

Intro



ADA Operations Contact Info

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

Your Destination...Our Priority





MnDOT ADA Training

Curb Ramp Construction 2016

Module II

Your Destination...Our Priority



ADA Curb and Gutter

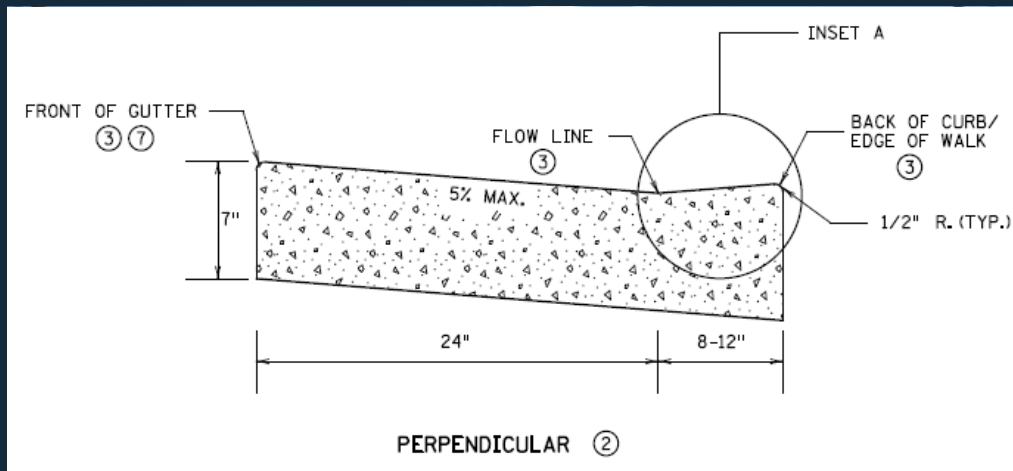
Do not overlay PAR curb and gutter.

New gutter face/flow line must match new road surface, see Standard Plans sheet 3 note (7)



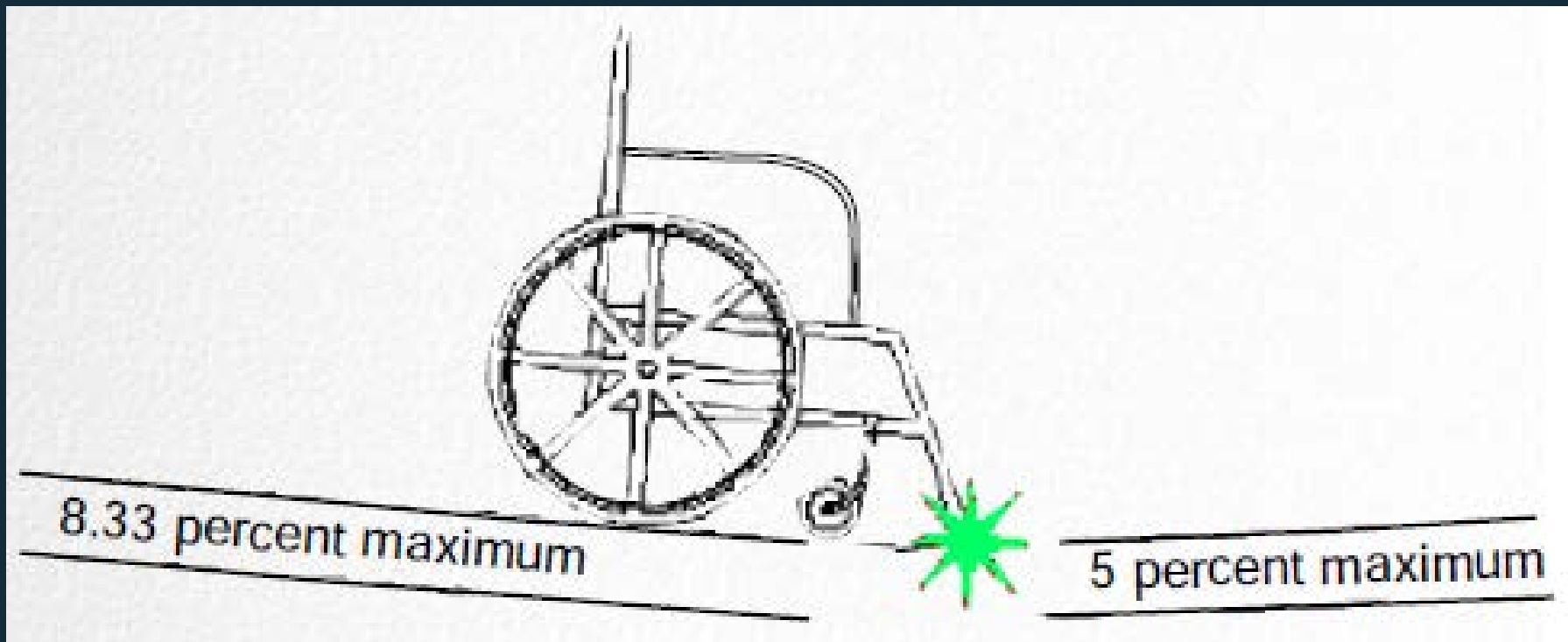
ADA Curb and Gutter

Perpendicular, tiered, parallel and diagonal ramps require 5% maximum gutter slope



ADA Curb and Gutter

- 13% is the maximum rollover allowed.



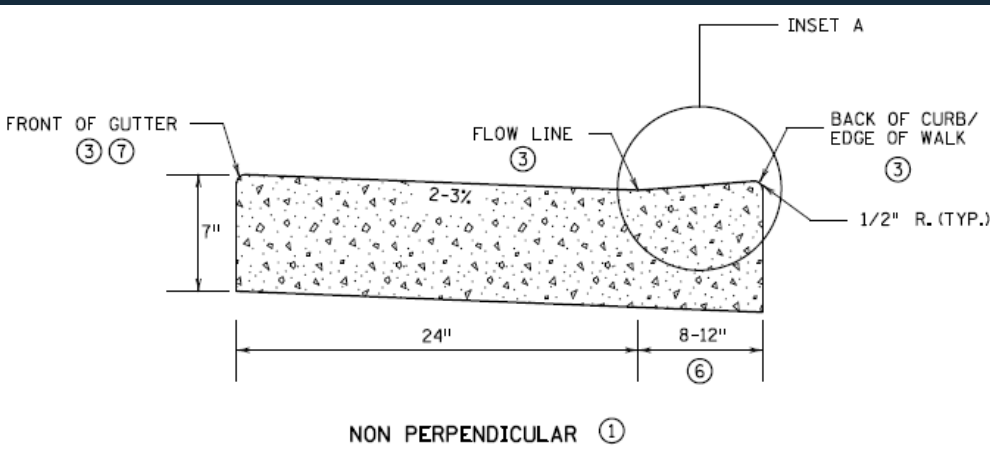
Concrete Curb & Gutter

If the curb and gutter is slip formed the transitions should occur within 5'-10' of curb openings. The same as when transitioning from existing curb sections. (Spec 2531)



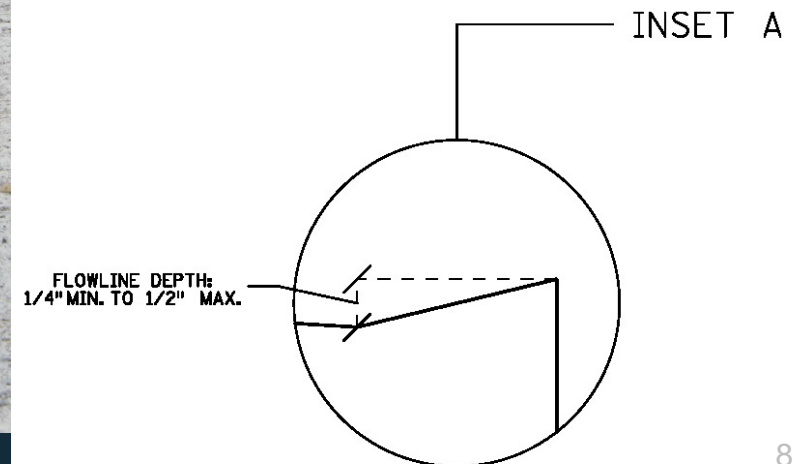
ADA Curb and Gutter

Fans, depressed corners, one way and combined directional ramps require 2%-3% maximum gutter slope.



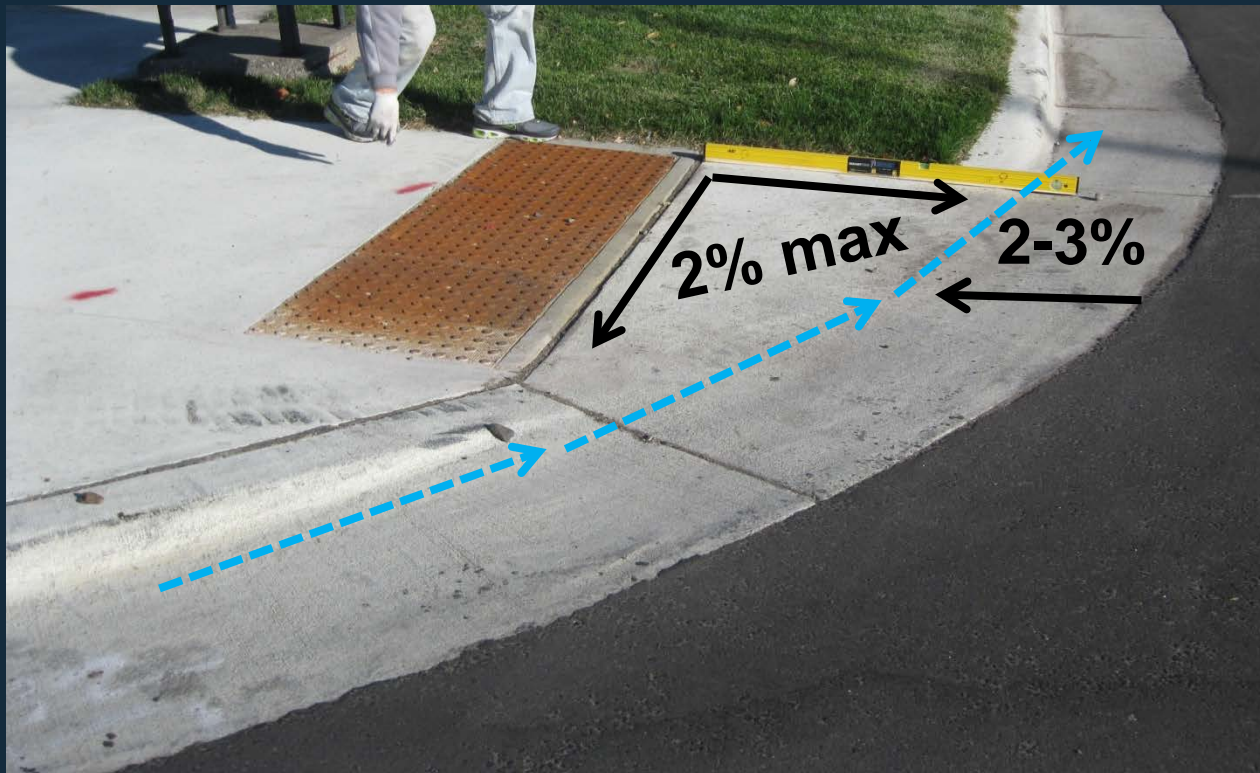
ADA Curb and Gutter

- Flow line Depth $\frac{1}{4}$ " to $\frac{1}{2}$ "



ADA Curb and Gutter

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



ADA Curb and Gutter

- When constructing directional ramps, maintain positive flow.



