Intro

ADA Operations Contact Info

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

MnDOT ADA Training

STANDARD PLANS & PAY ITEMS

Your Destination...Our Priority

Module Overview

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

Curb Ramp/PROWAG Basics

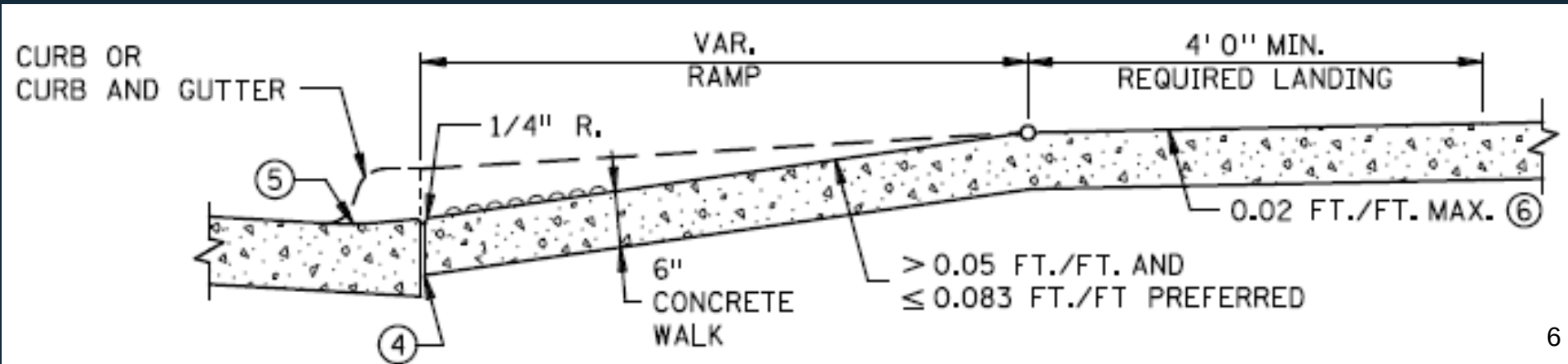
- PROWAG requirements are based on slopes, so curb ramps cannot simply meet a certain length to be compliant.
- A 6 inch high curb does not necessarily mean that a ramp should be 6 foot long; it depends on whether the area behind the ramp slopes up, down or is flat from the top of curb.

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

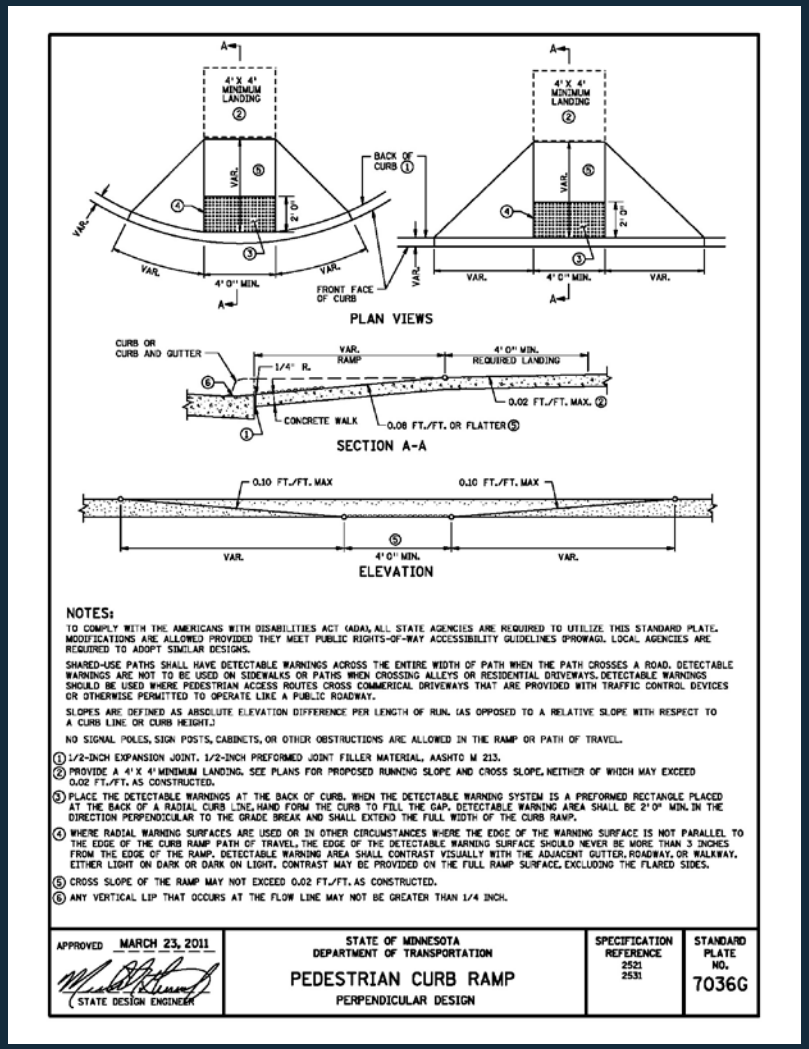
- If longitudinal slope exceeds 5 percent, or there is a change in direction, landings must be provided on any pedestrian facility.
- Maximum ramp slope is 8.3 percent.
- Maximum length of initial ramp is 15 feet.
- Slopes and dimensions are **absolute**. PROWAG allows no tolerances for exceeding these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



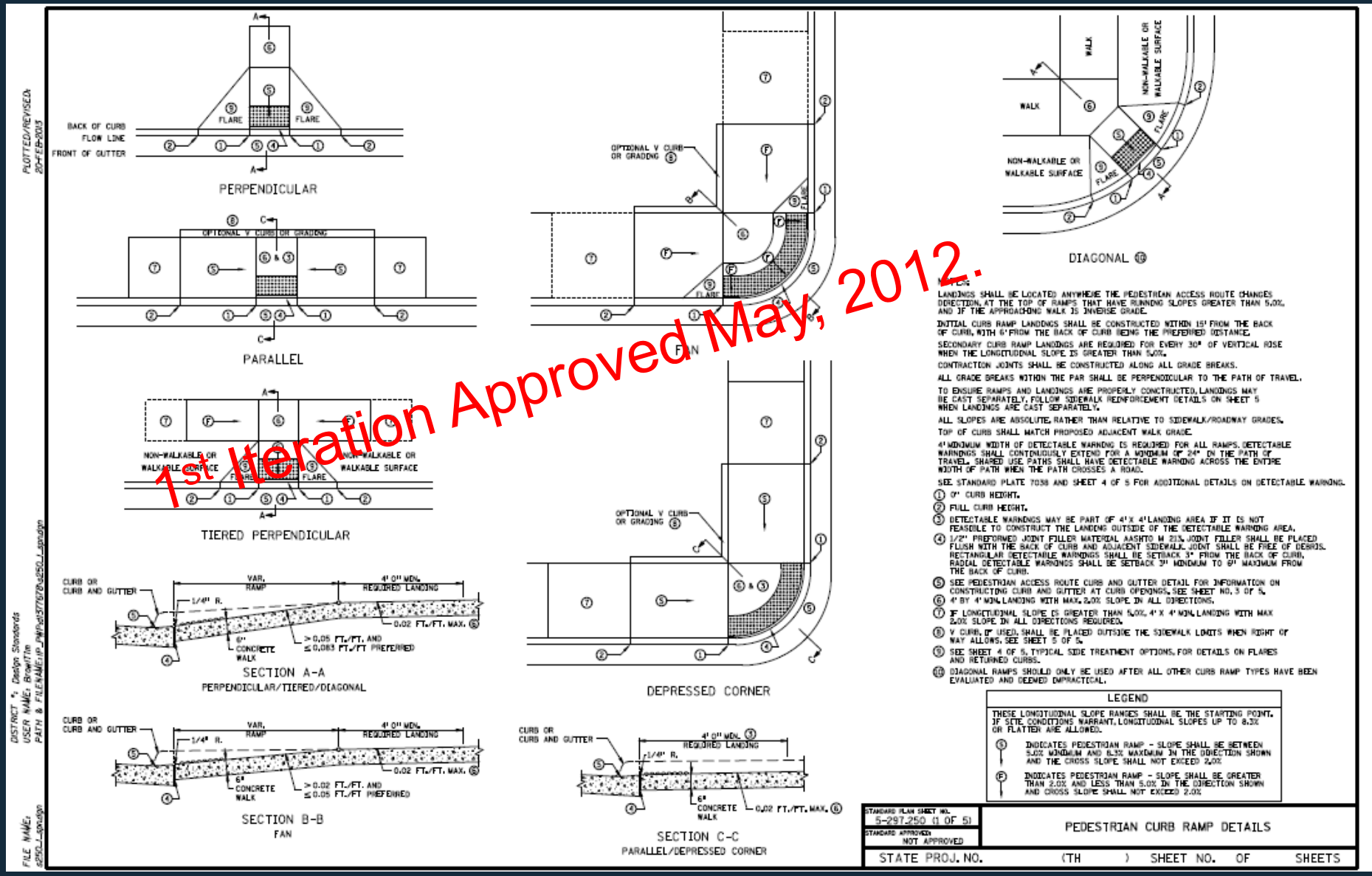
Standard Plate 7036G

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



1st Iteration Approved May, 2012.

