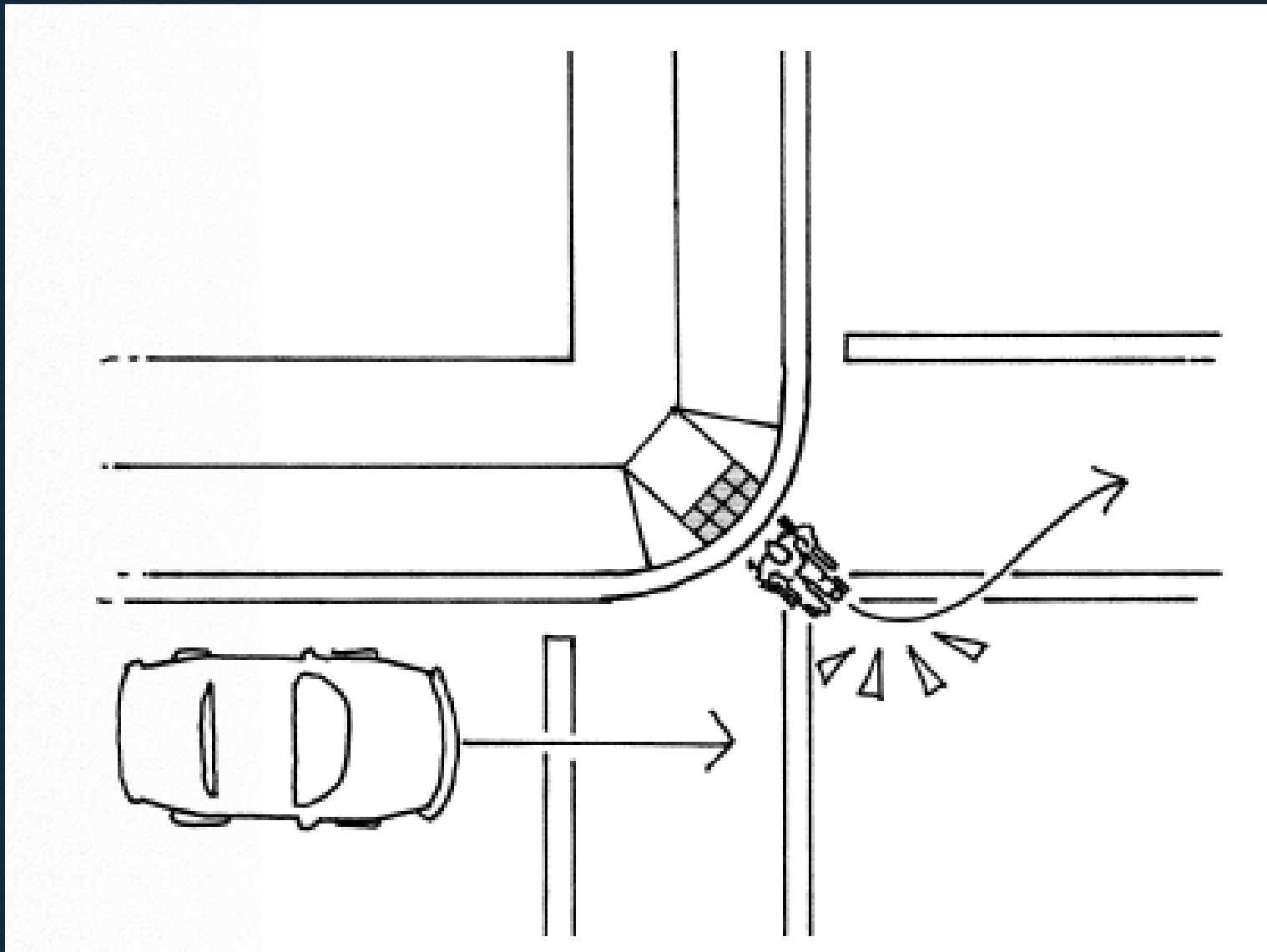


Diagonal Ramp

- 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

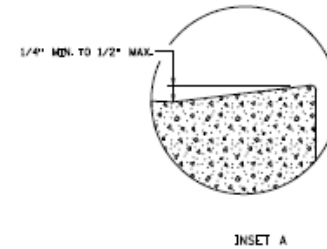
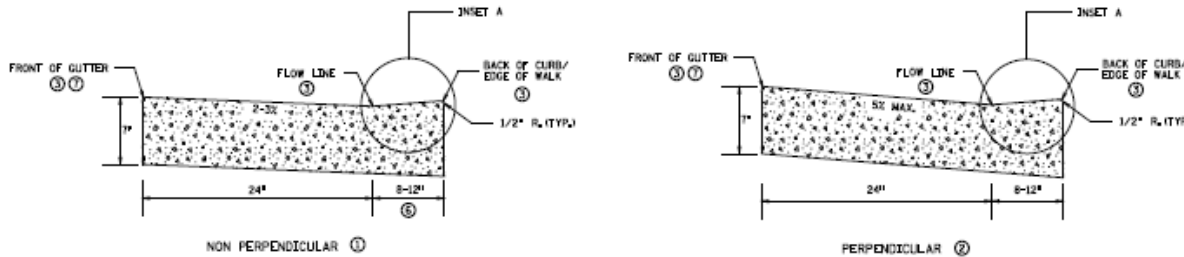
ADA PAY ITEMS

- 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

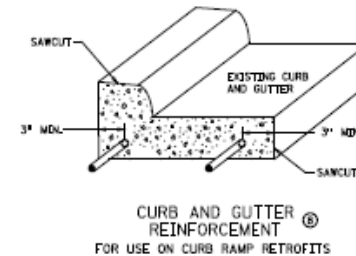
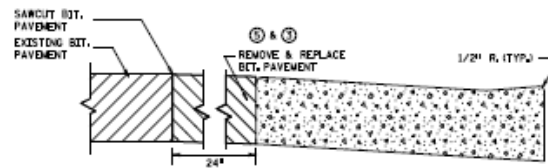
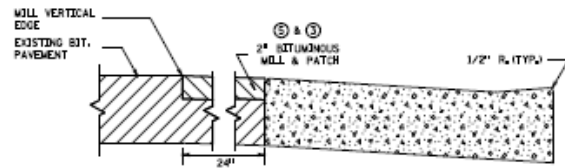
- ADA pay items allow less time tracking quantities in the field and more time ensuring a quality product