ADA Curb and Gutter



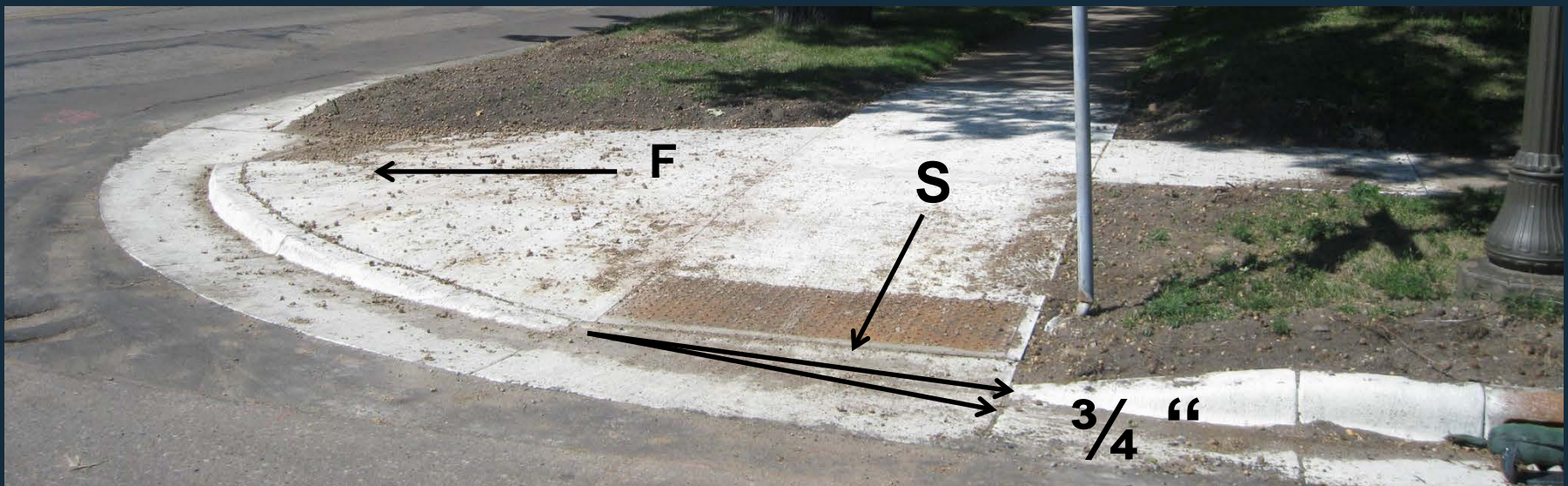
- Spec. 2531 Concrete Curb and Gutter ADA : if gutter flow line exceeds 2% The flow line should be adjusted to allow a flatter slope, but still provide positive drainage



Curb ramp Construction



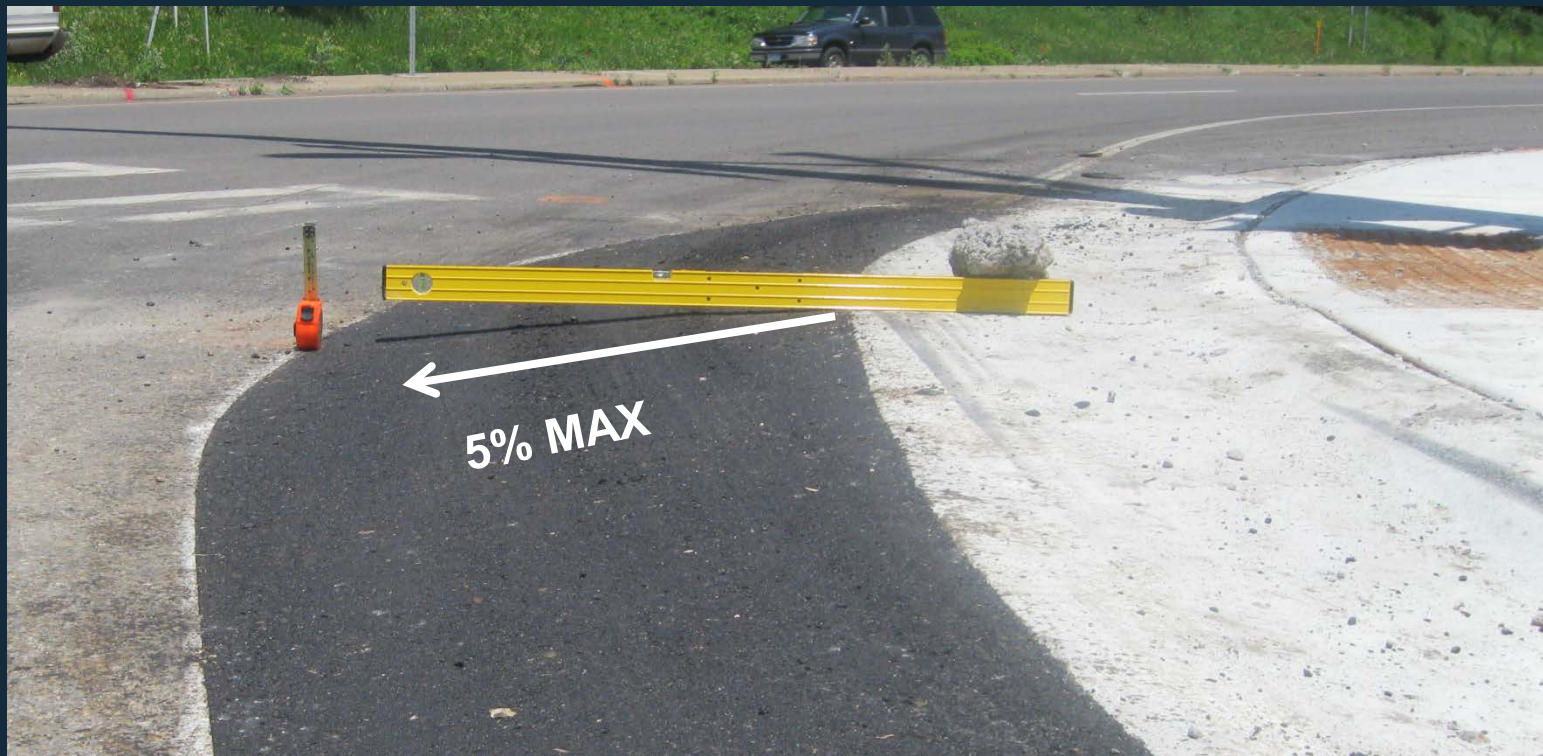
- Adjustments in the curb flow line to achieve 2% max. cross slope without changing drainage patterns.
- Example: 6' wide ramp at 3% / corrected to 2% would be $\frac{3}{4}$ " adjustment.



ADA Curb and Gutter

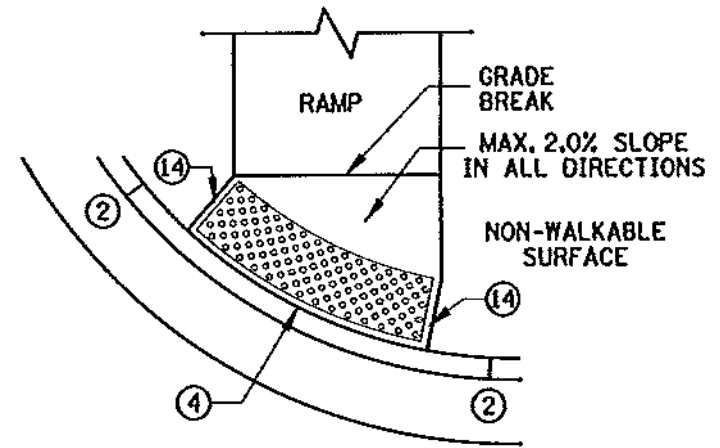
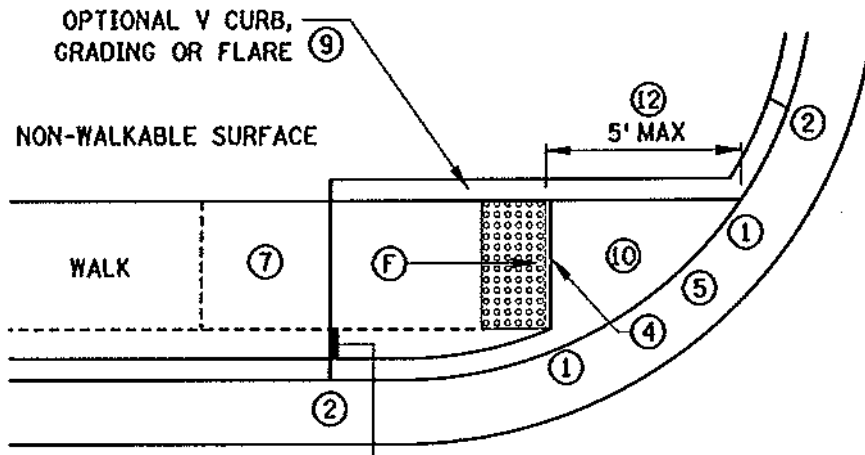


- Spec. 2531 Concrete Curb and Gutter ADA : the Contractor must consult with the engineer before modifying any flow line that will result in the cross slope of the adjacent patching (running slope of crosswalk) exceeding 5%



Side Treatments

- (Sheet 2 Note 2) One Way Directional Ramps:
- Full Curb Height



Side Treatments

- (Sheet 2 Note 2) Full Curb Height
- A longer curb transition may be used to reduce reverse grade boulevard.