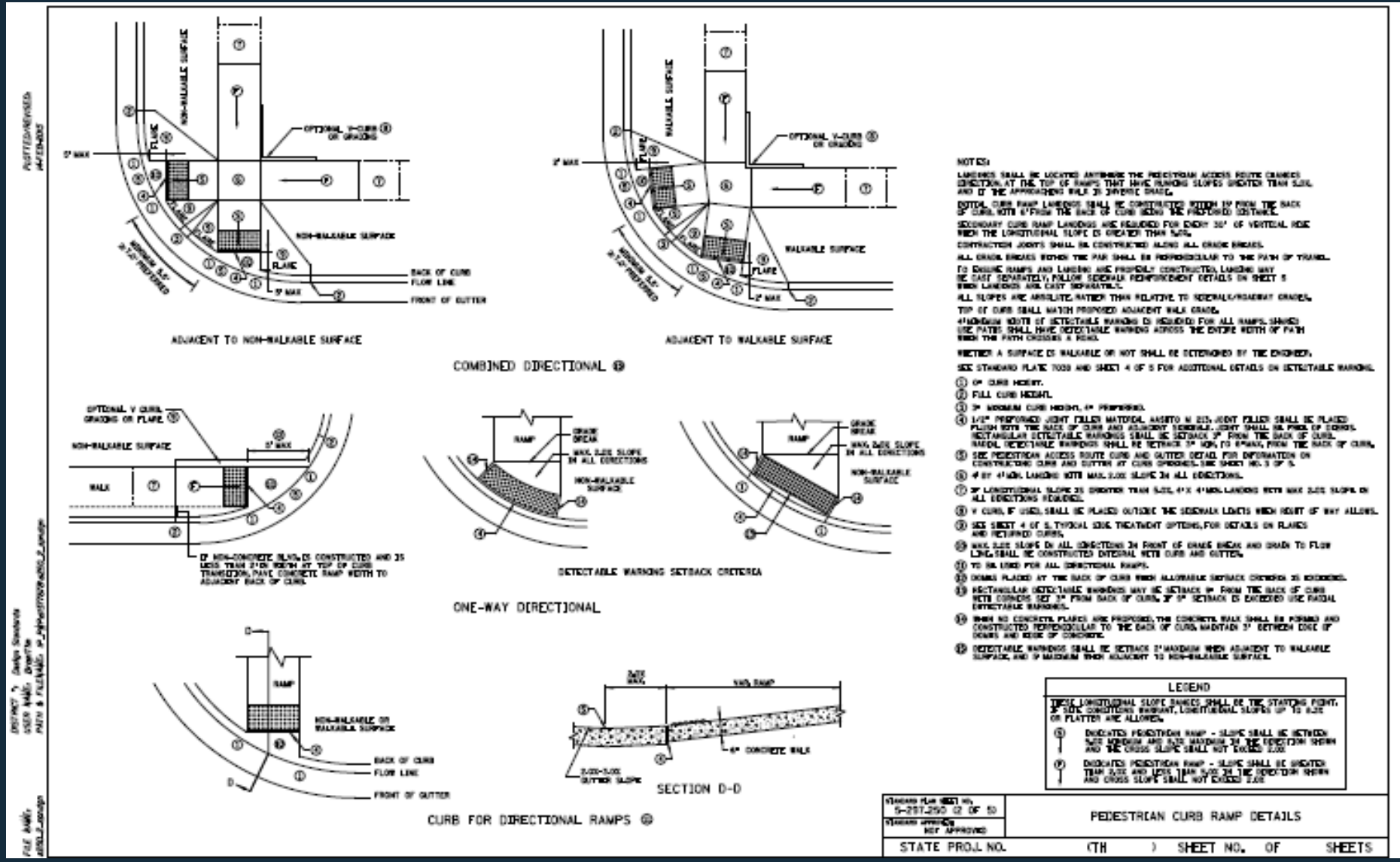
Standard Plans

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%

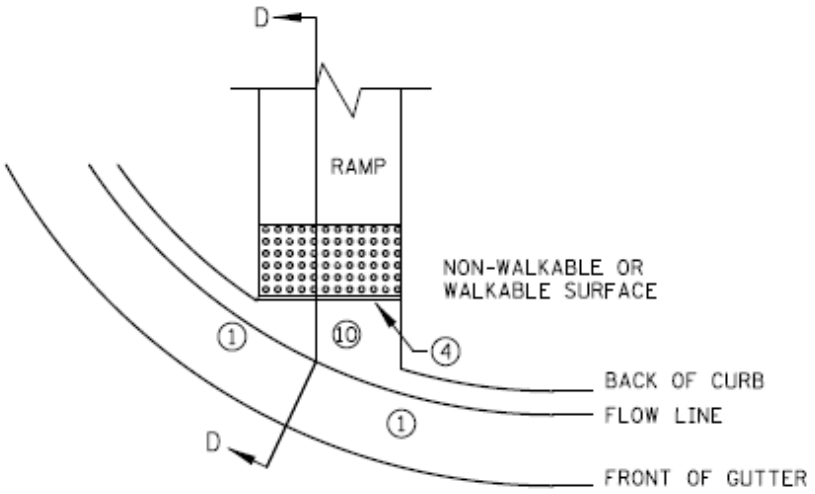
INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%

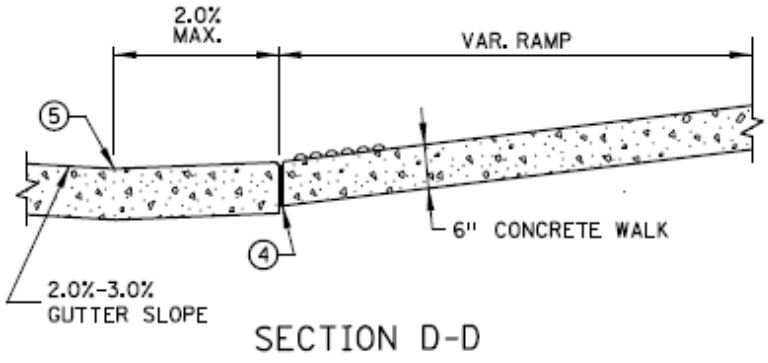
Standard Plans



Standard Plans

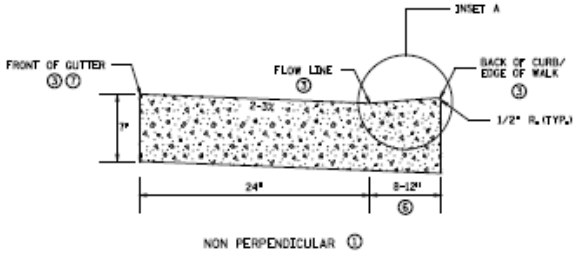
- When constructing directional ramps, the “triangular” concrete piece shall be poured integral with the curb and gutter (Directional Curb).



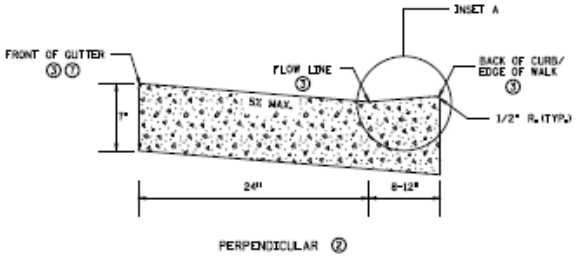


CURB FOR DIRECTIONAL RAMPS ⑪

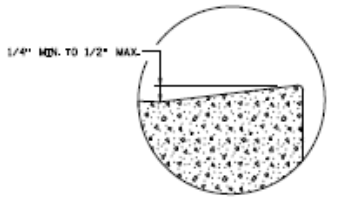
Standard Plans



NON PERPENDICULAR ①

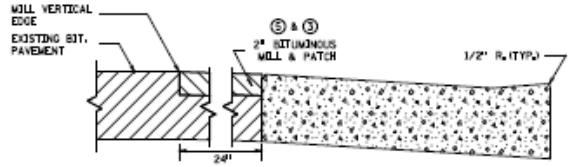


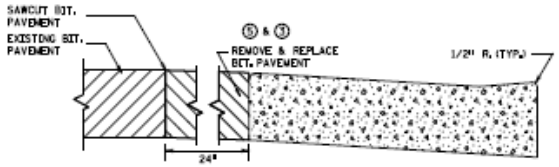
PERPENDICULAR ②

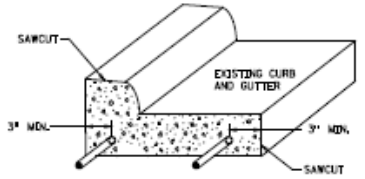


INSET A

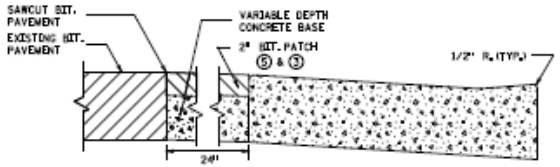
PEDESTRIAN ACCESS ROUTE
CURB & GUTTER DETAIL

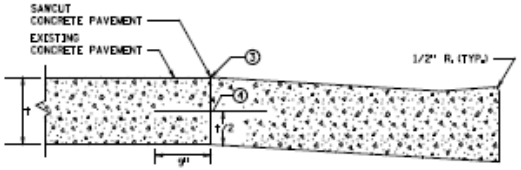






CURB AND GUTTER REINFORCEMENT ⑧
FOR USE ON CURB RAMP RETROFITS





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 INCLUDED: 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 INCLUDED: PERPENDICULAR, TIERED PERPENDICULAR, PARALLEL, AND DIAGONAL RAMPS.

③ THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4".

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 OVERLAID.

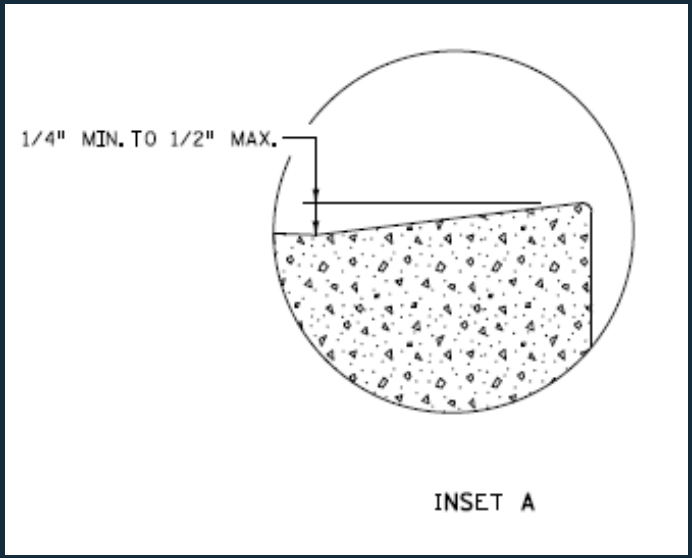
⑧ WHERE PLAN SPECIFIES, DRILL AND GROUT 2 - NO.4 X 12" LONG REINFORCEMENT BARS (EPOXY COATED).

