



**mn** DEPARTMENT OF  
TRANSPORTATION

# ADA Training Standard Plans

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

2018  
MnDOT



# Standard Plans 2017 Overview

## Overview

- PROWAG and Curb Ramp Basics
- Curb Ramp Types
- ADA Curb Ramp Standard Plans
- ADA Driveway and Sidewalk Standard Plans

# PROWAG and Curb Ramp Basics

## In 2010 MNDOT Implements PROWAG

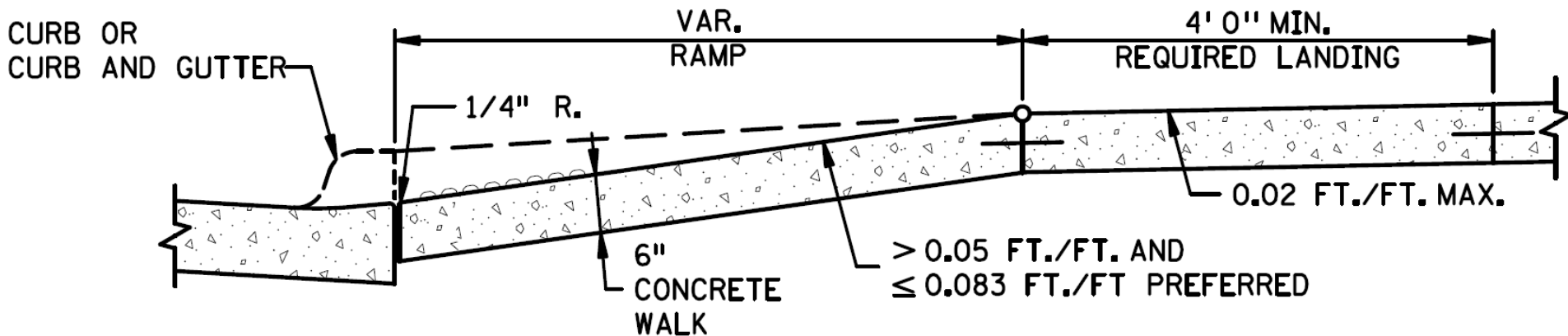
- Public Rights of Way Accessibility Guidelines
- Minimum 4 foot wide Pedestrian Access Route (PAR) with a maximum cross slope of 2% is required.
- 5' x 5' min. passing areas is needed every 200' feet
- Vertical discontinuity of  $\frac{1}{4}$ " or less or beveled at 1:2 for up to a  $\frac{1}{2}$ "



# PROWAG and Curb Ramp Basics

## In 2010 MNDOT Implements PROWAG

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



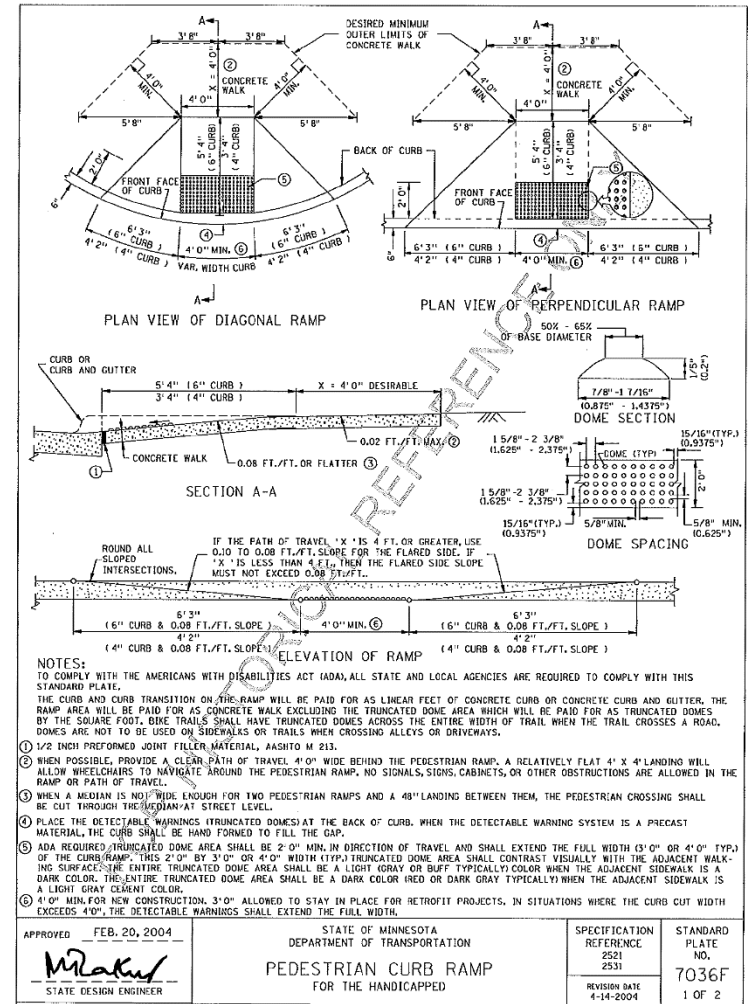


# PROWAG and Curb Ramp Basics

## Standard Plate 7036F

### Pedestrian Curb Ramp - Discontinued

- February 20th, 2004 Standard Plate 7036F
- Ramps are based on lengths
- When possible provide a clear path of travel 4' wide behind the pedestrian ramp (PAR)
- Desirable** 4' x 4' relatively flat landing

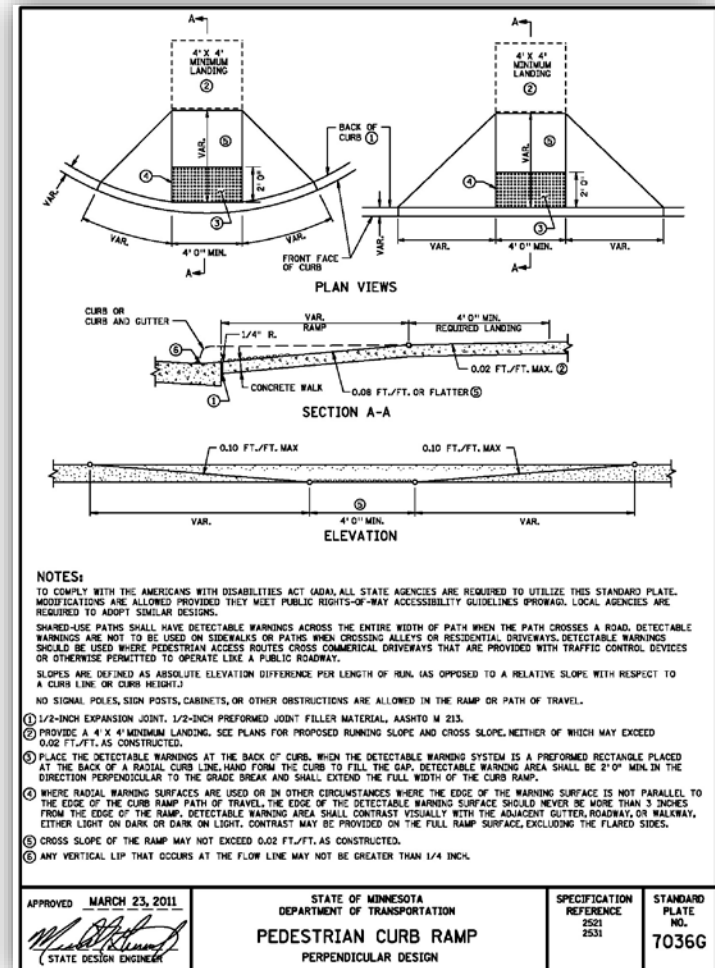


# PROWAG and Curb Ramp Basics

## Standard Plate 7036G

### Pedestrian Curb Ramp - Discontinued

- March 23<sup>rd</sup>, 2011 7036G
- Based on PROWAG
- 4 ft. by 4 ft. minimum landing max. 2% slope in all directions
- Ramp lengths depend on grades



# Standard Plans – Curb Ramps

## Legend

### LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

 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%.

 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%.

 LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.

X" CURB HEIGHT

# Curb Ramp Types

## Standard Plan Sheet 1

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

## Standard Plan Sheet 2

- One-way directional ramp
- Combined directional ramp

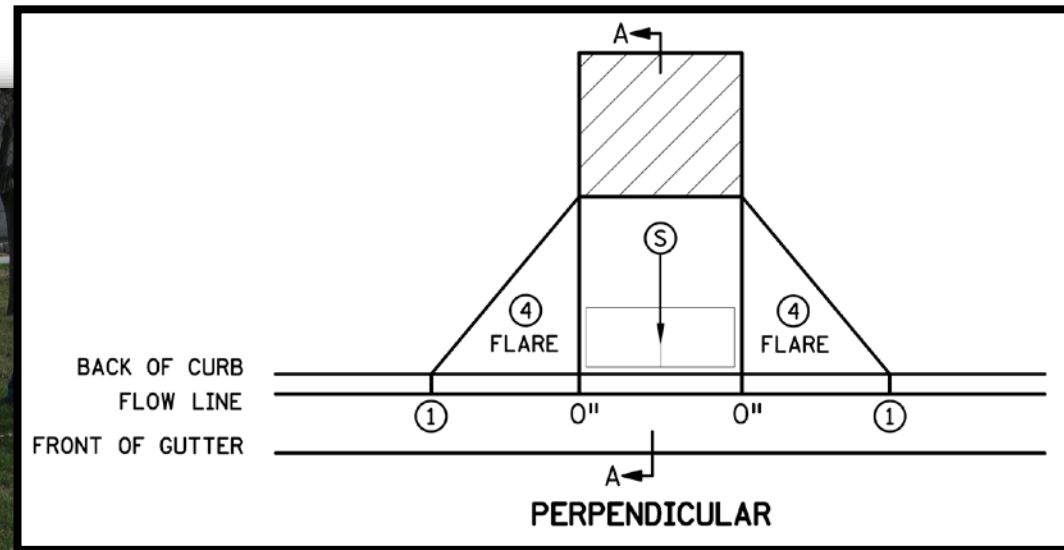
## Standard Plan Sheet 5

- Semi-Directional ramp

# Curb Ramp Types

## Perpendicular Ramp

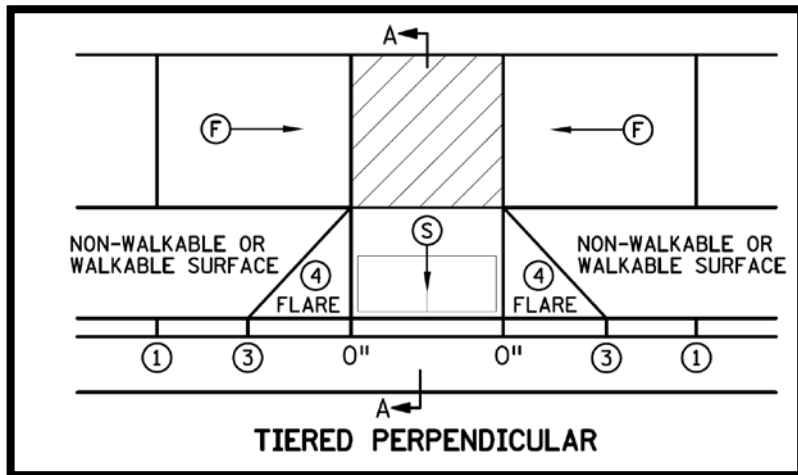
- Ramp is perpendicular to the curb line.





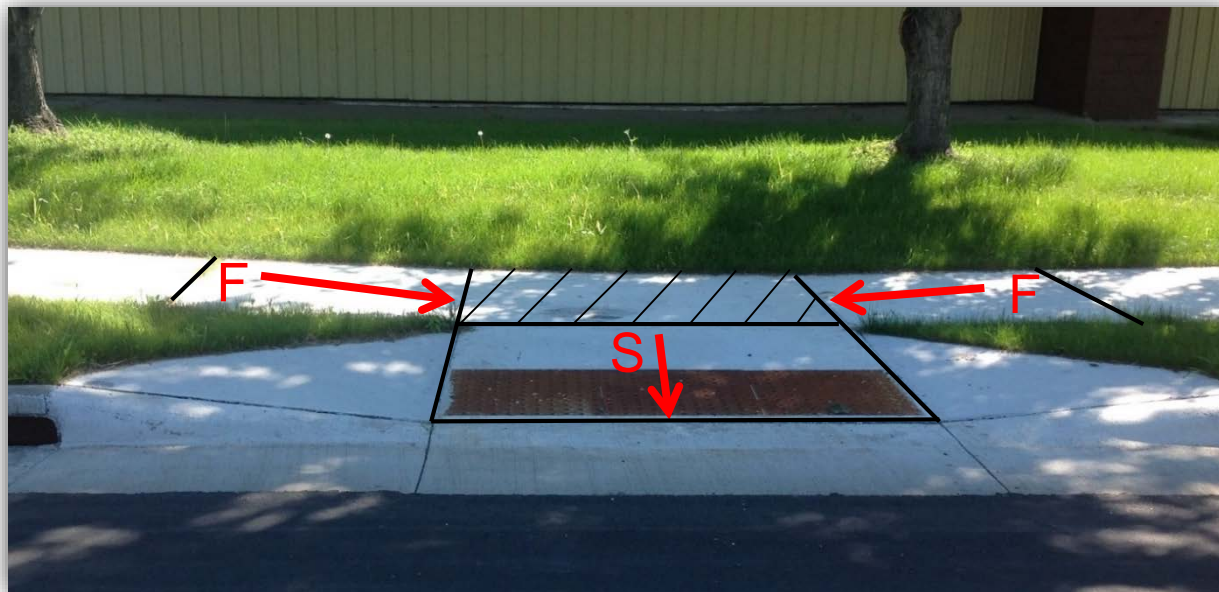
# Curb Ramp Types

## Tiered Perpendicular Ramp



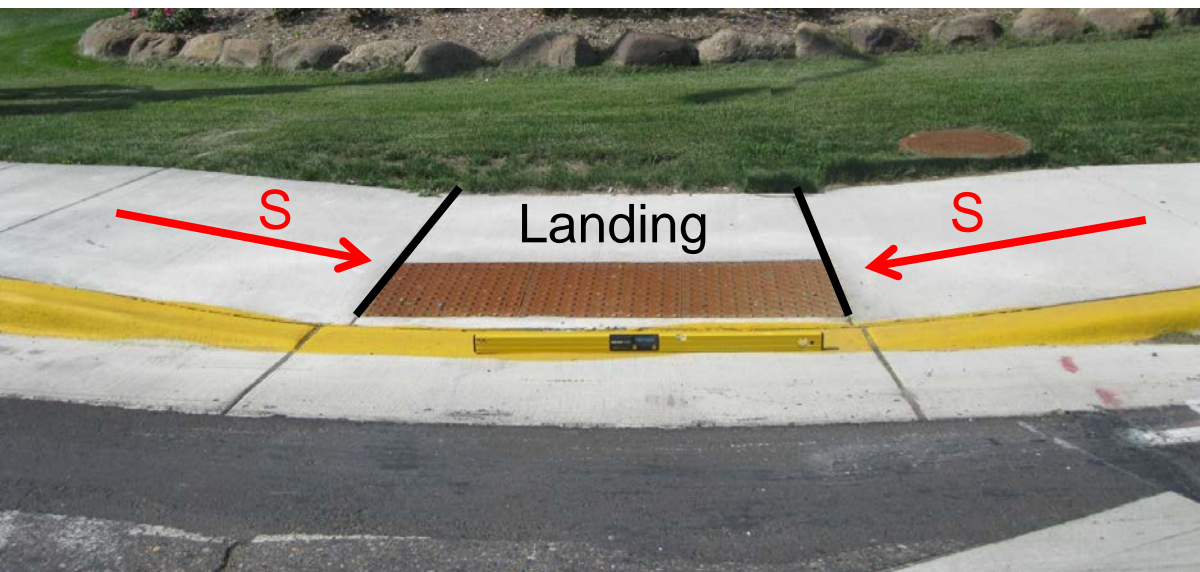
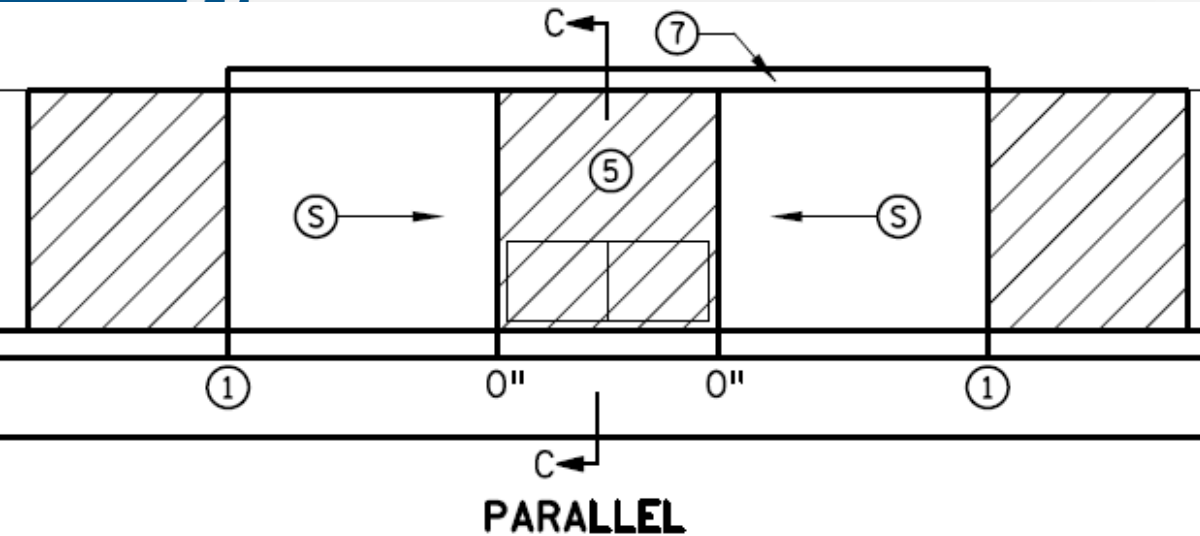
- Used where the initial curb ramp cannot make up the elevation difference, so a secondary ramp is needed

- 3" high curb when using a 3' long ramp
- 4" high curb when using a 4' long ramp



# Curb Ramp Types

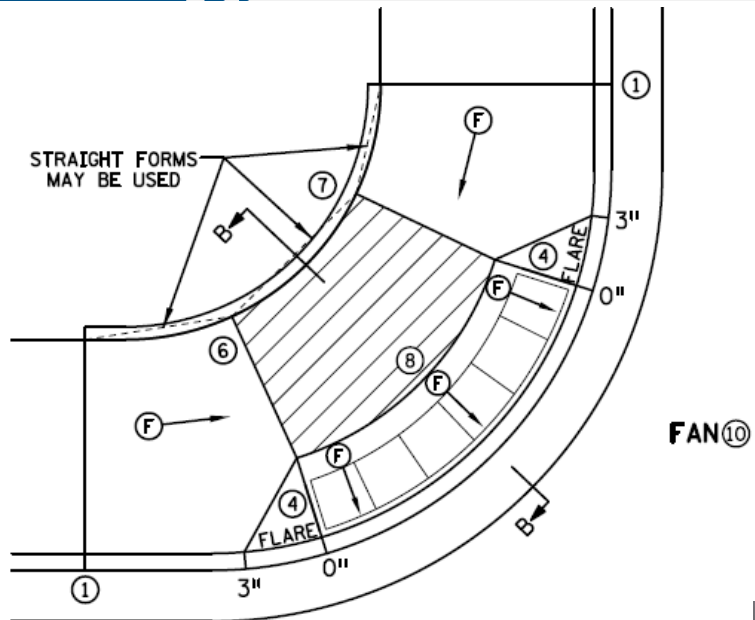
## Parallel Ramp



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

# Curb Ramp Types

## Fan Ramp



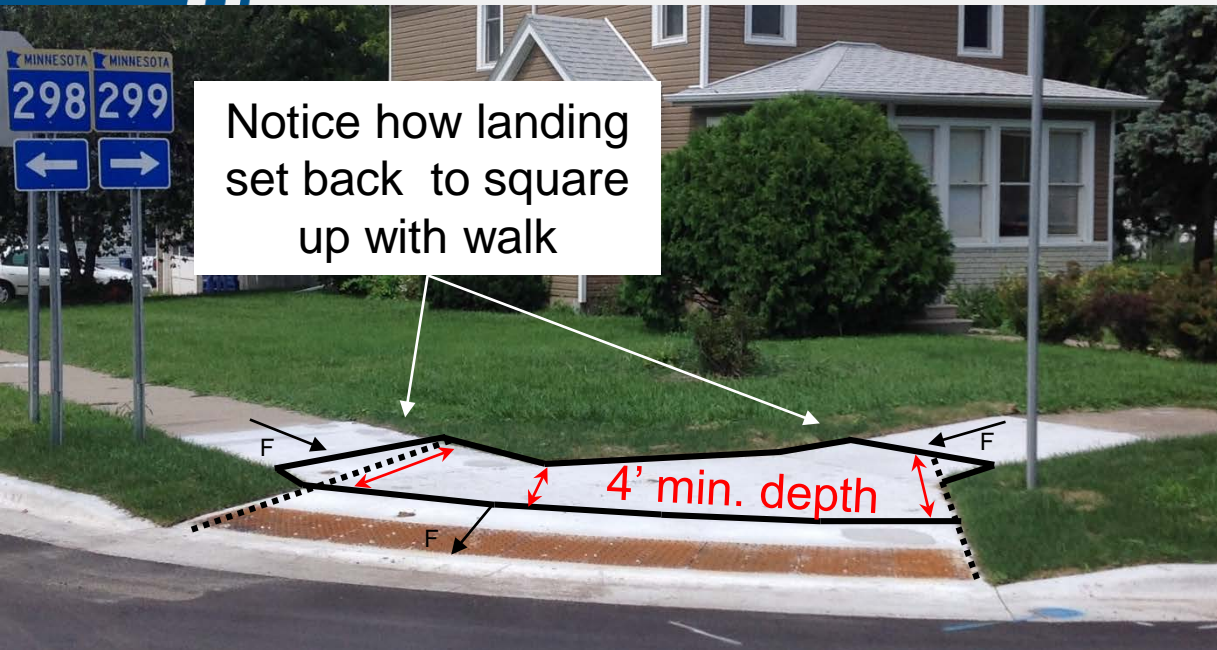
- (F) slope through detectable warnings
- Minimum 3' long initial ramp
- The top of curb tapers should always be at 3" height
- (8) 7' Min top radius grade break required to be constructible. Initial ramp 5% max.





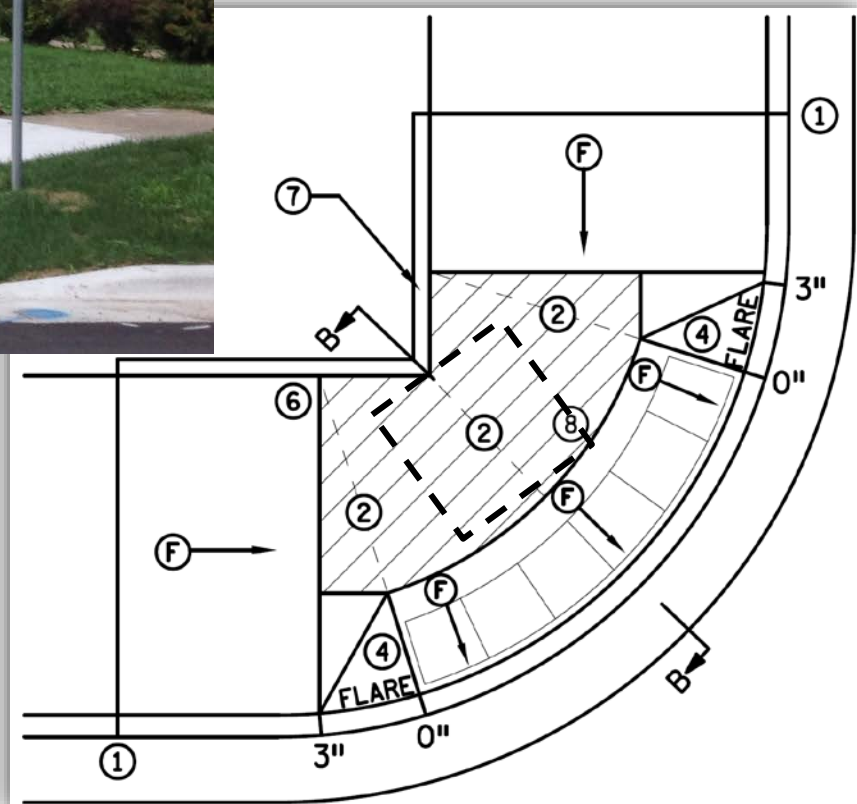
# Curb Ramp Types

## Modified Fan



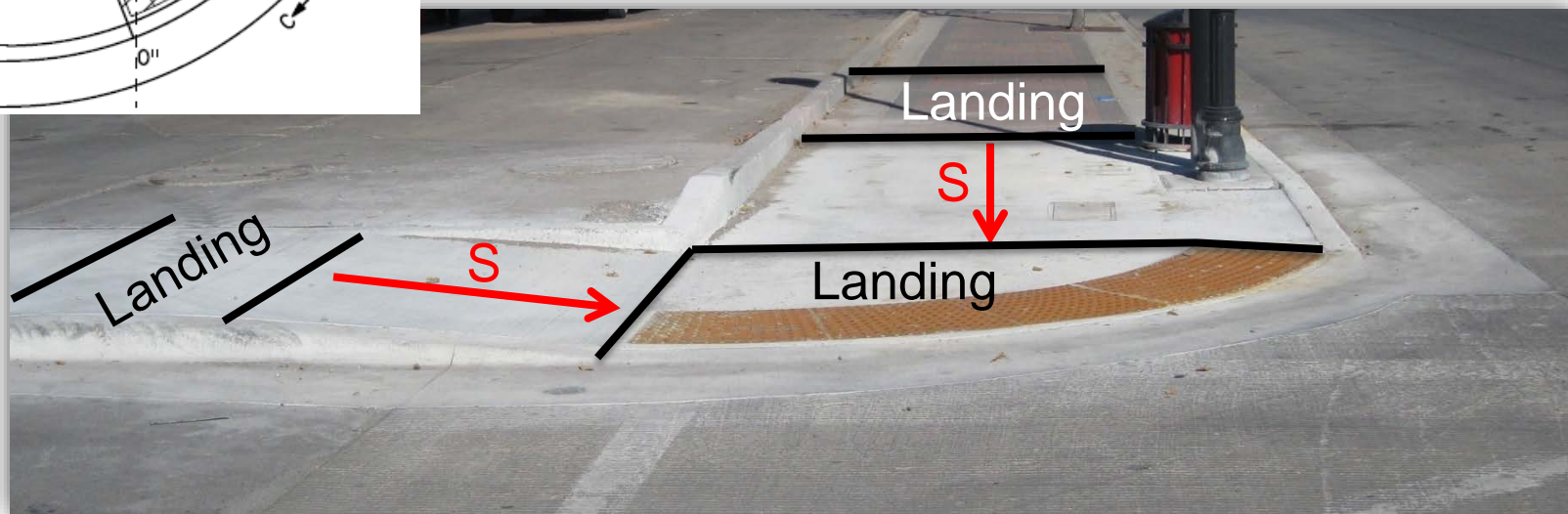
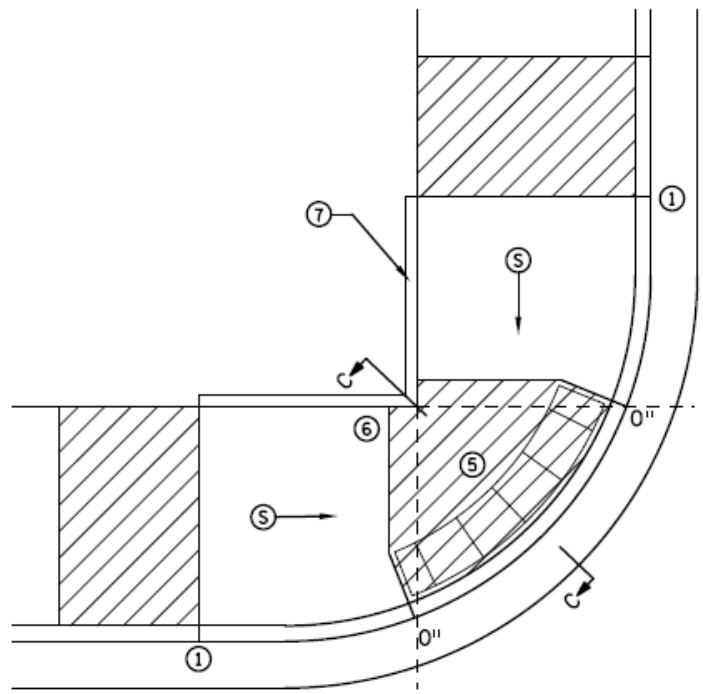
- Typically used when Right-of-Way is constrained