Side Treatments



If you have non-concrete (turf) Blvd. and it is less than 2' in width at top of the curb transition. Pave concrete ramp width to adjacent back of curb.



Side Treatments



- A longer curb transition may be used to reduce reverse grade boulevard.



Side Treatments



- Or construct curb to match an “S” ramp (5% - 8.3%) and landing.



ADA Curb and Gutter



2531 - The contractor shall construct a contraction joint through the curb and gutter section at the bottom of the curb height transition (zero height curb).



ADA Curb and Gutter

If curb joints fall within the PAR they shall meet MnDOT 2521.3D



Truncated Dome Directionality

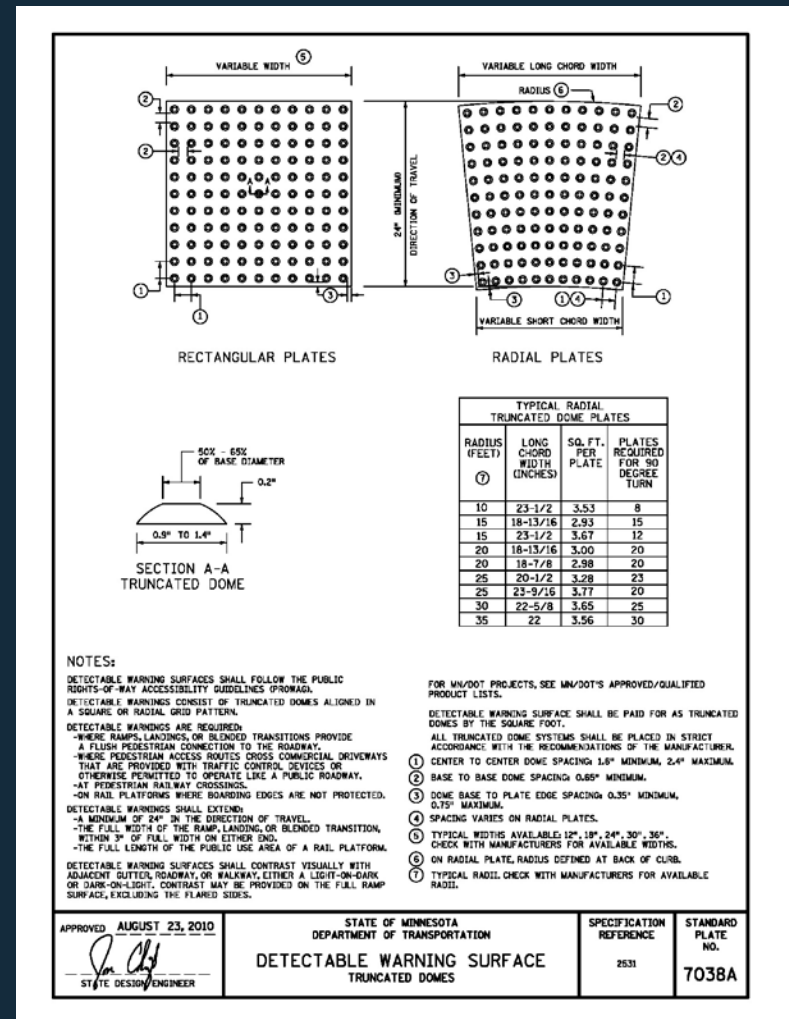
- Purpose of domes is to inform the user that they are at the edge of the roadway.
- Directionality only works in certain circumstances.
- Directionality should be done only when it works.
- Directional ramps are more difficult to construct with APS criteria.



Standard Plate 7038A

Detectable Warning Surface (Truncated Domes)

- Approved August 2010
- Includes both rectangular and radial detectable warning surfaces
- Radial detectable warnings must accommodate existing radius dimensions to nearest 5 ft. increment



ADA Detectable Edge

Notes: Detectable Warning Surface Shall contrast visually with adjacent gutter, roadway, or walkway, either a light-on-dark or dark-on-light.



Detectable Warnings



(2531) The truncated domes shall be placed in concrete and shall be pressed firmly into the concrete to the point that concrete fills the vent holes on the truncated dome plates.

Result of domes not installed correctly.



ADA Detectable Edge

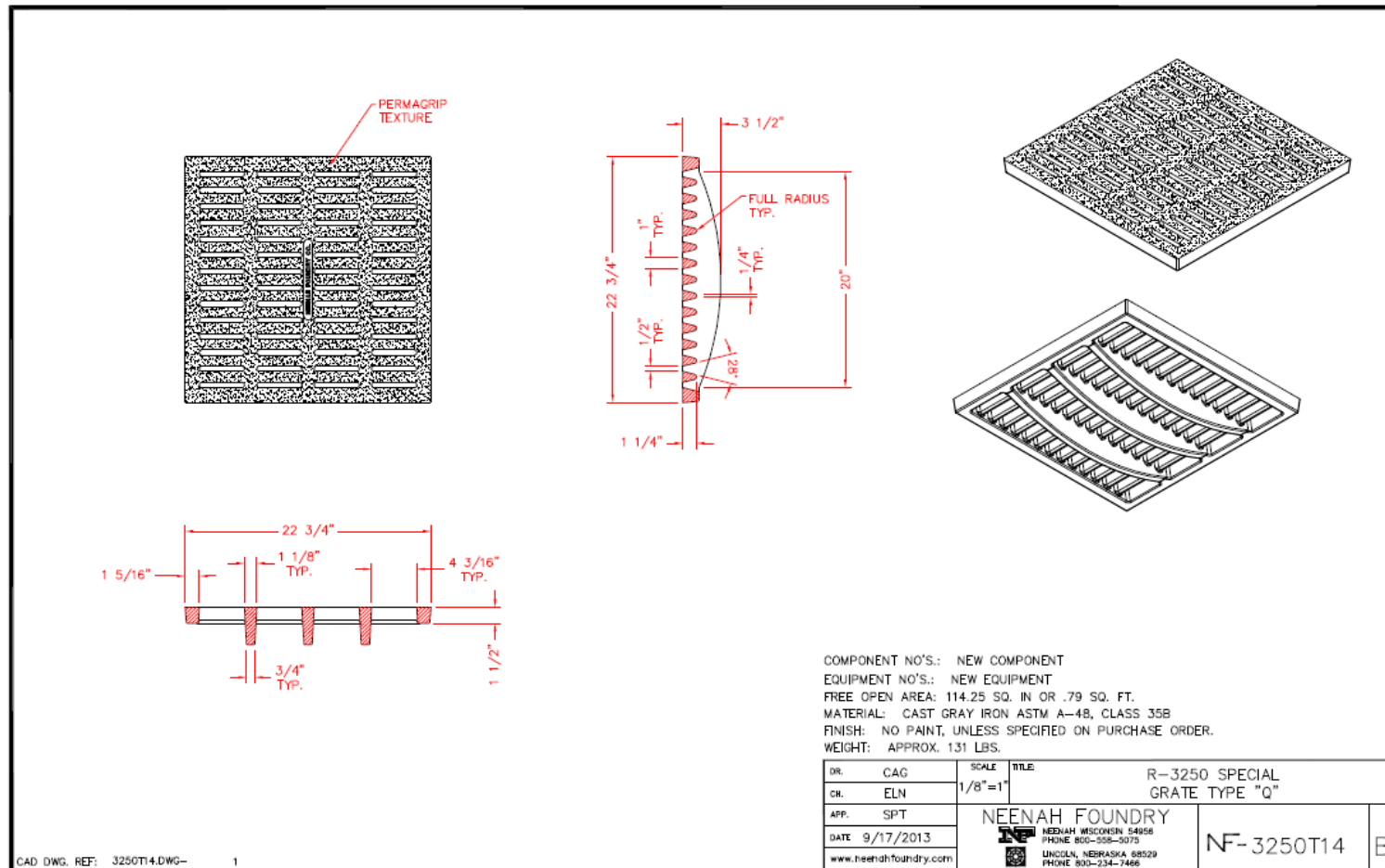


Good detectable edge with not so good placement.
Always check for structures in the PAR.



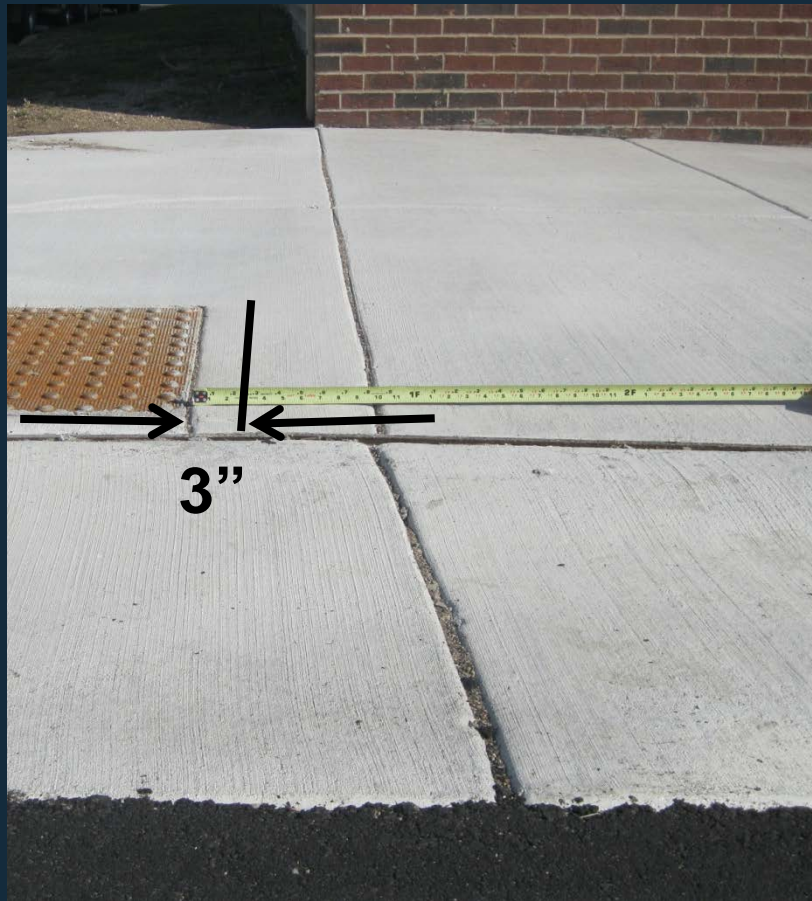
ADA GRATE

ADA Grate R3250 Special type "Q" can be installed per plan or when approved by the Engineer.



ADA Detectable Edge

Curb tapers are considered detectable edge when the taper starts within 3" of the edge of the truncated domes. Maintain a 2' continuous detectable edge.