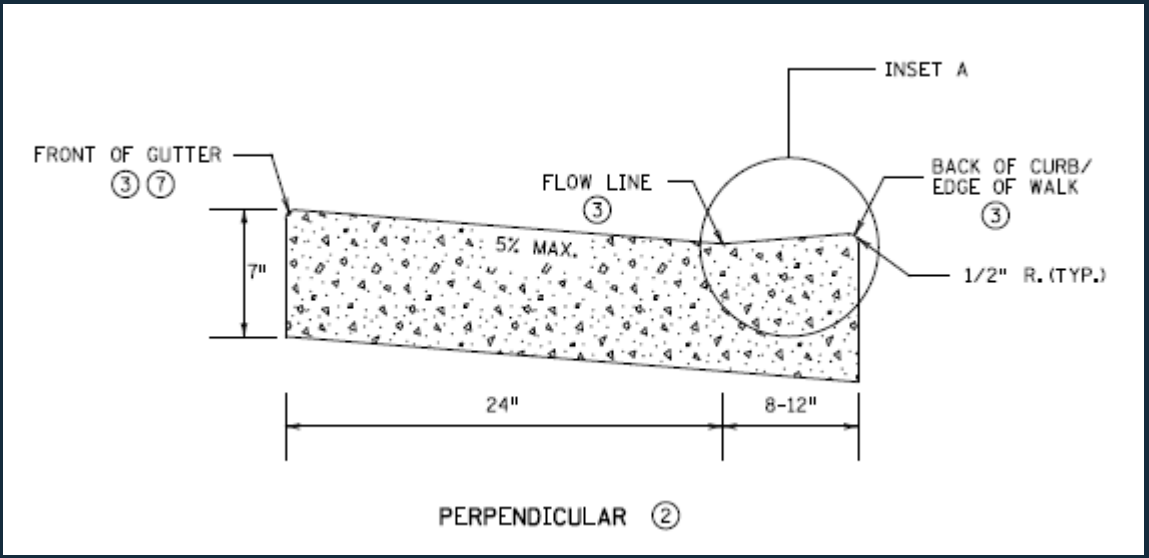
STANDARD PLAN SHEET NO. 5-297.250 (3 OF 5)	PEDESTRIAN CURB RAMP DETAILS
STANDARD APPROVED NOT APPROVED	
STATE PROJ. NO.	(TH) SHEET NO. OF SHEETS

PLOTTED/REVISED: 20-FEB-2013
DISTRICT *, Design Standards
USER NAME: BrentTin
PATH & FILENAME: \\P...\e297250_3.sprdgn
FILE NAME: e297250_3.sprdgn

Curb and Gutter Details

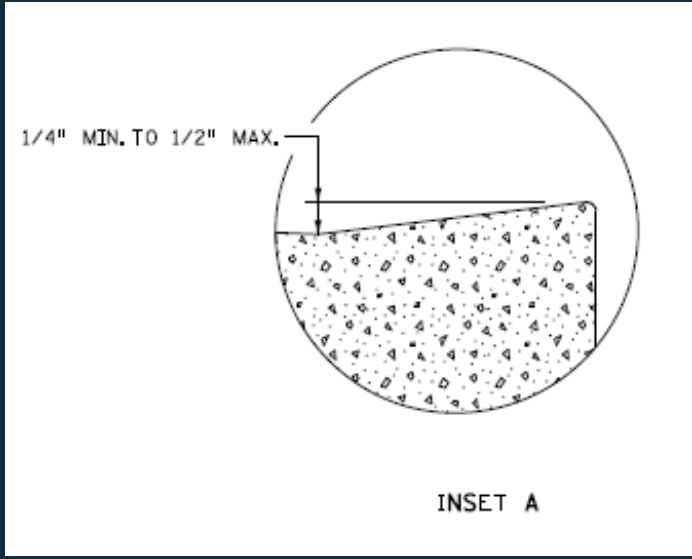
- Always maintain flow line and use modified Pedestrian Access Route curb and gutter sections.
- Perpendicular and parallel ramps can have a maximum 5% gutter slope because the pedestrian's path of travel is perpendicular to the gutter flow line.

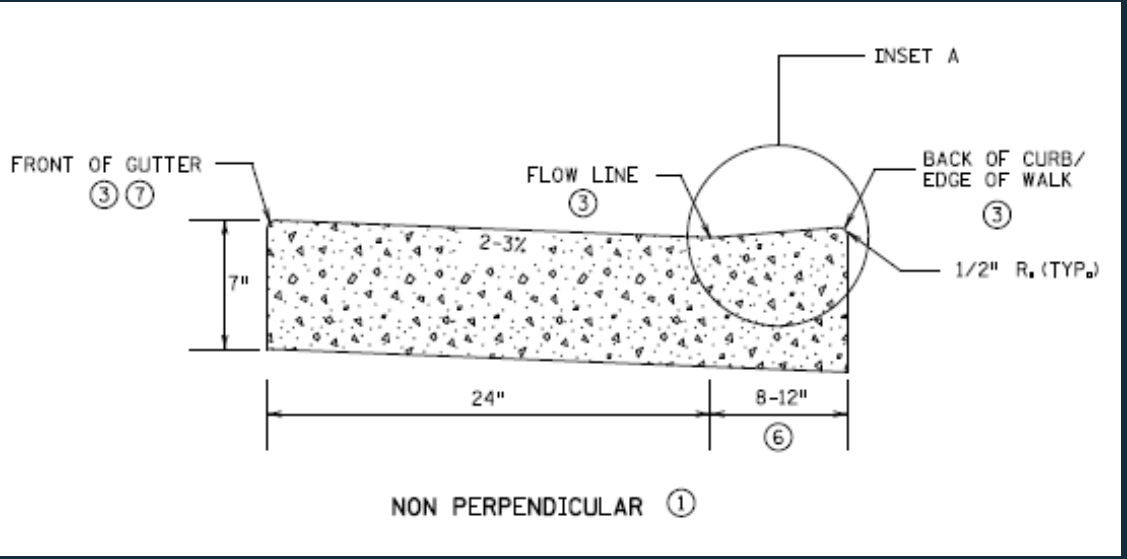




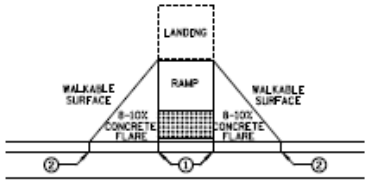
Curb and Gutter Details

- 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%.

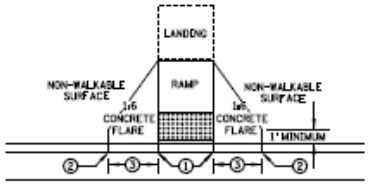




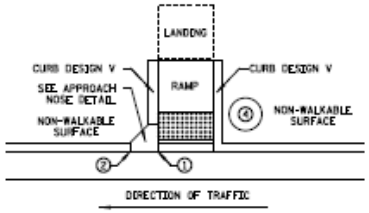
Standard Plans



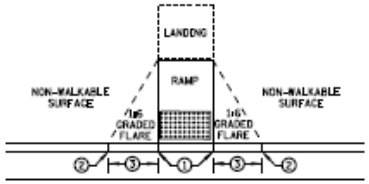
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

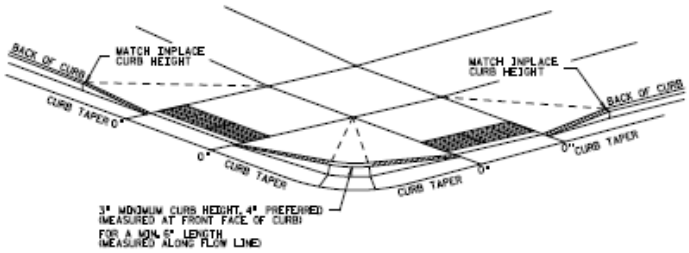


RETURNED CURB

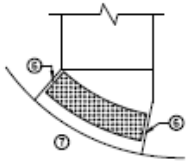


GRADED FLARES

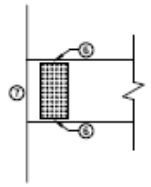
TYPICAL SIDE TREATMENT OPTIONS ⑤



DETECTABLE EDGE WITH
CURB AND GUTTER ⑧

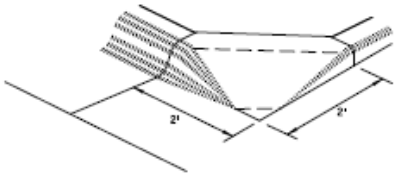


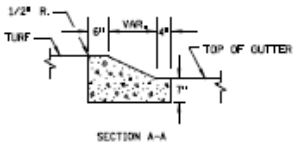
RADIAL DETECTABLE WARNING



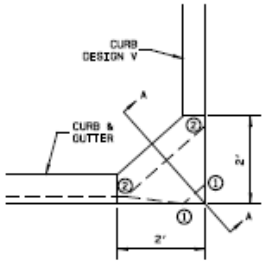
RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER





SECTION A-A



APPROACH NOSE DETAIL
FOR DOWNSTREAM SIDE OF TRAFFIC

NOTES:

SEE STANDARD PLATE 7038 AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.

WHETHER A SURFACE IS WALKABLE OR NOT SHALL BE DETERMINED BY THE ENGINEER.

CONCRETE FLARE LENGTHS ADJACENT TO NON-WALKABLE SURFACES SHOULD BE LESS THAN 8'LONG MEASURED ALONG THE RAMPS FROM THE BACK OF CURB.

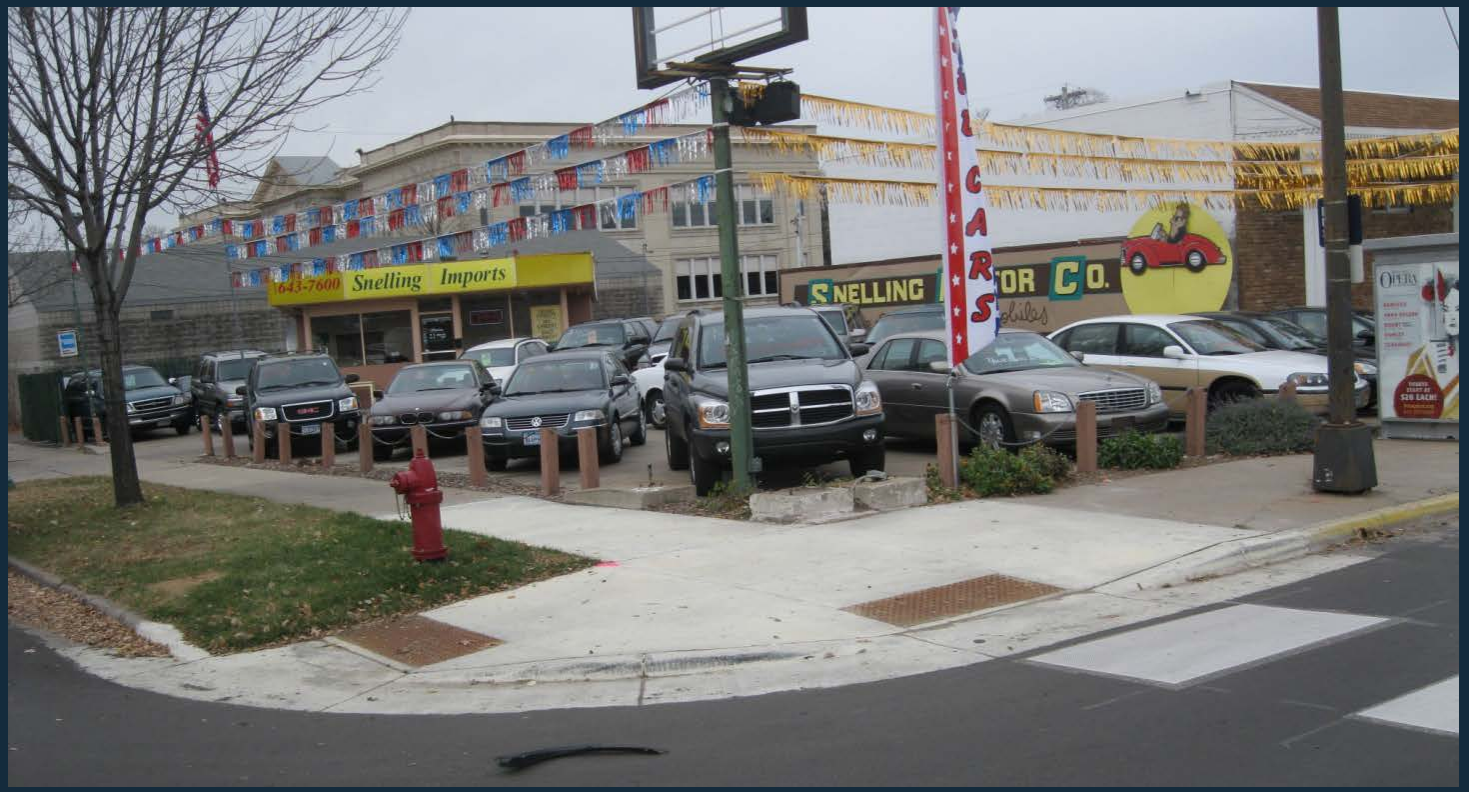
① 0" CURB HEIGHT.
② FULL CURB HEIGHT.
③ 2' - 3' FLARE.
④ IMMOVABLE OBJECT OR OBSTRUCTION.
⑤ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED ON ALL RAMPS AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.
⑥ WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
⑦ IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 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 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.