Mill and Patch Bit. Pavement

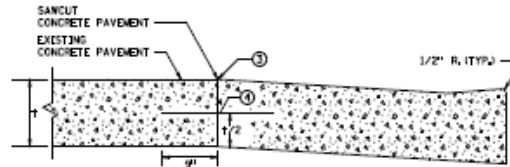
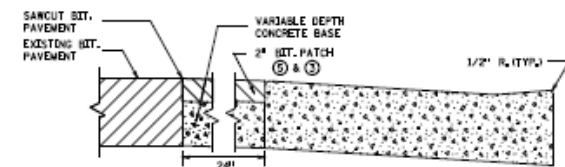
PLOTTED/REVISED
20/FEB/2003



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, TIERED 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
USER NAME: BROWIN
PARTY & FILENAME: JP:\m\157570\0200_3.dwg
FILE NAME: 2500_3.dwg

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

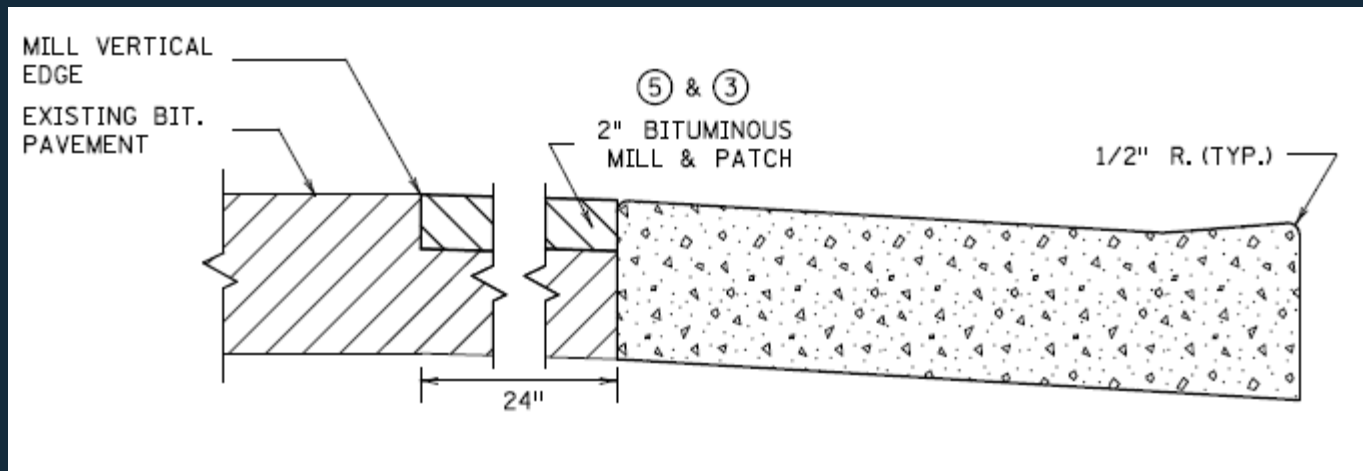
Mill and Patch Bit. Pavement

S-1 (2232) MILL AND PATCH BITUMINOUS PAVEMENT (ADA)

This work shall consist of milling and patching the existing bituminous surface adjacent to the newly constructed curb and gutter in accordance with the provisions of MnDOT 2232, 2360, other Contract provisions, and the following:

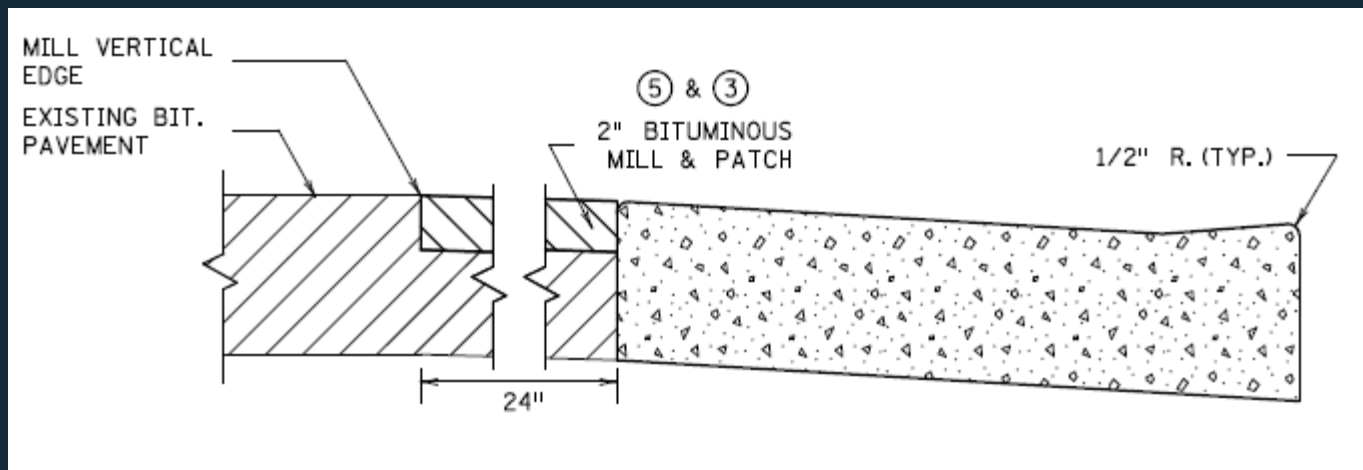
S-1.1 Construction Requirements

The bituminous surface shall be milled to a depth of 2 inches for a width of 2 feet in front of the curb and gutter as shown in the Plans and in conformance with requirements of MnDOT 2232, Mill Pavement Surface. The Contractor shall place bituminous material over the milled surface.