ADA Detectable Edge

Curb tapers are considered a detectable edge when the taper starts within 3" of the edge of truncated domes and uniformly rises to a 3" minimum curb height.



ADA Construction Finishing



Spec 1503 Conformity with Contract Documents

If the Contract requires a maximum or minimum dimension or value, the Contractor shall control the production and processing of the material and the performance of work so that the material or workmanship is not of borderline quality or dimension.

Spec 2521.3D The Engineer will use a 10" straight edge to measure the surface.



ADA Construction Finishing



Spec 2521.3D The department considers deviations in the surface greater than $\frac{3}{16}$ inch and deviations in formed concrete greater than $\frac{1}{2}$ inch from the required location as unacceptable work.



ADA Construction Finishing



Spec 2521.3D The department considers deviations in the surface greater than $\frac{3}{16}$ inch and deviations in formed concrete greater than $\frac{1}{2}$ inch from the required location as unacceptable work.



ADA Construction Finishing



Spec 2521.3D Remove and replace unacceptable work as directed by the Engineer.



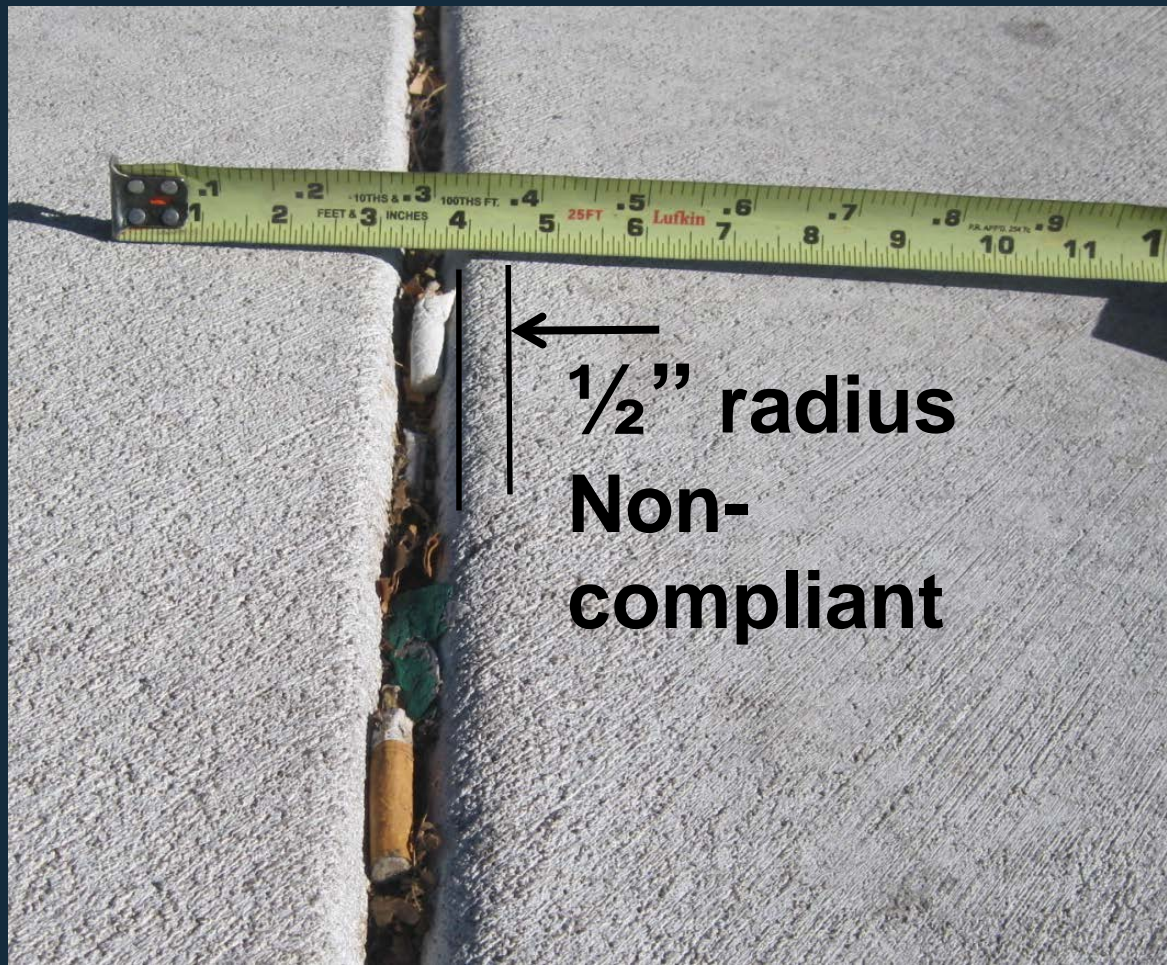
ADA Construction Joints

Joint Construction : Spec. 2521.3D2 The Contractor may form or saw the joints in walking surfaces as approved by the Engineer.



ADA Construction Joints

Joint Construction: Spec 2521.3D If forming the joints, round joints within the walking surface with a $\frac{1}{4}$ inch radius edge grooving tool.



ADA Construction Joints



Joint Construction : Spec. 2521.3D2 Extend contraction joints to a depth of at least 30% of the walk thickness. If saw cutting, provide 1/8" wide contraction joints.



ADA Construction Joints



Joint Construction : Spec2521.3D contraction joints shall extend to at least 30 percent of the walk thickness.

Bull Float Groover Attachment

Bronze Bull Float Groover Attachment; 1/4" Radius, 3/8" Wide, 2" Deep

Login

EDI: 17553



Click Image to Enlarge

- Made from high quality, long wearing bronze
- Finely finished to make smooth, clean edges
- Two thumbscrews are used to tighten the attachment to the bull float
- Slides easily over any bull float
- Gives the bull float the ability to form grooves or expansion joints
- Groove radius - 1/4"
- Groove width - 3/8"
- Groove depth - 2"

ADA Construction Joints

Saw cut or tooled joints?

5 1/2 X 3" Bronze Hand Groover w/ Wood Handle
1/4" Radius, 5/16" Wide, 3/8" Deep

DI: 10424



Heavy Duty Hand Groover

- Polished stainless steel creates smooth working surface
- Top Plate increases strength for cutting grooves in concrete.

No.	Size	Width	Deep
CF756	6"x6"	1/4"	1/4"
CF757	8"x5"	3/8"	3/4"



Heavy Duty Walking Groover

- Includes 54" Wood Clevis Handle (CC656)
- Full Top-Plate for extra strength
- Narrow Top Plate available in some sizes for a lighter tool.

Add "01"
after part number
for groover w/o handle

Full Top Plate

No.	Size	Width	Deep
CC756	8"x12"	1/4"	1/4"
CC757	8"x12"	3/8"	3/4"
CC758	8"x18"	3/8"	3/4"
CC759	8"x12"	3/4"	7/8"

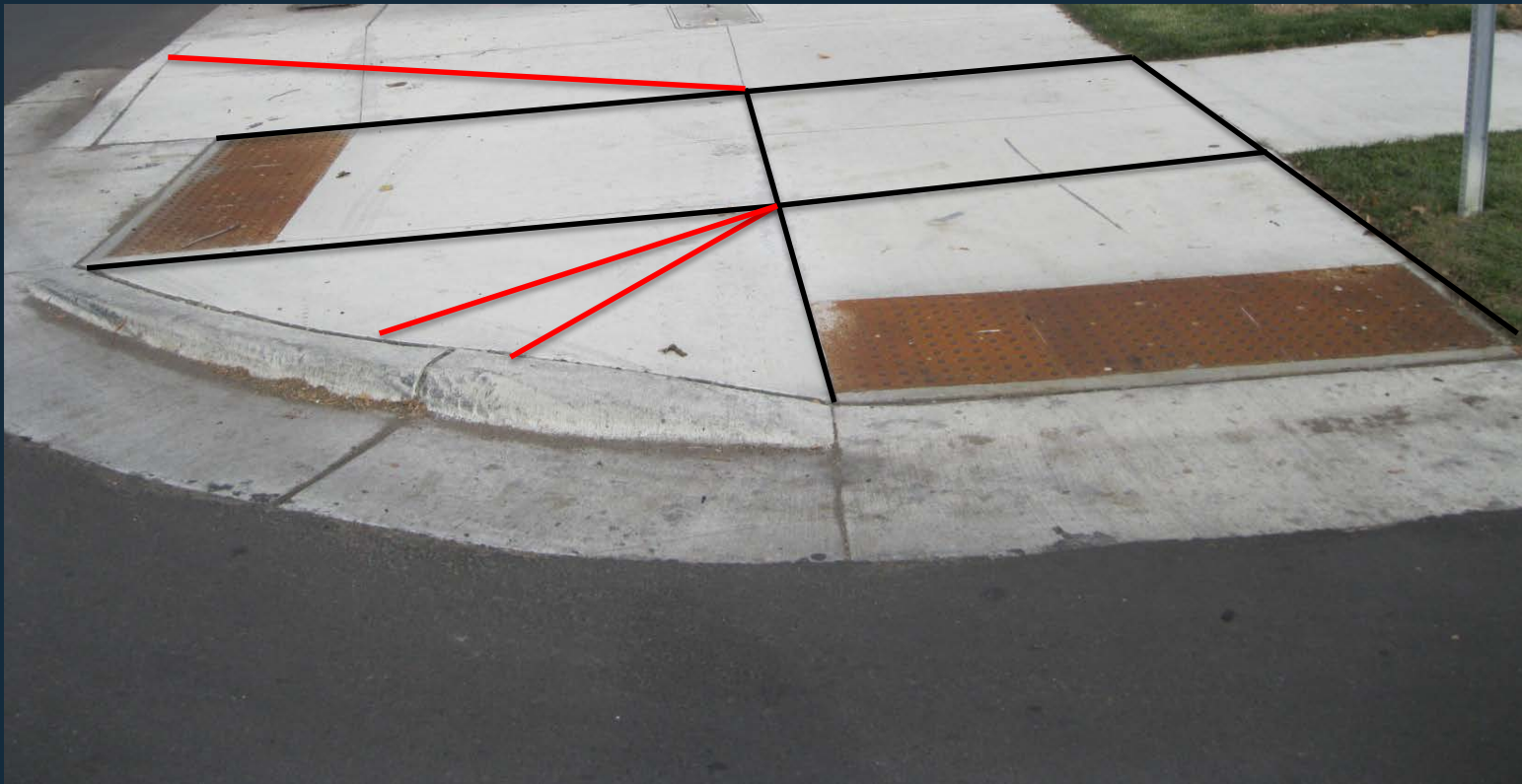
Narrow Top Plate

No.	Size	Width	Deep
CC757N	8"x12"	3/8"	3/4"
CC759N	8"x12"	3/4"	7/8"