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

PLOTTED/REVISED: 20-FEB-2013
DISTRICT: Design Standards
USER NAME: BrownTim
PATH & FILENAME: P:\Pw\dot\ST\PDF\5297250\4_spndgn
FILE NAME: 4250_4_spndgn

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.

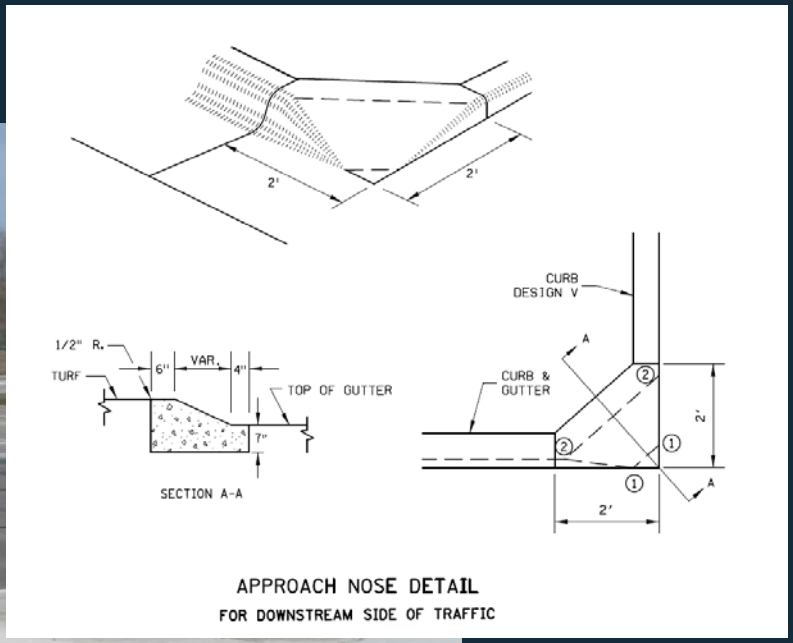


Side Treatments

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

Side Treatments

- Approach nose detail for downstream side of traffic.