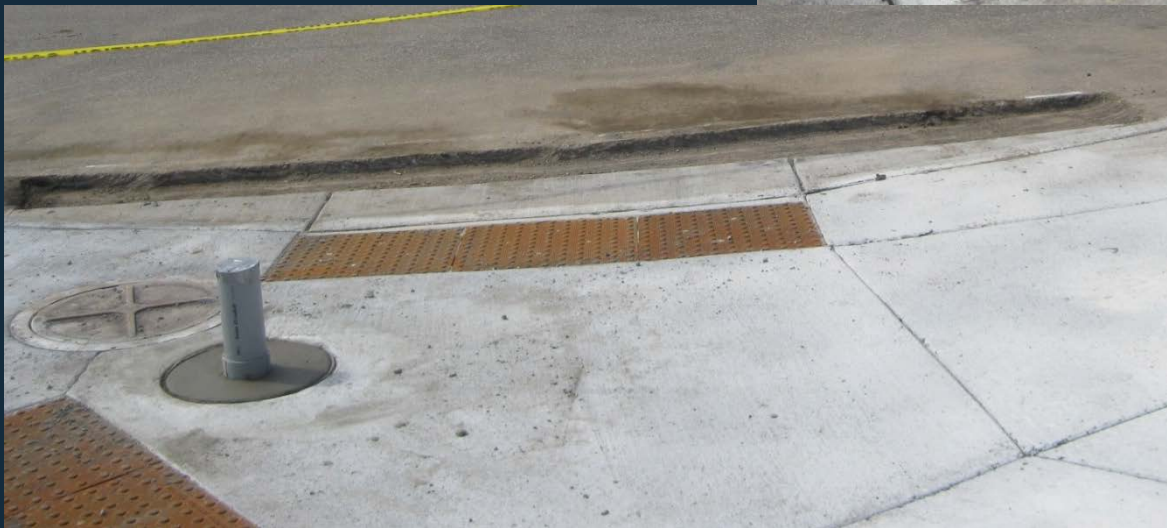
Mill and Patch Bit. Pavement

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.



Mill and Patch

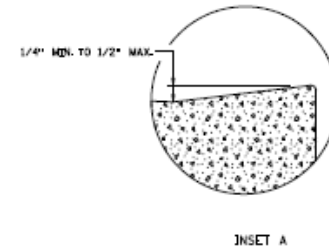
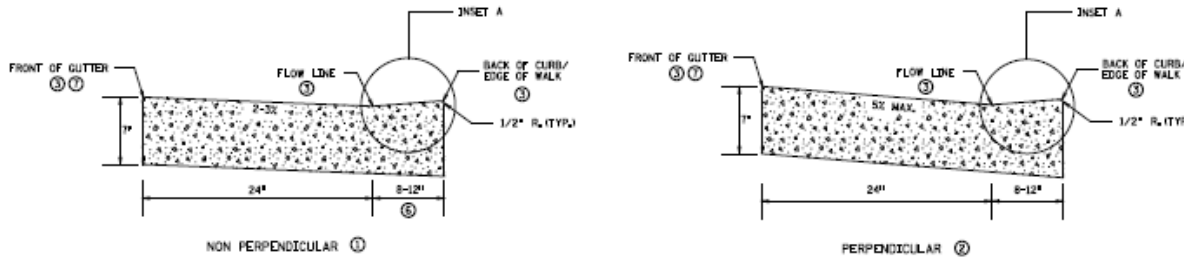
- (2232) Mill and patch bit. pavement – Lin Ft



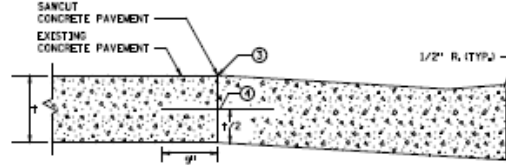
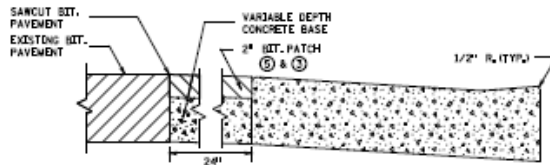
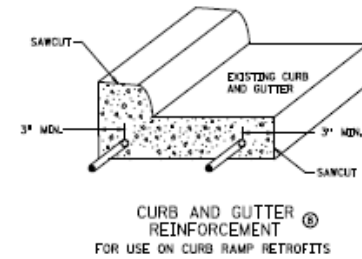
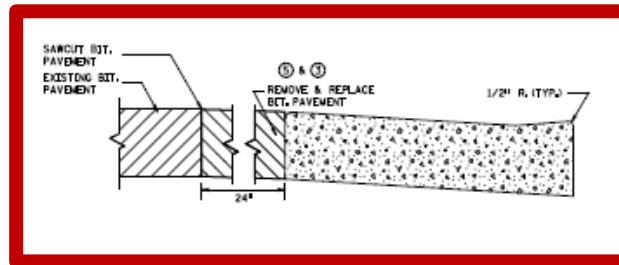
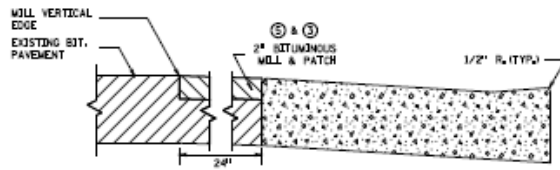
Remove and Replace Bit. Pavement



PLOTTED/REVISED
20/FEB/2013



PEDESTRIAN ACCESS ROUTE
CURB & GUTTER DETAIL



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, TIERED 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
USER NAME: BROWIN
PATH & FILENAME: J:\Projects\57079\0200_5.dwg