- (2) 4' min. depth landing required across top of ramp
- (6) The grade break shall be perpendicular to the back of walk



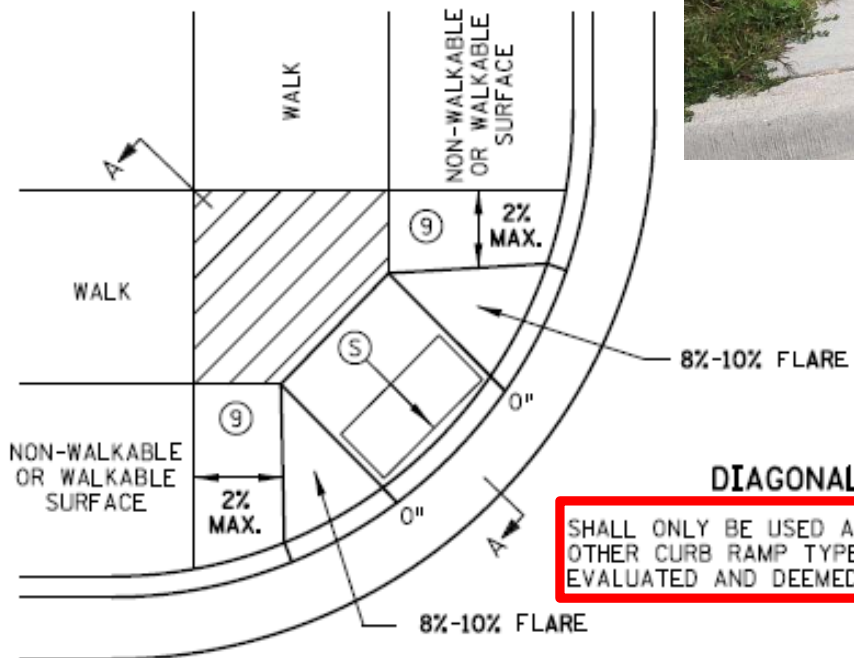
# Curb Ramp Types

## Depressed Corner



# Curb Ramp Types

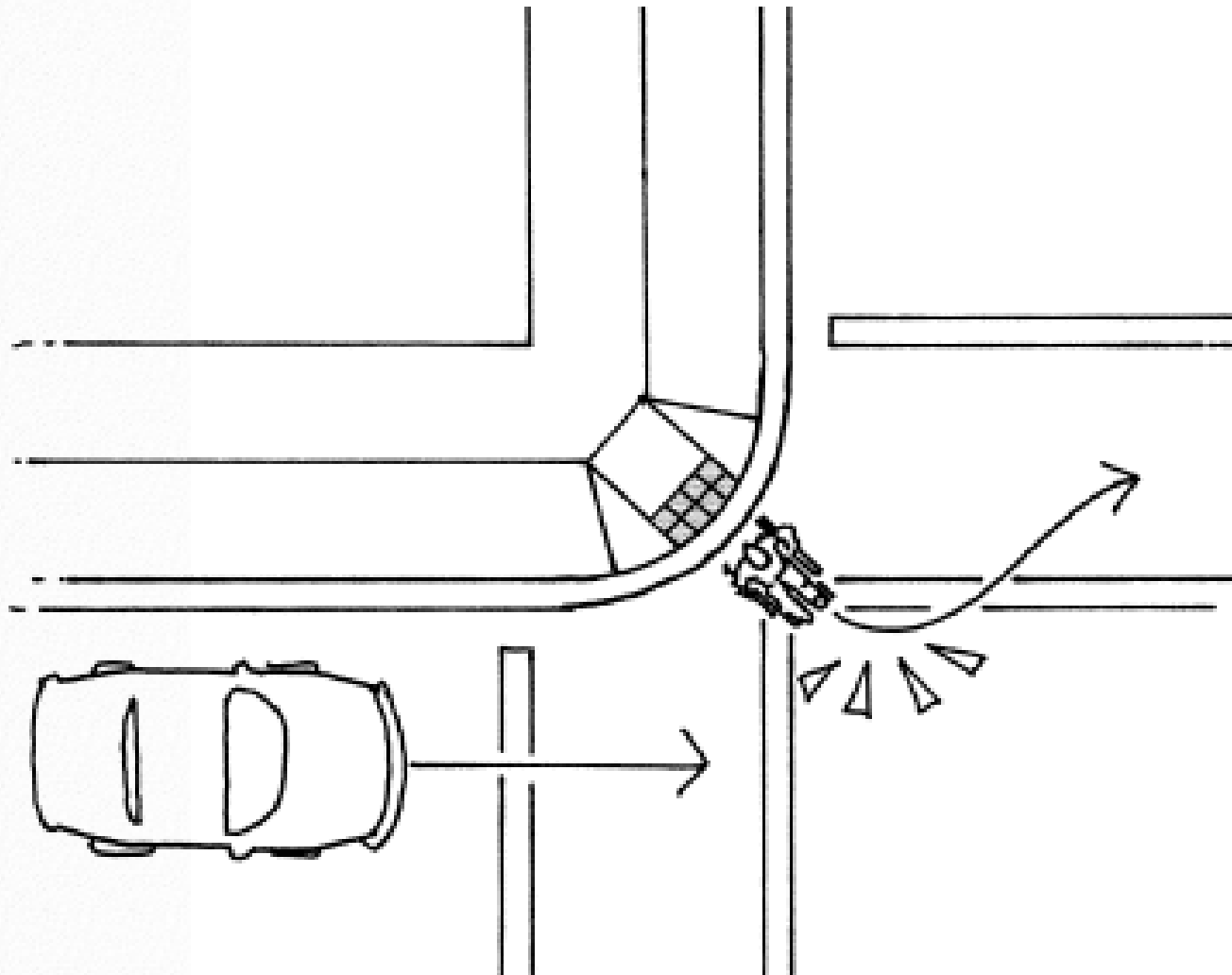
## Diagonal Ramp



SHALL ONLY BE USED AFTER ALL OTHER CURB RAMP TYPES HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL

# Curb Ramp Types

## Diagonal Ramp- Least Preferred

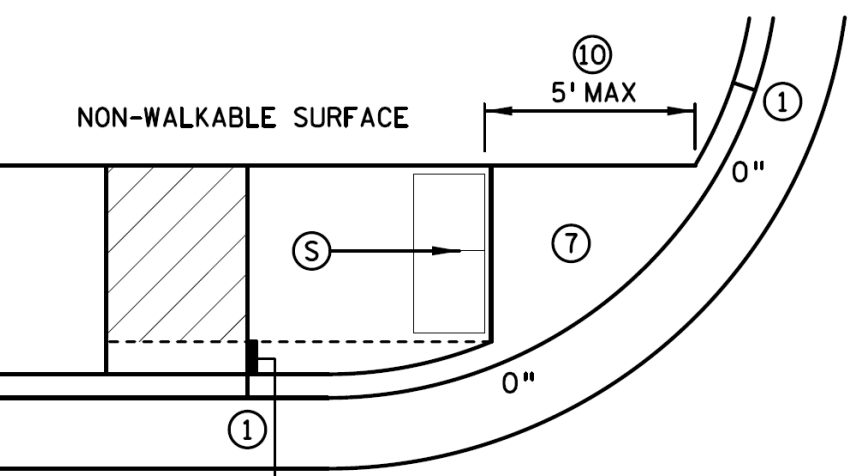




# Curb Ramp Types

## One-way Directional Ramp

(7) Max. 2.0% slope in all directions in front of grade break and drain to flow line. SHALL be constructed integral with curb and gutter.



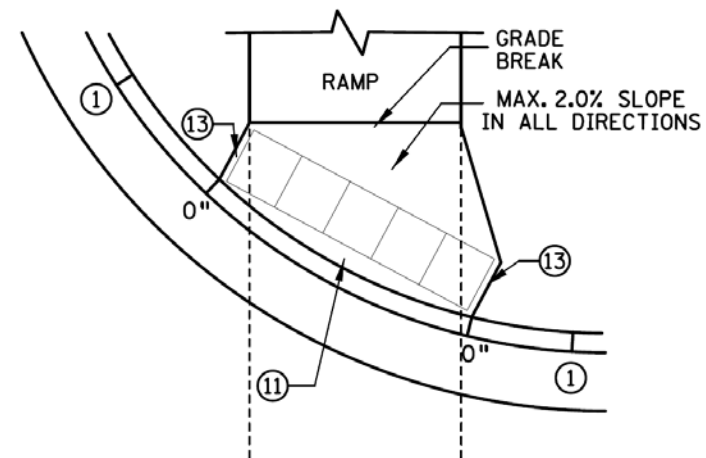
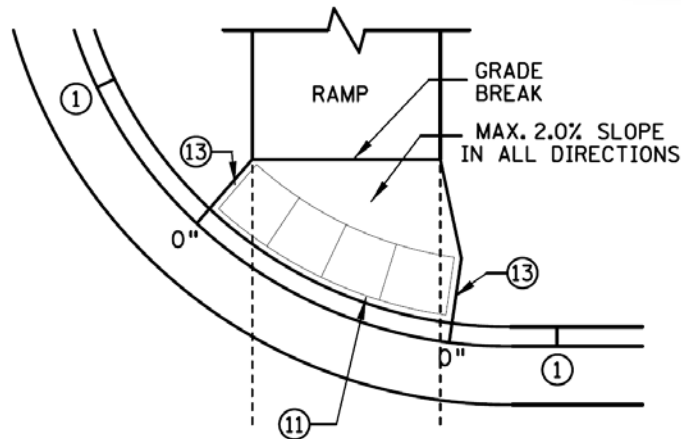
IF NON-CONCRETE BLVD. IS CONSTRUCTED AND IS LESS THAN 2' IN WIDTH AT TOP OF CURB TRANSITION, PAVE CONCRETE RAMP WIDTH TO ADJACENT BACK OF CURB.

STANDARD ONE-WAY DIRECTIONAL ⑨

# Curb Ramp Types

## Directional with Domes back of Curb

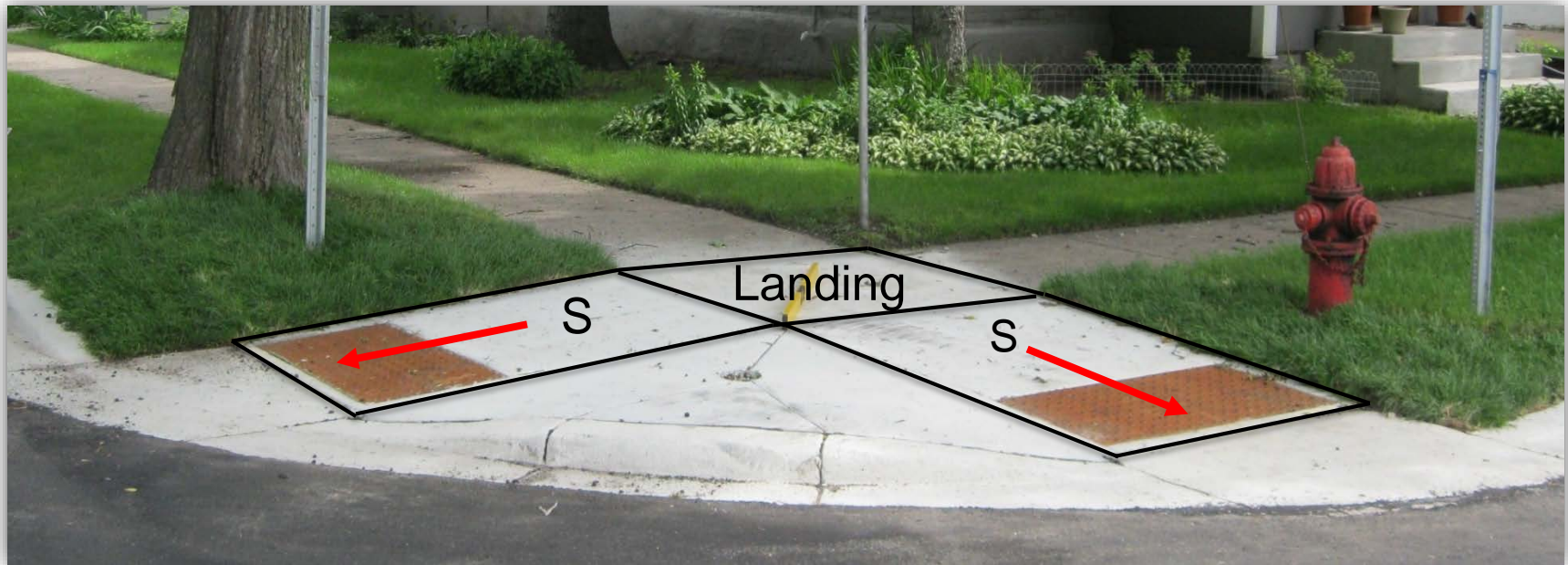
- Detectable warning shall cover the full width of walk/path
- Eliminate the curb taper obstructing the pedestrian path of travel



DETECTABLE WARNING PLACEMENT WHEN  
SETBACK CRITERIA IS EXCEEDED

# Curb Ramp Types

## Combined Directional

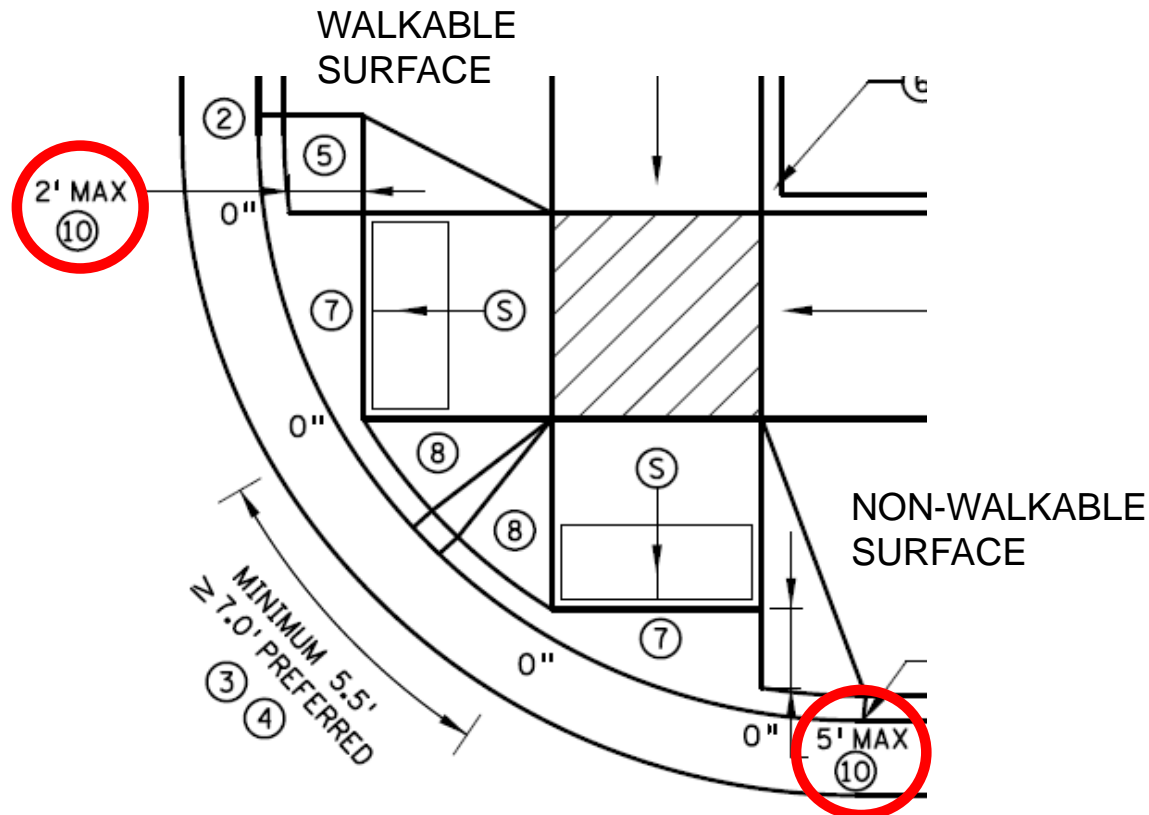


- Provide direction both ways
- In Line with both incoming walks
- Ramps are directional
- Perpendicular grade breaks in line with path of travel
- Combined landing
- Bump should not be in path of travel

# Curb Ramp Types

## Directional Ramps – Dome Setback

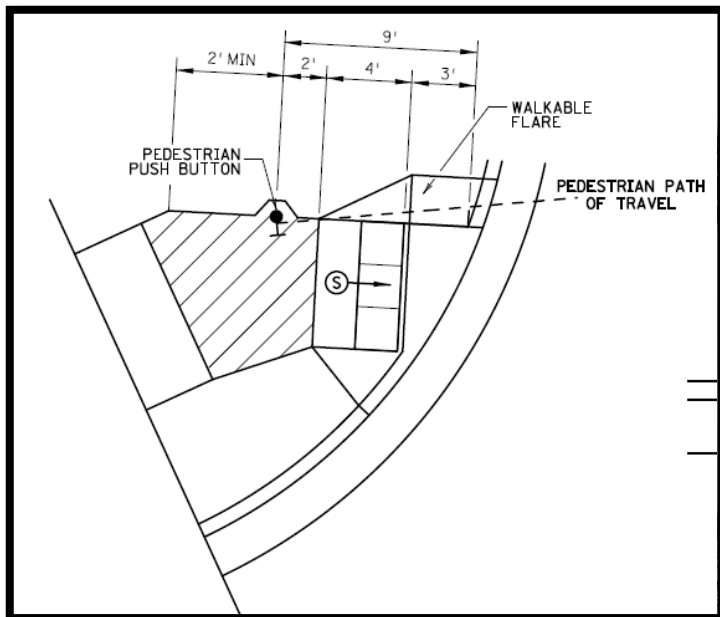
(10) Dome setback shall be 2' max when adjacent to **walkable** surface and 5' max setback when adjacent to **non-walkable** surface.





# Curb Ramp Types

## Semi-Directional Ramp



**Semi-Directional Ramp (3,4,9)**

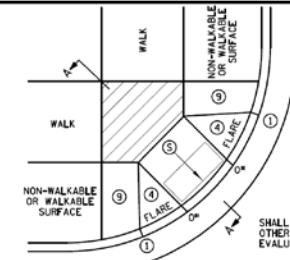
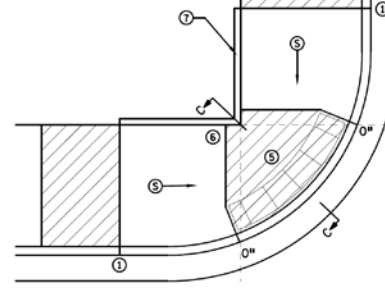
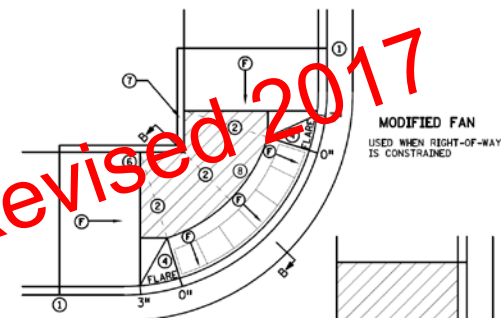
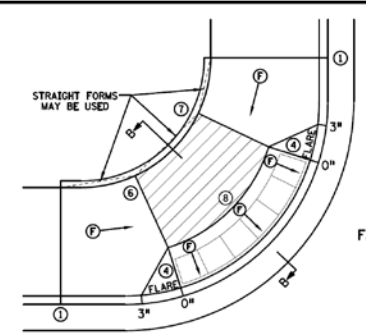
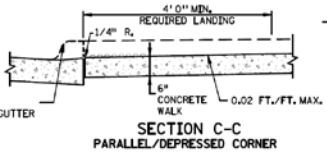
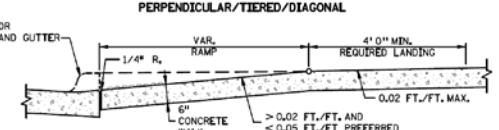
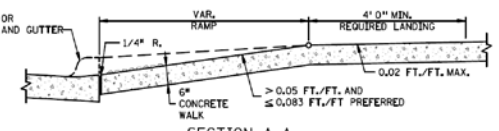
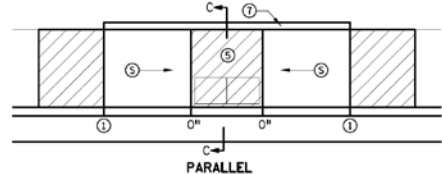
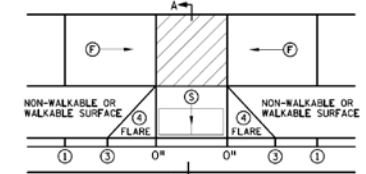
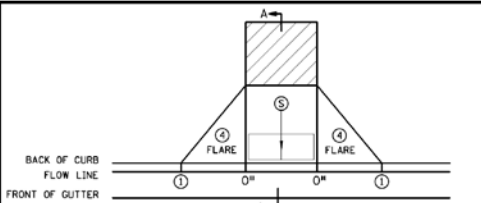
# Standard Plans – Curb Ramps

## Sheet 1

PULITTED/REVISED

DISTRICT \*  
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FILE NAME:  
BY/DATE:



**NOTES:**  
LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE GREATER THAN 2%. 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, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%. SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30' OF VERTICAL RISE WHEN THE LONGITUDINAL RUNNING SLOPE IS GREATER THAN 5.0%. CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR, 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOPS OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES. ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL, THIS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH, EXCEPT AS STATED BY (5) BELOW. TO ENSURE INITIAL RAMPS AND INITIAL LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS SHALL BE CAST SEPARATELY, FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 AND THE ADA SPECIAL PROVISION 1803 (PROSECUTION OF WORK). TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

WHEN THE BOULEVARD IS 4' WIDE OR LESS, THE TOP OF CURB TAPER SHALL MATCH THE RAMP SLOPES TO REDUCE NEGATIVE BOULEVARD SLOPES FROM THE TOP BACK OF CURB TO THE PAR. ALL RAMP TYPES SHOULD HAVE A MINIMUM 3'-LONG RAMP LENGTH.

4" MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER ENTIRE WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK. DETECTABLE WARNING SHOULD BE 6" LESS THAN THE PAR/TRAIL WIDTH. ARC LENGTH OF RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

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.

- ① MATCH FULL HEIGHT CURB.
- ② 4" MINIMUM DEPTH LANDING REQUIRED ACROSS TOP OF RAMP.
- ③ 3" HIGH CURB WHEN USING A 3'-LONG RAMP, 4" HIGH CURB WHEN USING A 4'-LONG RAMP.
- ④ SEE SHEET 4 OF 6, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS, WHEN INITIAL LANDING IS AT FULL CURB HEIGHT.
- ⑤ DETECTABLE WARNINGS MAY BE PART OF THE 4' X 4' MIN. LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.
- ⑥ THE GRADE BREAK SHALL BE PERPENDICULAR TO THE BACK OF WALK, THIS WILL ENSURE THAT THE GRADE BREAK IS PERPENDICULAR TO THE DIRECTION OF TRAVEL, (TYPICAL FOR ALL)
- ⑦ WHEN ADJACENT TO GRASS, GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURBS, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS, WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.
- ⑧ A 7' MIN TOP RADIUS GRADE BREAK REQUIRED TO BE CONSTRUCTIBLE.
- ⑨ PAVE FULL WALK WIDTH.

LEGEND	
⑤	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%.
⑥	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%.
⑦	LANDING AREA - 4' X 4' MIN., 15' X 5' MIN. PREFERRED DIMENSIONS AND MAX. 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PAR.
X"	CURB HEIGHT

REVISION	APPROVED	NOT APPROVED



STATE DESIGN ENGINEER

REVISION: \_\_\_\_\_

APPROVED: \_\_\_\_\_

NOT APPROVED

PEDESTRIAN CURB RAMP DETAILS	
STANDARD PLAN 5-297.250	1 OF 6

# Standard Plans – Curb Ramps

## Sheet 1

- Note: Landings shall be located **anywhere the pedestrian access route changes direction**, at the top of ramps that have running slopes greater than 5%, and if the approaching walk is inverse grade greater than 2%.





# Standard Plans – Curb Ramps

## Sheet 1

- Note: Landings shall be located anywhere the pedestrian access route changes direction, **at the top of ramps that have running slopes greater than 5%**, and if the approaching walk is inverse grade greater than 2%.