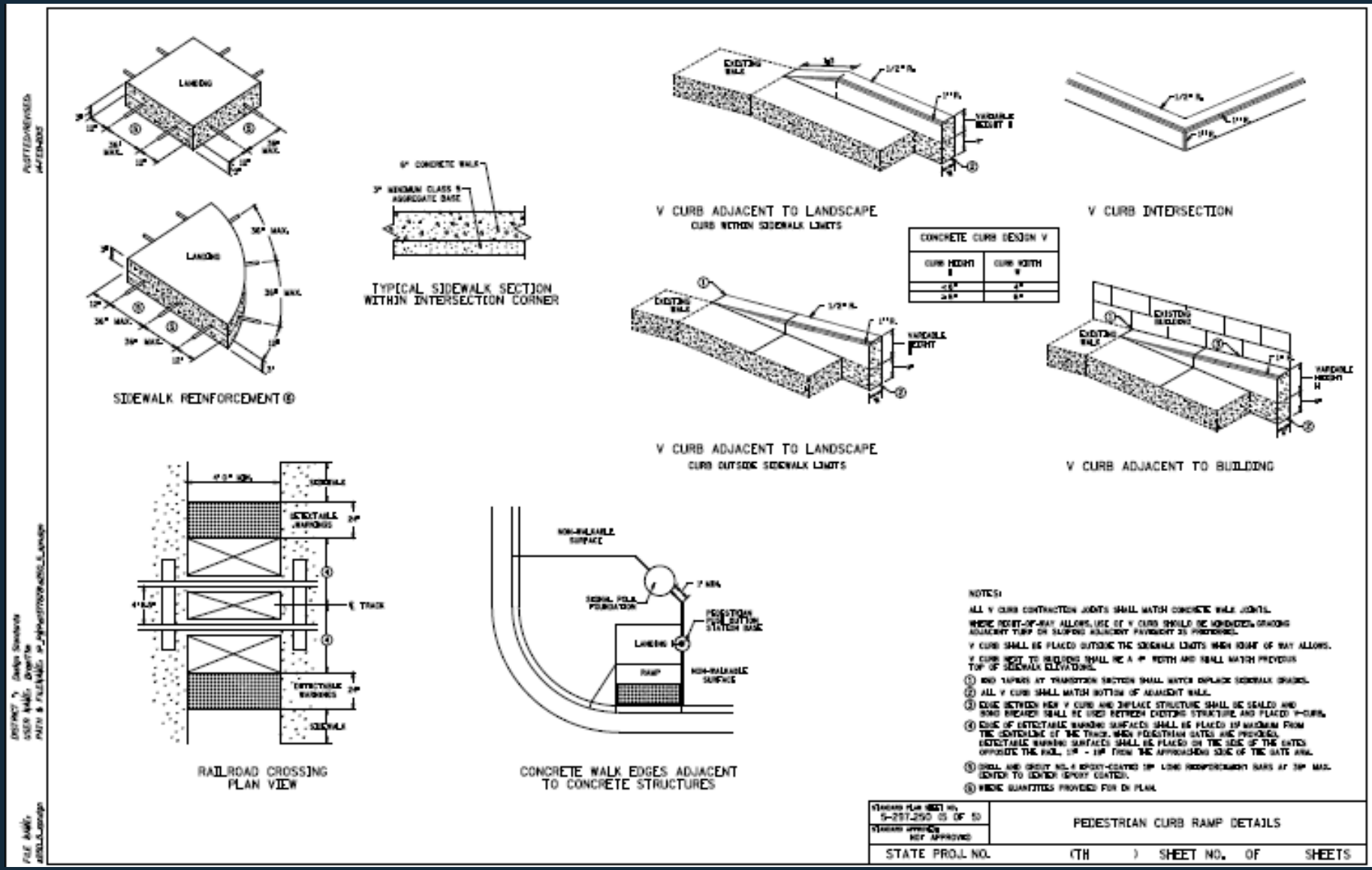
Detectable Edge at quadrant

- 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



Vertical Face Curb

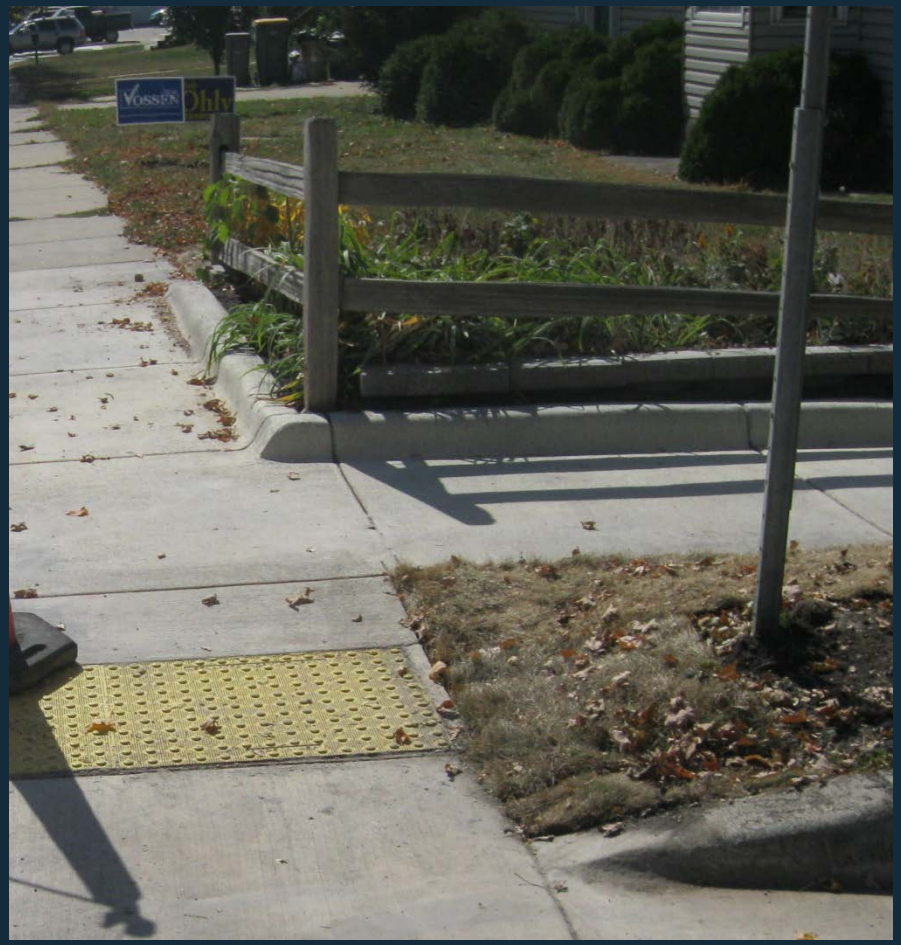
- V-curb adjacent to building

V-Curb

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

V-Curb

- V-curb adjacent to landscape and inside sidewalk limits

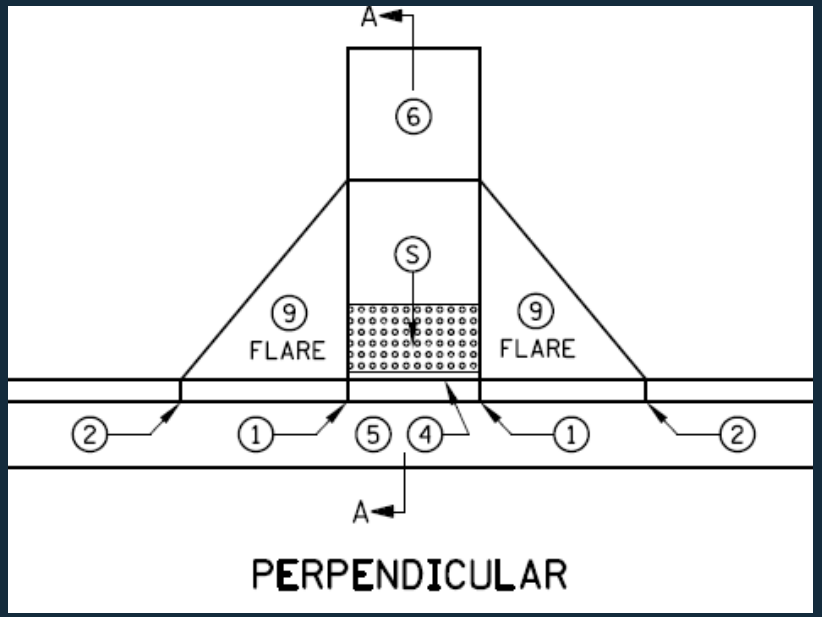


Curb Ramp Types

- 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

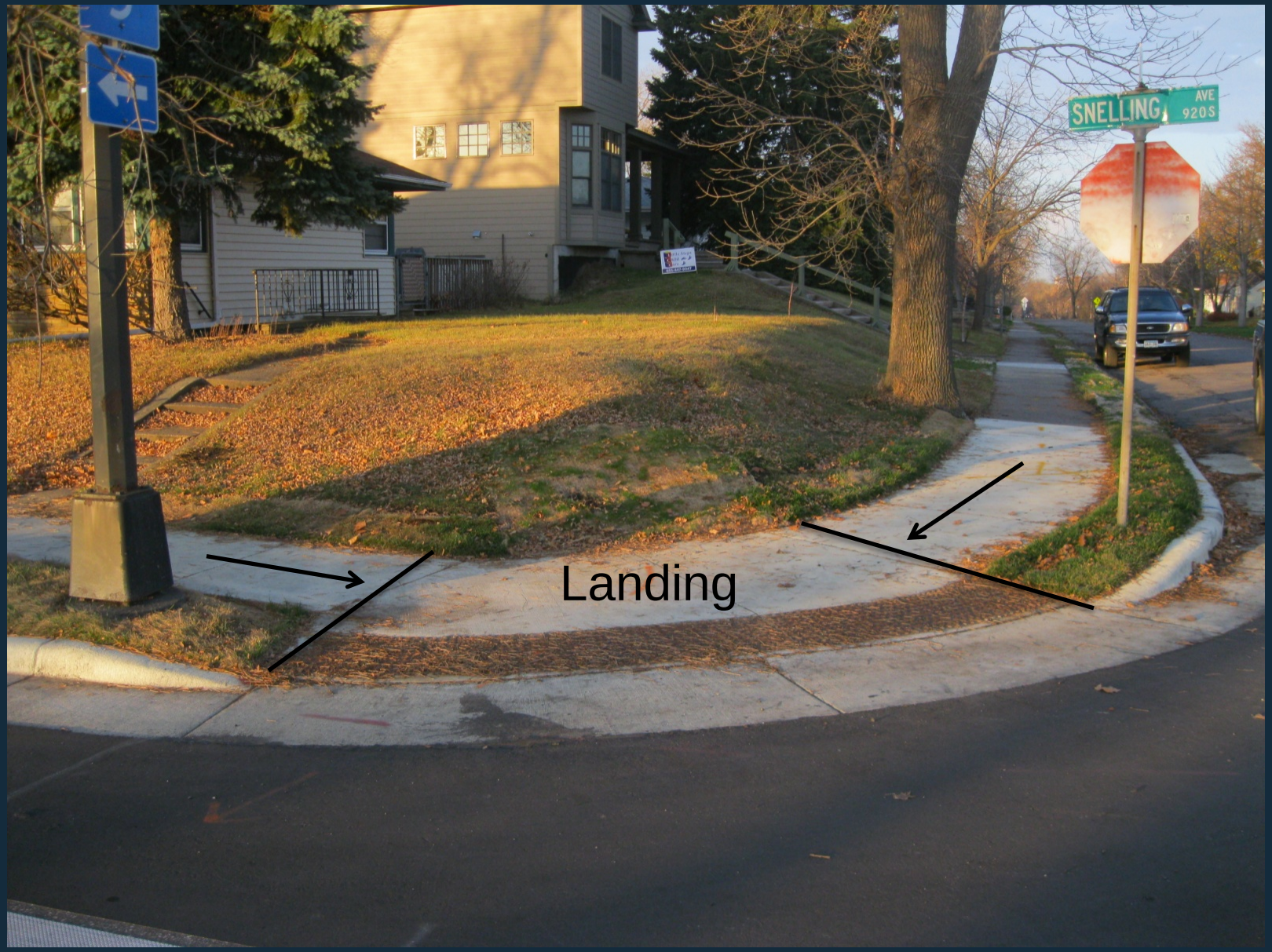
- Ramp is parallel to the curb line.
- Landing occurs at the bottom of the ramp.