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

Remove and Replace Bit. Pavement

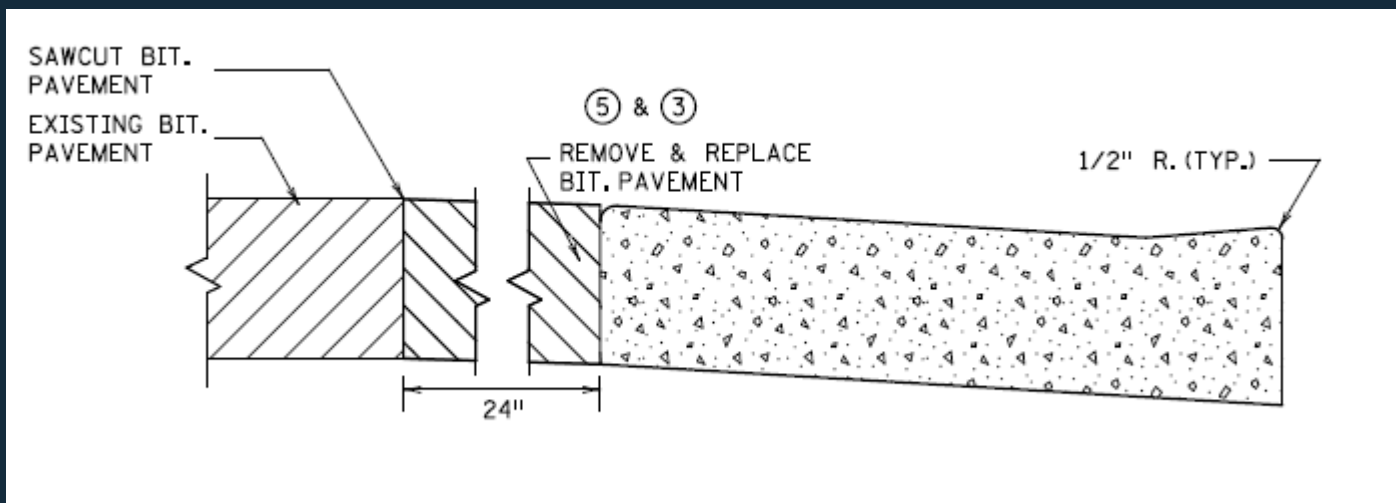


S-1 (2104) REMOVE AND REPLACE BITUMINOUS PAVEMENT (ADA)

This work shall consist of full depth sawing, removing, and replacing the bituminous surface adjacent to the newly constructed curb and gutter in accordance with MnDOT 2104, 2360, other Contract provisions, and the following:

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.



Remove and Replace Bit. Pavement

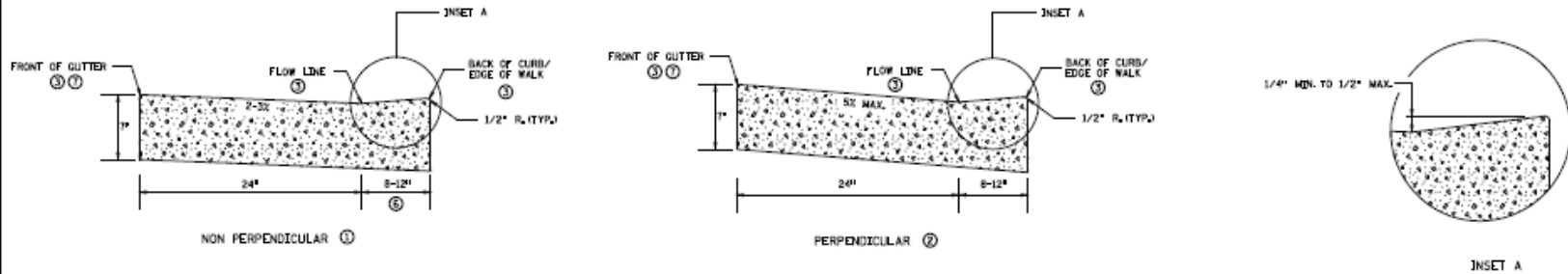


- **(2104) Remove & Replace Bit. Pavement – Lin Ft**
 - **Compacted bit surface to be finished flush with gutter face ($\frac{1}{4}$ " tolerance)**

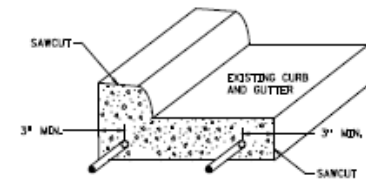
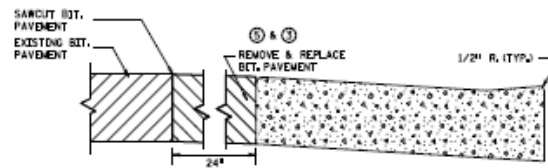
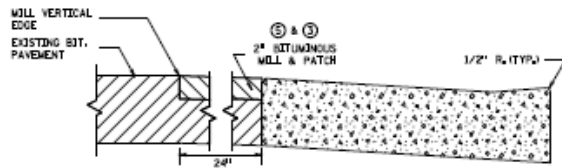


Concrete Curb & Gutter

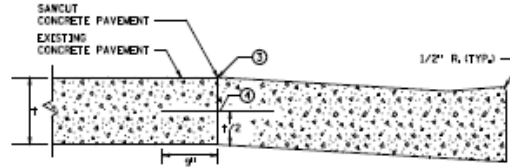
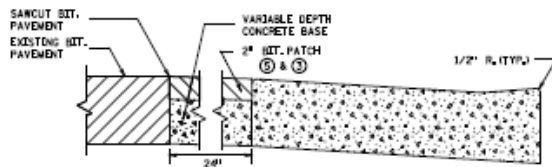
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PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL



CURB AND GUTTER REINFORCEMENT (6)
FOR USE ON CURB RAMP RETROFITS



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

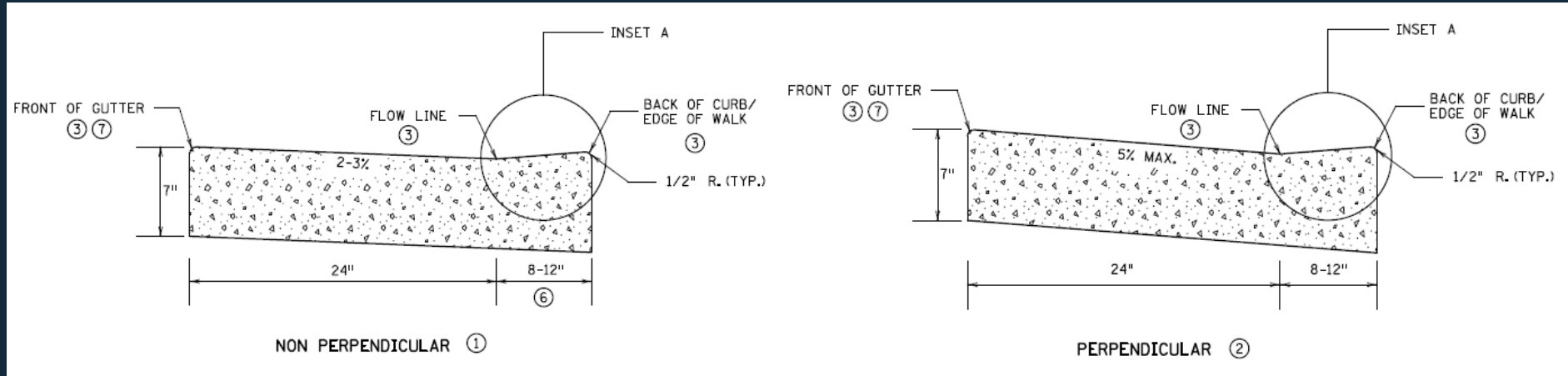
NOTES:

- POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM.
- NO PONDING SHALL BE PRESENT IN THE PAIR.
- 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, TIERED 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 FOR 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 Services
USER NAME: BROWIN
PATH & FILENAME: J:\Projects\5707\0200_5.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

Concrete Curb & Gutter



S-1 (2531) CONCRETE CURB & GUTTER (ADA)

This work shall consist of constructing Concrete Curb and Gutter and the necessary Aggregate Base in accordance with the provisions of MnDOT 2531, other Contract provisions, and the following:

S-1.1 Construction Requirements

Concrete Curb and Gutter – The curb and gutter shall be constructed to meet the details in the Plan. The transition from the existing curb and gutter section to the new curb and gutter section shall occur within 5 feet of the point where the curb and gutter construction begins.

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.

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

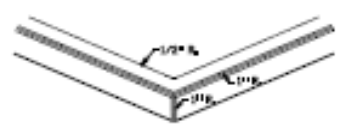
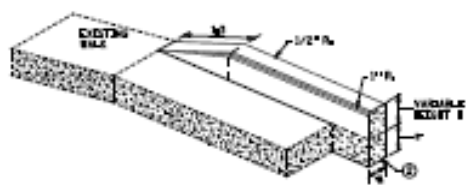
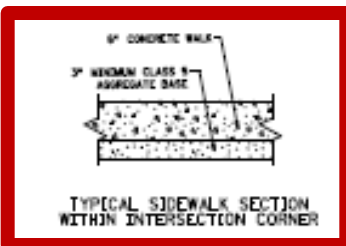
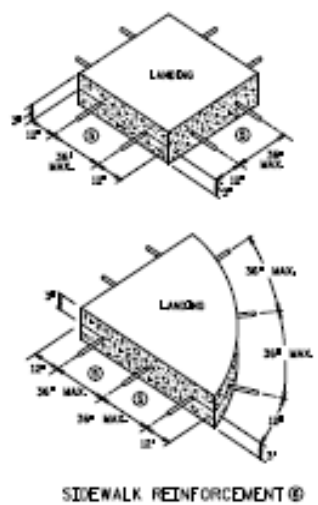
- **(2531) Concrete Curb and Gutter – Lin Ft**
 - This work shall consist of constructing concrete curb and gutter and the necessary aggregate base.
 - No specific curb height pay items are specified in the plan. Simply match existing curb height at removal limit and transition into PAR curb and gutter at the pedestrian ramps.



Concrete Walk



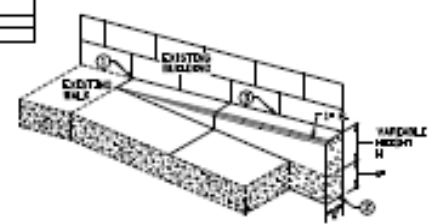
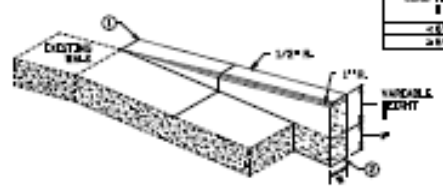
POSTED/REVISED DATE



V CURB ADJACENT TO LANDSCAPE
CURB WITHIN SIDEWALK LIMITS

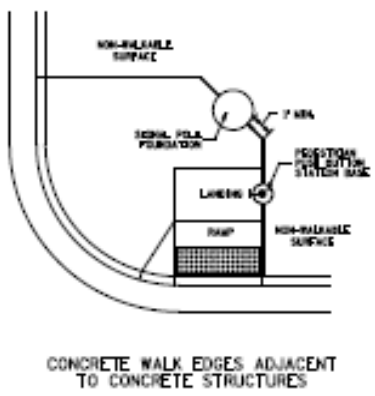
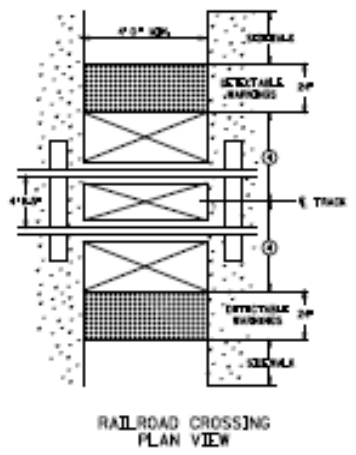
V CURB INTERSECTION

CONCRETE CURB DESIGN V	
CURB HEIGHT	CURB WIDTH
24"	24"
28"	24"