# Standard Plans – Curb Ramps

## Sheet 1

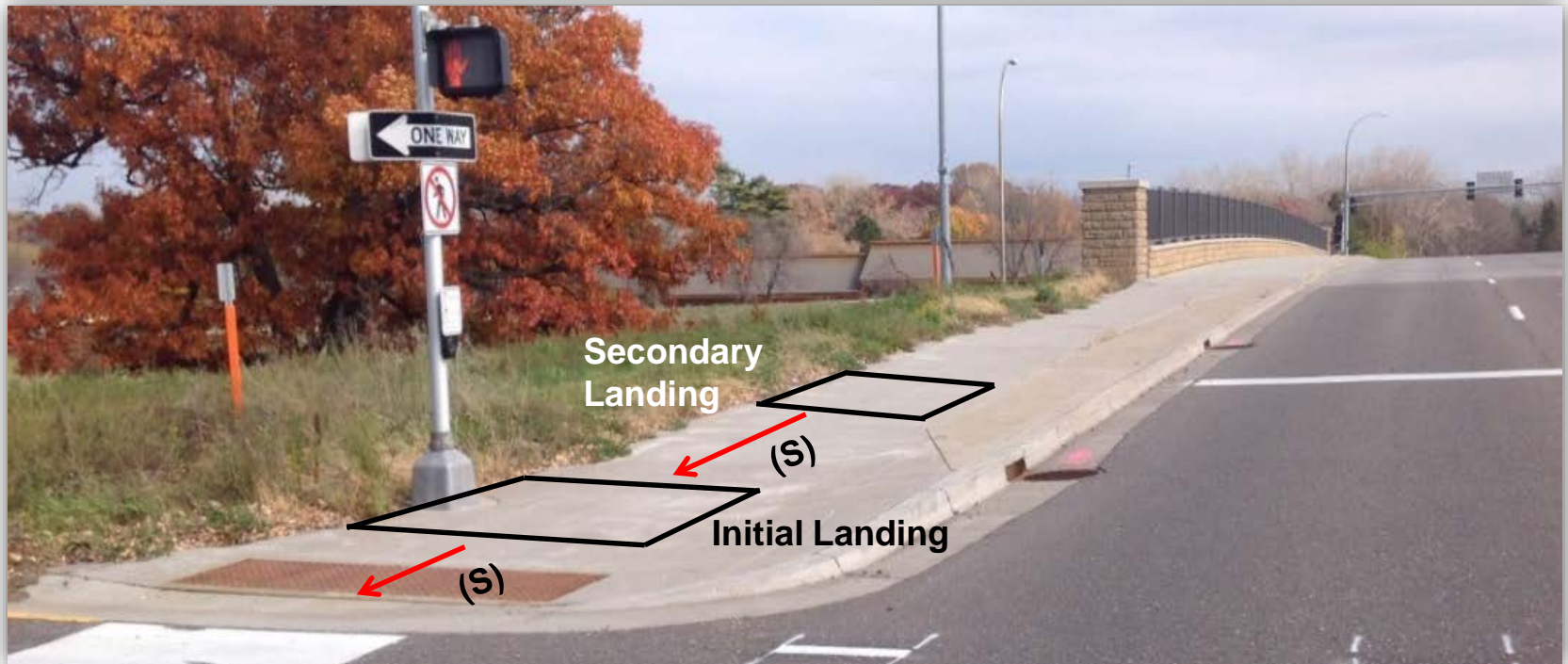
- Note: Landings shall be located anywhere the pedestrian access route changes direction, at the top of ramps that have running slopes greater than 5%, and if the approaching walk is inverse grade greater than 2%.



# Standard Plans – Curb Ramps

## Sheet 1

- Initial curb ramps landings shall be constructed within 15' from the back of curb, with 4'-6' from the back of curb being the preferred distance.
- Secondary curb ramp landings are required for every 30" of vertical rise when longitudinal slope is greater than 5%

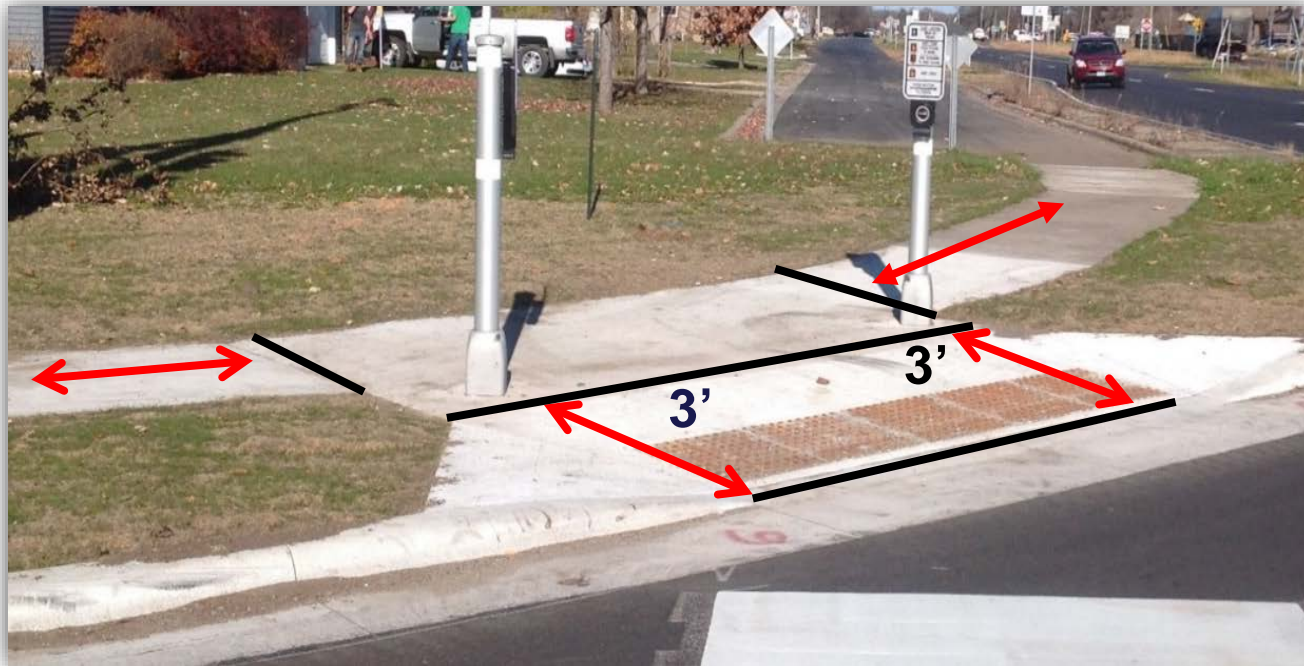




# Standard Plans – Curb Ramps

## Sheet 1

- All grade breaks within the PAR shall be perpendicular to the path of travel.
- Both sides of a sloped walking surface must be equal in length.



# Standard Plans – Curb Ramps

## Sheet 1

- The outside edges of the ramp differ in length, thus no perpendicular grade break to path of travel. The grade break at the top and bottom of ramps shall be parallel.





# Standard Plans – Curb Ramps

## Sheet 1

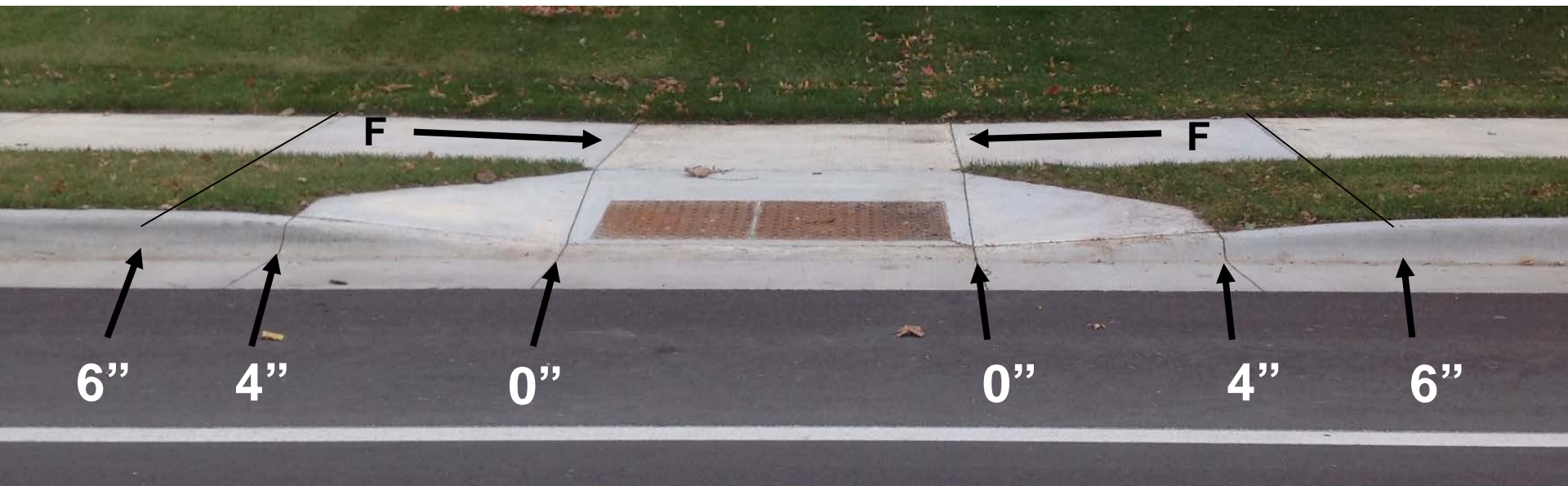
- To ensure initial ramps and initial landings (at the top of ramps) are properly constructed, initial landings SHALL be cast separately. Follow sidewalk reinforcement details on sheet 6 and the Special Provisions, Prosecution of Work (ADA) 1804.



# Standard Plans – Curb Ramps

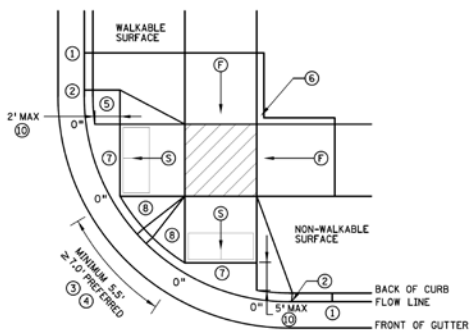
## Sheet 1

When the boulevard is 4' wide or less, the top of curb taper shall match the ramp slopes to reduce negative boulevard slopes from the top back of curb to the PAR

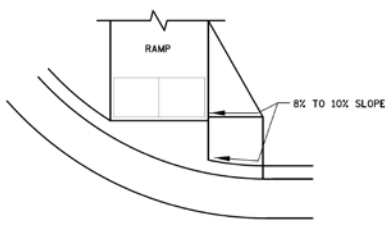


# Standard Plans - Curb Ramps

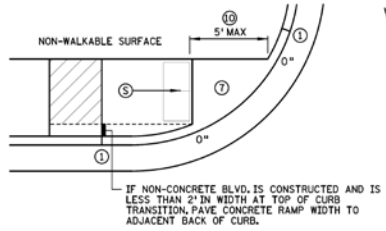
## Sheet 2



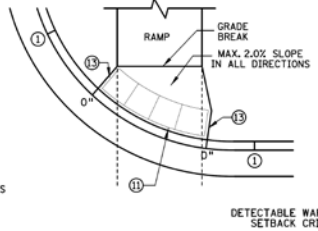
COMBINED DIRECTIONAL ⑩



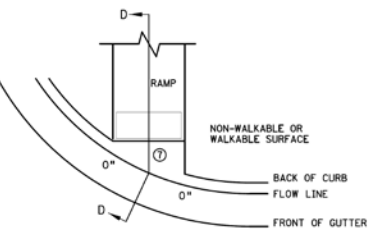
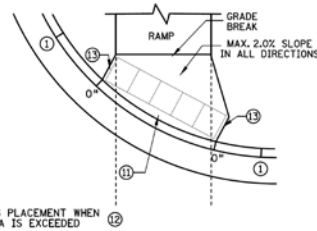
DIRECTIONAL RAMP WALKABLE FLARE



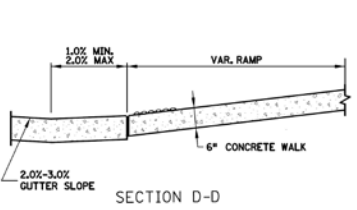
STANDARD ONE-WAY DIRECTIONAL ⑪



ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB



CURB FOR DIRECTIONAL RAMPS ⑬



TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER



STATE DESIGN ENGINEER

NOTES:

- LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) 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, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.
- SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30' OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.
- CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR, 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOP GRADE BREAK OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.
- ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL, THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH.
- TO ENSURE INITIAL RAMPS AND INITIAL LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS SHALL BE CAST SEPARATELY, FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 AND THE ADA SPECIAL PROVISION 1803 (PROSECUTION OF WORK).
- TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.
- WHEN THE BOULEVARD IS 4' WIDE OR LESS, THE TOP OF CURB TAPER SHALL MATCH THE RAMP SLOPES TO REDUCE NEGATIVE BOULEVARD SLOPES FROM THE TOP BACK OF CURB TO THE PAR.
- ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.
- 4" MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER ENTIRE WIDTH OF SHARED-USE PATH AND THE ENTIRE PAR WIDTH OF THE WALK. DETECTABLE WARNING SHOULD BE 6" LESS THAN THE PAR/PATH WIDTH, ARC LENGTH OF RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.
- RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB. SEE NOTES ⑩ & ⑪ FOR INFORMATION REGARDING RECTANGULAR DETECTABLE WARNING PLACEMENT.
- ① MATCH FULL CURB HEIGHT.
- ② 3" HIGH CURB WHEN USING A 3' LONG RAMP.  
4" HIGH CURB WHEN USING A 4' LONG RAMP.
- ③ 3" MINIMUM CURB HEIGHT (5.5' MIN. DISTANCE REQUIRED BETWEEN DOMES)
- ④ PREFERRED (7' MIN. DISTANCE REQUIRED BETWEEN DOMES).
- ⑤ THE "BUMP" IN BETWEEN THE RAMPS SHOULD NOT BE IN THE PATH OF TRAVEL FOR COMBINED DIRECTIONAL RAMPS. IF THIS OCCURS MODIFY THE RAMP LOCATION OR SWITCH RAMP TO A FAN/DEPRESSED CORNER.
- ⑥ WHEN USING CONCRETE PAVED FLARES ON THE OUTSIDE OF DIRECTIONAL RAMPS, AND ADJACENT TO A WALKABLE SURFACE, DIRECTIONAL RAMP FLARES SHOULD BE USED. SEE THE DETAIL ON THIS SHEET.
- ⑦ GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.
- ⑧ MAX. 2.0% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK AND DRAIN TO FLOW LINE SHALL BE CONSTRUCTED INTEGRAL WITH CURB AND GUTTER.
- ⑨ 6% TO 10% WALKABLE FLARE.
- ⑩ PLACE DOMES AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.
- ⑪ FRONT EDGE OF DETECTABLE WARNING SHALL BE SET BACK 2" MAXIMUM WHEN ADJACENT TO WALKABLE SURFACE, AND 5" MAXIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE WITH ONE CORNER SET 3" FROM BACK OF CURB, WHETHER A SURFACE IS WALKABLE OR NOT SHALL BE DETERMINED BY THE ENGINEER.
- ⑫ RECTANGULAR DETECTABLE WARNINGS MAY BE SETBACK UP TO 9" FROM THE BACK OF CURB WITH CORNERS SET 3" FROM BACK OF CURB. IF 9" SETBACK IS EXCEEDED USE RADIAL DETECTABLE WARNINGS.
- ⑬ FOR DIRECTIONAL RAMPS WITH THE DETECTABLE WARNINGS PLACED AT THE BACK OF CURB, THE DETECTABLE WARNINGS SHALL COVER THE ENTIRE WIDTH OF THE WALK/PATH, THIS ENSURES A DETECTABLE EDGE AND HELPS ELIMINATE THE CURB TAPER OBSTRUCTING THE PATH OF PEDESTRIAN TRAVEL.
- ⑭ THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB, MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
- ⑮ TO BE USED FOR ALL DIRECTIONAL RAMPS, EXCEPT WHERE DOMES ARE PLACED ALONG THE BACK OF CURB.

LEGEND	
THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT, IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.	
⑩	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%.
⑪	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%.
⑬	LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX. 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PAR.
X"	CURB HEIGHT

REVISION:
APPROVED: _____
NOT APPROVED _____
OPERATING ENGINEER

REVISED:
APPROVED: _____
NOT APPROVED _____

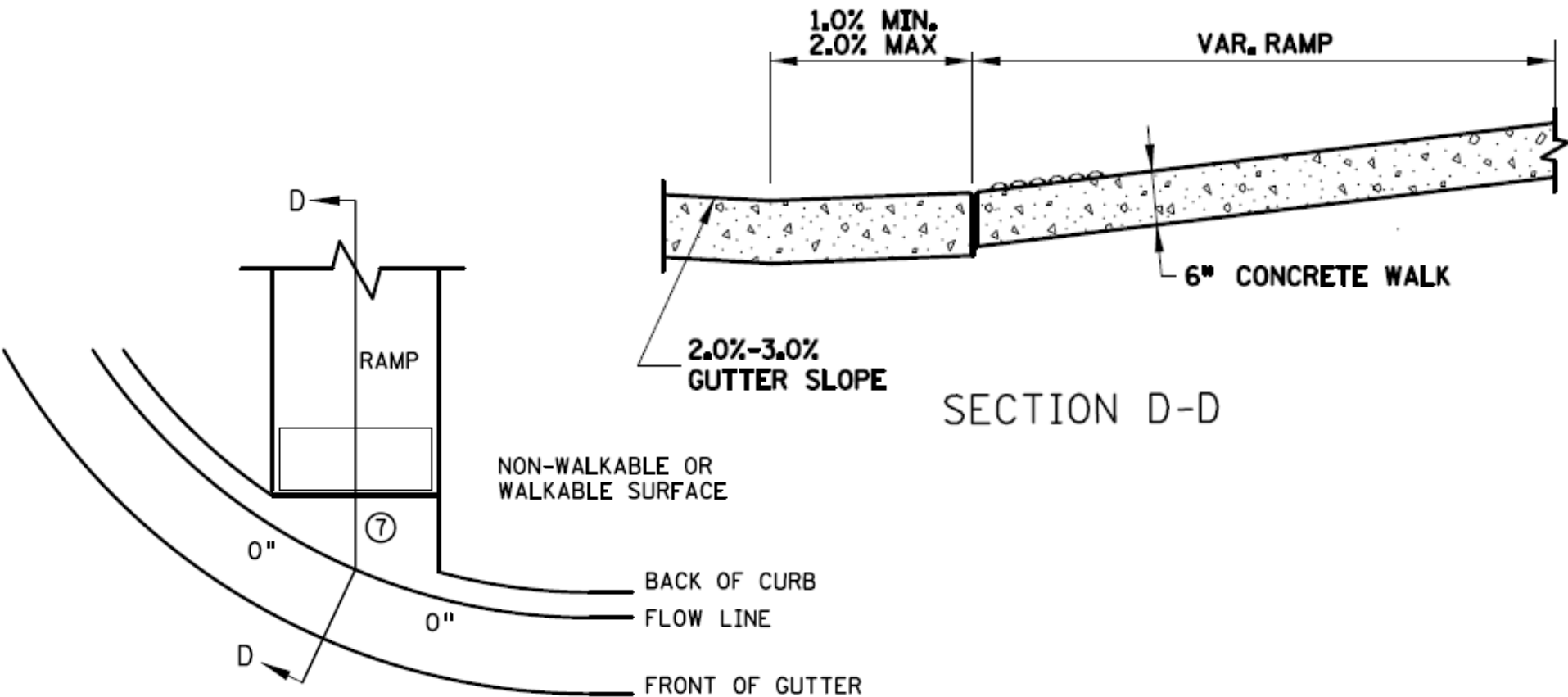
PEDESTRIAN CURB RAMP DETAILS	
STANDARD PLAN 5-297.250	2 OF 6



# Standard Plans – Curb Ramps

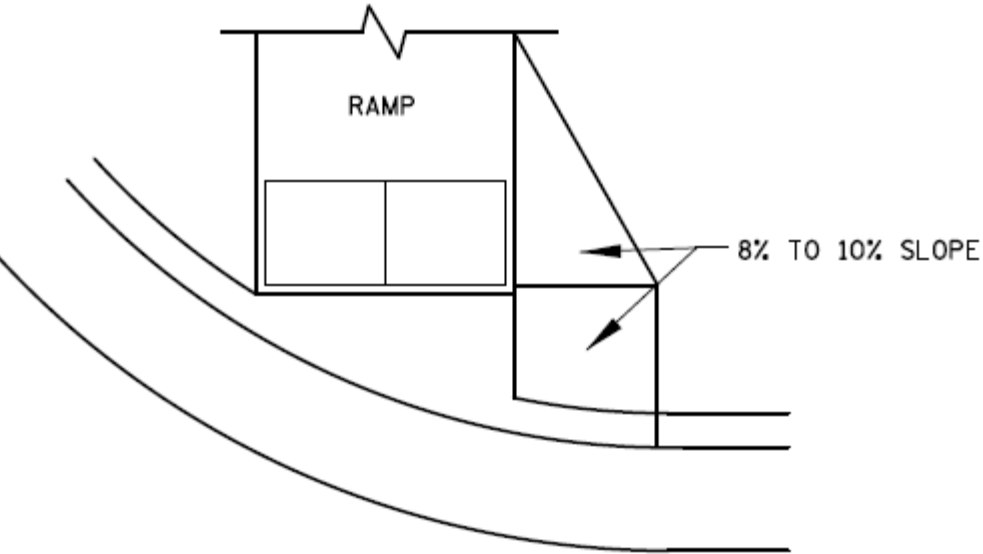
## Sheet 2

Note: (7) Max. 2% slope in all directions in front of grade break and drain to flow line. SHALL be constructed integral with curb and gutter.