One Way Directional

LESS THAN 5% RAMP SLOPE,
LANDING NOT REQUIRED

Combined Directional

Depressed Corner



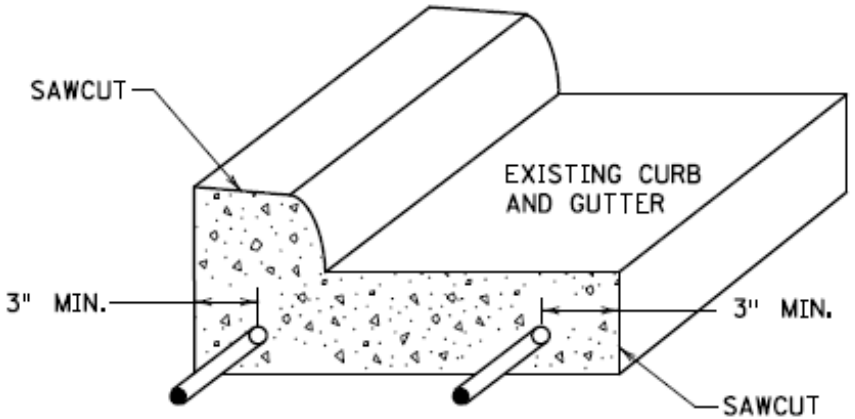
Tiered Perpendicular

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

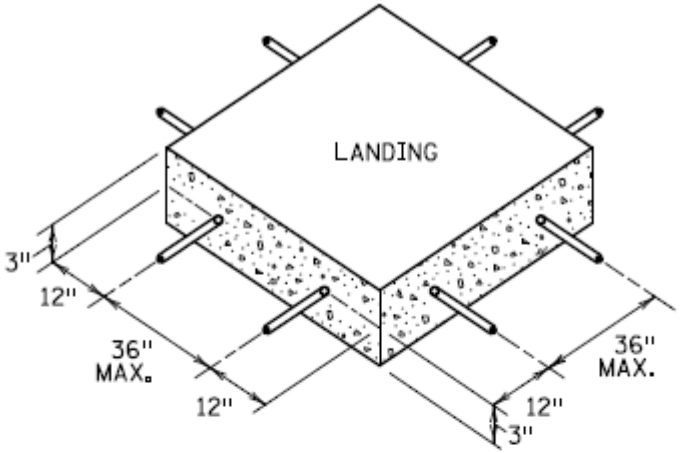
Fan

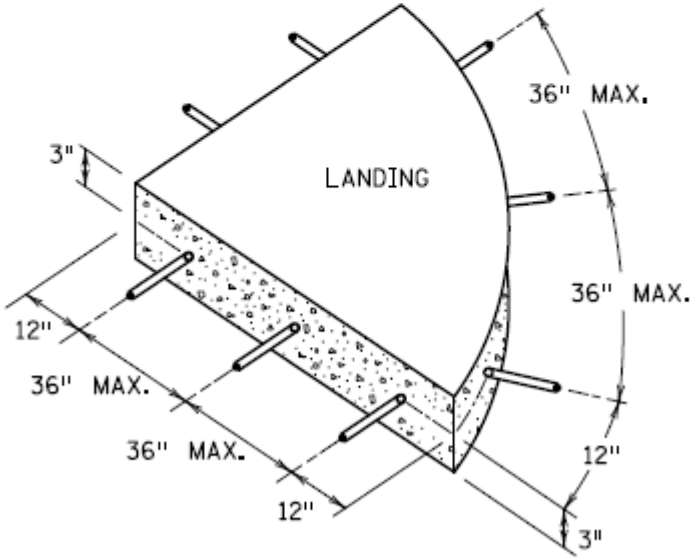
Standard Plan Sheets

New in 2013:
Reinforcement Details



CURB AND GUTTER REINFORCEMENT ⑧
FOR USE ON CURB RAMP RETROFITS



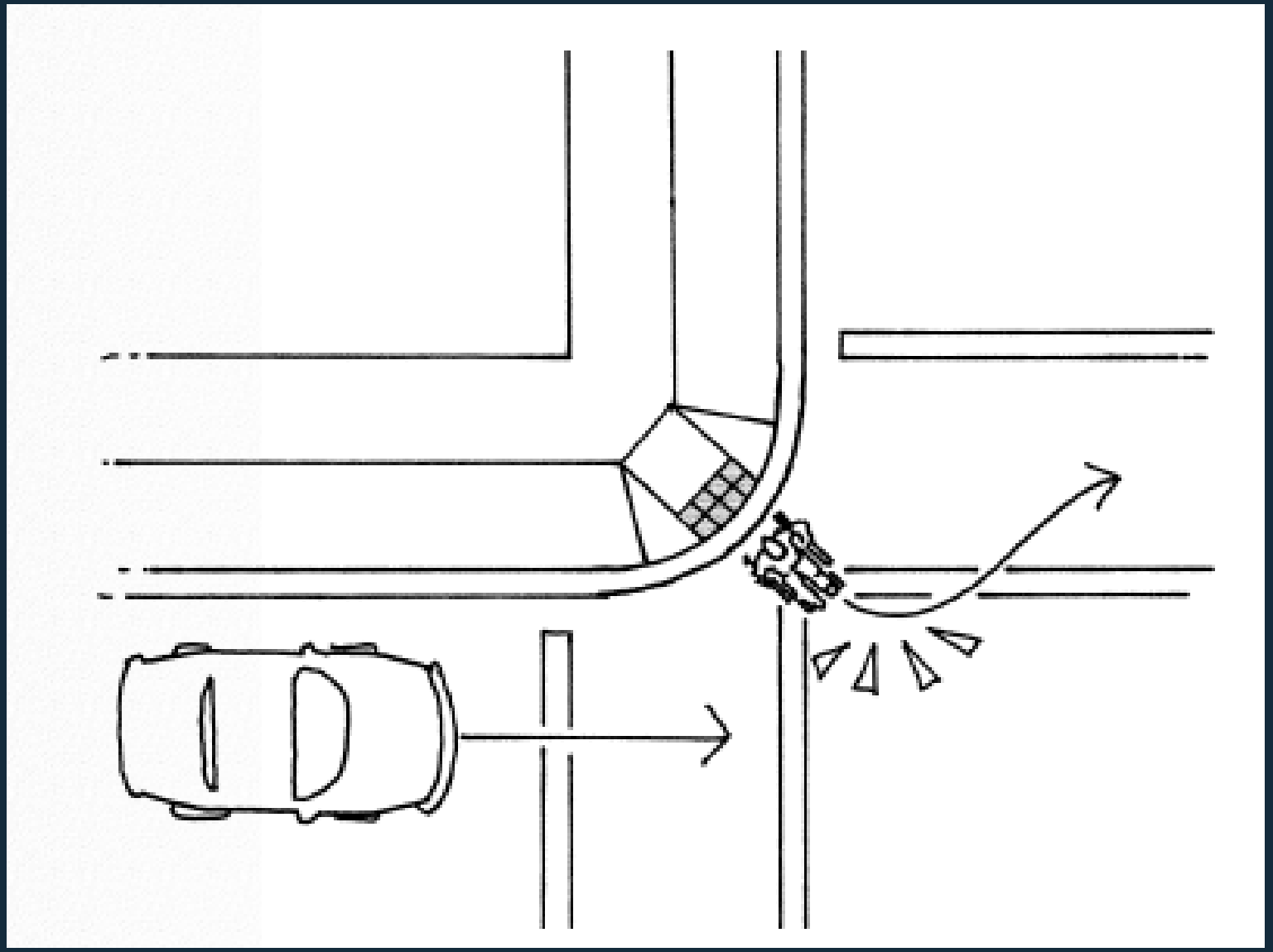


SIDEWALK REINFORCEMENT ⑤ ⑥

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

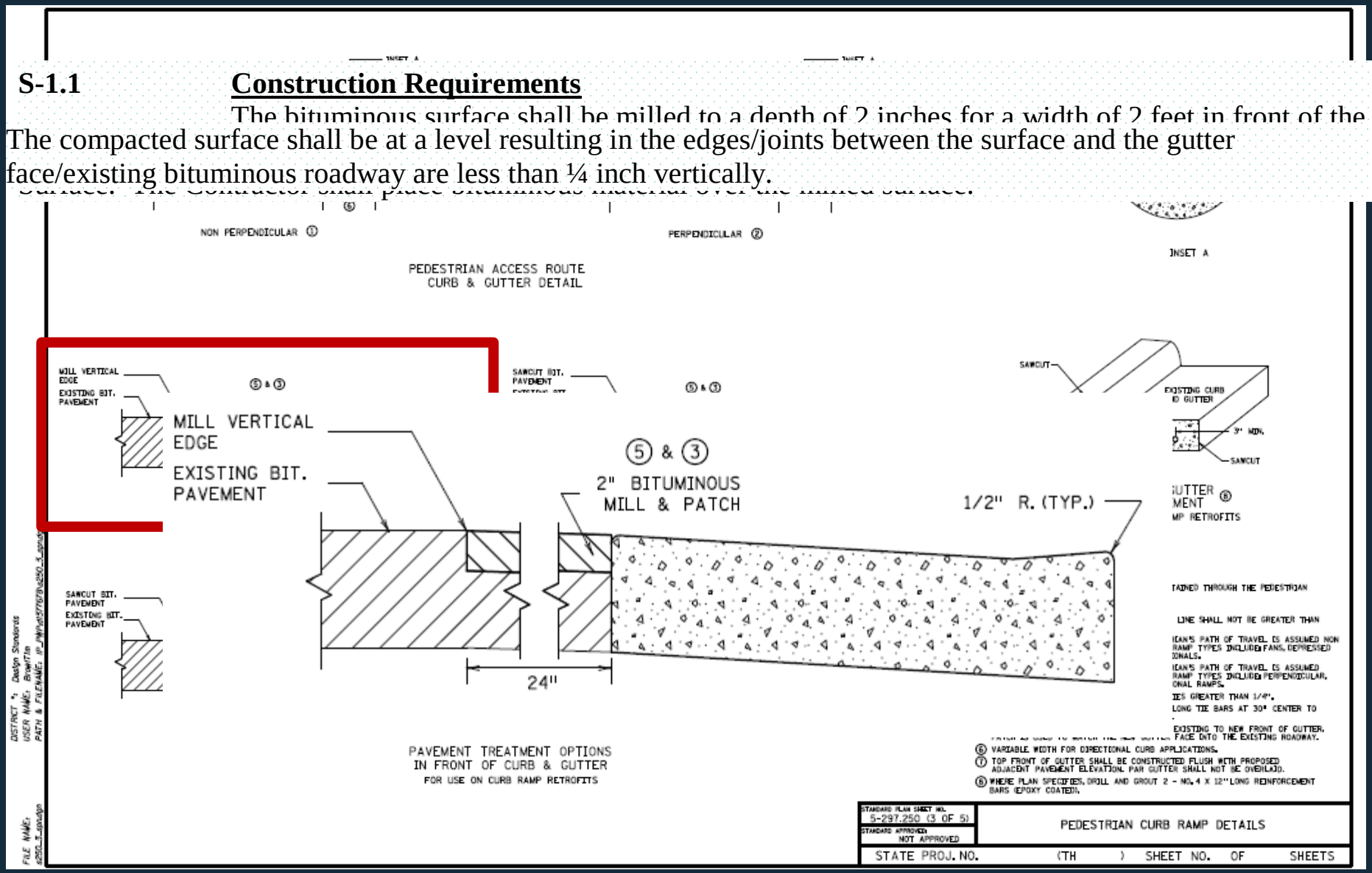
ADA PAY ITEMS
REMOVE AND REPLACE BITUMINOUS PAVEMENT
MILL AND PATCH BITUMINOUS PAVEMENT
REMOVE CONCRETE WALK
CONCRETE CURB AND GUTTER
CONCRETE WALK
CONCRETE CURB DESIGN V
SITE RESTORATION

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

Mill and Patch Bit. Pavement

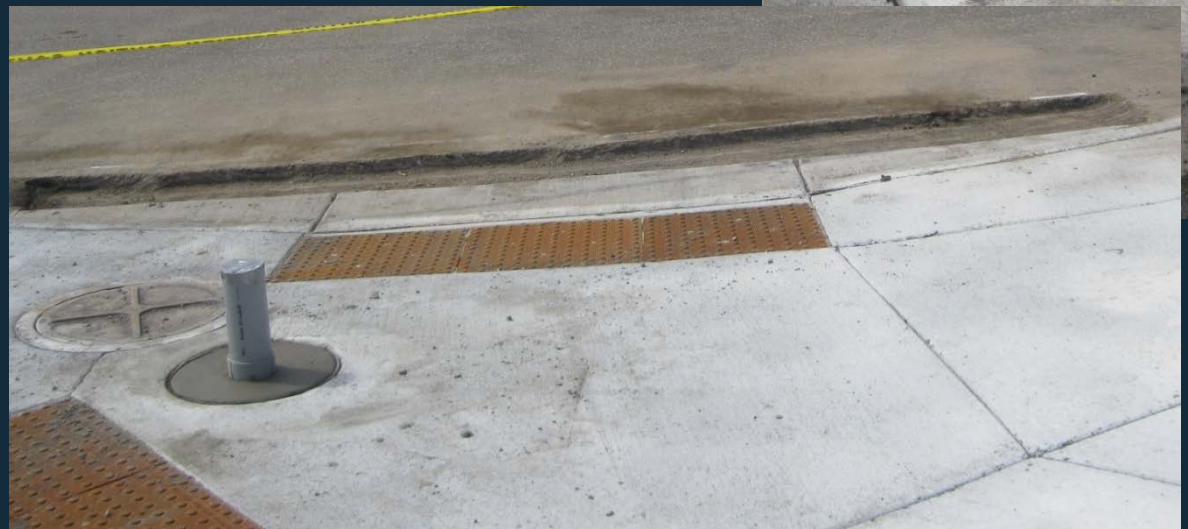
S-1.1 **Construction Requirements**

The bituminous surface shall be milled to a depth of 2 inches for a width of 2 feet in front of the gutter face. 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 ¼ inch vertically.