New 2014 Special Provisions 1803

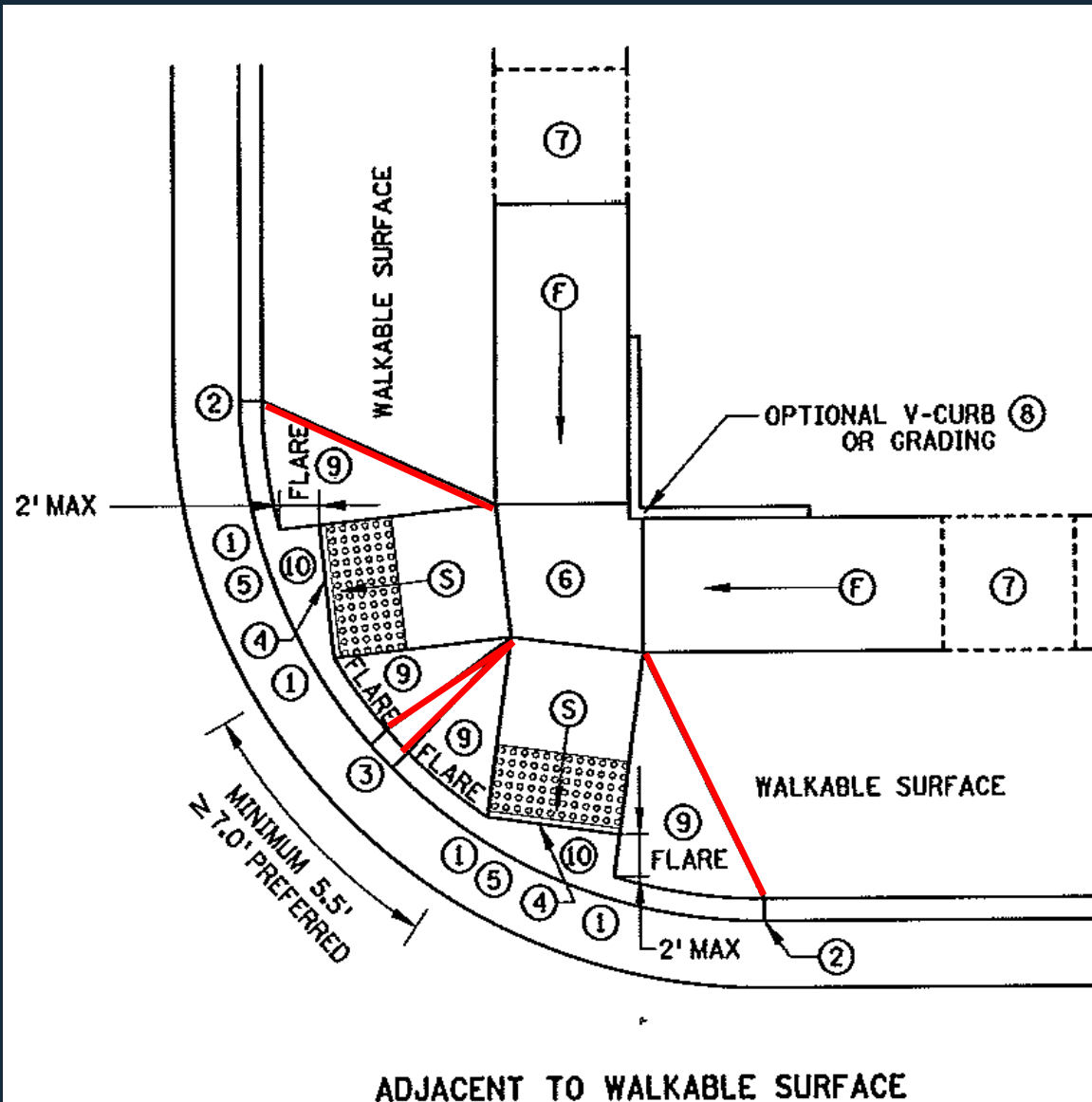


- The top grade break of walkable flares need a visual joint to indicate a change in grade. This visual joint shall meet Spec. 2521.3D except the depth requirement is reduced to $\frac{1}{4}$ "



Concrete Walk

Saw cuts
at $\frac{1}{4}$ "



ADA Sidewalk Construction



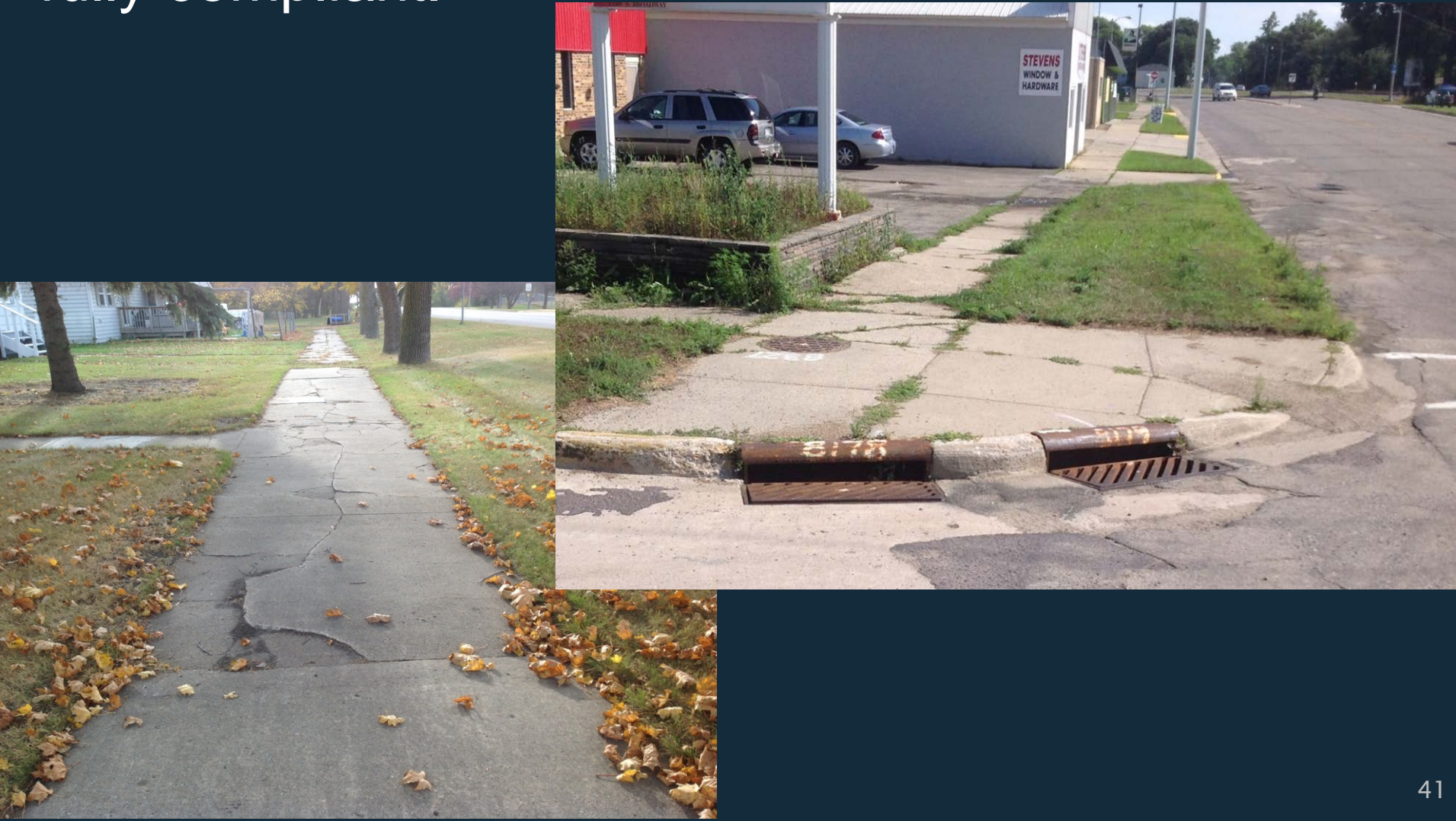
Total system consists of over 600 miles of sidewalk on MnDOT right of way.



20 Year Sidewalk Program



Of that 600 miles only 260 miles are considered fully compliant.



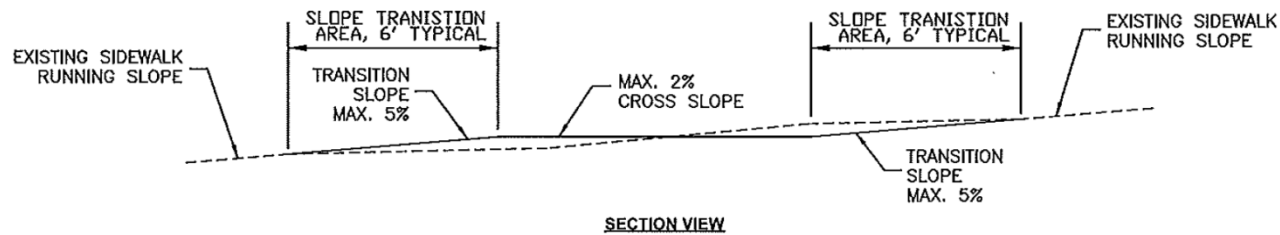
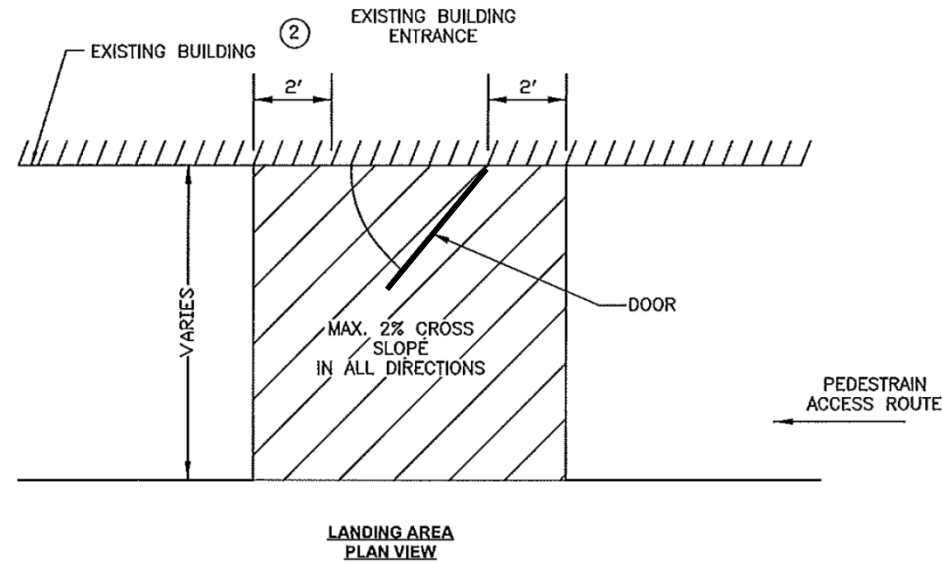
ADA Sidewalk Construction



New in (1803) When no sidewalk jointing information is provided in the plan... When greater than 50' of continues sidewalk runs are constructed the contractor shall saw cut all joints.