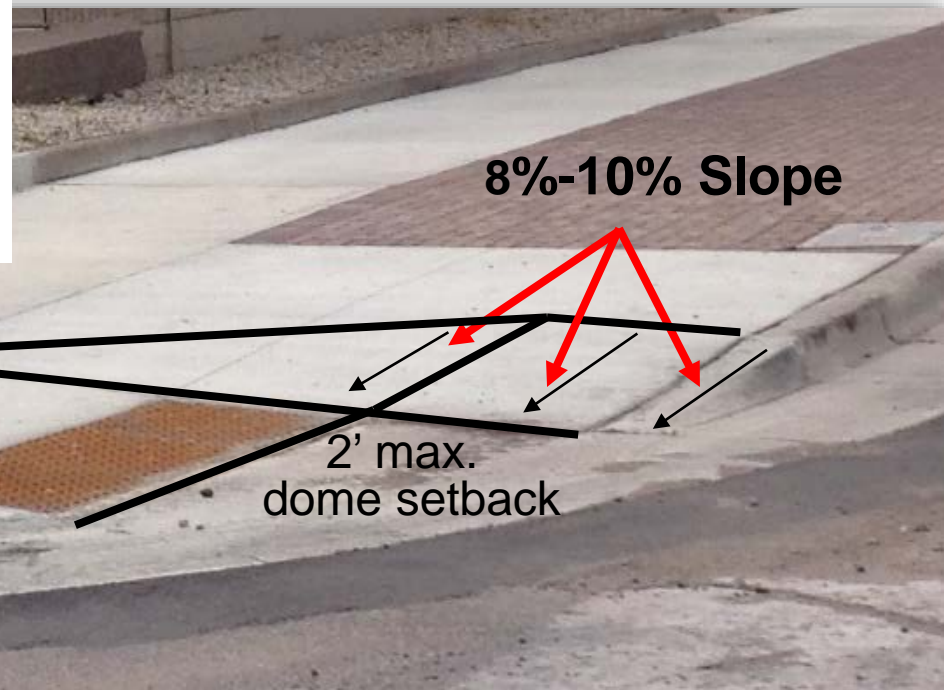


# Standard Plans – Curb Ramps

## Sheet 2

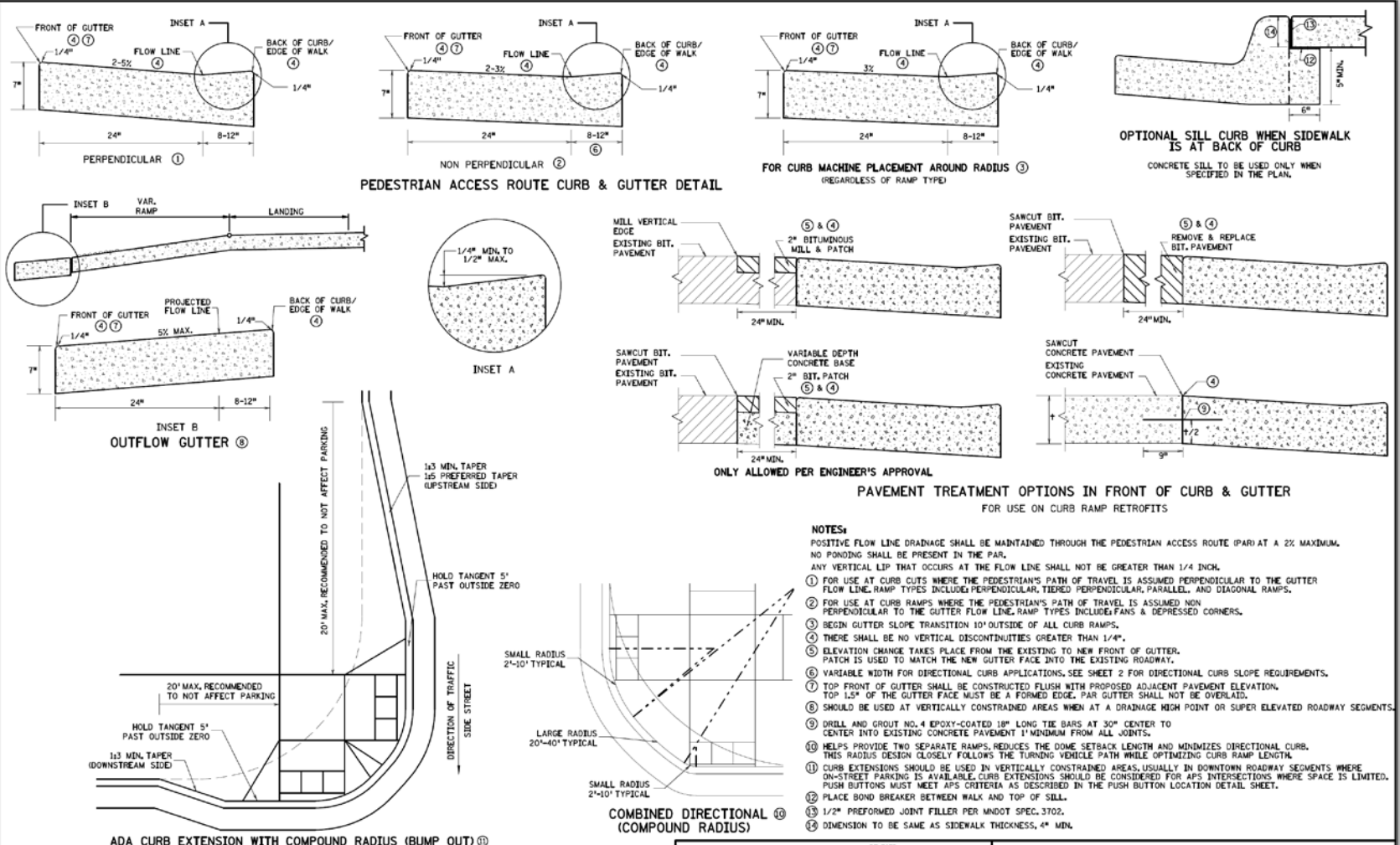


**DIRECTIONAL RAMP WALKABLE FLARE**



# Standard Plans – Curb Ramps

## Sheet 3

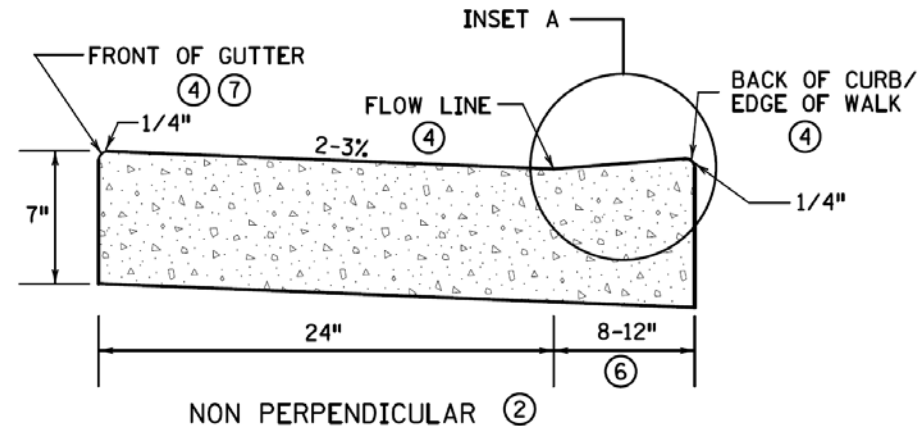
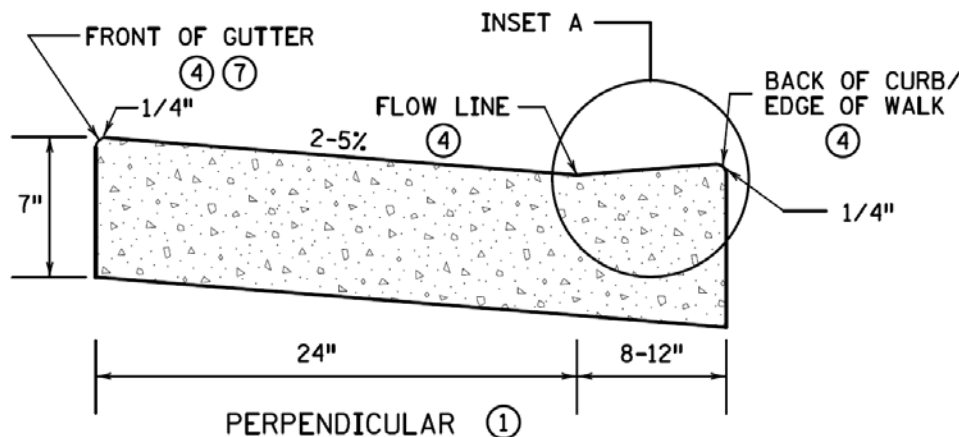


REVISIONS APPROVED: _____ NOT APPROVED: _____ <small>OPERATIONS ENGINEER</small>	STATE DESIGN ENGINEER 	PEDESTRIAN CURB RAMP DETAILS STANDARD PLAN 5-297.250	3 OF 6
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# Standard Plans – Curb Ramps

## Sheet 3

- Positive flow line drainage shall be maintained through the PAR at a max. 2%. No ponding shall be present in the PAR.
- 5'-10' min. curb and gutter removals are needed for transitioning the existing gutter in-slope to the proposed PAR gutter in-slope.
- When “tabling” of the flow lines is needed, removals greater than 10' on each side of the ramp is often required for compliance

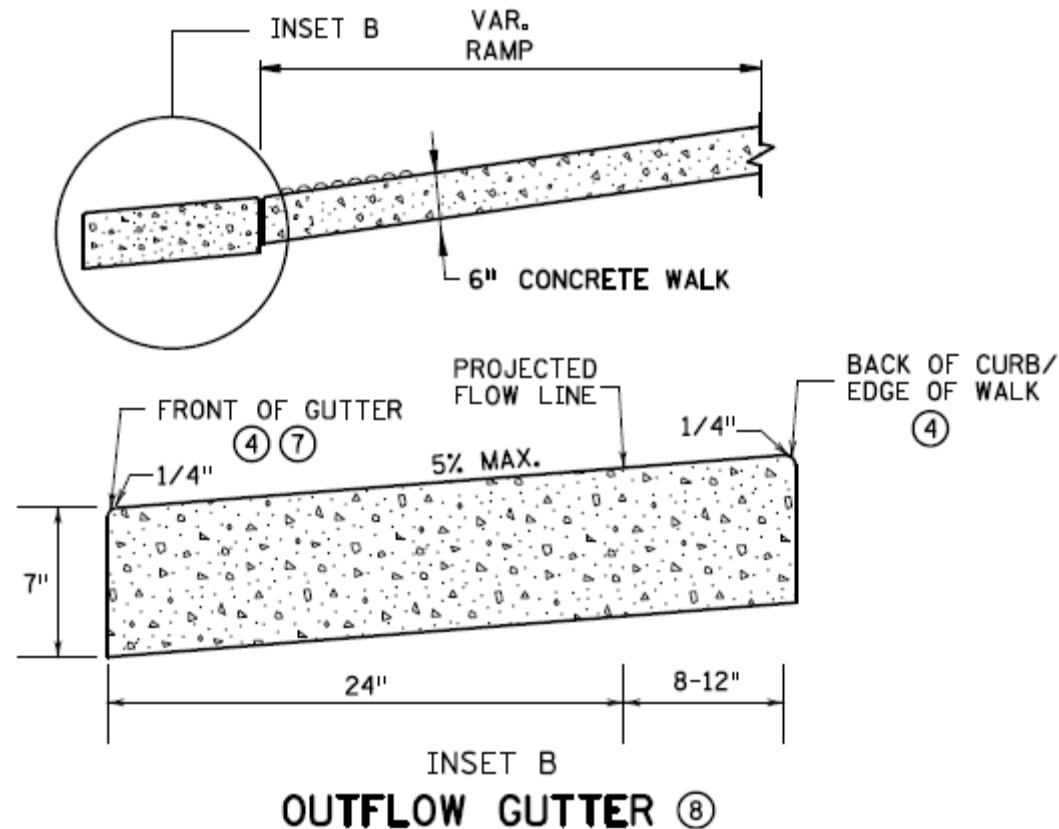


PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL

# Standard Plans – Curb Ramps

## Sheet 3

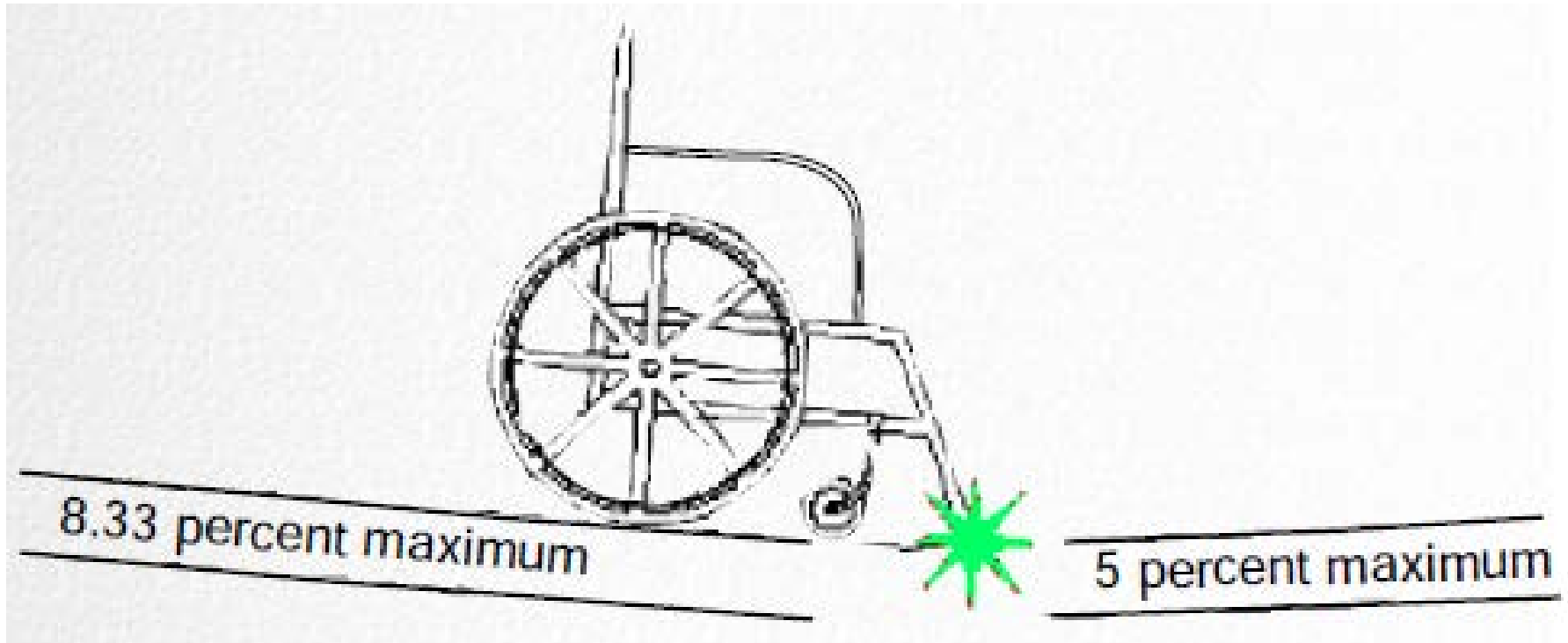
- Outflow Gutter 5% Max, 2% max. for directional curb applications
- Should be used at vertically constrained areas when at a drainage highpoint or super elevated roadway segments
- 0.2' elevation gain





# ADA Curb and Gutter

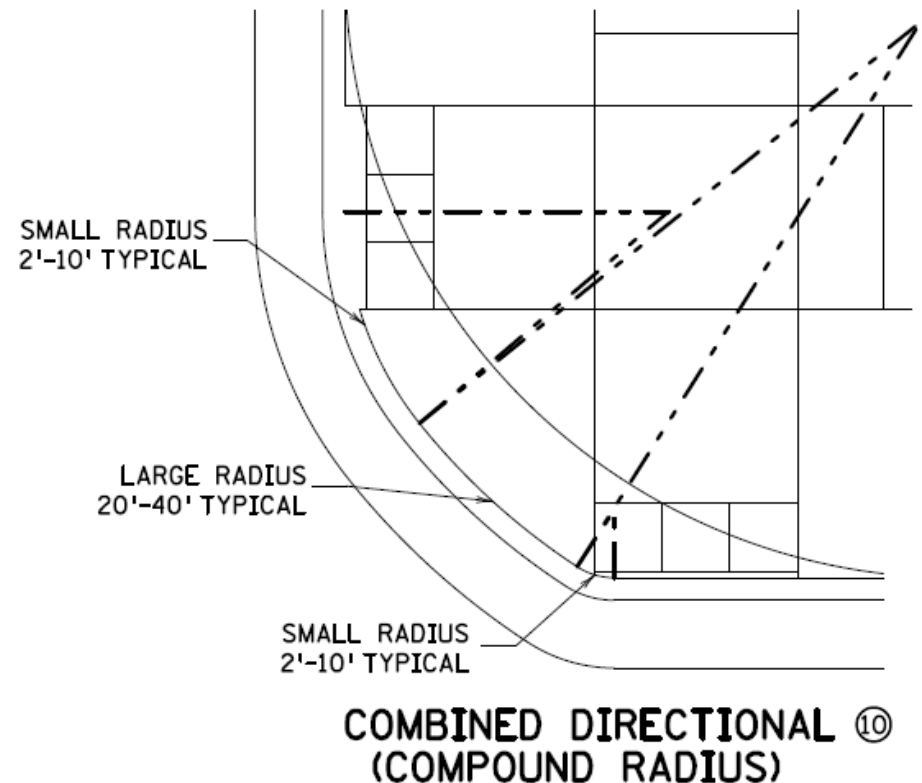
- 13% is the maximum rollover allowed.



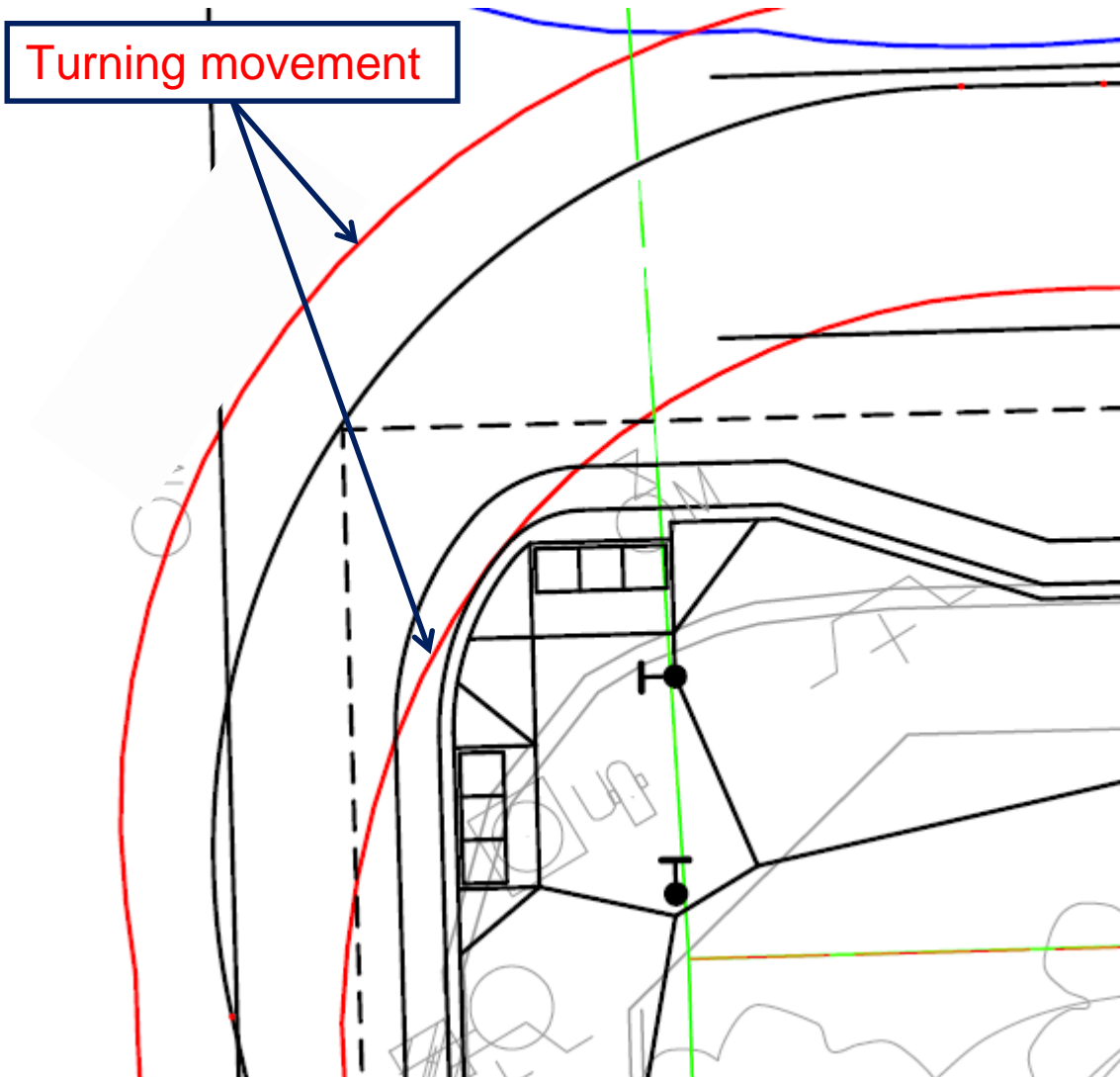
# Standard Plans – Curb Ramps

## Sheet 3

- Helps provide two separate ramps
- Maximizes ramp length by reducing dome setback and minimizing directional curb length
- Compound radius should closely mimic the turning vehicle path



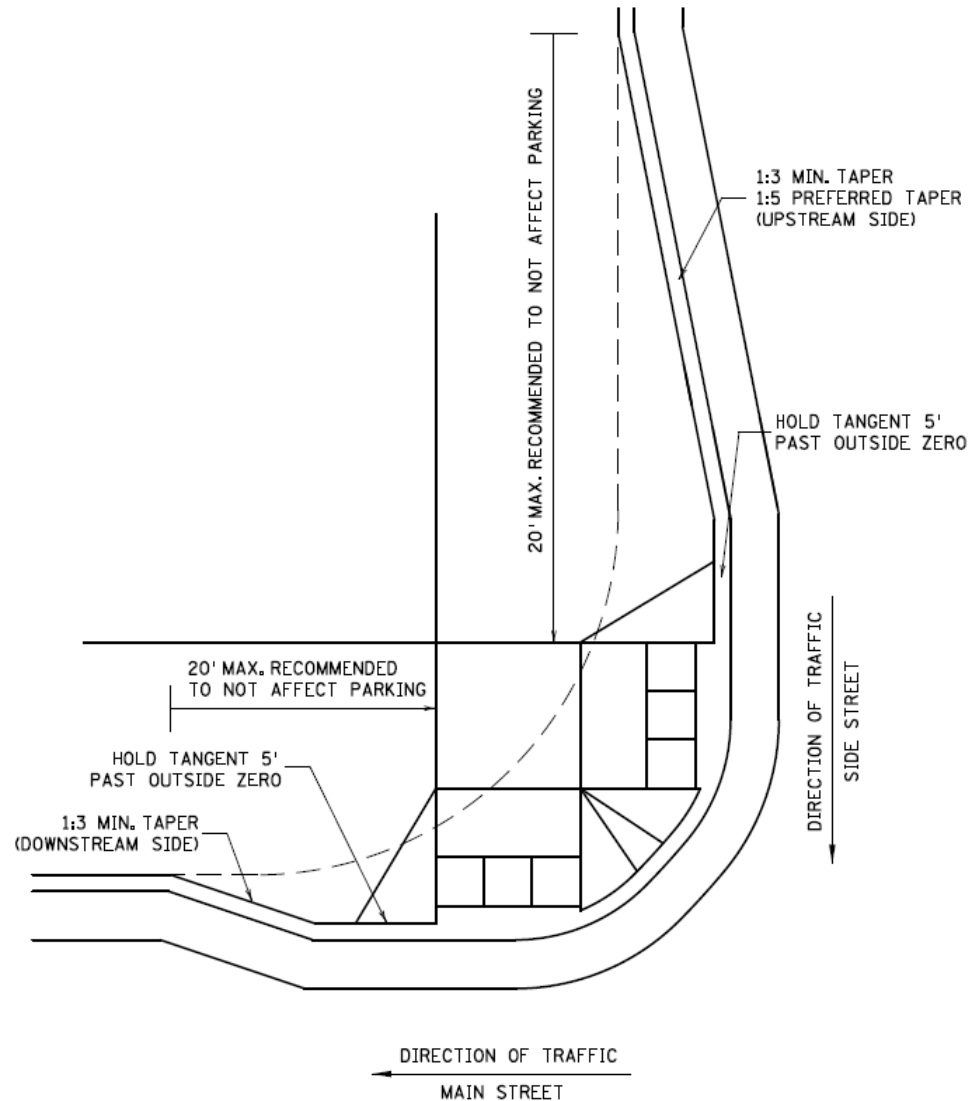
# Compound Radii & Turning Movements



# Standard Plans – Curb Ramps

## Sheet 3

- ADA Curb Extension with Compound Radius (Bump Out)
- Vertically constrained areas
- Signalized quadrants where space is limited
- 5' Tangent

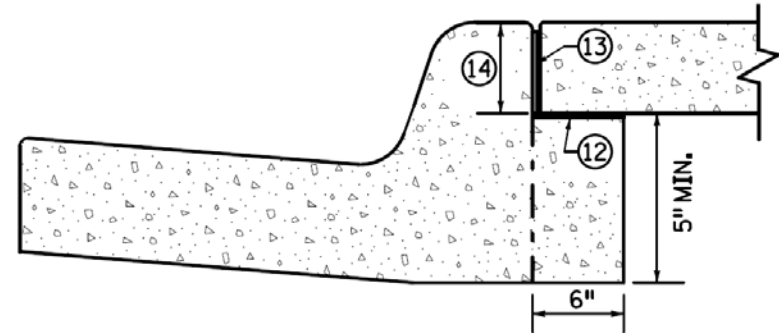




# Standard Plans – Curb Ramps

## Sheet 3

- Prevents sidewalk settling
- Should be used in areas where long segments of sidewalk and curb is being replaced at back of curb



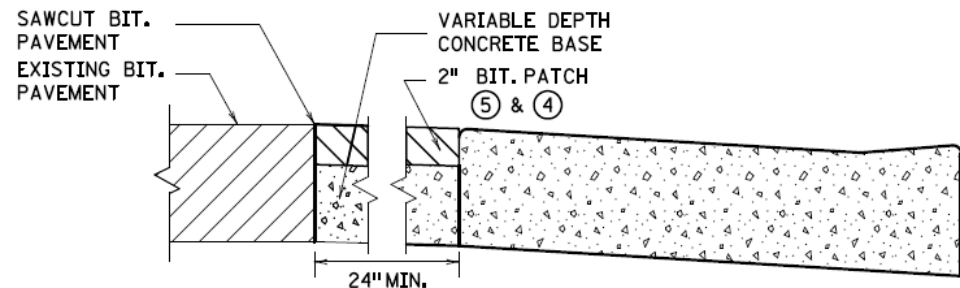
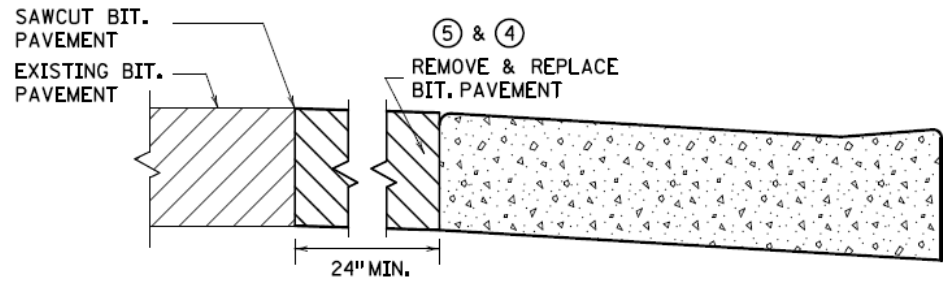
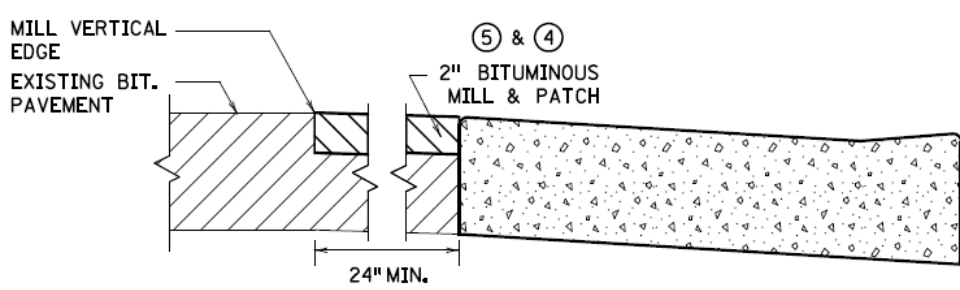
**OPTIONAL SILL CURB WHEN SIDEWALK  
IS AT BACK OF CURB**

CONCRETE SILL TO BE USED ONLY WHEN  
SPECIFIED IN THE PLAN.