V CURB ADJACENT TO LANDSCAPE
CURB OUTSIDE SIDEWALK LIMITS

V CURB ADJACENT TO BUILDING

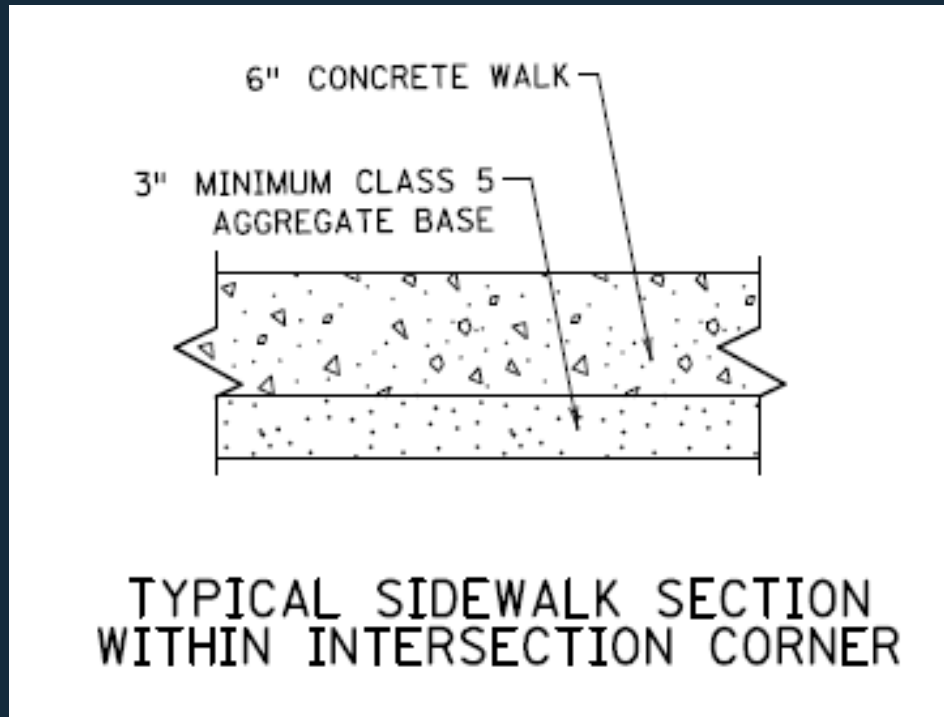


- NOTES:
- ALL V CURB CONSTRUCTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.
 - WHERE RIGHT-OF-WAY ALLOWS, USE OF V CURB SHOULD BE MODIFIED OR AVOIDED ADJACENT TO RAMP OR SLOPING WALKWAY PAVEMENT TO PREVENT.
 - V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. V CURB NOT TO BE PLACED SHALL BE A 1/2" WIDTH AND SHALL MATCH PREVIOUS TOP OF SIDEWALK ELEVATION.
 - END TURNERS BY TRANSITION SECTION SHALL WATER DISPLACE SIDEWALK BRACKS.
 - ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.
 - JOINT BETWEEN NEW V CURB AND EXISTING STRUCTURE SHALL BE SEALED AND BOND BREAKER SHALL BE USED BETWEEN EXISTING STRUCTURE AND PLACED 1/2" FROM.
 - EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 1/2" 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, 1/2" - 1/4" FROM THE APPROACHING SIDE OF THE GATE AND.
 - SHALL AND ABOUT 1/4" SPACED 1/2" LONG REINFORCEMENT BARS AT 3/4" MAX. CENTER TO CENTER SPACING.
 - MINI QUANTITIES PROVIDED FOR IN PLAN.

DESIGNED BY: Design Services
CHECKED BY: USER NAME, DIVISION
DATE & FILE NAME: 11-14-2017/STP/00000000000000000000

MINNESOTA PLAN SET NO. S-297,290 03 OF 50	PEDESTRIAN CURB RAMP DETAILS
DESIGN APPROVED KEY APPROVED	
STATE PROJ. NO.	(TH) SHEET NO. OF SHEETS

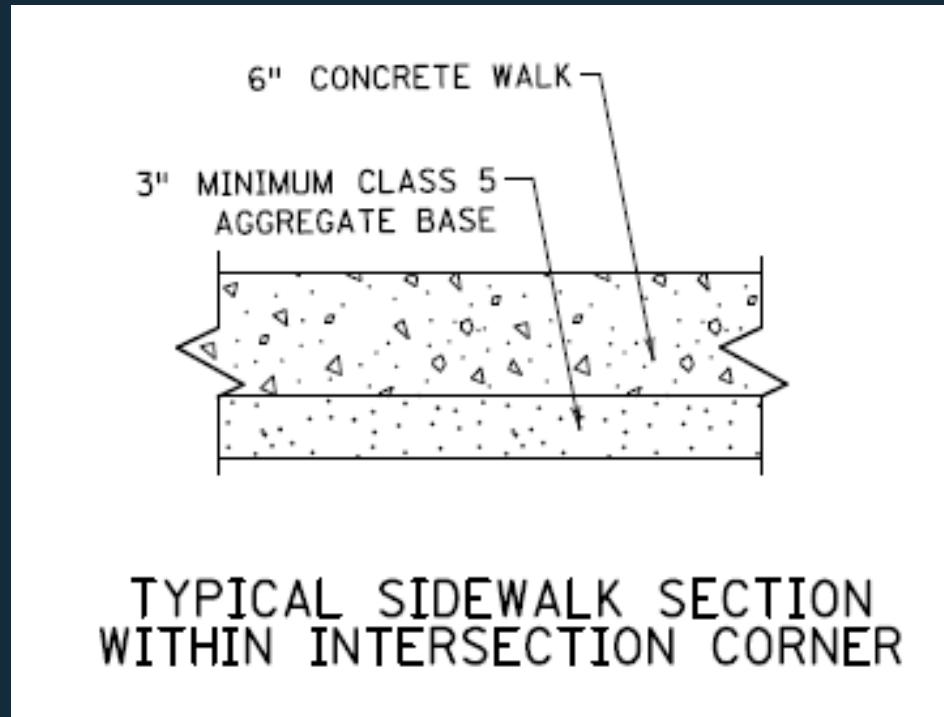
Concrete Walk



S-1 (2521) CONCRETE WALK (ADA)

This work shall consist of constructing Concrete Walk, including necessary Subgrade Preparation, Aggregate Base, and Grading as indicated in the Plan, in accordance with the provisions of MnDOT 2112, 2211, 2521, other Contract provisions, and the following:

Concrete Walk



S-1.1 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.