Typical Doorway Landings



**SIDEWALK SLOPE TRANSITION
DETAIL AT BUILDING ENTRANCES**

② INCREASE TO 36" AT ANY OUTPULL DOORS

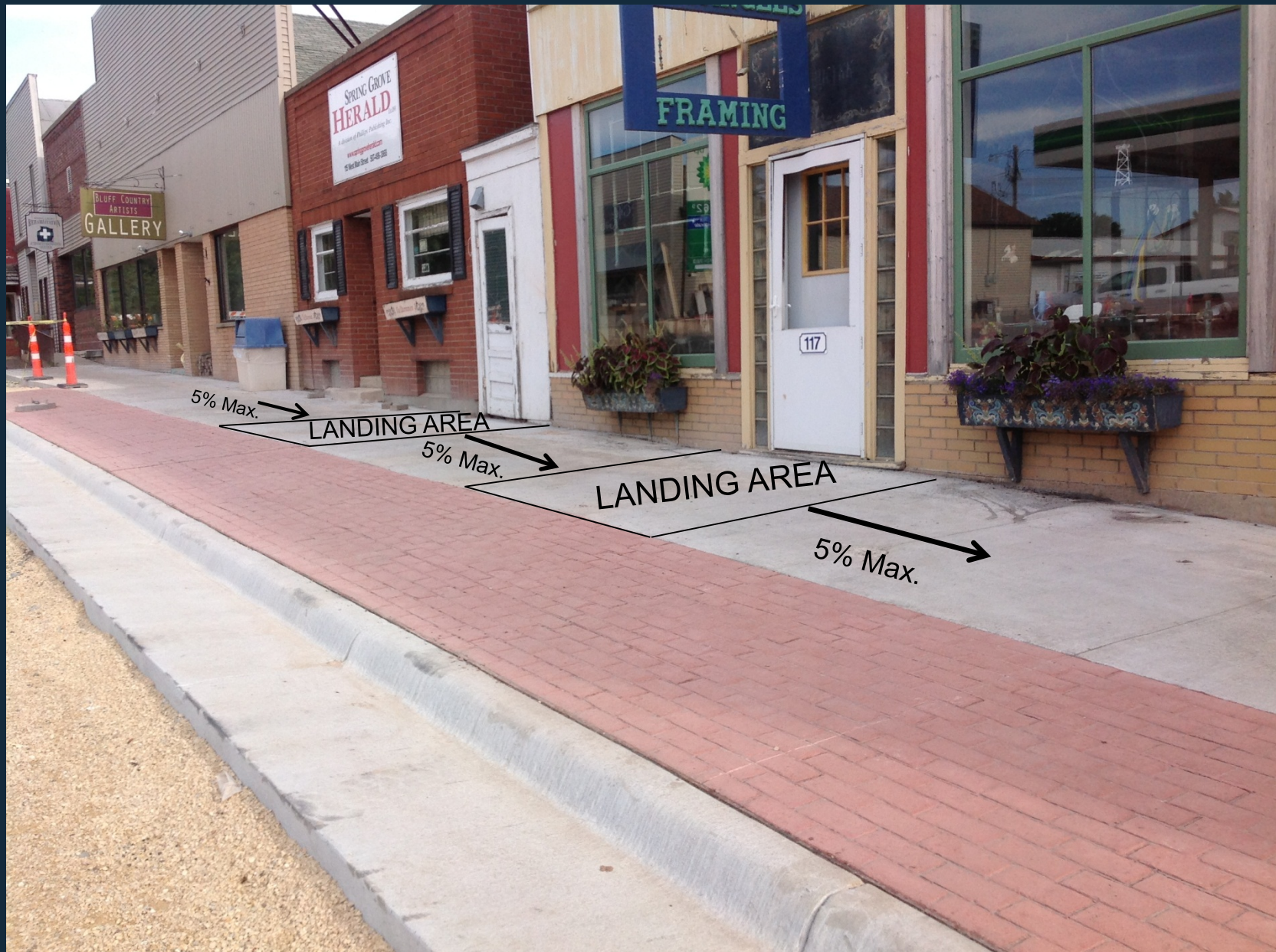
Typical Doorway Landings



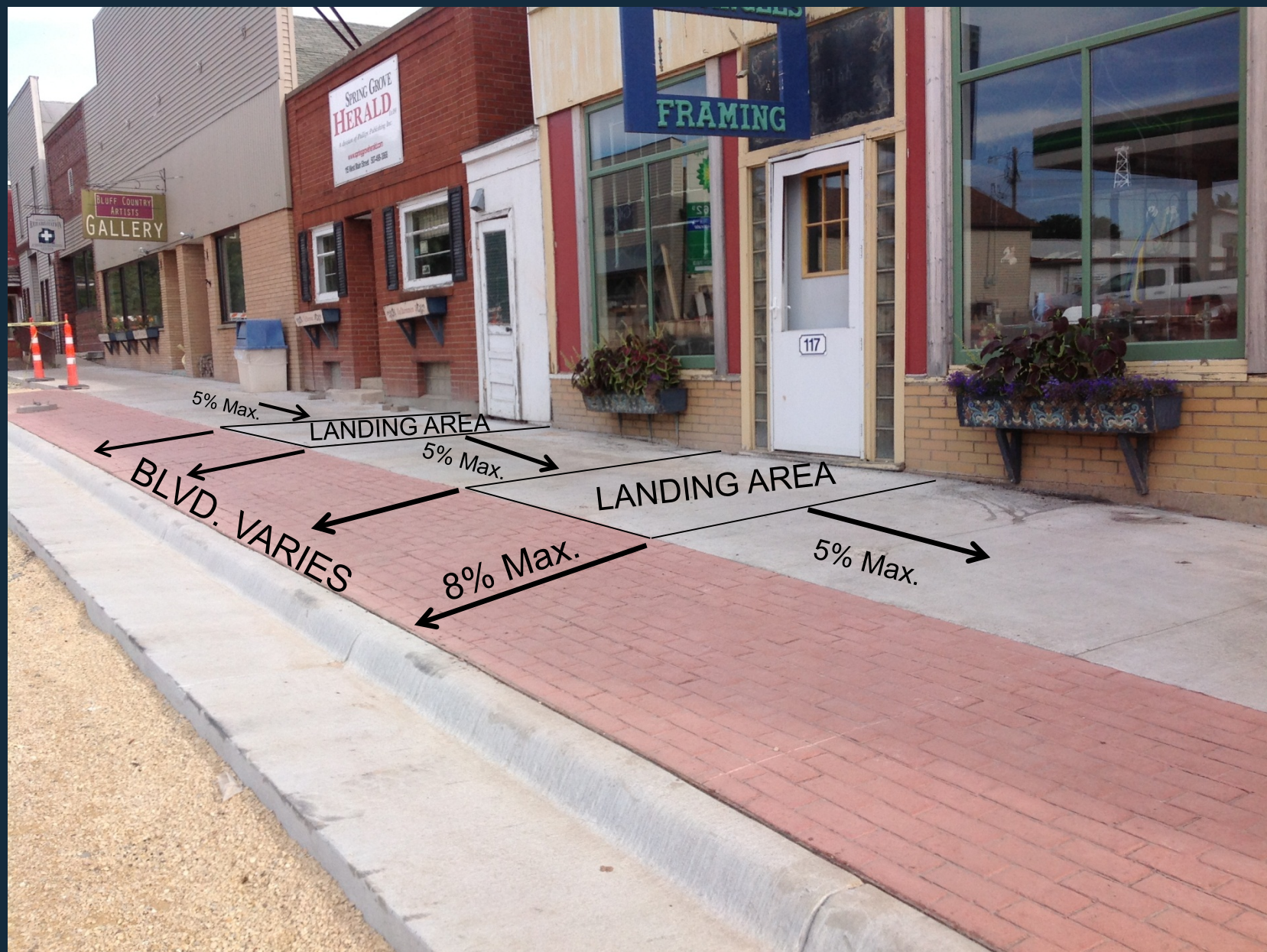
Typical Doorway Landings



Typical Doorway Landings



Typical Doorway Landings



ADA Driveway Construction



Review removal limits to verify grades.



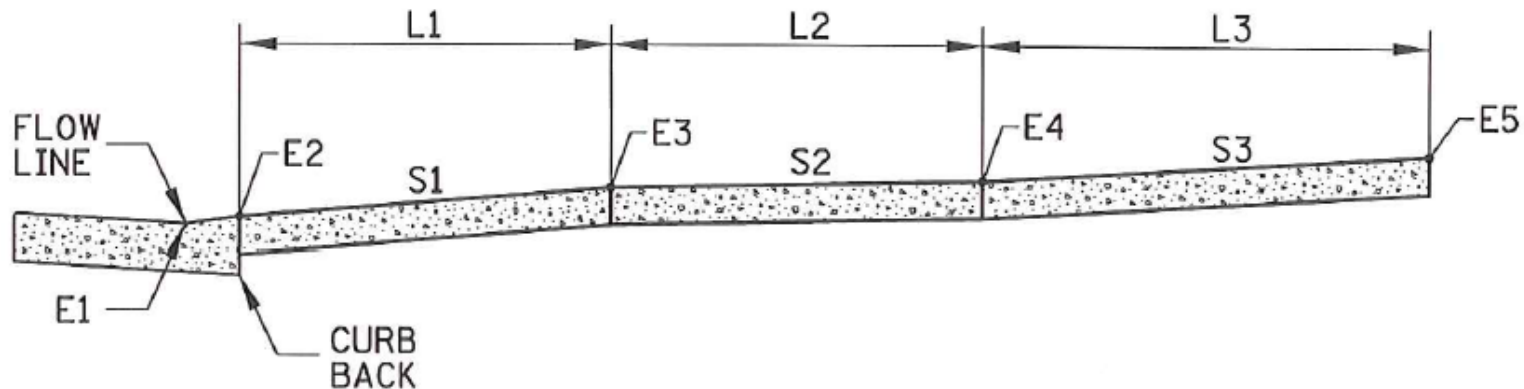
ADA Driveway Construction



Know what your driveway construction plan is before placing concrete curb and verify that your PAR can be constructed compliant.