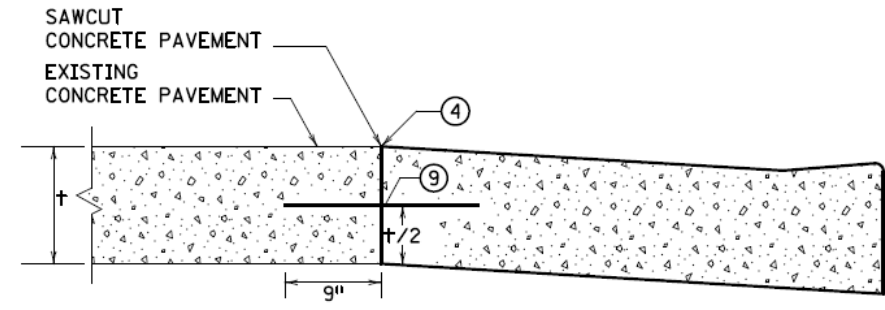


# Standard Plans – Curb Ramps

## Sheet 3



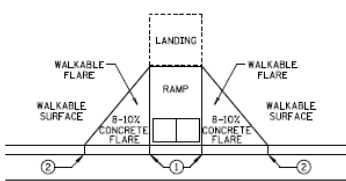
**ONLY ALLOWED PER ENGINEER'S APPROVAL**



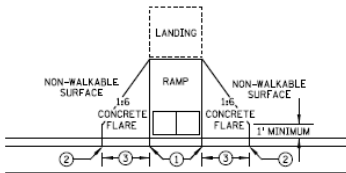
**PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER**  
FOR USE ON CURB RAMP RETROFITS

# Standard Plans – Curb Ramps

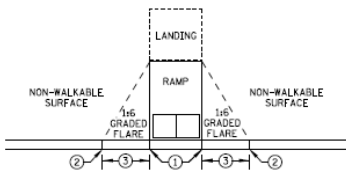
## Sheet 4



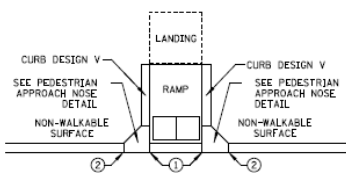
PAVED FLARES ADJACENT TO WALKABLE SURFACE



PAVED FLARES ADJACENT TO NON-WALKABLE SURFACE

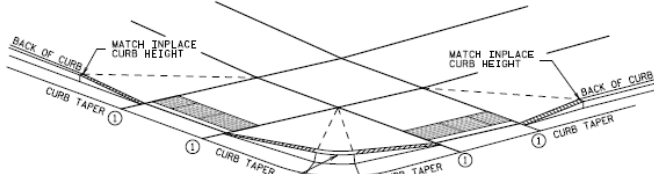


GRADED FLARES



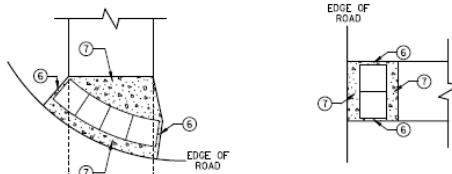
RETURNED CURB ⑤

TYPICAL SIDE TREATMENT OPTIONS ④ ⑤



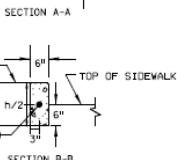
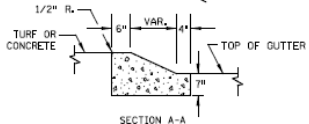
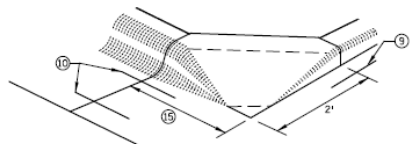
3" MINIMUM CURB HEIGHT, 4" PREFERRED (MEASURED AT FRONT FACE OF CURB) FOR A MIN. 6" LENGTH (MEASURED ALONG FLOW LINE)

DETECTABLE EDGE WITH ⑥ CURB AND GUTTER

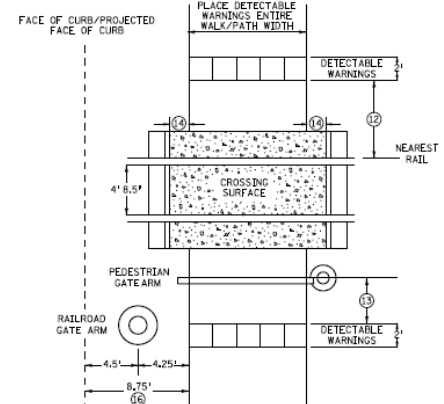


RADIAL DETECTABLE WARNING RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER



PEDESTRIAN APPROACH NOSE DETAIL (FOR RETURNED CURB SIDE TREATMENT)



RAILROAD CROSSING PLAN VIEW

NOTES:

- SEE STANDARD PLATE 7038 AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.
- A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.
- 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" FOR 4" HIGH CURB AND 3" FOR 6" HIGH CURB.
- ④ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED 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.
- ⑤ TYPICALLY USED FOR MEDIANS AND ISLANDS.
- ⑥ WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY, MAINTAIN 3" MAX. 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 BITUMINOUS ROADWAY AND/OR BITUMINOUS SHARED-USE PATH TO PROVIDE VISUAL CONTRAST.
- ⑧ ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS WHENEVER THERE IS ZERO-INCH HIGH CURB. CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE INITIAL LANDING IS MORE THAN 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.
- ⑨ DRILL AND GROUT 1 - NO. 4 12" LONG REINFORCEMENT BAR (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE V CURB.
- ⑩ DRILL AND GROUT 2 - NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE CURB AND GUTTER.
- ⑪ SIDE TREATMENT EXAMPLES SHOWN ARE WHEN THE INITIAL LANDING IS APPROXIMATELY LEVEL WITH THE FULL HEIGHT CURB (I.E. 6" HIGH RAMP FOR 6" HIGH CURB). WHEN THE INITIAL LANDING IS MORE THAN 1" BELOW FULL HEIGHT CURB REFER TO SHEETS 1 & 2 TO MODIFY THE CURB HEIGHT TAPERS AND MAINTAIN POSITIVE SIDEWALK DRAINAGE.
- ⑫ NEAREST EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 12" MINIMUM TO 15" MAXIMUM FROM THE NEAREST RAIL FOR SKEWED RAILWAYS IN NO INSTANCE SHALL THE DETECTABLE WARNING BE CLOSER THAN 12" MEASURED PERPENDICULAR TO THE NEAREST RAIL.
- ⑬ WHEN PEDESTRIAN GATES ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL, 2' FROM THE APPROACHING SIDE OF THE GATE ARM. THIS CRITERIA GOVERNS OVER NOTE ⑫.
- ⑭ CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED-USE PATH.
- ⑮ 3' FOR MEDIANS AND SPLITTER ISLANDS, NOSE CAN BE REDUCED TO 2' ON FREE RIGHT ISLANDS.
- ⑯ SIDEWALK TO BE PLACED 8.75' MIN. FROM THE FACE OF CURB/PROJECTED FACE OF CURB. THIS ENSURES MIN. CLEARANCE BETWEEN THE SIDEWALK AND GATE ARM COUNTERWEIGHT SUPPORTS.

REVISION:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER

STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS
1-23-2017
STANDARD PLAN 5-297.250
4 OF 6



# Standard Plans – Curb Ramps

## Sheet 4 (Detectable Warning)

- Purpose of domes is to inform the user that they are at the edge of the roadway.
- The domes don't "Point You" in a certain direction.





# Standard Plans – Curb Ramps

## Sheet 4

- When adjacent to pavement, flares shall be constructed at 8-10% max slope (walkable flare)
- When adjacent to turf, 1:6 graded flare is generally preferred (non-walkable flare)
- Concrete flare length adjacent to grass should be less than 8' – measured along edge of ramp



# Standard Plans – Curb Ramps

## Sheet 4 (Detectable Edge)

- All constructed curbs must have continuous detectable edge for the visually impaired.
- Curb transitions are considered a detectable edge when the taper starts within 3” of the edge of truncated domes.

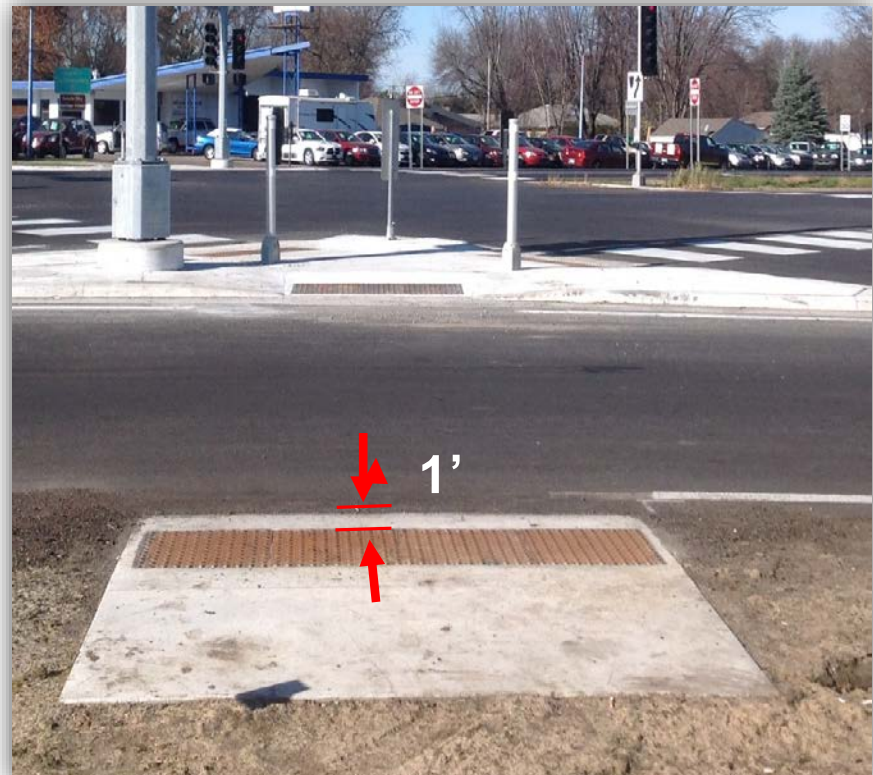
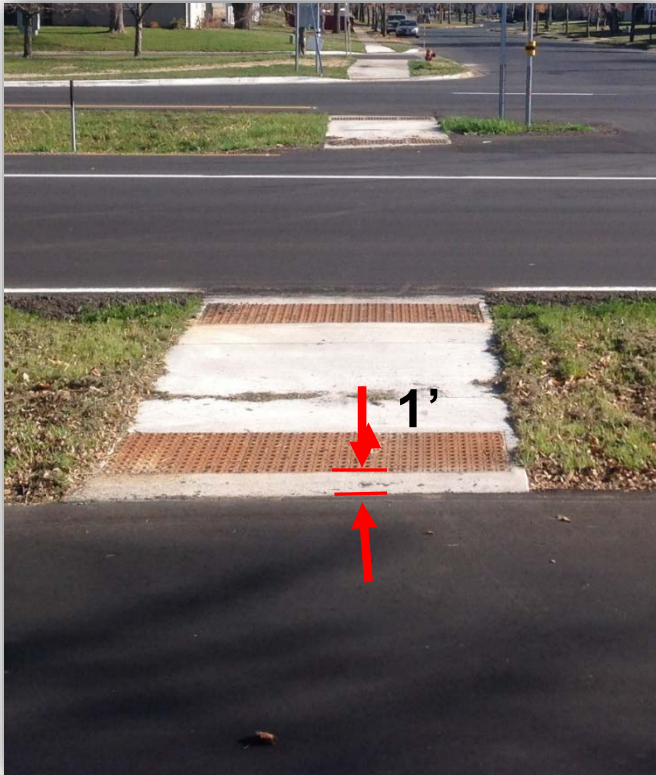


# Standard Plans – Curb Ramps

## Sheet 4

### Detectable Edge Without Curb and Gutter

- Detectable warnings shall be placed 1' from edge of bituminous roadway, for visual contrast.





# Standard Plans – Curb Ramps

## Sheet 4 (Detectable Edge)



DETECTABLE EDGE  
REQUIRED FOR  
ENTIRE WIDTH

DOMES PLACED 1' FROM EDGE  
OF PAVEMENT TO PROVIDE  
VISUAL CONTRAST

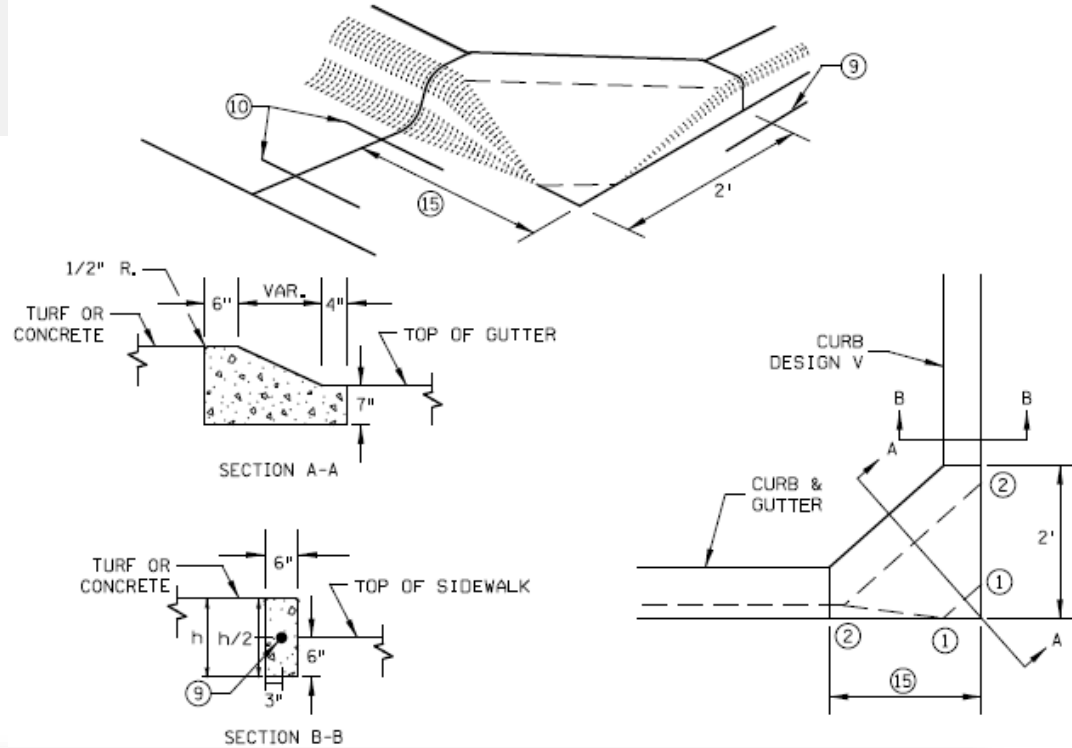


# Standard Plans – Curb Ramps

## Sheet 4

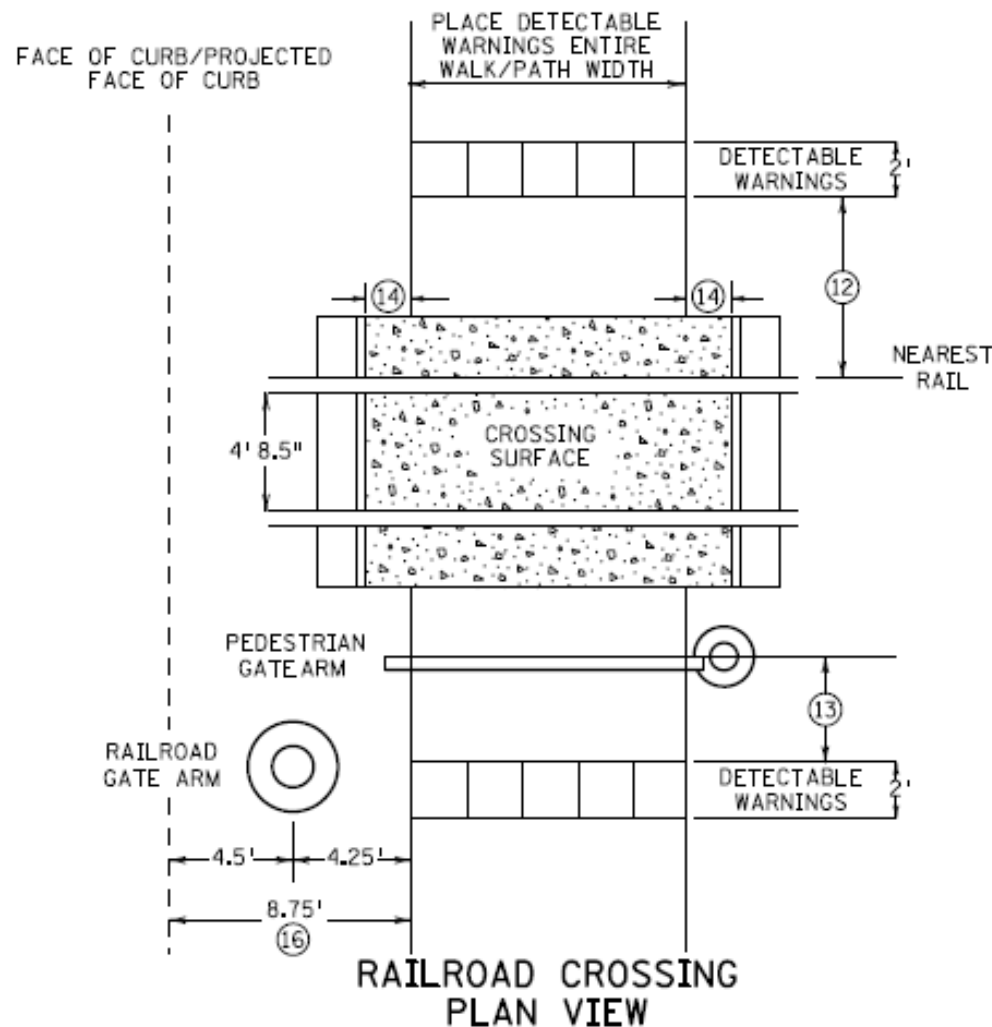
### Pedestrian Approach Nose Detail (for returned curb side treatment)

- Note: (15) 3' for both upstream and downstream side on medians and splitter islands



# Standard Plans – Curb Ramps

## Sheet 4

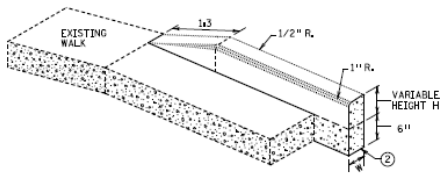


- Domes to be 12' min. to 15' max to the nearest rail (measured perpendicular)
- Concrete crossing surface shall extend 2' past the outside edge of walk/path
- Sidewalk to be placed 8.75' min. from the face of curb

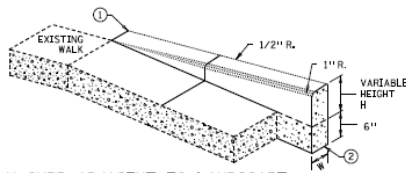


# Standard Plans – Curb Ramps

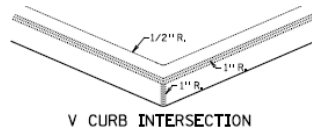
## Sheet 5



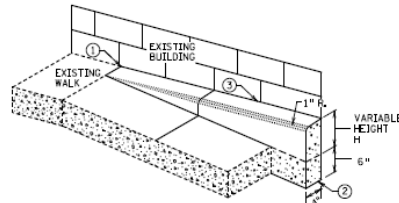
V CURB ADJACENT TO LANDSCAPE  
CURB WITHIN SIDEWALK LIMITS



V CURB ADJACENT TO LANDSCAPE  
CURB OUTSIDE SIDEWALK LIMITS

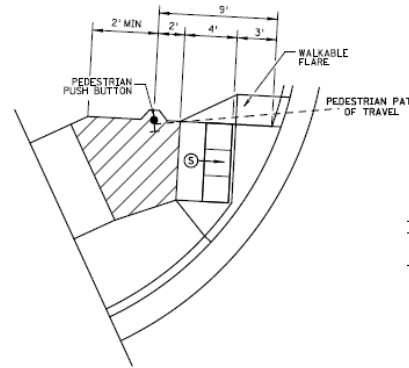


V CURB INTERSECTION



V CURB ADJACENT TO BUILDING  
OR BARRIER

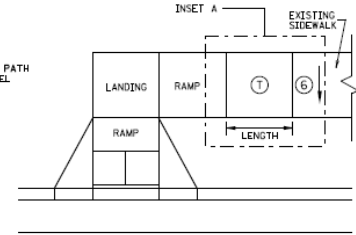
CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
< 6"	4"
≥ 6"	6"



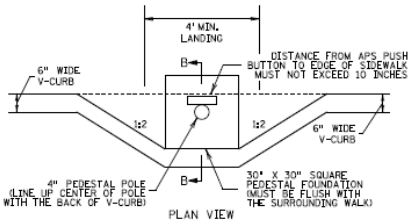
SEMI-DIRECTIONAL RAMP (3,4,9)

3" DOME SETBACK, 4" LONG RAMP AND  
PUSH BUTTON 9" FROM THE BACK OF CURB

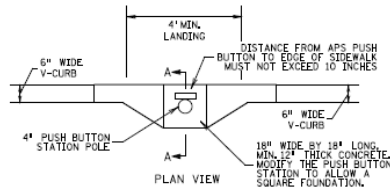
PRIMARYLY USED FOR APS APPLICATIONS,  
WHERE THE PAR DOES NOT CONTINUE PAST  
THE PUSH BUTTON (DEAD-END SIDEWALK)



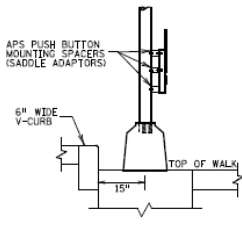
TRANSITION PANEL (4,5)



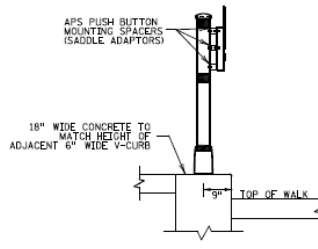
SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)



PUSH BUTTON STATION (V-CURB)



SECTION B-B



SECTION A-A

**NOTES**

A WALKABLE FLARE IS AN 8-10% CONCRETE FLARE THAT IS REQUIRED WHEN THE FLARE IS ADJACENT TO A WALKABLE SURFACE, OR WHEN THE PEDESTRIAN PATH OF TRAVEL OF A PUSH BUTTON TRAVERSES THE FLARE.

ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.

WHERE RIGHT-OF-WAY ALLOWS, USE OF V CURB SHOULD BE MINIMIZED, GRADING ADJACENT TURF OR SLOPING ADJACENT PAVEMENT IS PREFERRED.

V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS.

V CURB NEXT TO BUILDING SHALL BE A 4" WIDTH AND SHALL MATCH PREVIOUS TOP OF SIDEWALK ELEVATIONS.

- ① END TAPERS AT TRANSITION SECTION SHALL MATCH INPLACE SIDEWALK GRADES.
- ② ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.
- ③ EDGE BETWEEN NEW V CURB AND INPLACE STRUCTURE SHALL BE SEALED AND BOND BREAKER SHALL BE USED BETWEEN EXISTING STRUCTURE AND PLACED V-CURB.
- ④ THE MAX. RATE OF CROSS SLOPE TRANSITIONING IS 1' LINEAR FOOT OF SIDEWALK PER HALF PERCENT CROSS SLOPE, WHEN PAR WIDTH IS GREATER THAN 6' OR THE RUNNING SLOPE IS GREATER THAN 5%, DOUBLE THE CALCULATED TRANSITION LENGTH.
- ⑤ TRANSITION PANELS ARE TO ONLY BE USED AFTER THE RAMP, OR IF NEEDED, LANDING ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).
- ⑥ EXISTING CROSS SLOPE GREATER THAN 2.0%.

**LEGEND**

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT, IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 0.3% OR FLATTER ARE ALLOWED.

- ⑤ 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%.
- ④ LANDING AREA - 4' X 4' MIN, (5' X 5' MIN, PREFERRED) DIMENSIONS AND MAX. 2.0% SLOPE IN ALL DIRECTIONS, LANDING SHALL BE FULL WIDTH OF INCOMING PARS.
- ① TRANSITION PANEL(S) - TO BE USED FOR TRANSITIONING THE CROSS-SLOPE OF A RAMP TO THE EXISTING WALK CROSS-SLOPE, RATE OF TRANSITION SHOULD BE 0.5% PER 1' LINEAR FOOT OF WALK, SEE THIS SHEET FOR ADDITIONAL INFORMATION.