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.

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**

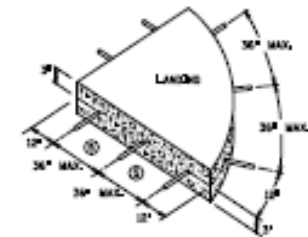
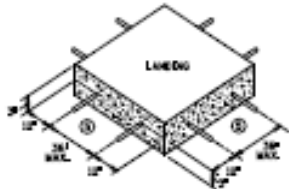
If common borrow requirements exceed 8 CY (CV) at any individual site/quadrant, than the common borrow required at that location specifically required for in the Plan shall be paid for at \$20/CY (CV).



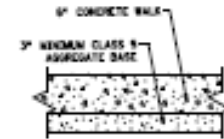
Concrete Curb Design V



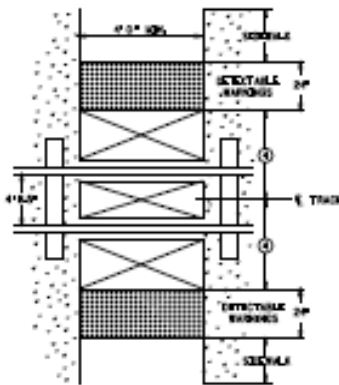
PART 1000 - CONSTRUCTION
 SECTION 1000 - CONSTRUCTION
 PART 1000 - CONSTRUCTION



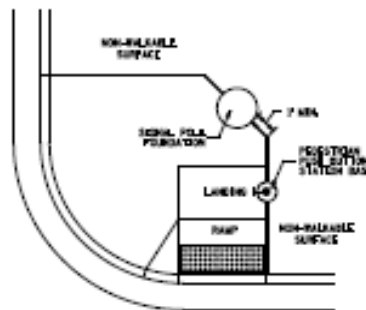
SIDEWALK REINFORCEMENT



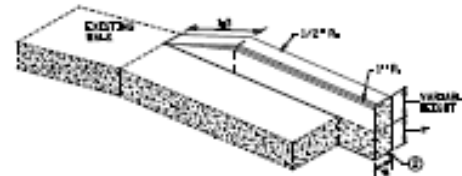
TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER



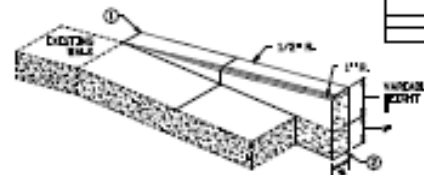
RAILROAD CROSSING PLAN VIEW



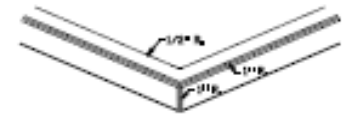
CONCRETE WALK EDGES ADJACENT TO CONCRETE STRUCTURES



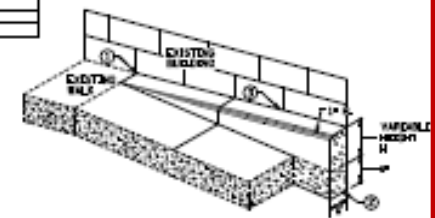
V CURB ADJACENT TO LANDSCAPE CURB WITHIN SIDEWALK LIMITS



V CURB ADJACENT TO LANDSCAPE CURB OUTSIDE SIDEWALK LIMITS



V CURB INTERSECTION



V CURB ADJACENT TO BUILDING

CONCRETE CURB DESIGN V	
CURB HEIGHT	CURB WIDTH
24"	24"
28"	24"

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 OMOOD ADJACENT TO RAMP OR SLOPING WALKWAY PARALLEL TO SIDEWALK.
- 3. V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. V CURB NOT TO BE PLACED SHALL BE A 4\"/>
- 4. END TYPERS BY TRANSPORTATION SHALL WATER DISPLACE SIDEWALK BRICKS.
- 5. ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.
- 6. GAPS BETWEEN NEW V CURB AND EXISTING STRUCTURE SHALL BE SEALED AND WOOD BRICKS SHALL BE USED BETWEEN EXISTING STRUCTURE AND PLACED 1\"/>
- 7. EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 18\"/>
- 8. EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL. 18\"/>
- 9. BRICK AND GROUT SHALL BE SPOT-COATED 18\"/>
- 10. BRICK QUANTITIES PROVIDED FOR IN PLAN.

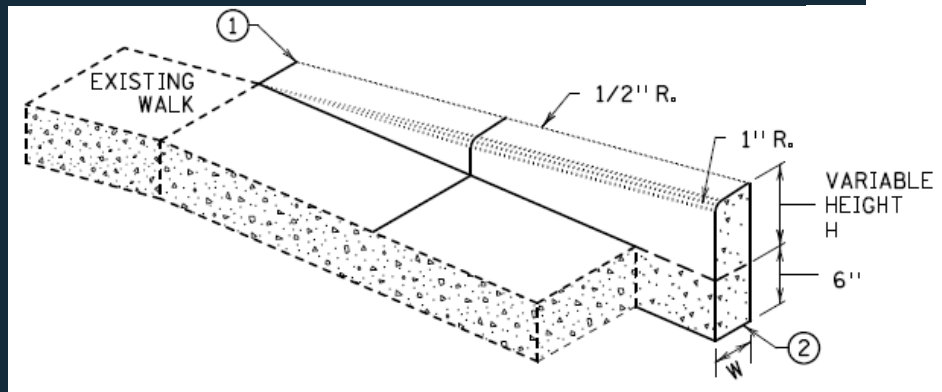
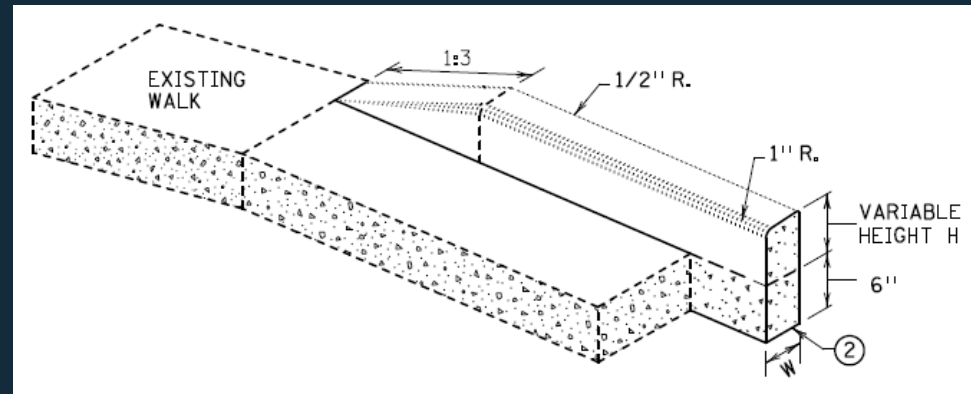
MINNESOTA PLAN SET NO. 10-201250 03 OF 50
 DESIGN APPROVED
 KEY APPROVED