ADA Driveway Construction

See Plan Driveway Details



SECTION A-A

STATION	SIDE	E1	E2	L1	S1	E3	L2	S2	E4	L3	S3	E5	NOTES
				FT	%		FT	%		FT	%		
29+38	RT	642.535	642.618	15.130	4.125	643.243	5.000	-1.500	643.168				(5)
31+37	RT	645.613	645.781	15.531	-4.438	645.092	5.000	-1.500	645.017				(1)
37+93	RT	655.992	656.006	15.457	2.997	656.467	5.000	1.500	656.542				
38+55	RT	656.971	656.987	15.775	3.652	657.563	5.000	-1.500	657.488				
44+03	RT	660.625	660.695	15.942	3.863	661.311	5.000	1.500	661.386				
46+90	RT	662.629	662.846	16.053	-1.545	662.598	5.000	-1.500	662.523				(1)
50+55	RT	664.459	664.542	15.740	1.957	664.850	5.000	-1.500	664.775				
51+79	RT	665.142	665.127	10.710	3.446	665.496	5.000	-1.500	665.421				
55+48	RT	667.364	667.406	15.475	6.656	668.436	5.000	-1.500	668.361				
57+02	RT	668.192	668.237	14.952	3.742	668.796	5.000	-1.500	668.721				
59+73	RT	669.845	669.886	14.853	2.870	670.312	5.000	-1.500	670.237				
63+50	RT	671.333	671.461	13.913	8.626	672.661	5.000	1.500	672.736				
71+14	LT	664.935	665.021	6.253	4.599	665.309	5.000	1.500	665.384				

ADA Driveway Construction

Back of curb Height at Driveway Apron

Non Vertically
Constrained 1"

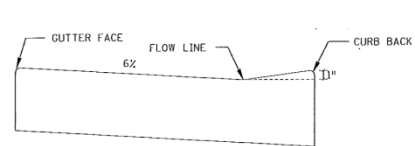
If Vertically
Constrained
2"- 3"



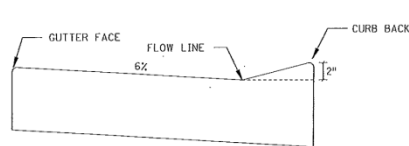
D1

D2

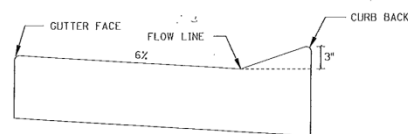
D3



NOT VERTICALLY CONSTRAINED



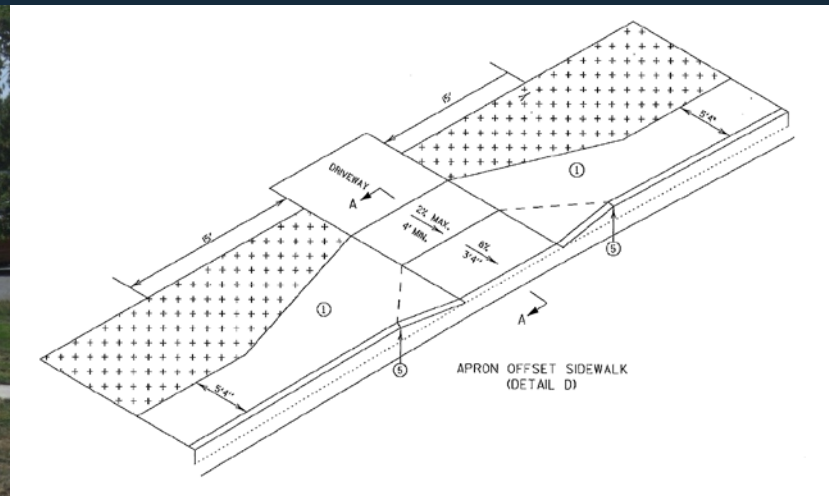
VERTICALLY CONSTRAINED



VERTICALLY CONSTRAINED

ADA Driveway Construction

PAR Height: Minimize sidewalk roller coaster affect

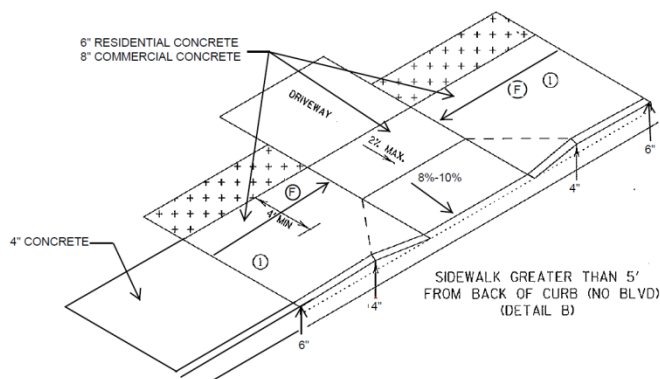


ADA Driveway Construction



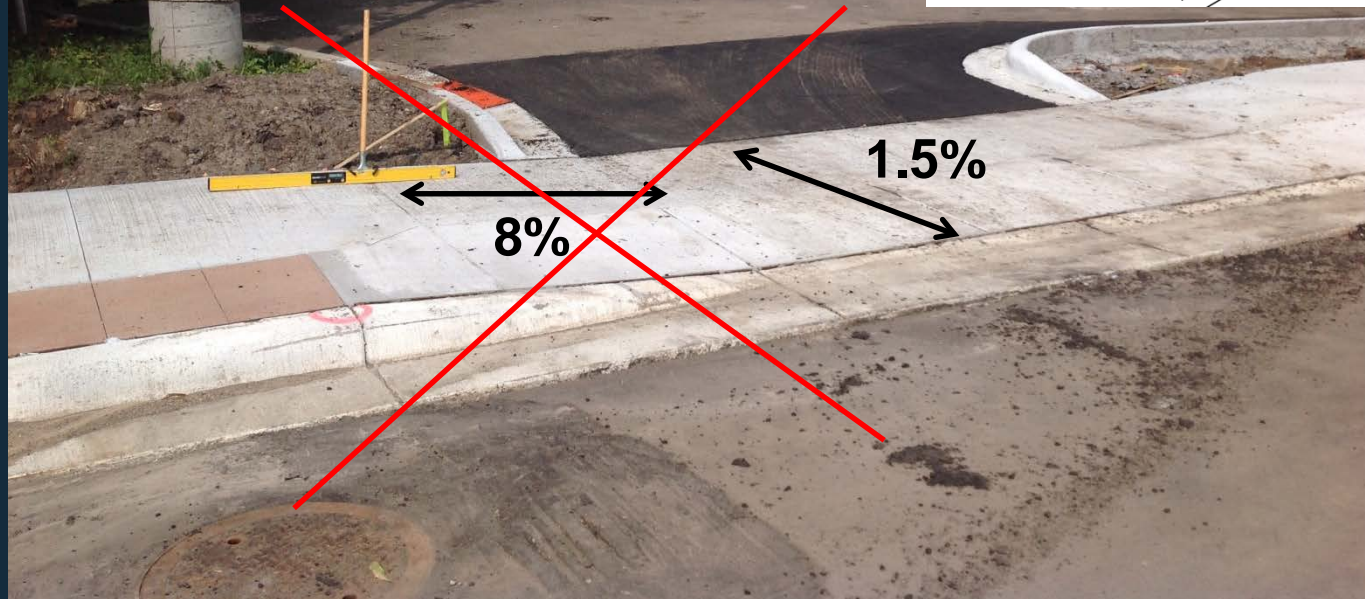
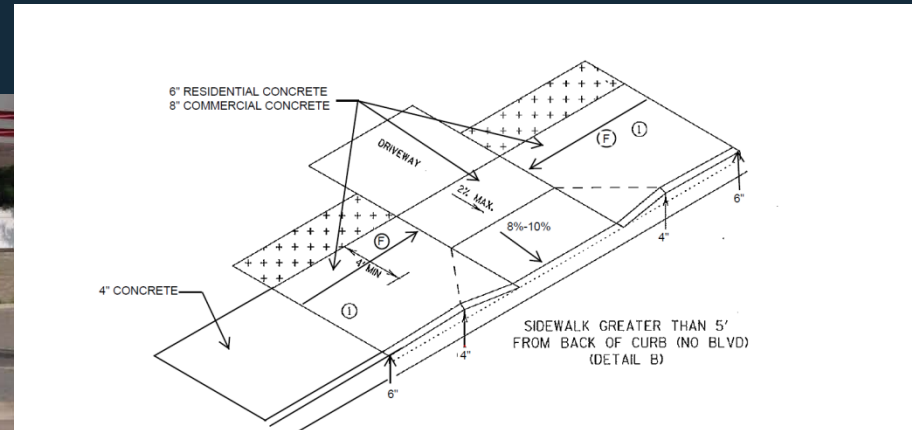
Commercial apron slope 10% max.
Residential apron slope 12% max.

Both have a
Preferred 8% max.
PAR width 4' min.
Preferred 4.5' min.



ADA Driveway Construction

Maximize apron slopes to avoid the roller coaster effect when driveway match in elevations are higher than roadway elevations.