REVISION
APPROVED: JANUARY 23, 2017



Rom Sh...  
STATE DESIGN ENGINEER

REVISION  
APPROVED  
1-23-2017

PEDESTRIAN CURB RAMP DETAILS  
STANDARD PLAN 5-297.250 | 5 OF 6



# Standard Plans – Curb Ramps

## Sheet 5

- V-curb adjacent to building (4" wide)





# Standard Plans – Curb Ramps

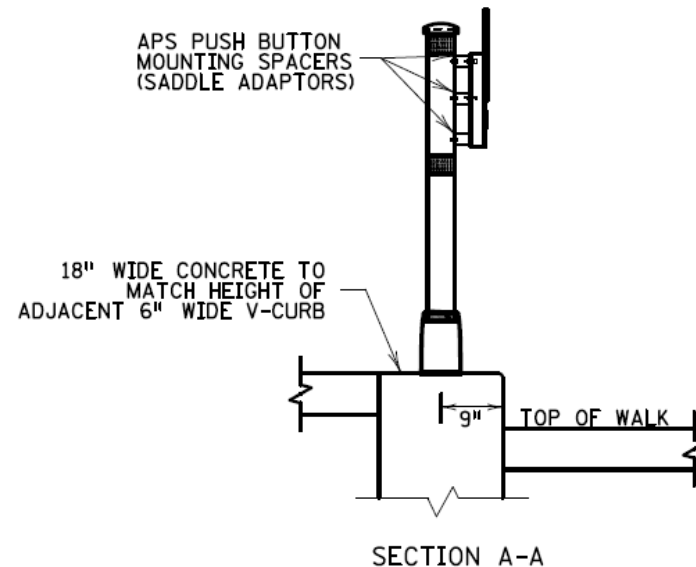
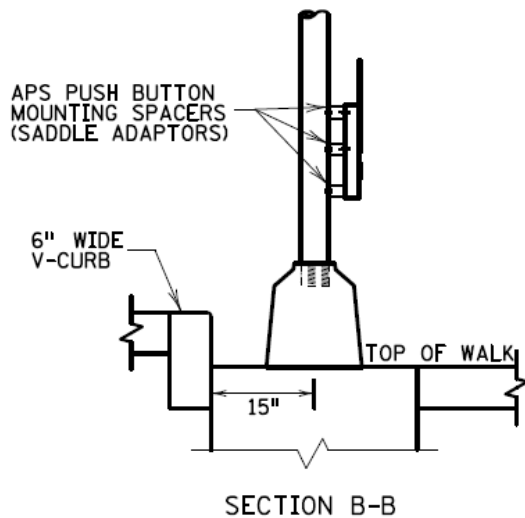
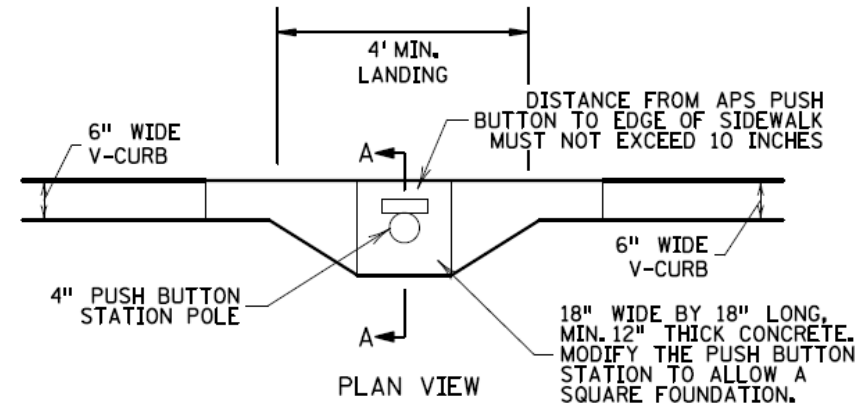
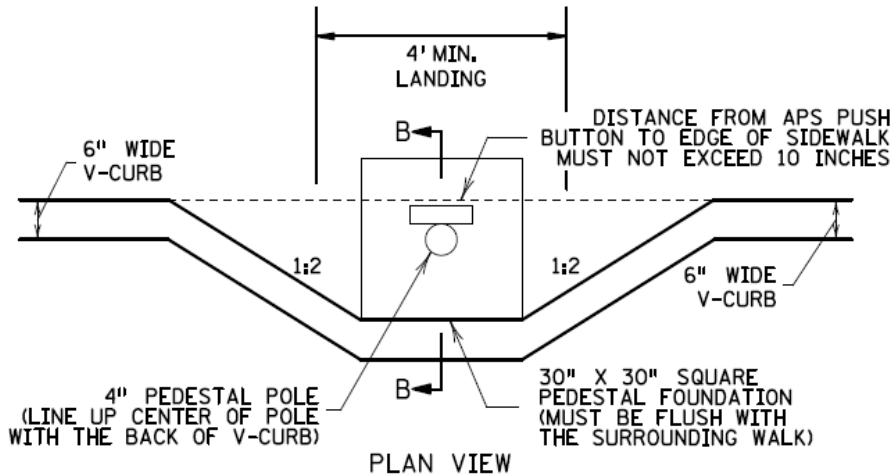
## Sheet 5

- V-curb adjacent to landscape and (1) outside sidewalk limits [preferred], (2) inside sidewalk limits



# Standard Plans – Curb Ramps

## Sheet 5



SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)

PUSH BUTTON STATION (V-CURB)

# Standard Plans – Curb Ramps

## Sheet 5

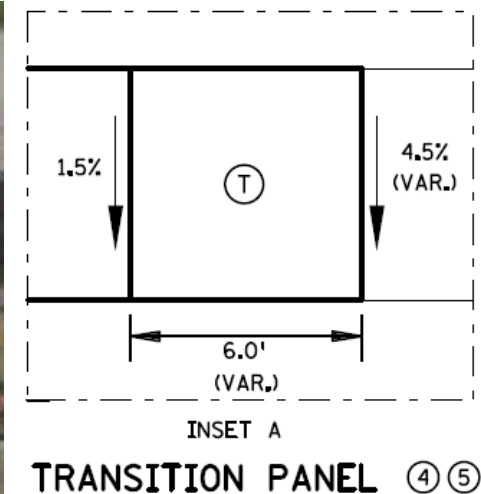
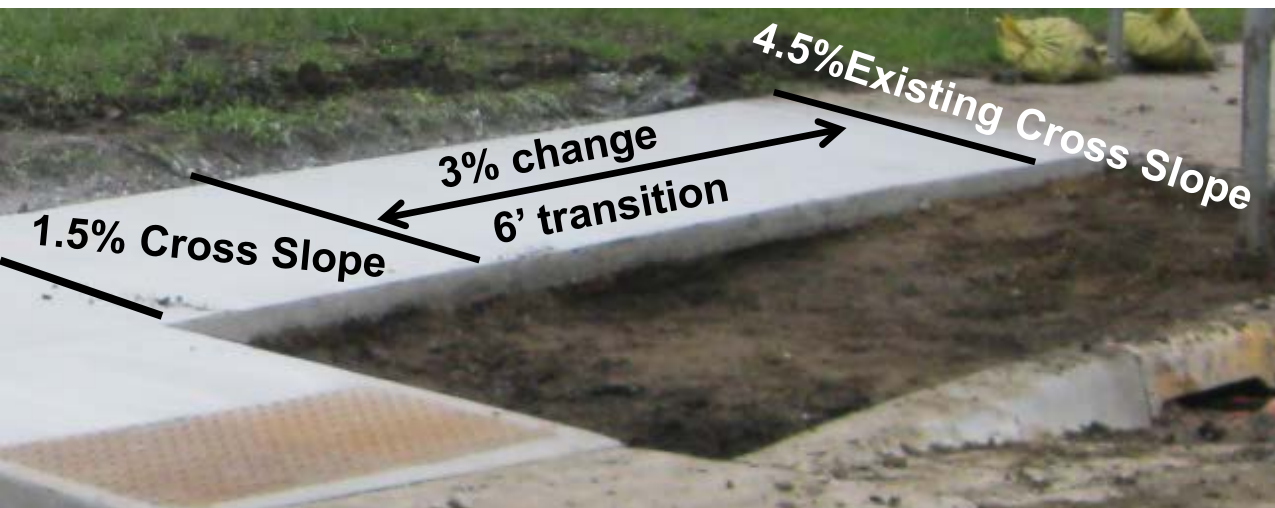
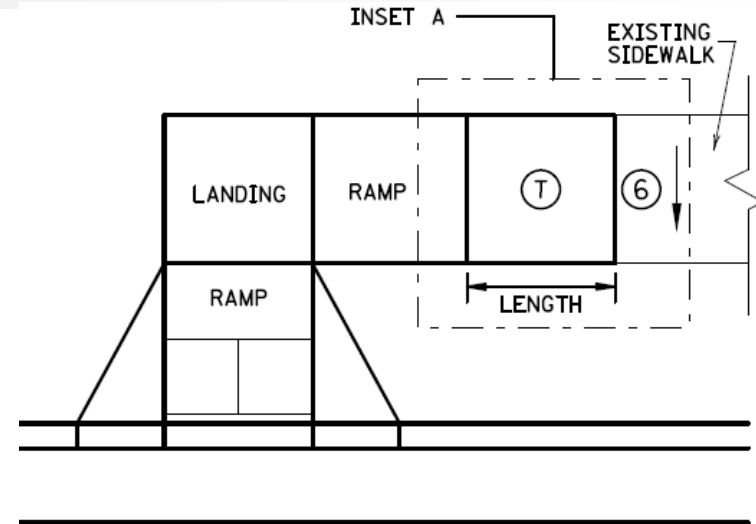




# Standard Plans – Curb Ramps

## Sheet 5

- Max. rate of cross-slope transitioning is 1' linear foot of sidewalk per HALF percent of cross-slope (double the length of transition when PAR is greater than 6' or when running slope is greater than 5%)
- Transition panels are only used after the ramp, or if needed, landing is at typical section height





# Standard Plans – Curb Ramps

## Sheet 6

**EXPANSION MATERIAL PLACEMENT FOR CONCRETE AND BITUMINOUS ROADWAYS**

**OPTIONAL CURB LINE REINFORCEMENT PLACEMENT ON BITUMINOUS ROADWAYS**

**OPTIONAL SIDEWALK REINFORCEMENT**

**CURB LINE AND ROAD CROSSING ADJUSTMENTS**

**FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS**

**FLOW LINE PROFILE "TABLE" - FAN**

**FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS**

**FLOW LINE PROFILE RAISE - FAN**

**OPTIONAL CURB LINE REINFORCEMENT DETAILS**

**SEPARATE LANDING POUR REINFORCEMENT**

**NOTES:**

- TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE FINISHING SLOPE GREATER THAN 2% SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON THIS SHEET FOR ALL SEPARATELY POURED INITIAL LANDINGS.
- DRILL AND GROUT NO. 4 12" LONG REINFORCEMENT BARS AT 36" MAXIMUM CENTER TO CENTER (EPOXY COATED) BARS TO BE ADJUSTED TO MATCH RAMP GRADE.
- DRILL AND GROUT 2 - NO. 4 X 12" LONG REINFORCEMENT BARS (EPOXY COATED) REINFORCEMENT REQUIRED FOR ALL CONSTRUCTION JOINTS WITHIN RADIUS.
- THIS OPTIONAL CURB LINE REINFORCEMENT DETAIL SHOULD ONLY BE USED ON BITUMINOUS ROADWAYS WHEN SPECIFIED IN THE PLAN.
- 1/2 IN. PREFORMED JOINT FILLER MATERIAL PER MNDOT SPEC. 3702.

**REVISIONS:**

REVISION:	
APPROVED:	NOT APPROVED
	OPERATING DESIGNER

**RAISING OF CURB LINES SHOULD OCCUR IN VERTICALLY CONSTRAINED AREAS. RAISE THE CURB LINES ENOUGH TO ALLOW COMPLIANT RAMPS OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA:**

- 1.0% MIN. AND 5.0% MAXIMUM CROSS-SLOPE OF THE ROAD
- 2.0% MIN. FLOW LINE (ON EITHER SIDE OF PEDESTRIAN RAMP) TO MAINTAIN POSITIVE DRAINAGE
- 5.0% RECOMMENDED MAX. FLOW LINE
- LONGITUDINAL THROUGH LANE ROADWAY TAPERS SHOULD BE 1" VERTICAL PER 15' HORIZONTAL

**REVISIONS:**

REVISION:	
APPROVED:	NOT APPROVED
	STATE DESIGN ENGINEER

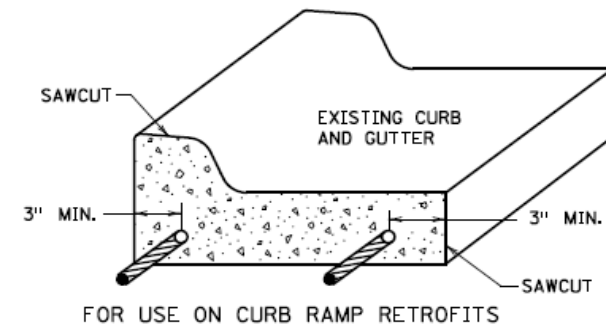
**PEDESTRIAN CURB RAMP DETAILS**

**STANDARD PLAN 5-297.250**

**6 OF 6**

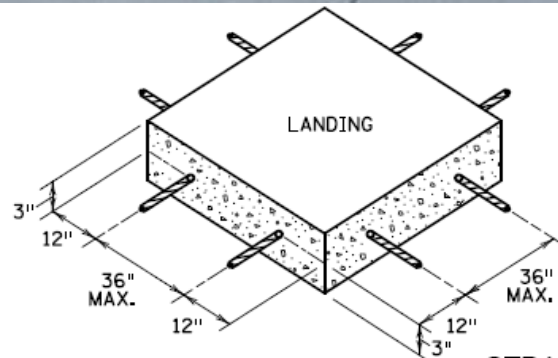
# Standard Plans – Curb Ramps

## Sheet 6

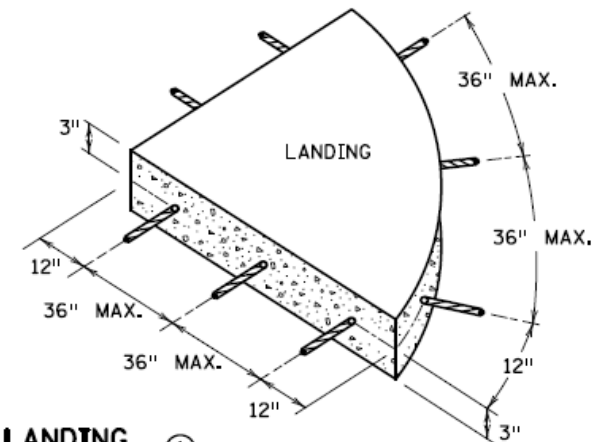


**CURB AND GUTTER REINFORCEMENT** ③

- Drill and grout Reinf. Bars (epoxy coated) paid for as each



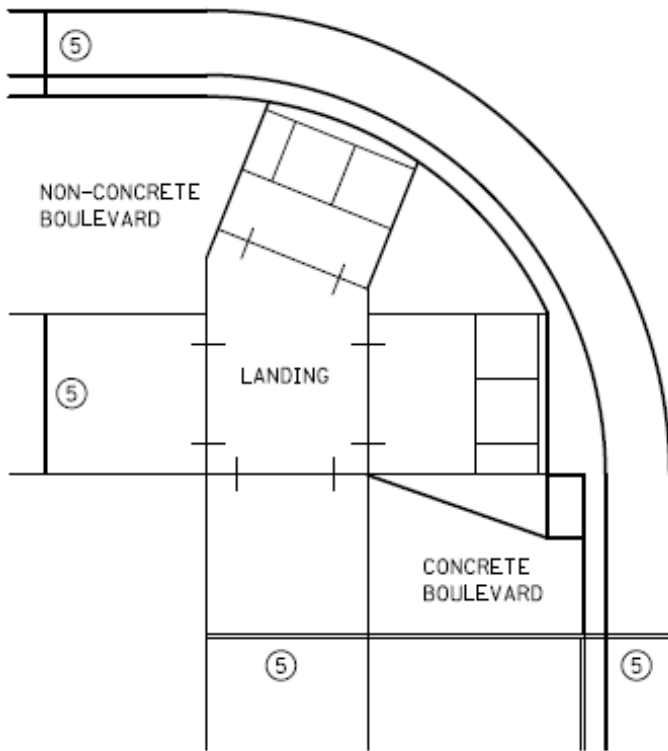
**SEPARATE LANDING POUR REINFORCEMENT** ①



# Standard Plans – Curb Ramps

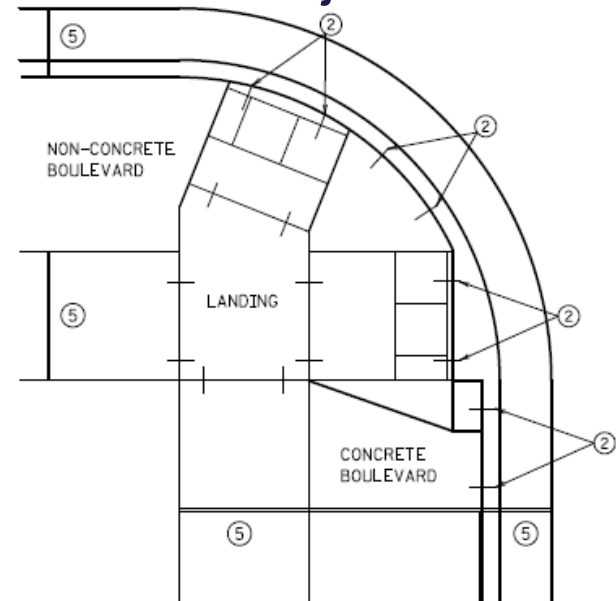
## Sheet 6 (Expansion & Reinf. Detail)

- No expansion material to be used in front of pedestrian ramp

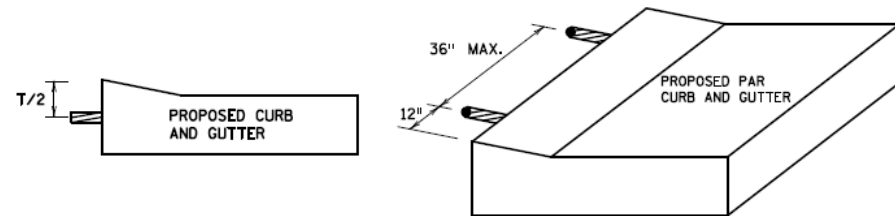


EXPANSION MATERIAL PLACEMENT FOR CONCRETE AND BITUMINOUS ROADWAYS

- Reinf. used in settlement prone areas and with adjacent sill curb



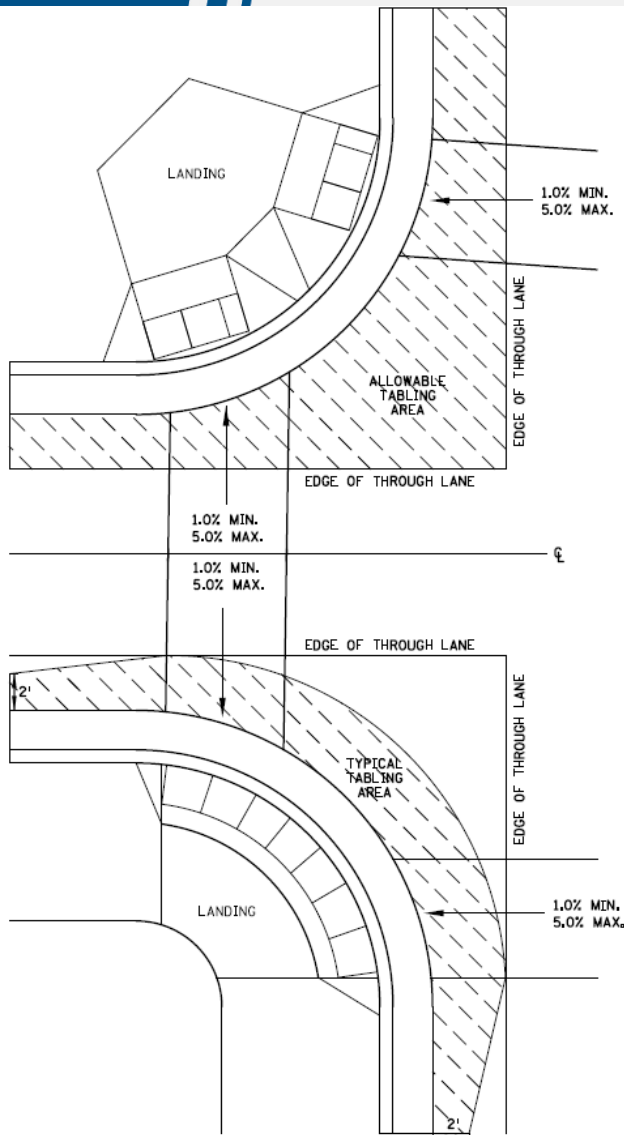
OPTIONAL CURB LINE REINFORCEMENT PLACEMENT ON BITUMINOUS ROADWAYS ④



OPTIONAL CURB LINE REINFORCEMENT DETAILS ②④

# Standard Plans – Curb Ramps

## Sheet 6



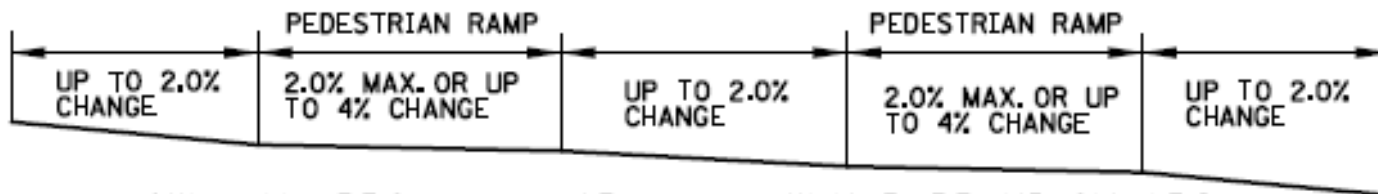
CURB LINE AND ROAD CROSSING ADJUSTMENTS

- When the existing flowline is greater than 2% the flowline must be “tabled.”
- “Tabling” of the pavement should occur in shoulder, parking areas, and turn lanes. Cannot extend into the through lane.
- “Table” the flowline to 2% max or up to a 4% change.
- The roadway cross-slope must be between 1% min or 5% max.

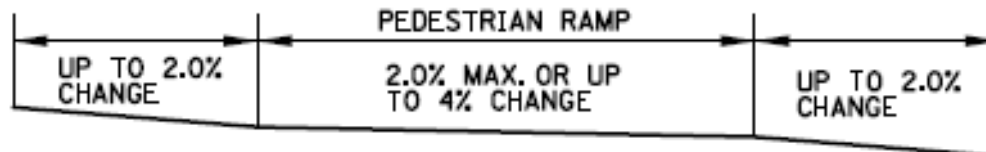


# Standard Plans – Curb Ramps

## Sheet 6 (Tabling)



FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



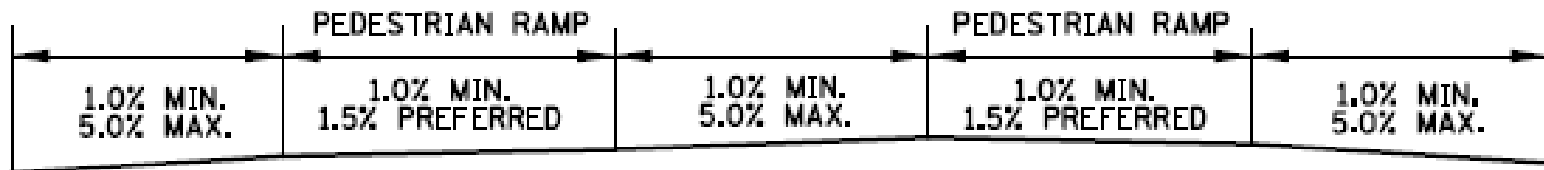
FLOW LINE PROFILE "TABLE" - FAN

# Standard Plans – Curb Ramps

## Sheet 6 (Raise)

RAISING OF CURB LINES SHOULD OCCUR IN VERTICALLY CONSTRAINED AREAS. RAISE THE CURB LINES ENOUGH TO ALLOW COMPLIANT RAMPS OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA;

- 1) 1.0% MIN. AND 5.0% MAXIMUM CROSS-SLOPE OF THE ROAD
- 2) 1.0% MIN. FLOW LINE (ON EITHER SIDE OF PEDESTRIAN RAMP) TO MAINTAIN POSITIVE DRAINAGE
- 3) 5.0% RECOMMENDED MAX. FLOW LINE
- 4) LONGITUDINAL THROUGH LANE ROADWAY TAPERS SHOULD BE 1" VERTICAL PER 15' HORIZONTAL



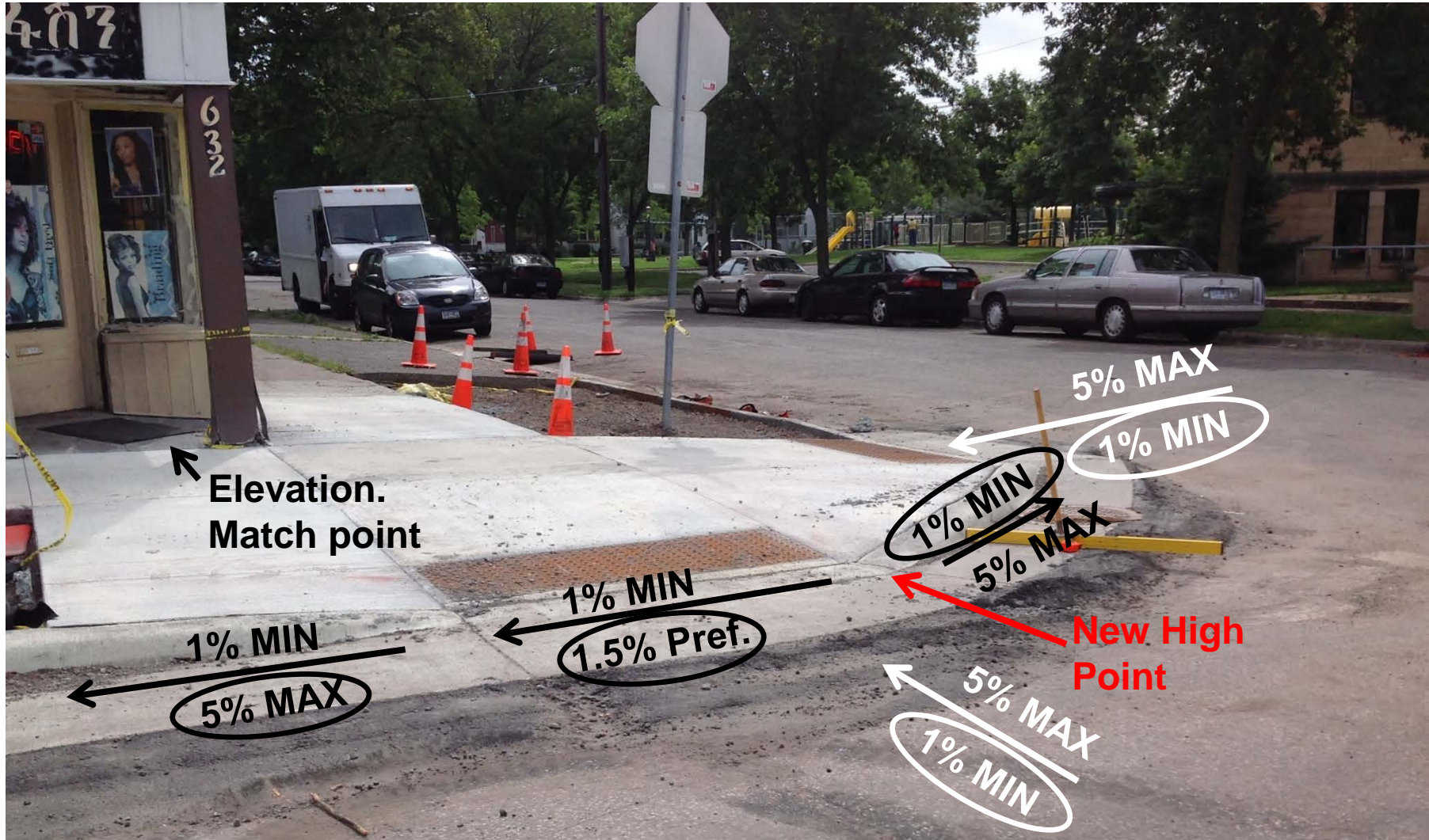
FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS



FLOW LINE PROFILE RAISE - FAN

# Standard Plans – Curb Ramps

## Sheet 6 (Raise)





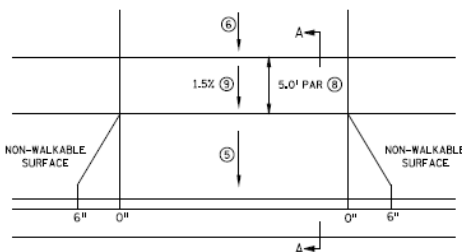
# Standard Plans – Curb Ramps

## Sheet 6 (Raise)

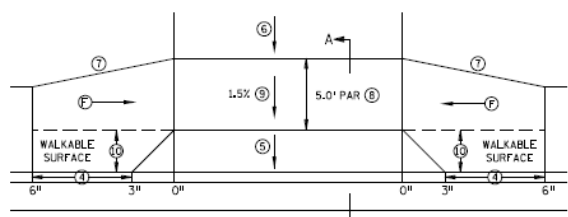




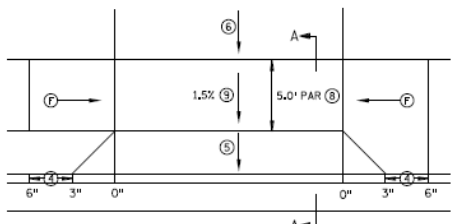
# Standard Plans – Driveway and Sidewalk (Sheet 1)