PEDESTRIAN CURB RAMP DETAILS

DRAWING NO. 10-201250
 USER NAME: D:\DTP\10-201250
 FILE NAME: 10-201250-03.DWG
 DATE: 10/10/2012 10:10:10 AM

Concrete Curb Design V

CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
< 6"	4"
≥ 6"	6"



S-1 (2531) CONCRETE CURB DESIGN V (ADA)

This work shall consist of constructing Concrete Curb Design V of varying heights up to 8 inches as detailed in the Plan and in accordance with the provisions of MnDOT 2531, other Contract provisions, and the following:

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.



Concrete Curb Design V

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

Sections of concrete curb design v that never reach a 3” height shall be paid for as concrete walk.



Concrete Curb Design V

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

Any additional v-curb beyond the quantity provided in the Plan, shall be paid for at \$20/Lin. Ft.



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).

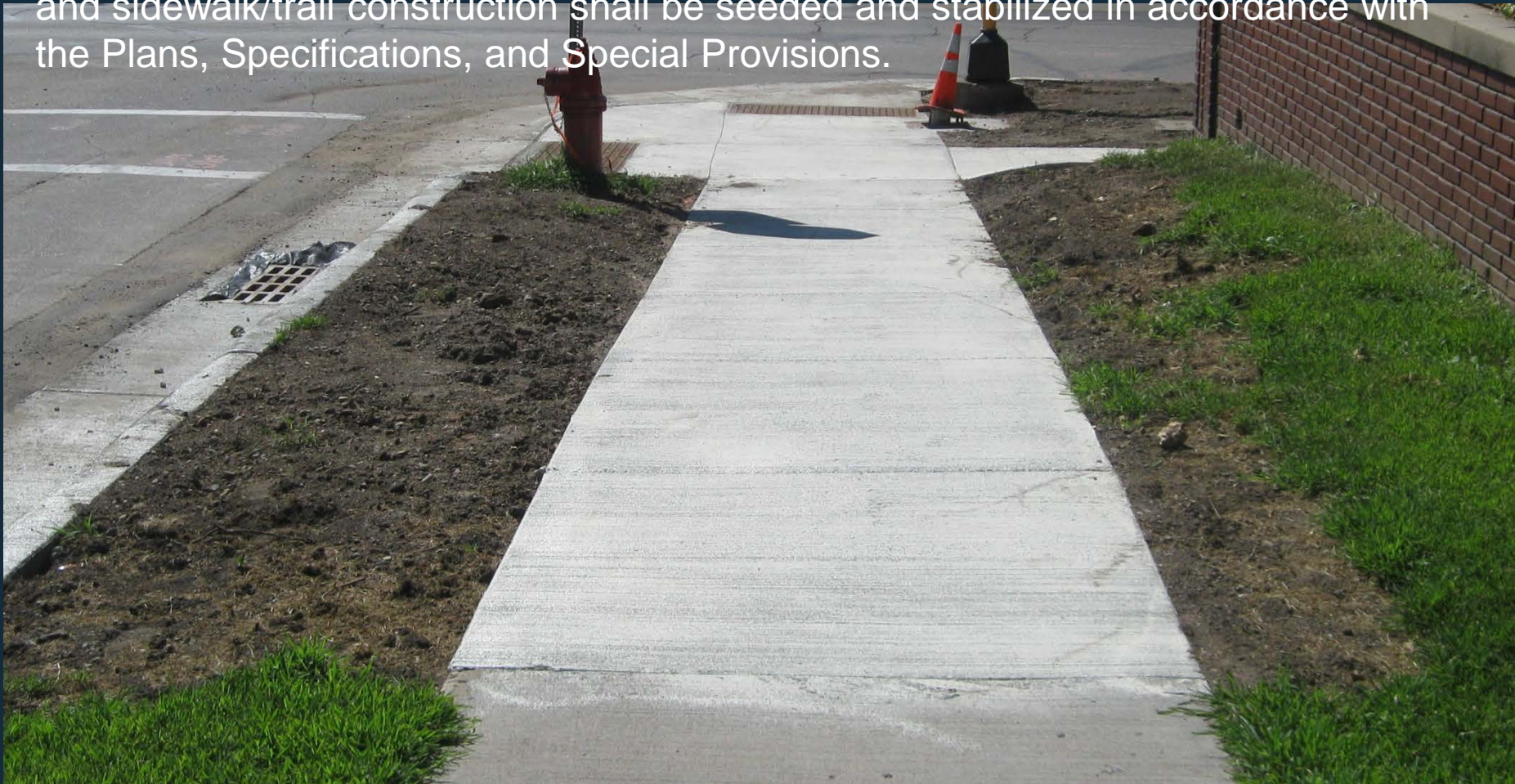


Site Restoration



- **(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