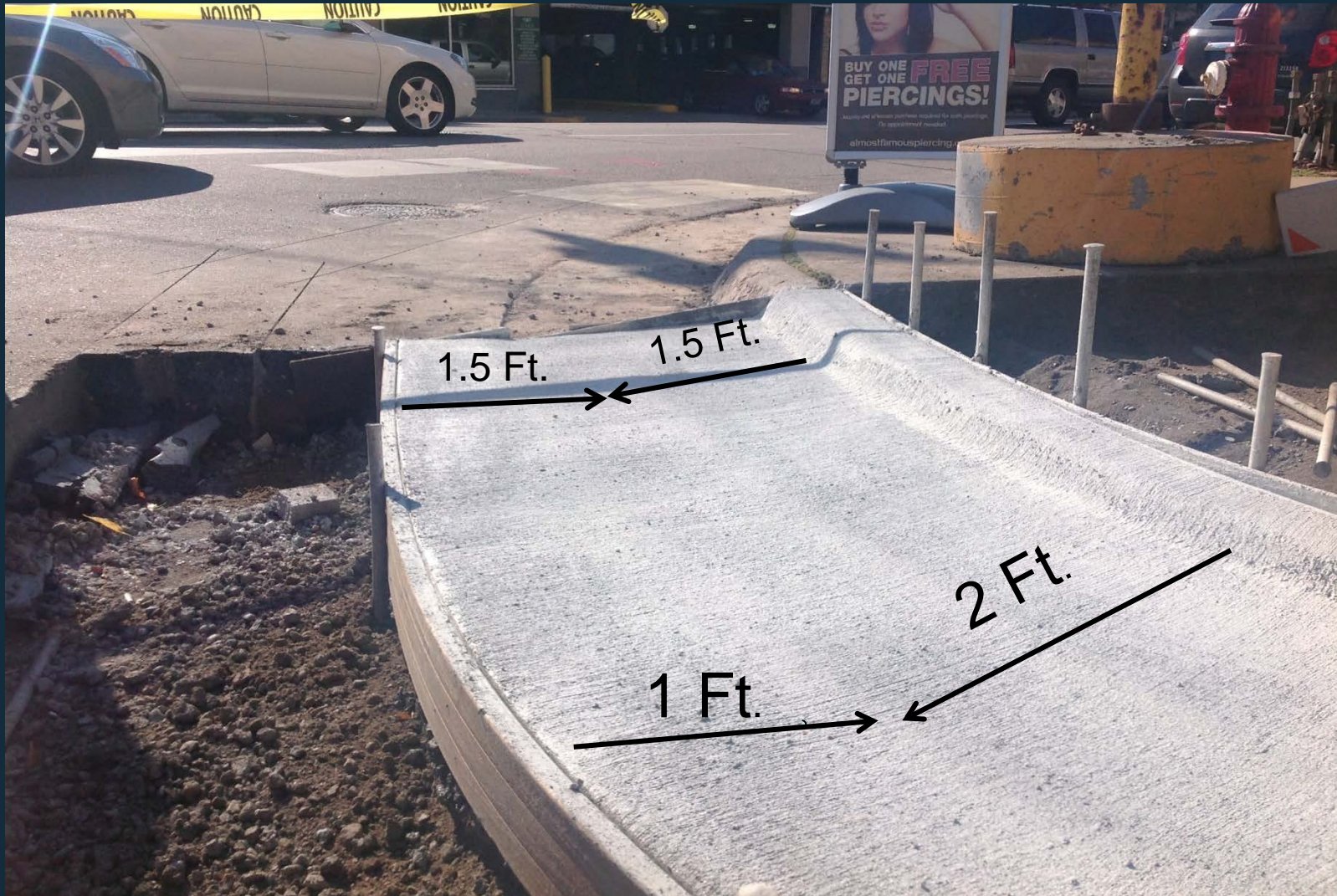
Curb and Gutter Adjustments

Special situations: Maximum Extent Feasible

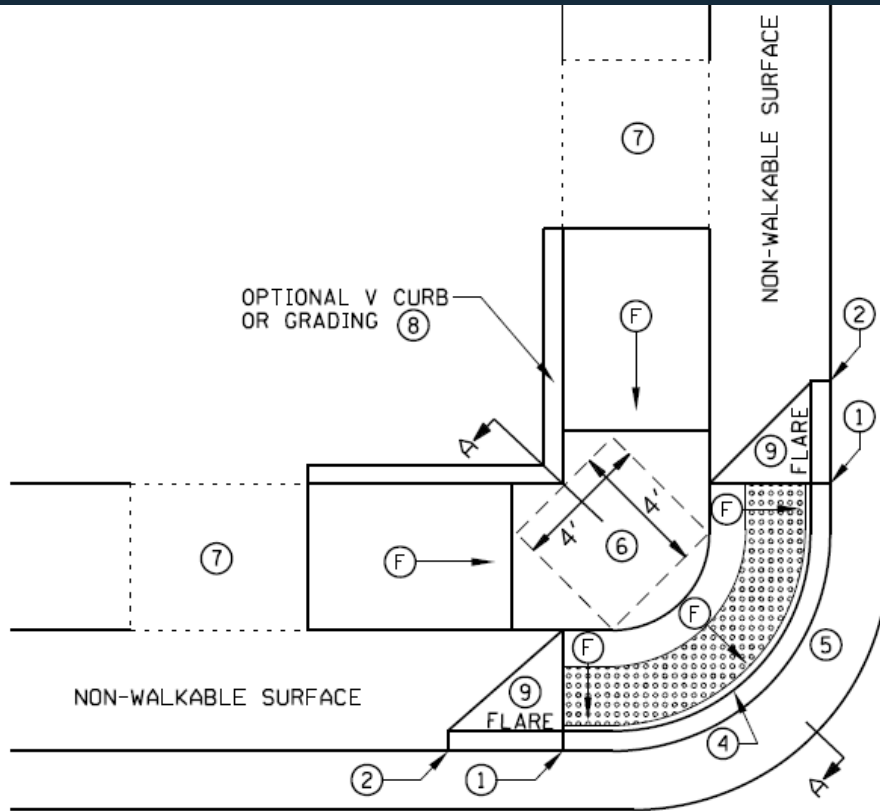


Curb and Gutter Adjustments

Special situations: Maximum Extent Feasible



Modified Fan Ramp



- Designed to maintain minimum 4'X4' landing



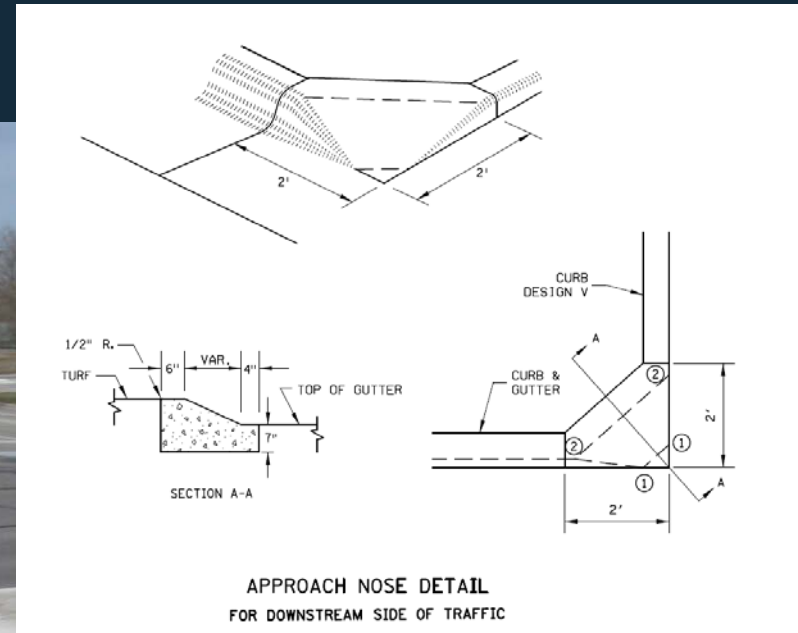
Roundabouts and Median Islands

- Approach nose detail for downstream side of traffic. Truncated domes need to be behind curb.



Side Treatments

- Approach nose detail for downstream side of traffic.



Roundabouts and Median Islands

- Approach nose detail on both sides of cut through



Roundabouts and Median Islands

- Approach nose detail on both sides of cut through.



Roundabouts and Median Islands

- Roundabout ramps place domes in the direction of travel and provide visual contrast.



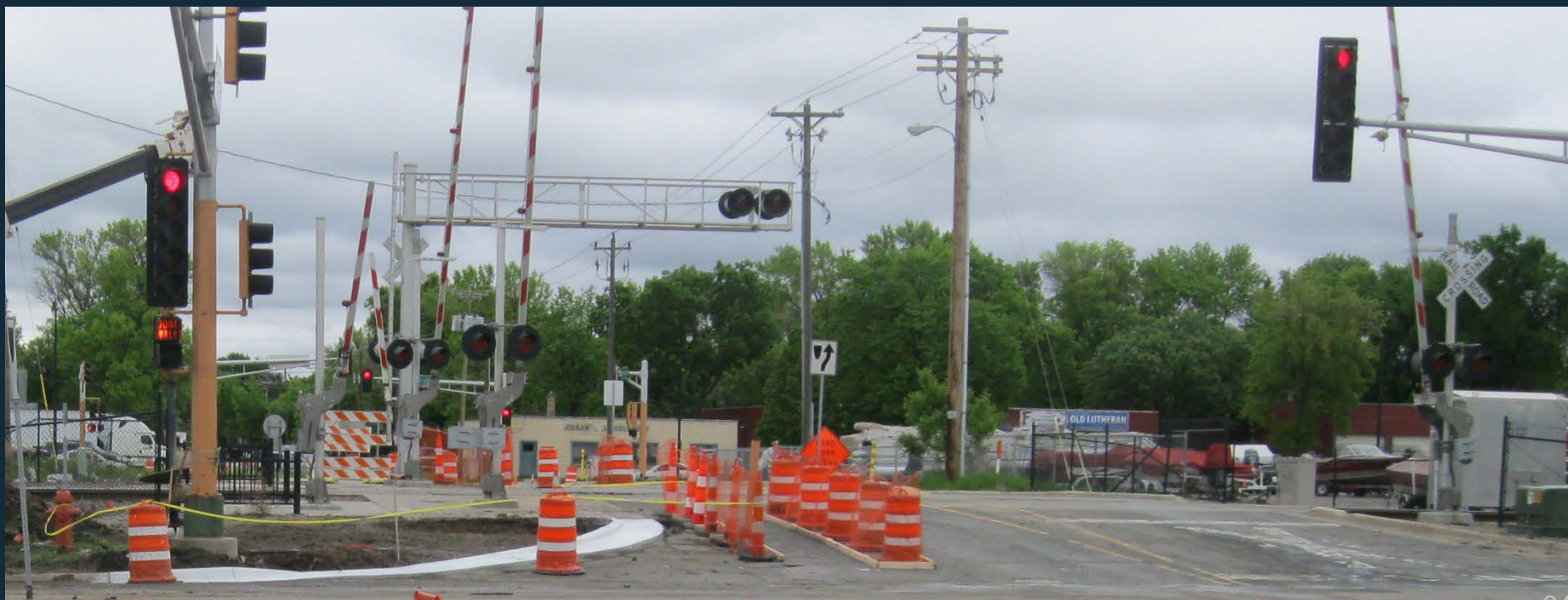
Roundabouts and Median Islands

- At ramps located where slip ramp “T” into trail place domes at the top of ramp
- At locations where trail comes off roadway place domes in the direction of travel.



Curb Ramp Construction

- RR Crossings Standard Plans Sheet 5 of 5
Note: 5) When pedestrian gates are provided detectable warning surface shall be placed on the side of the gates opposite the rail, 2' from the approaching side of the gate arm.



ADA Construction

Be aware of and protect your environment.



ADA Construction