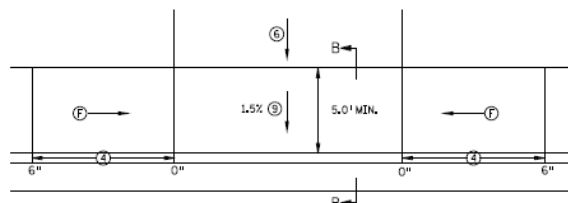
PERPENDICULAR DRIVEWAY ①



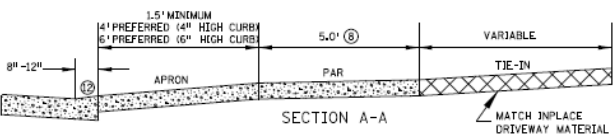
TIERED PERPENDICULAR OFFSET DRIVEWAY



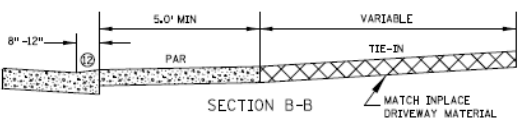
TIERED PERPENDICULAR DRIVEWAY ②



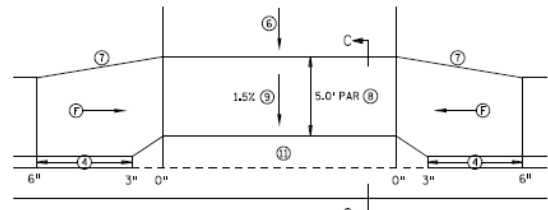
PARALLEL DRIVEWAY ③



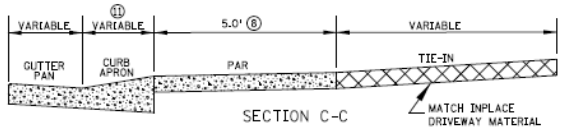
SECTION A-A



SECTION B-B



VALLEY GUTTER DRIVEWAY



SECTION C-C

NOTES:

- IN NO CASE SHALL SIDEWALK PROFILES EXCEED 5.0%, EXCEPT SIDEWALK PROFILES CAN MATCH ROADWAY GRADE IF ROADWAY GRADE IS GREATER THAN 5.0%. RAMP FOR DRIVEWAYS ARE REQUIRED TO FOLLOW THE ABOVE SIDEWALK CRITERIA.
- CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PEDESTRIAN ACCESS ROUTE (PAR). 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOPS OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.
- DRIVEWAY TYPES FROM MOST PREFERRED TO LEAST PREFERRED ARE AS FOLLOWS: PERPENDICULAR, TIERED PERPENDICULAR, TIERED PERPENDICULAR OFFSET & PARALLEL.
- ① TO BE USED WHEN THE DRIVEWAY PAR IS LEVEL WITH OR ABOVE THE TOP OF CURB, RESULTING IN A CONTINUOUS PAR PROFILE.
- ② TO BE USED WHEN THE DRIVEWAY PAR IS BELOW THE ROADWAY CURB HEIGHT. THIS DRIVEWAY TYPE CAN BE USED FOR BOTH PAVED (AS SHOWN) AND GRASS BOULEVARDS.
- ③ SHOULD BE USED FOR NEGATIVE SLOPED DRIVEWAYS. DW CURB TYPE 2 CURB SHOULD BE USED TO RAISE PAR ABOVE GUTTER AND REDUCE "ROLLER COASTER" EFFECT. 4" HIGH ROADWAY CURB SHOULD BE USED TO REDUCE "ROLLER COASTER" EFFECT ESPECIALLY WHEN MULTIPLE DRIVEWAYS ARE PRESENT.
- ④ TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.
- ⑤ 8% MAX. PREFERRED, 10% MAX. FOR COMMERCIAL AND 12% MAX. FOR RESIDENTIAL SEE GENERAL NOTES ON SHEET 2 FOR MORE INFORMATION.
- ⑥ 8% MAX. PREFERRED, SEE SHEET 2 FOR MORE INFORMATION.
- ⑦ 1.3 MIN. IS PREFERRED FOR DRIVEWAY RETROFIT PROJECTS. 1:10 PREFERRED FOR SIDEWALK REPLACEMENT PROJECTS.
- ⑧ 5.0' MIN. PAR WIDTH IS THE STANDARD THROUGH DRIVEWAYS. IF FEASIBLE WIDEN DRIVEWAY PAR WIDTH TO MATCH APPROACHING SIDEWALK PAR WIDTHS. IN VERTICALLY CONSTRAINED AREAS PAR WIDTHS CAN INCREMENTALLY BE REDUCED TO 4.5' OR 4' MIN AFTER ALL OTHER OPTIONS HAVE BEEN APPLIED.
- ⑨ THE PEDESTRIAN ACCESS ROUTE, MAY NOT EXCEED 0.02 FT./FT. AS CONSTRUCTED.
- ⑩ SIDEWALK OFFSET TO BE LESS THAN OR EQUAL TO HALF THE APPROACHING SIDEWALK WIDTH.
- ⑪ VALLEY GUTTER APRON TO BE POURED INTEGRAL WITH THE CURB AND GUTTER. SEE SHEET 2 FOR MORE INFORMATION.
- ⑫ SEE SHEET 2 FOR CURB TYPE INFORMATION.

LEGEND	
Ⓢ	INDICATES DRIVEWAY 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%
X"	CURB HEIGHT (INCHES)

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	APPROVED: NOT APPROVED
STATE DESIGN ENGINEER	

DRIVEWAY AND SIDEWALK DETAILS	
STANDARD PLAN 5-297.254	1 OF 4



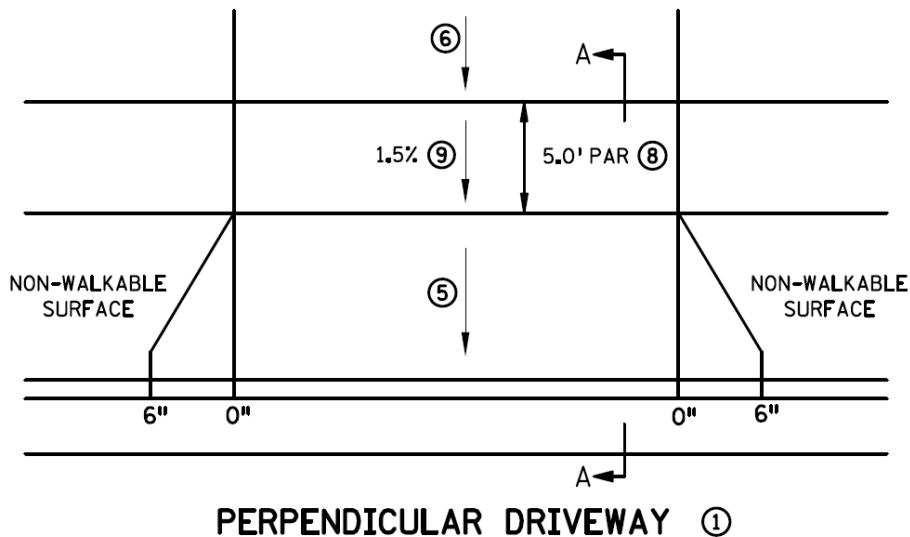
# Standard Plans – Driveway and Sidewalk (Sheet 1)

## General Driveway Notes:

- Apron slope: 8% max. preferred, 10% max. commercial and 12% max. residential
- 5' min. PAR, 4' min. can be used in vertically constrained areas after all other options have been applied
- 1.5% cross-slope of PAR, 2.0% max.
- 8% max. tie-in slope
- 5% max. sidewalk profile, unless road is greater than 5%

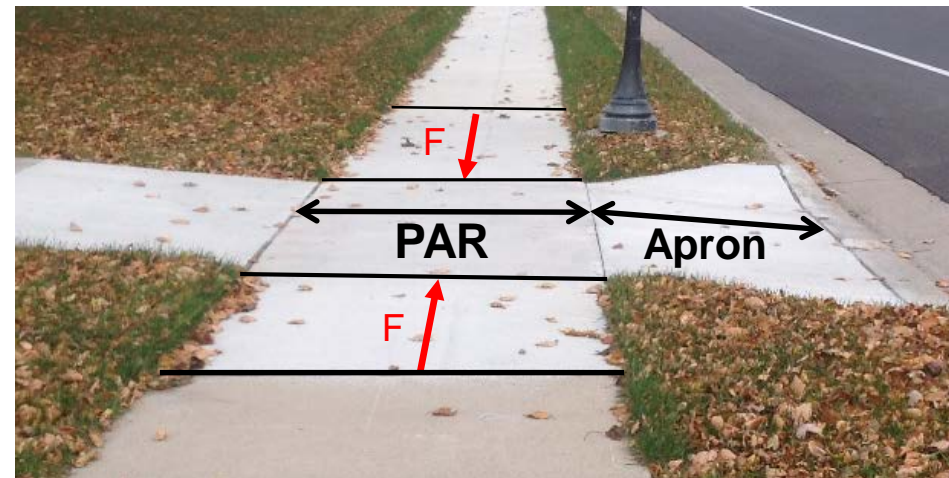
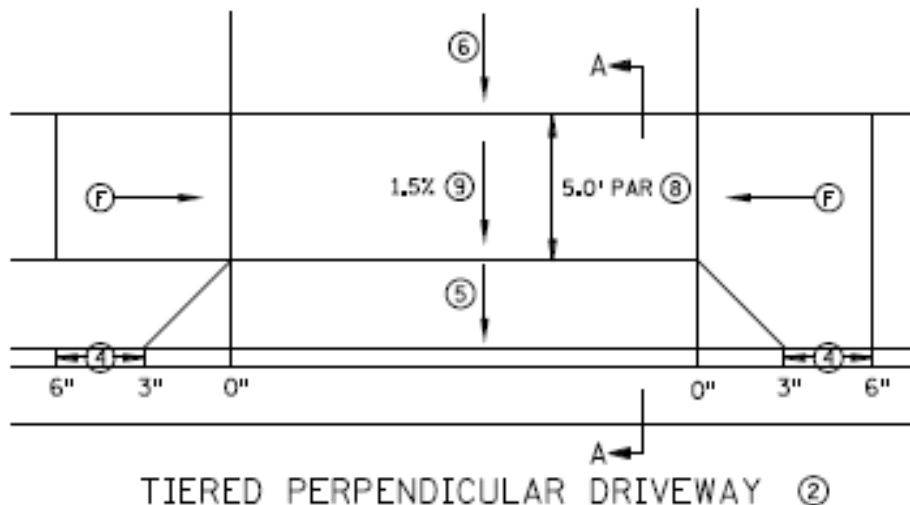
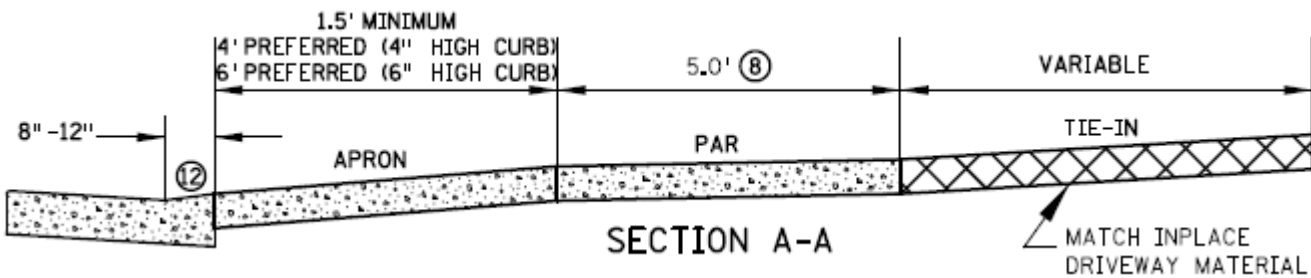
# Standard Plans – Driveway and Sidewalk (Sheet 1)

- Perpendicular driveway to be used when the driveway PAR is level with or above the top of curb, resulting in a continuous PAR profile



# Standard Plans – Driveway and Sidewalk (Sheet 1)

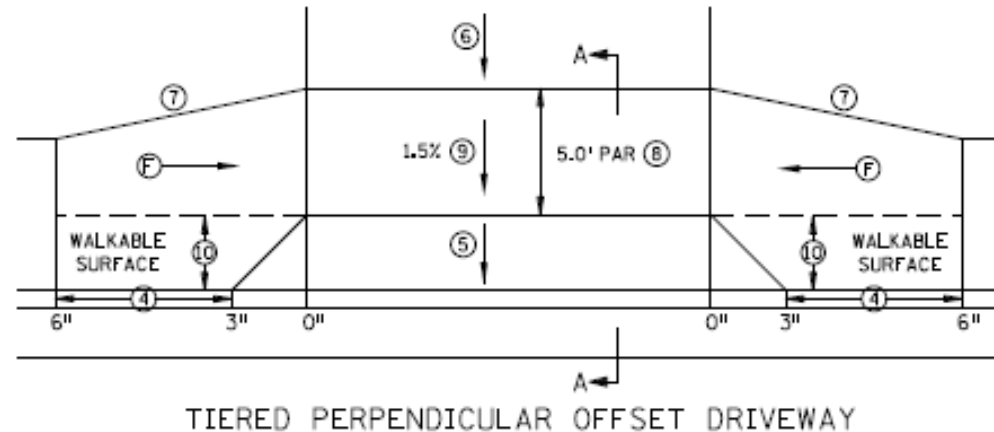
- Tiered perpendicular Driveways are to be used when the driveway PAR is below the roadway curb height.





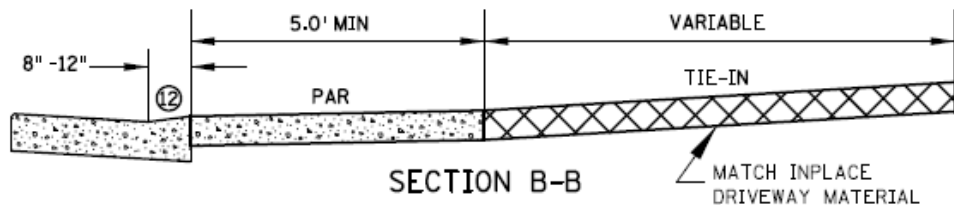
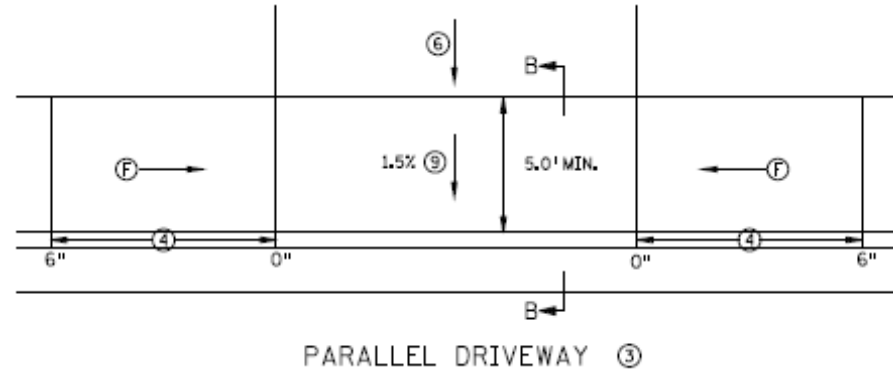
# Standard Plans – Driveway and Sidewalk (Sheet 1)

- Need ROW behind the back of walk.
- Sidewalk offset taper 1:3 min, 1:5 preferred, 1:10 for full Sidewalk Reconstruction projects
- Sidewalk offset to be less than or equal to half the approaching sidewalk width

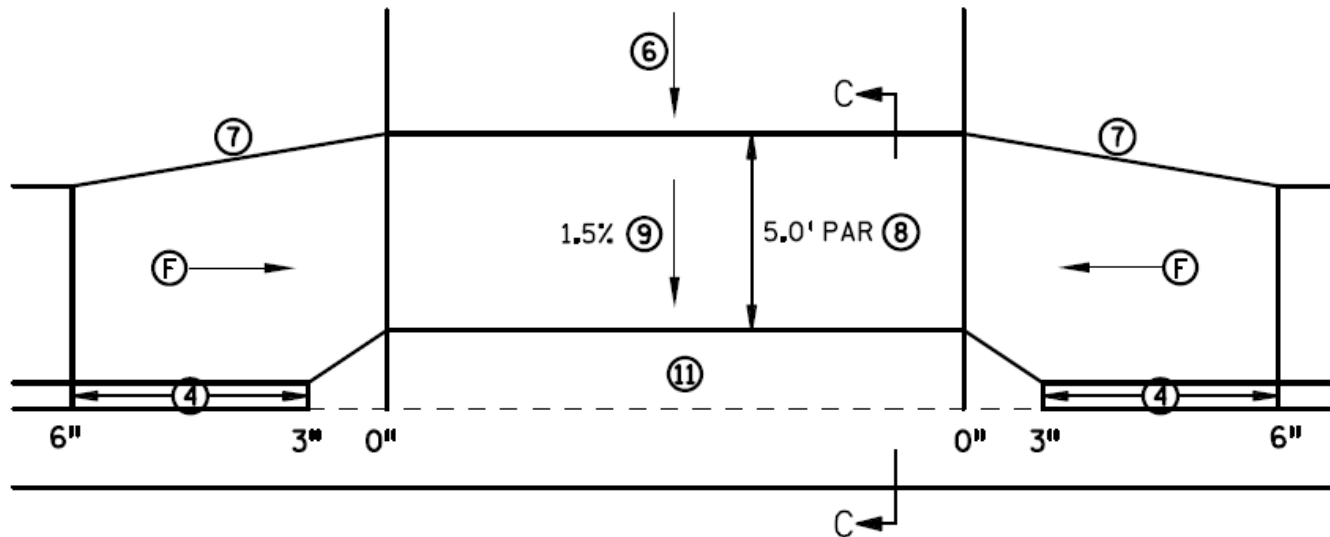


# Standard Plans – Driveway and Sidewalk (Sheet 1)

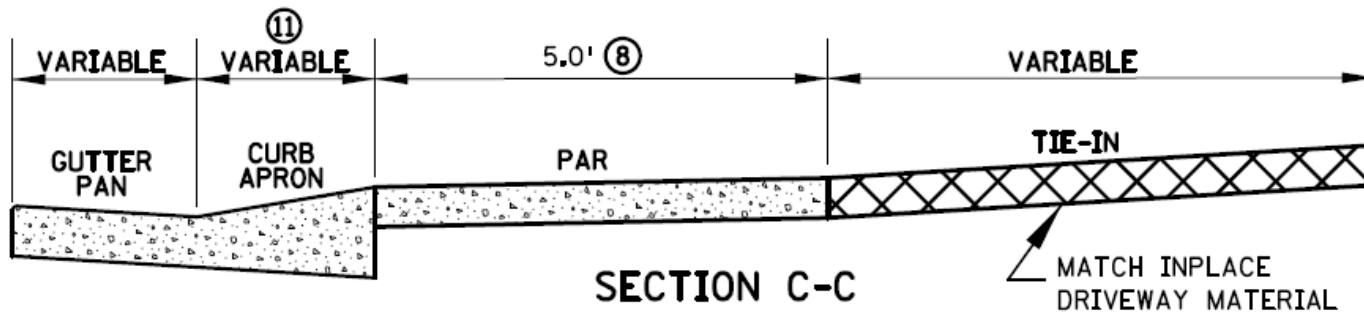
- Parallel driveways should be used for negative sloped driveways.
- 2" driveway curb should be used to help raise the PAR above the gutter and to reduce the "roller coaster" effect.
- Least preferred driveway type



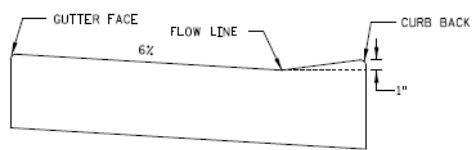
# Standard Plans – Driveway and Sidewalk (Sheet 1)



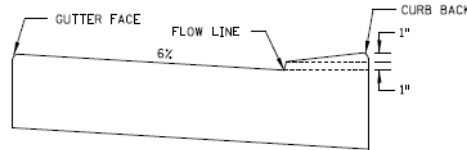
VALLEY GUTTER DRIVEWAY



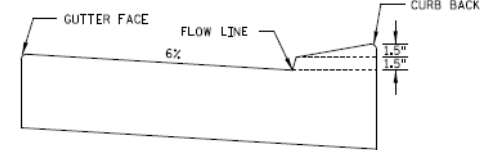
# Standard Plans – Driveway and Sidewalk (Sheet 2)



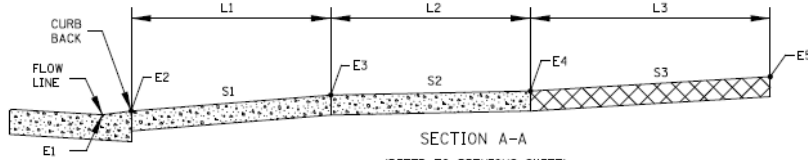
DW CURB STANDARD  
STANDARD CURB AT DRIVEWAY



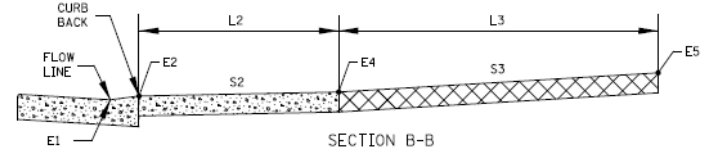
DW CURB TYPE 2  
VERTICALLY CONSTRAINED



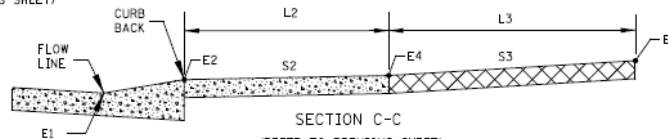
DW CURB TYPE 3  
VERTICALLY CONSTRAINED



SECTION A-A  
(REFER TO PREVIOUS SHEET)



SECTION B-B  
(REFER TO PREVIOUS SHEET)

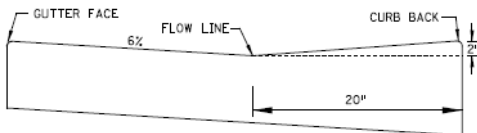


SECTION C-C  
(REFER TO PREVIOUS SHEET)

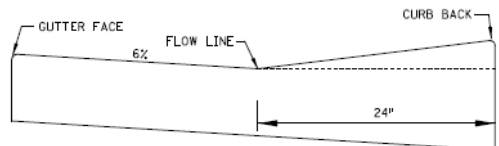
DRIVEWAY TABULATION ①																
STATION	SIDE	DRIVEWAY TYPE	CURB TYPE ②	E1	E2	L1	S1	E3	L2	S2 ②	E4	L3	S3	EXISTING %	E5	COMMENTS
						FT	%		FT	%		FT	%			

NOTES:

- DW CURB STANDARD SHALL BE USED WHEN THE DRIVEWAY ACTS AS A PEDESTRIAN RAMP; THE MAX. APRON SLOPE MUST ADHERE TO ADA CRITERIA AS WELL. DW CURB STANDARD SHOULD BE USED IF THERE IS ON STREET PARKING.
- WHERE ROADWAY DRAINAGE IS A CONCERN (NEGATIVE SLOPED APRON) DW CURB TYPE 2 CAN BE USED TO HELP KEEP THE WATER ON PUBLIC RIGHT OF WAY.
- S1 8% MAX PREFERRED, 10% MAX. COMMERCIAL AND 12% MAX. RESIDENTIAL. IF EXISTING GRADES ARE STEEPER DO NOT MAKE GRADES APPRECIABLY WORSE BY USING BEST PRACTICES SUCH AS DRIVEWAY CURB HEIGHTS, EXTENDING L3 AND/OR STEEPEN S3.
- DW CURB TYPE 3 SHALL ONLY BE USED IN EXTREME TIE-IN CASES.
- S3 8% MAX PREFERRED, IF THIS SLOPE IS EXCEEDED OR IS CONTINUED FOR MORE THAN 5' ANALYZE THE NEED FOR VERTICAL CURVE(S). SEE ROAD DESIGN MANUAL, CHAPTER 5, FOR GEOMETRIC DESIGNS OF DRIVEWAYS.
- ① EXAMPLE SHOWN TO BE INCLUDED IN PLAN FOR EACH DRIVEWAY.
- ② SHOULD BE DESIGNED AT 1.5%.
- ③ DW CURB STANDARD SHALL BE THE STARTING POINT FOR ALL PERPENDICULAR AND TIERED DRIVEWAYS. DW CURB TYPES 2 AND 3 SHALL ONLY BE USED AFTER UTILIZING BEST PRACTICES SUCH AS MAXIMIZING S1, S3, AND L3.



VG 220



VG 324

VALLEY GUTTER CURB  
OTHER CURB HEIGHTS & CURB APRON LENGTHS CAN BE USED

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OPERATIONS ENGINEER



REVISION:  
APPROVED: NOT APPROVED  
STATE DESIGN ENGINEER

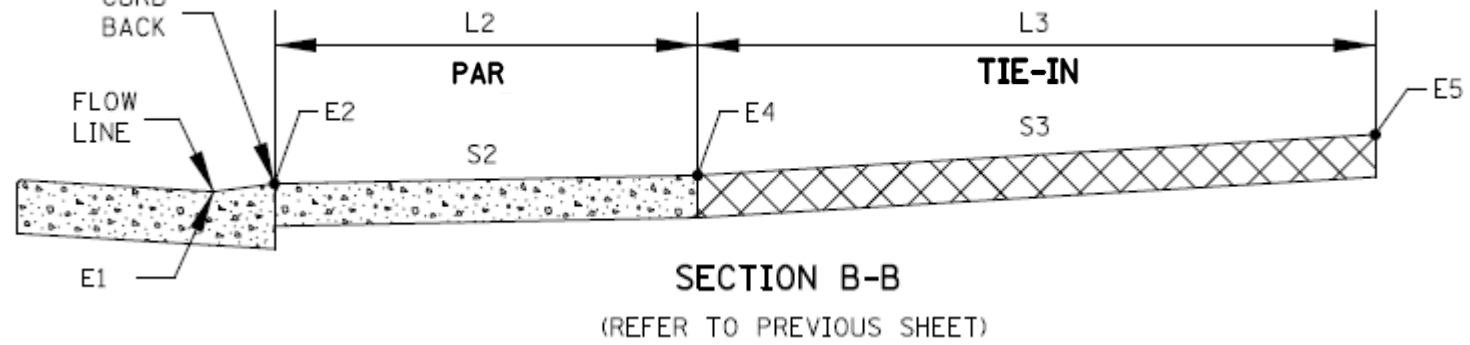
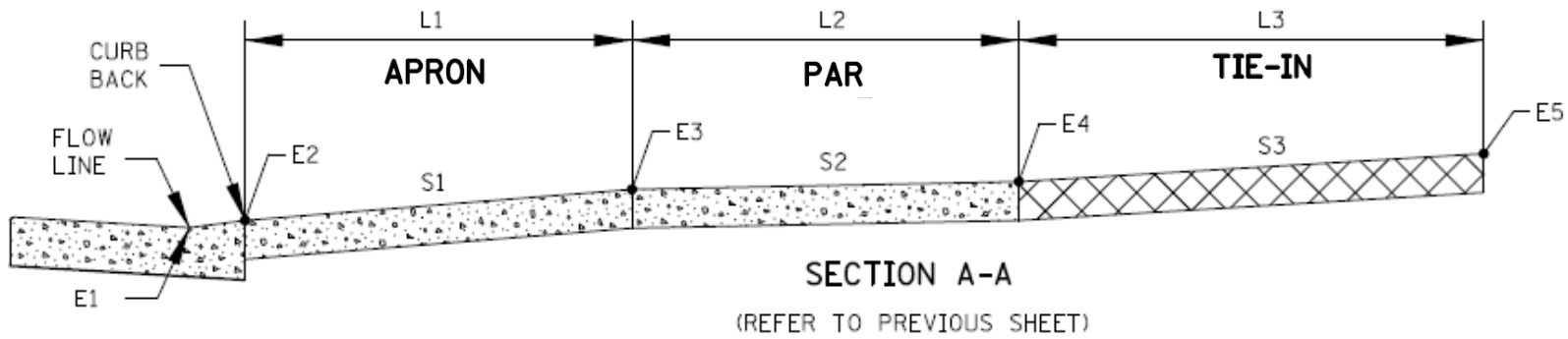
DRIVEWAY AND SIDEWALK DETAILS  
STANDARD PLAN 5-297.254 | 2 OF 4



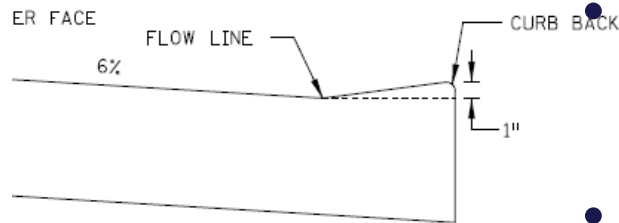
# Standard Plans – Driveway and Sidewalk (Sheet 2)

- The driveway tabulation (table) must be included in the plan set as a supplemental sheet. Only driveways with PAR are needed to be shown in the table.