Mill and Patch

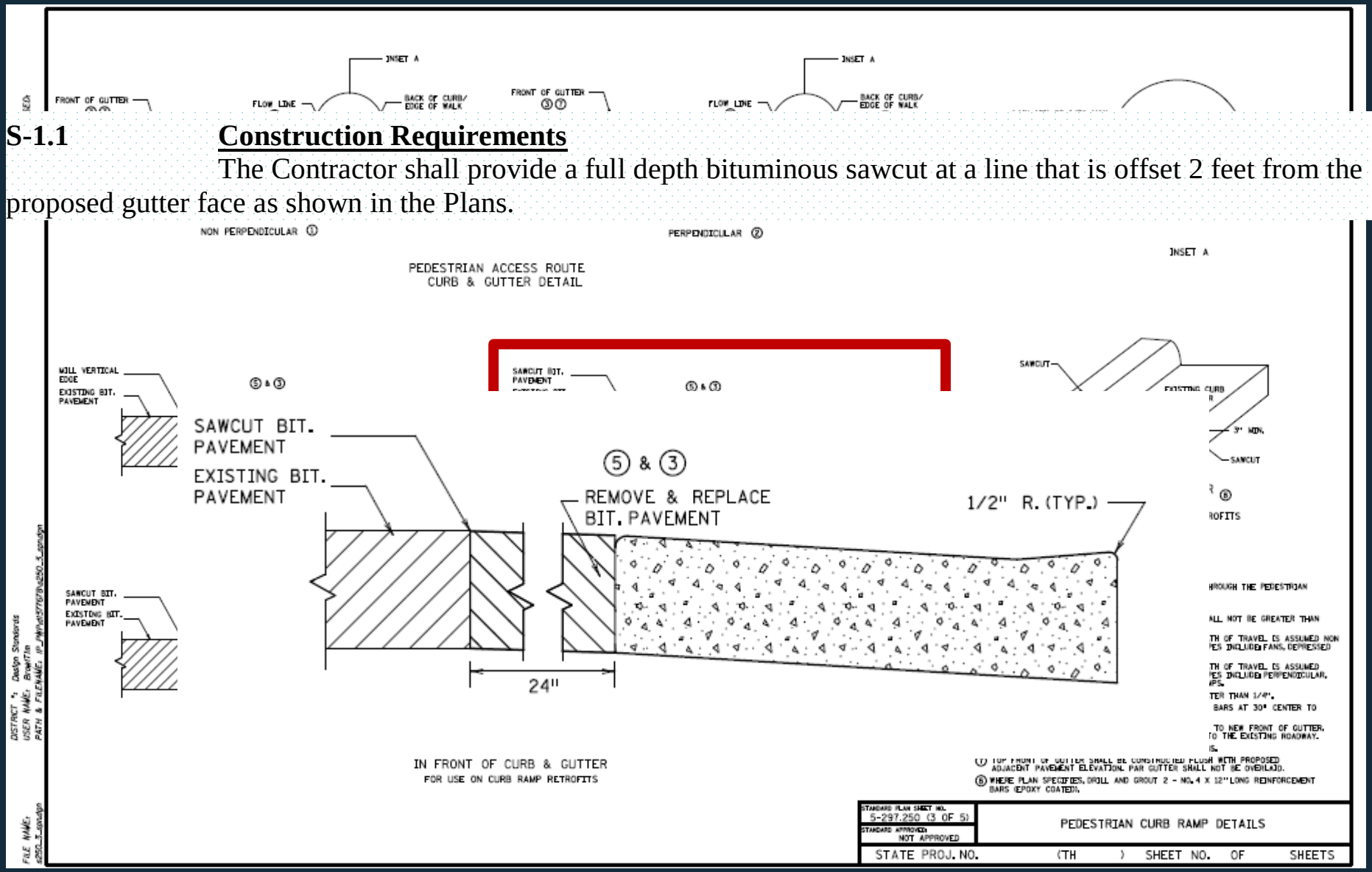
- (2232) Mill and patch bit. pavement – Lin Ft



Remove and Replace Bit. Pavement

S-1.1 **Construction Requirements**

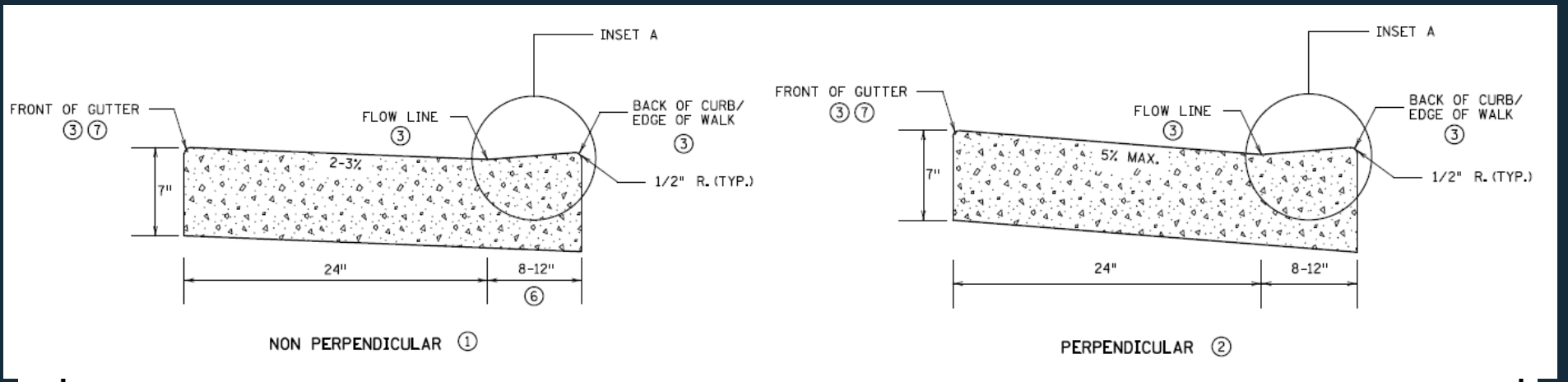
The Contractor shall provide a full depth bituminous sawcut at a line that is offset 2 feet from the proposed gutter face as shown in the Plans.



Remove and Replace Bit. Pavement

- **(2104) Remove & Replace Bit. Pavement – Lin Ft**
  - **Compacted bit surface to be finished flush with gutter face (¼” tolerance)**

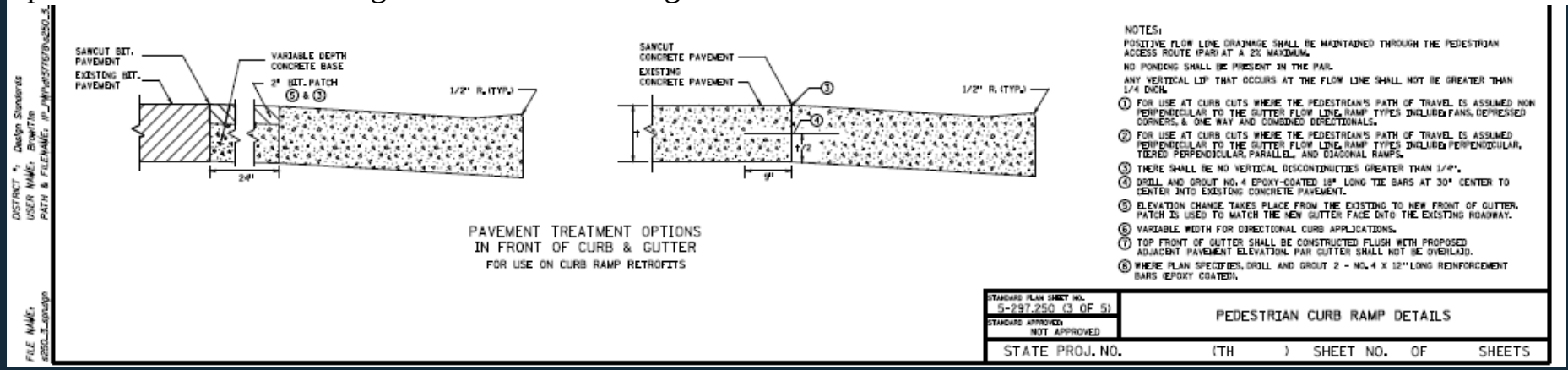
Concrete Curb & Gutter



SS 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.



Concrete Curb & Gutter Provision

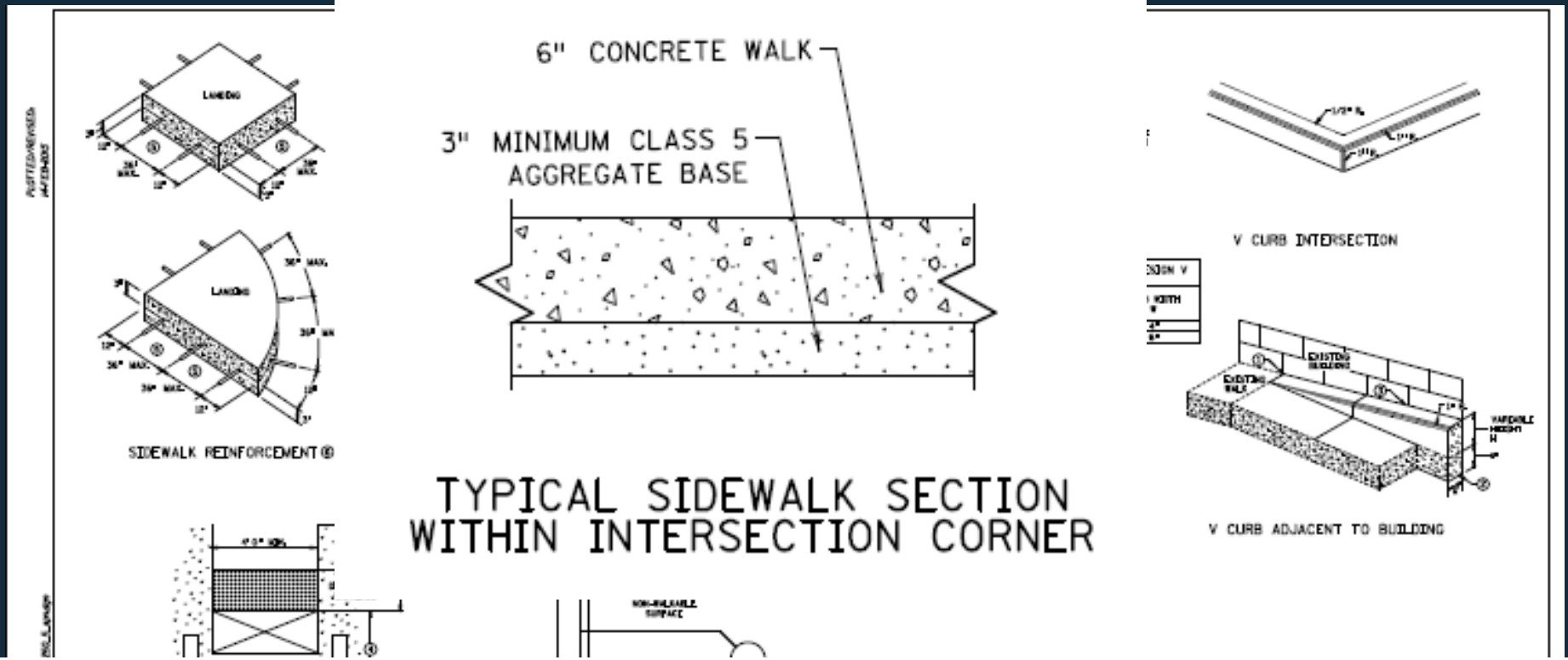
- **Construction requirements cont.**

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



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.

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.