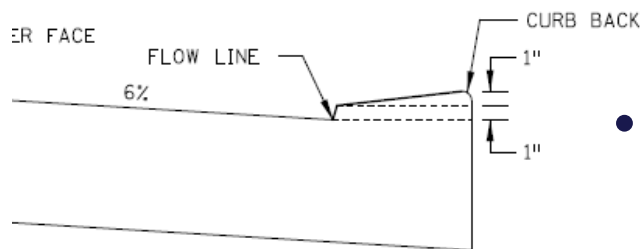
DRIVEWAY TABULATION ①																
STATION	SIDE	DRIVEWAY TYPE	CURB TYPE ③	E1	E2	L1	S1	E3	L2	S2 ②	E4	L3	S3	EXISTING	E5	COMMENTS
						FT	%		FT	%		%				



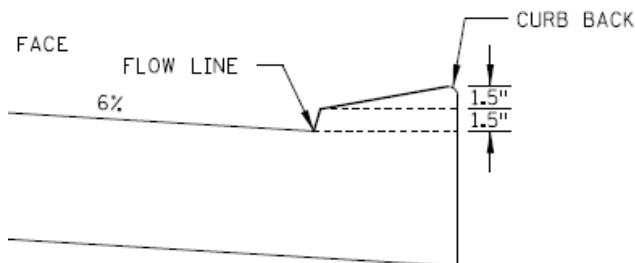
# Standard Plans – Driveway and Sidewalk (Sheet 2)



DW CURB STANDARD  
STANDARD CURB AT DRIVEWAY



DW CURB TYPE 2  
VERTICALLY CONSTRAINED



DW CURB TYPE 3  
VERTICALLY CONSTRAINED

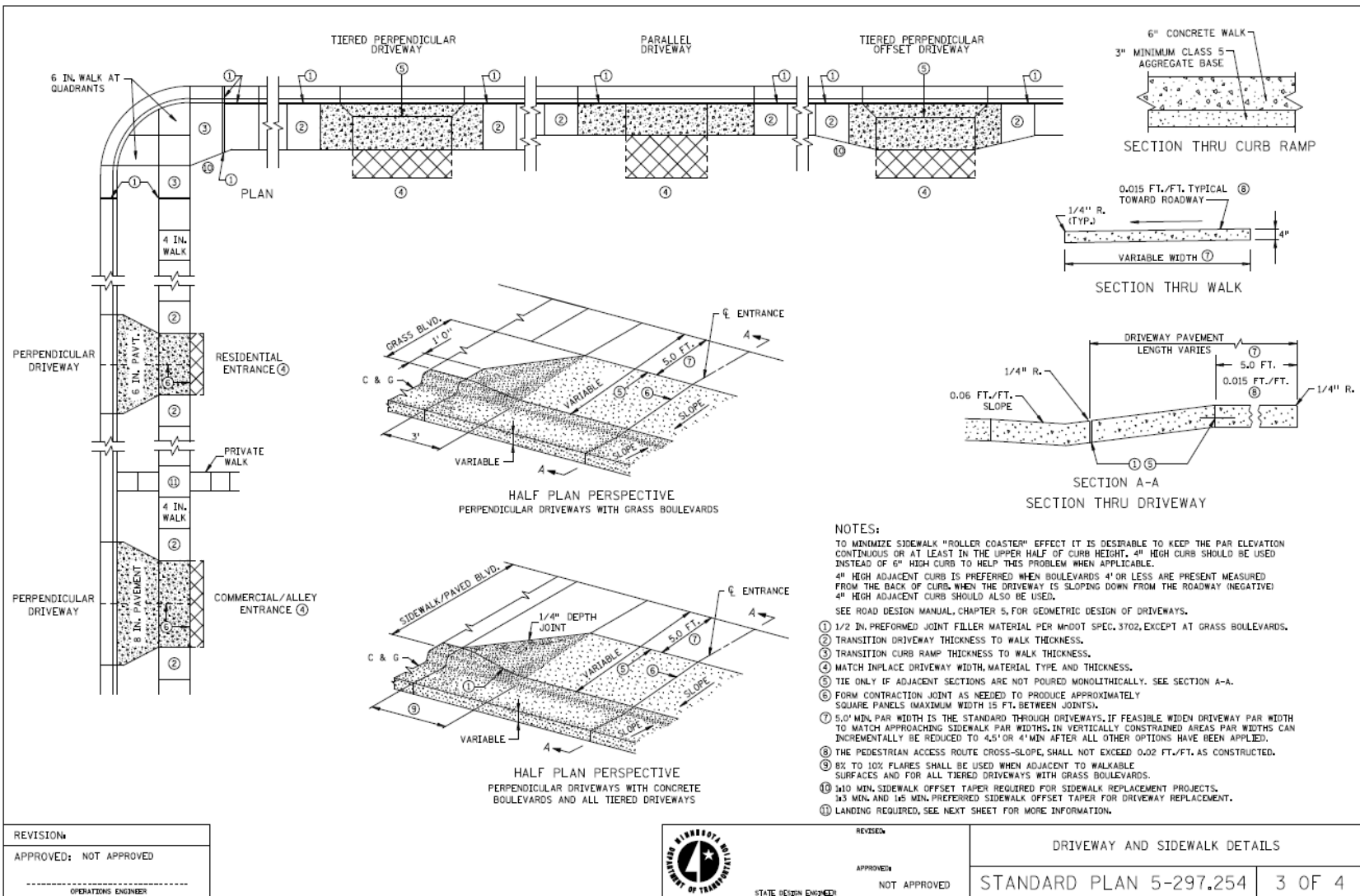
- Standard curb should be used when the Driveway Acts like a curb ramp or when there is on-street parking

- Type 2 curb should be used in negative sloped driveways if needed to maintain drainage or on parallel ramps to reduce “roller coaster” effect, not to be used in parking areas

- Type 3 curb should only be used in extreme tie-in cases (garage doors)

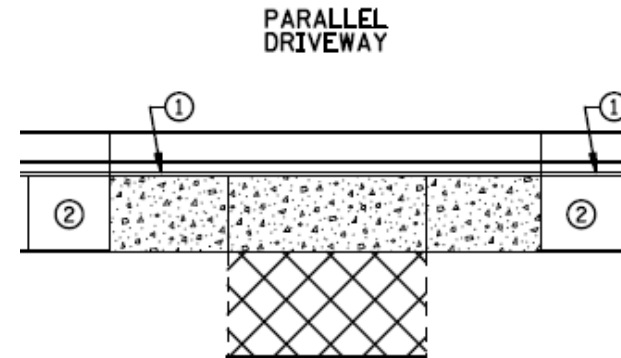
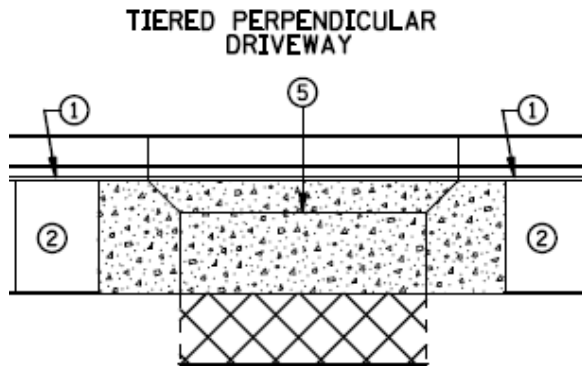
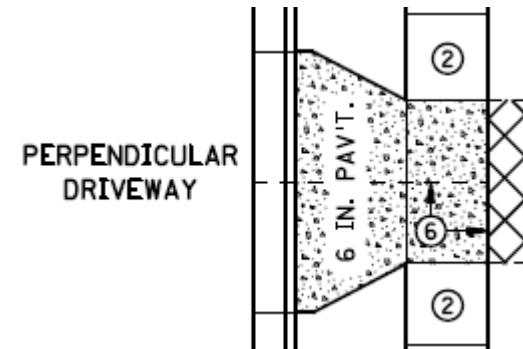


# Standard Plans – Driveway and Sidewalk (Sheet 3)



# Standard Plans – Driveway and Sidewalk (Sheet 3)

- Note (2) – Transition driveway to walk thickness. To occur when the PAR reaches the typical section height.







**RETURN CURBS ARE  
BARRIERS/TRIP HAZARDS  
IN WALKABLE AREAS**

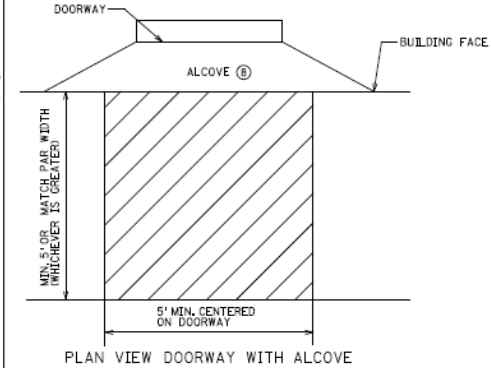
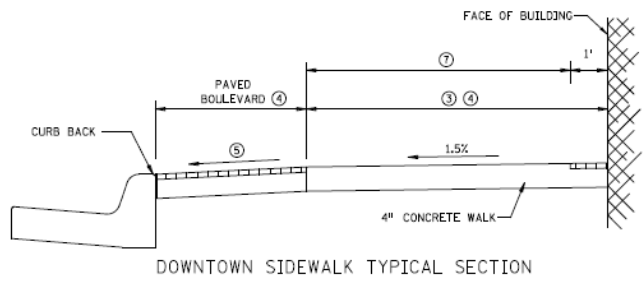
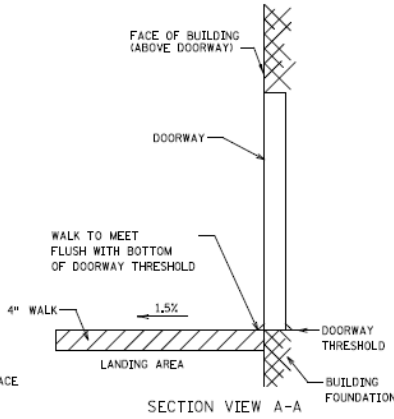
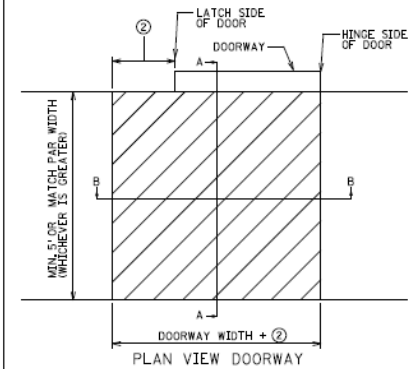
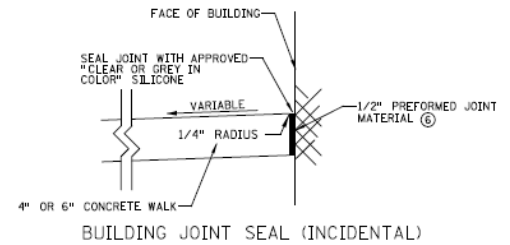
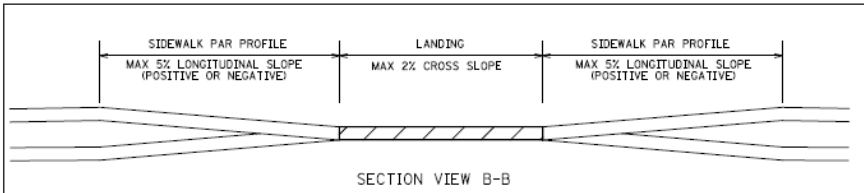






Driveway with return curb trip hazard and encroachments (sidewalk seating areas, private signing, sidewalk sales, etc.)

# Standard Plans – Driveway and Sidewalk (Sheet 4)



SIDEWALK LANDING REQUIREMENTS ①

- NOTES:
- FIELD ADJUST SIDEWALK PROFILES TO MEET ALL DOORWAY THRESHOLDS. SIDEWALK MUST MAINTAIN POSITIVE DRAINAGE AWAY FROM THE BUILDING TO THE ROADWAY. SEE SPECIAL PROVISIONS FOR SILICONE SPECIFICATIONS.
- LANDING CRITERIA IS REQUIRED FOR ALL DOORS, PRIVATE WALKS AND STEPS.
  - 18" MIN. WHEN DOOR SWINGS OUTWARD FROM BUILDING, 12" MIN. WHEN DOOR SWINGS INWARD FROM BUILDING.
  - 6" MIN. PAR REQUIRED WHEN ADJACENT TO BUILDINGS.
  - 2/3 PAR TO 1/3 BOULEVARD SHOULD BE USED WHEN FEASIBLE.
  - 1X-5X FOR THE MAJORITY OF THE BLOCK, WITH EXCEPTIONS UP TO 8X IN CONSTRAINED AREAS, 10X MAX. FOR SHORT SECTIONS ALLOWED TO ACCOUNT FOR FIELD TOLERANCES.
  - FURNISH AND INSTALL BACKER ROD OF APPROPRIATE DIAMETER.
  - TO MINIMIZE VIBRATION AND ROLLING RESISTANCE, AREA SHOULD BE FREE OF PAVERS, STAMPED CONCRETE, AND/OR EXCESSIVE JOINTING.
  - 2% MAX. PER BUILDING CODE, IF GREATER THAN 2%, FLATTEN AS FEASIBLE.

LEGEND	
	LANDING - ALL SLOPES TO BE LESS THAN 2%
	OPTIONAL AESTHETIC TREATMENT

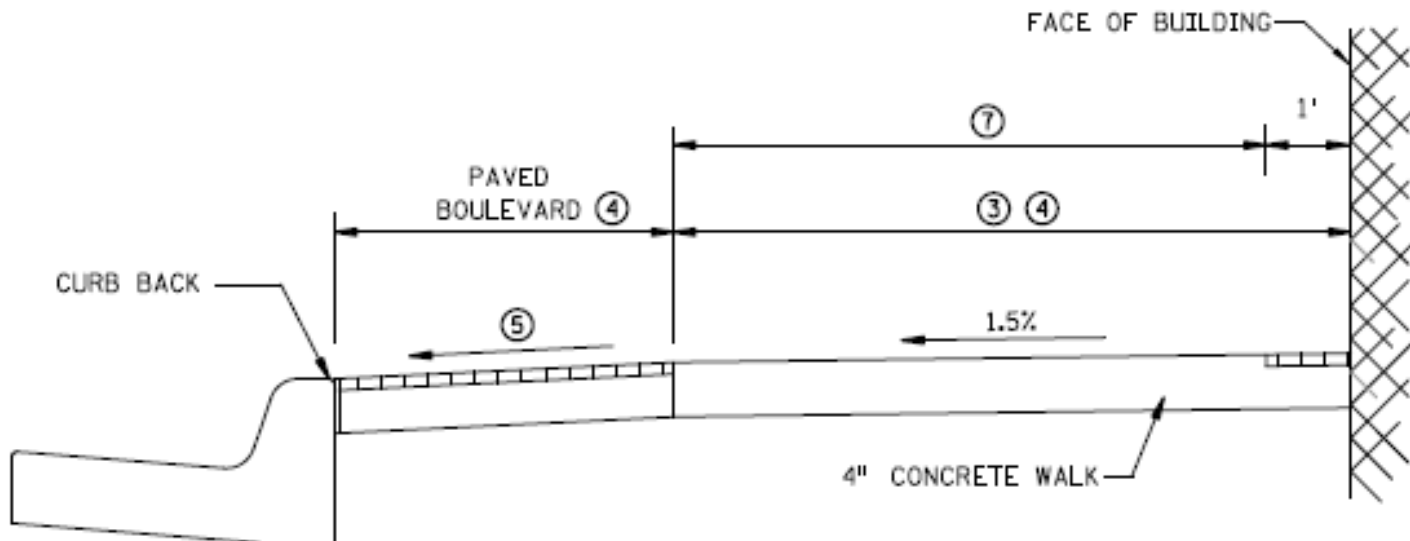
REVISION:
APPROVED: NOT APPROVED
----- OPERATIONS ENGINEER

	REVISION:
	APPROVED: NOT APPROVED
STATE DESIGN ENGINEER	

DRIVEWAY AND SIDEWALK DETAILS	
STANDARD PLAN 5-297,254	4 OF 4

# Standard Plans – Driveway and Sidewalk (Sheet 4)

- Sidewalk must maintain positive drainage away from building to the roadway
- 6' min. PAR when sidewalk is adjacent to building
- To minimize vibration and rolling resistance, the PAR **should** be free of brick pavers, stamped concrete or excessive jointing
- Sidewalk max profile is 5% or match roadway grade if steeper

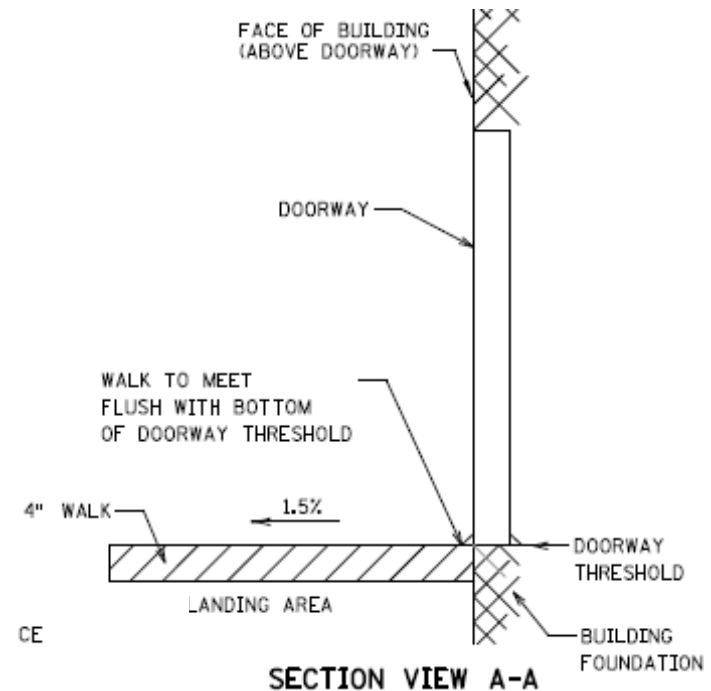
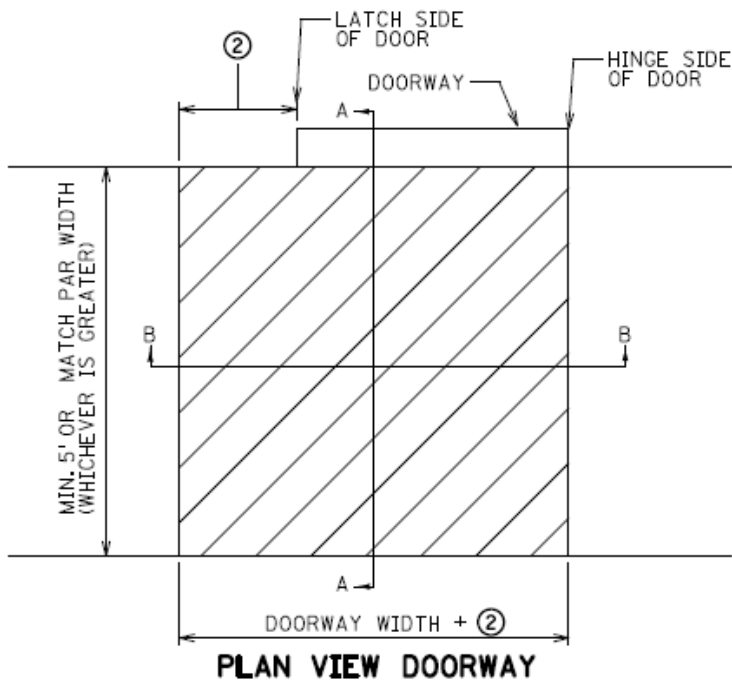


DOWNTOWN SIDEWALK TYPICAL SECTION



# Standard Plans – Driveway and Sidewalk (Sheet 4)

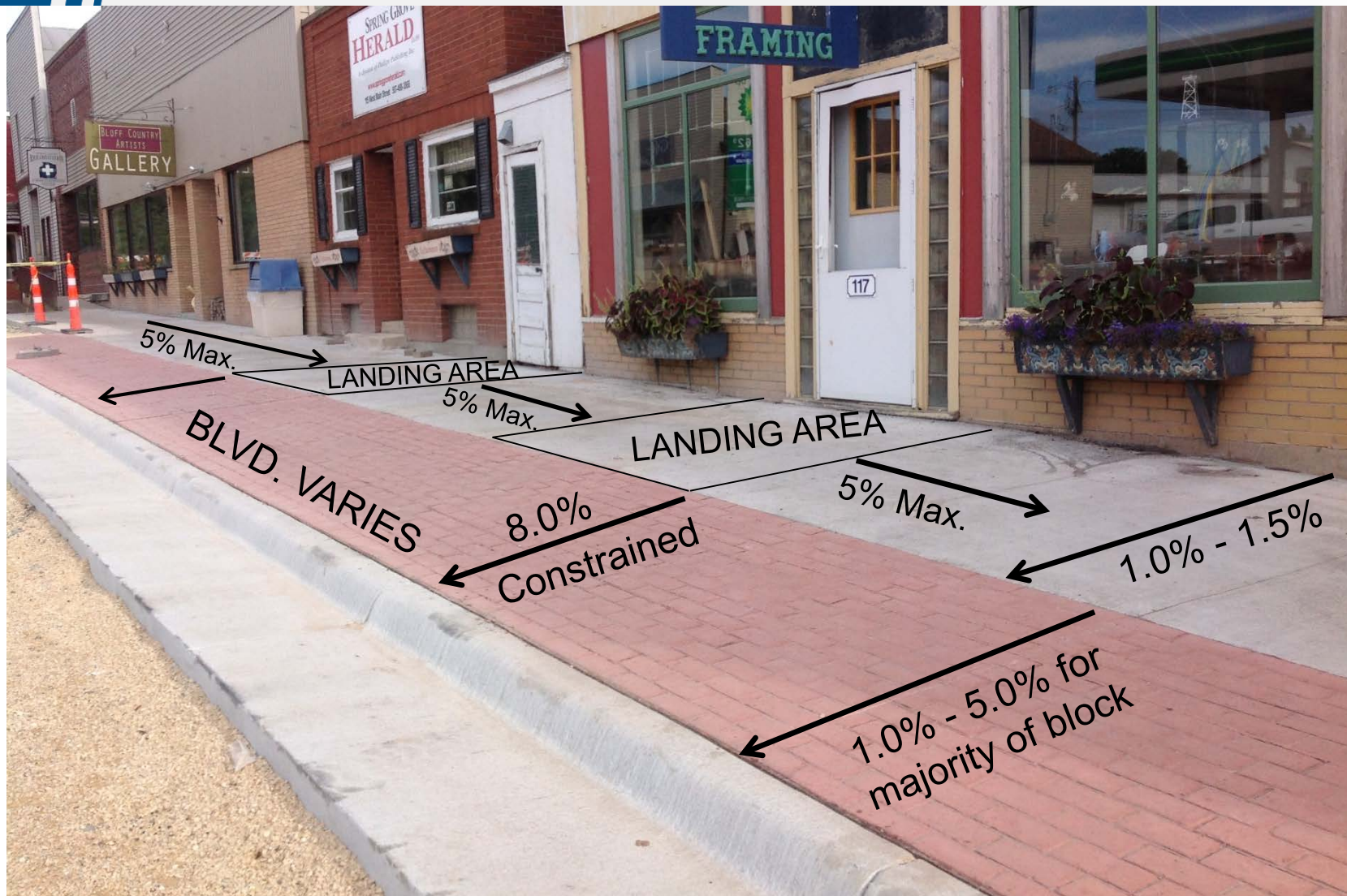
- Landings at doorways and steps are required under ADA Standards and Building Code. ADA requires landings at private walks
- For additional landing requirements at doorways see Section 404.2 of 2010 ADA Standards



① LANDING CRITERIA IS REQUIRED FOR ALL DOORS, PRIVATE WALKS AND STEPS.

② 18" MIN. WHEN DOOR SWINGS OUTWARD FROM BUILDING.  
12" MIN WHEN DOOR SWINGS INWARD FROM BUILDING.

# Standard Plans – Driveway and Sidewalk (Sheet 4)



# Standard Plans – Driveway and Sidewalk (Sheet 4)



Bricks, cobblestones and other textured pavement create:

- Increased rolling resistance
- Tripping hazards
- Painful vibrations to people with spinal cord injuries in wheelchairs
- Potential maintenance issues

- Pavers, stamped concrete, excessive/large jointing should be located outside the PAR
- Landscape concepts should be reviewed for accessibility impacts prior to public involvement



# Standard Plans – Driveway and Sidewalk (Sheet 4)





# Questions?