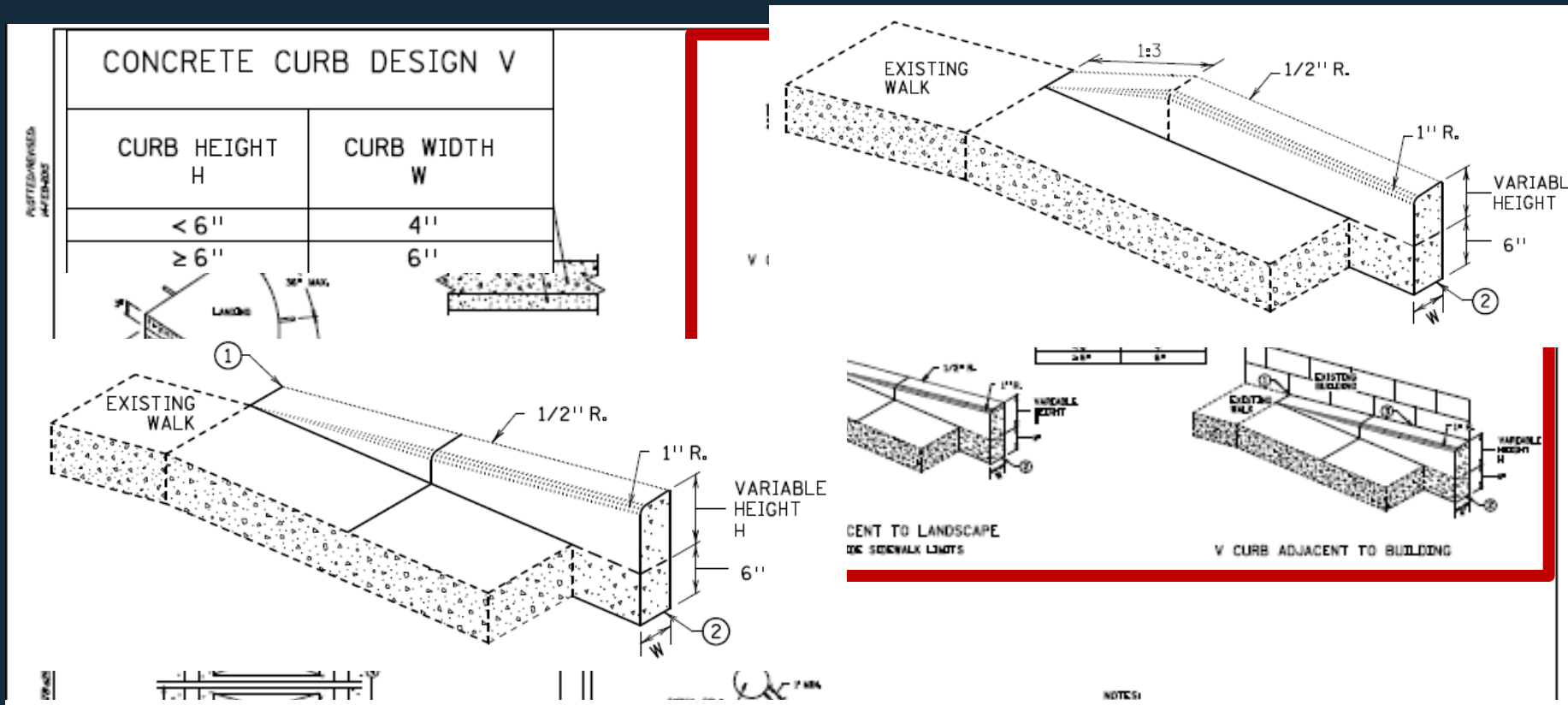
S-3.2 METHOD OF MEASUREMENT

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



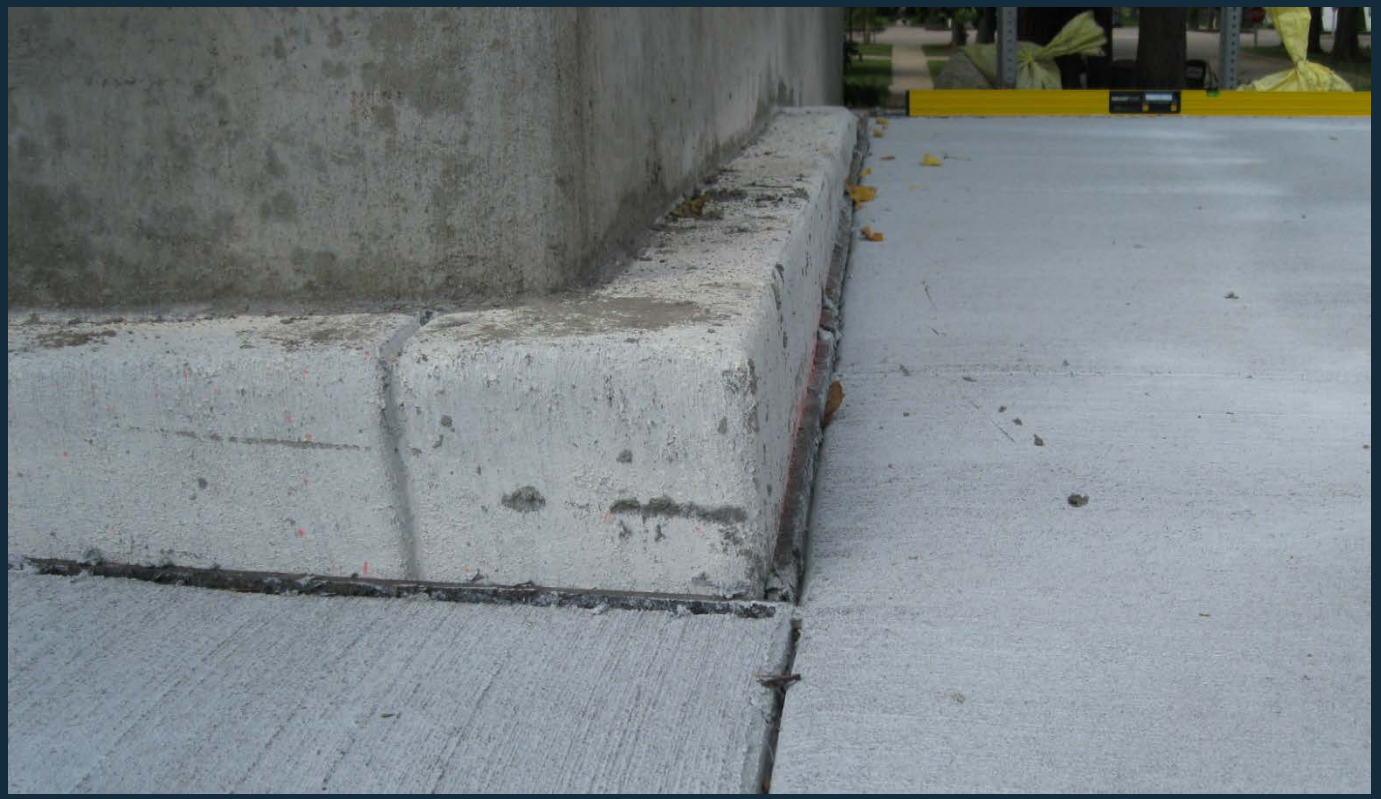
S-1.1 **Construction Requirements**

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

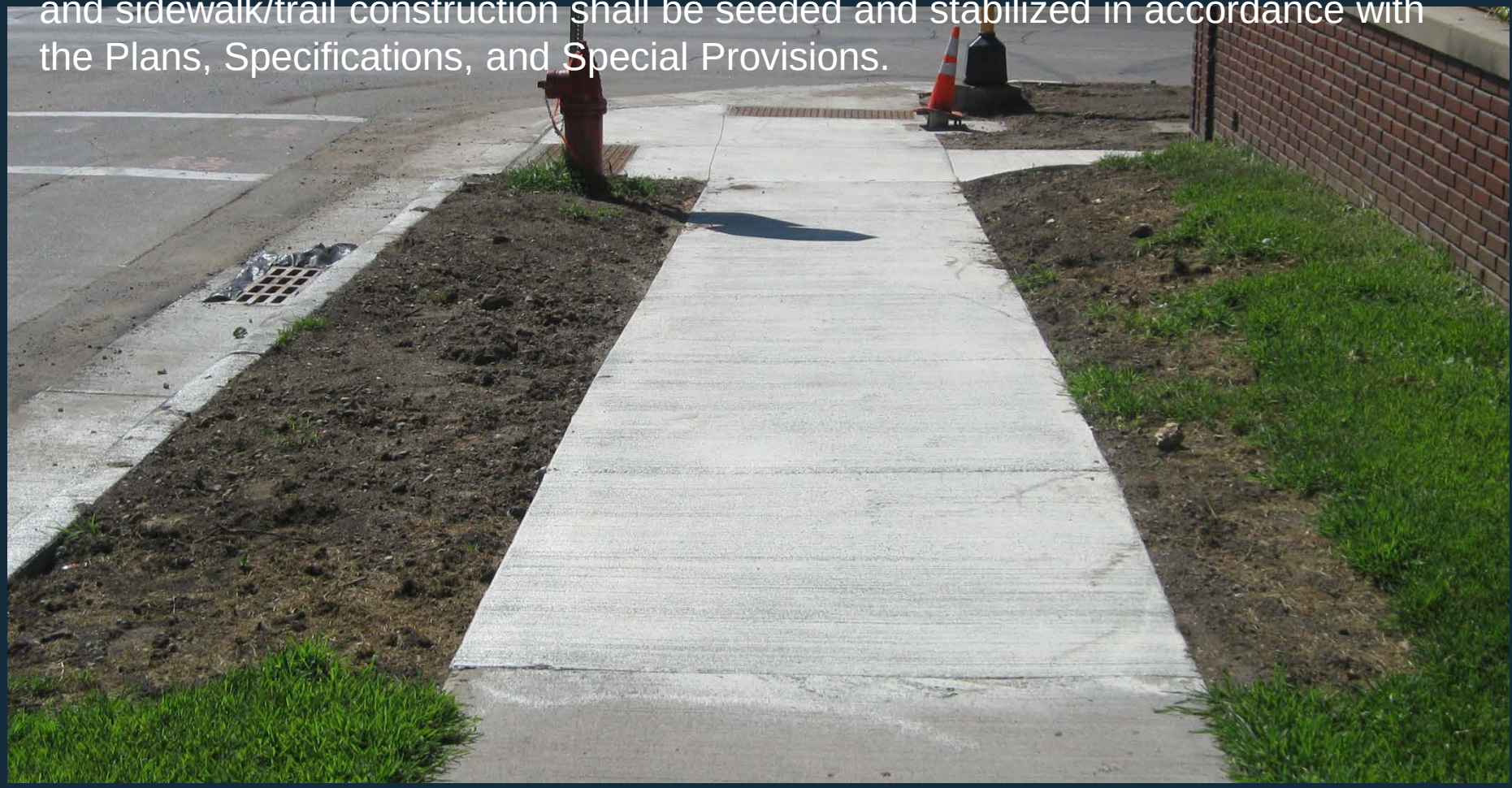
- **(2575) Site Restoration - Each**

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