



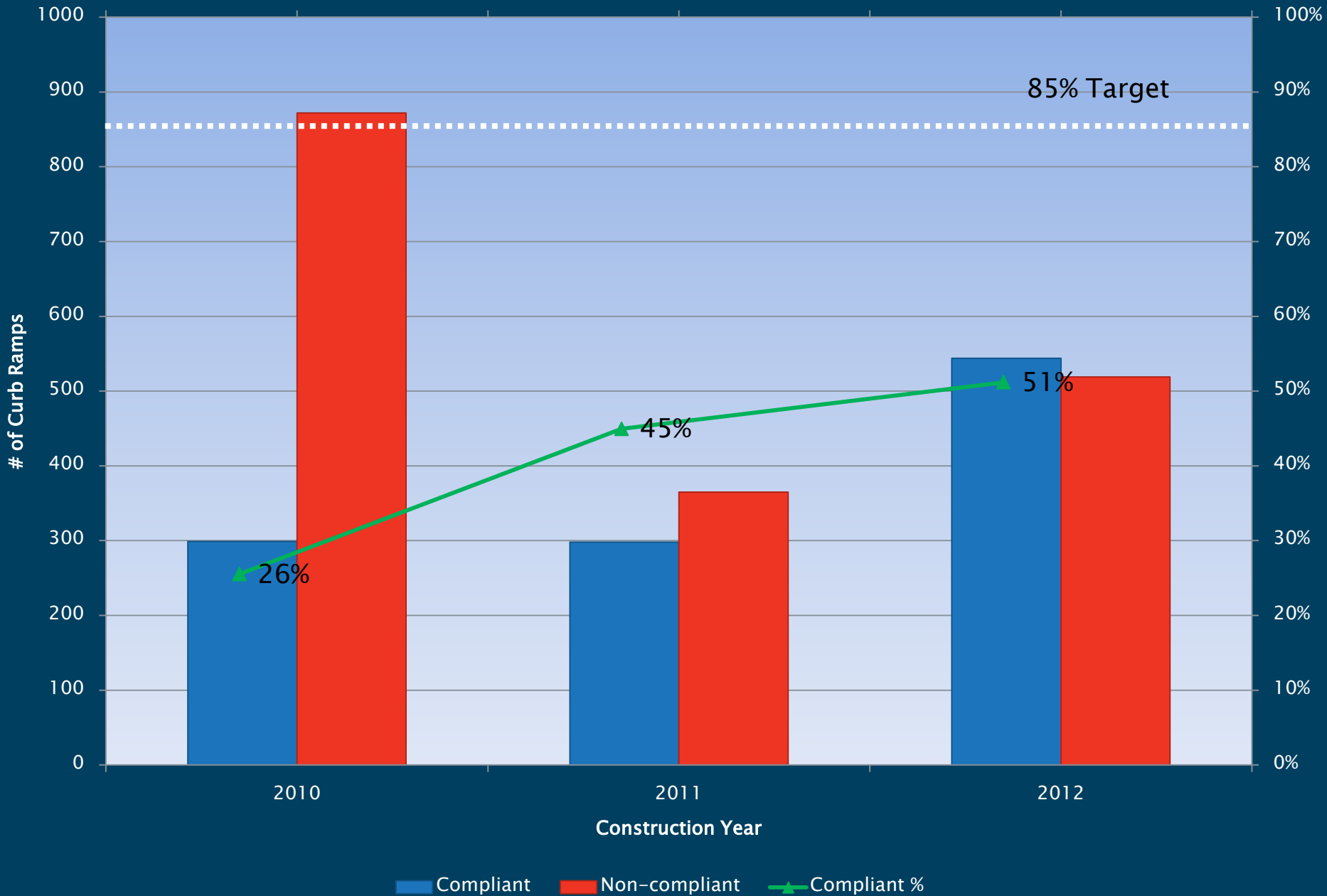
ADA Project Development Design Engineers Workshop

5/7/14

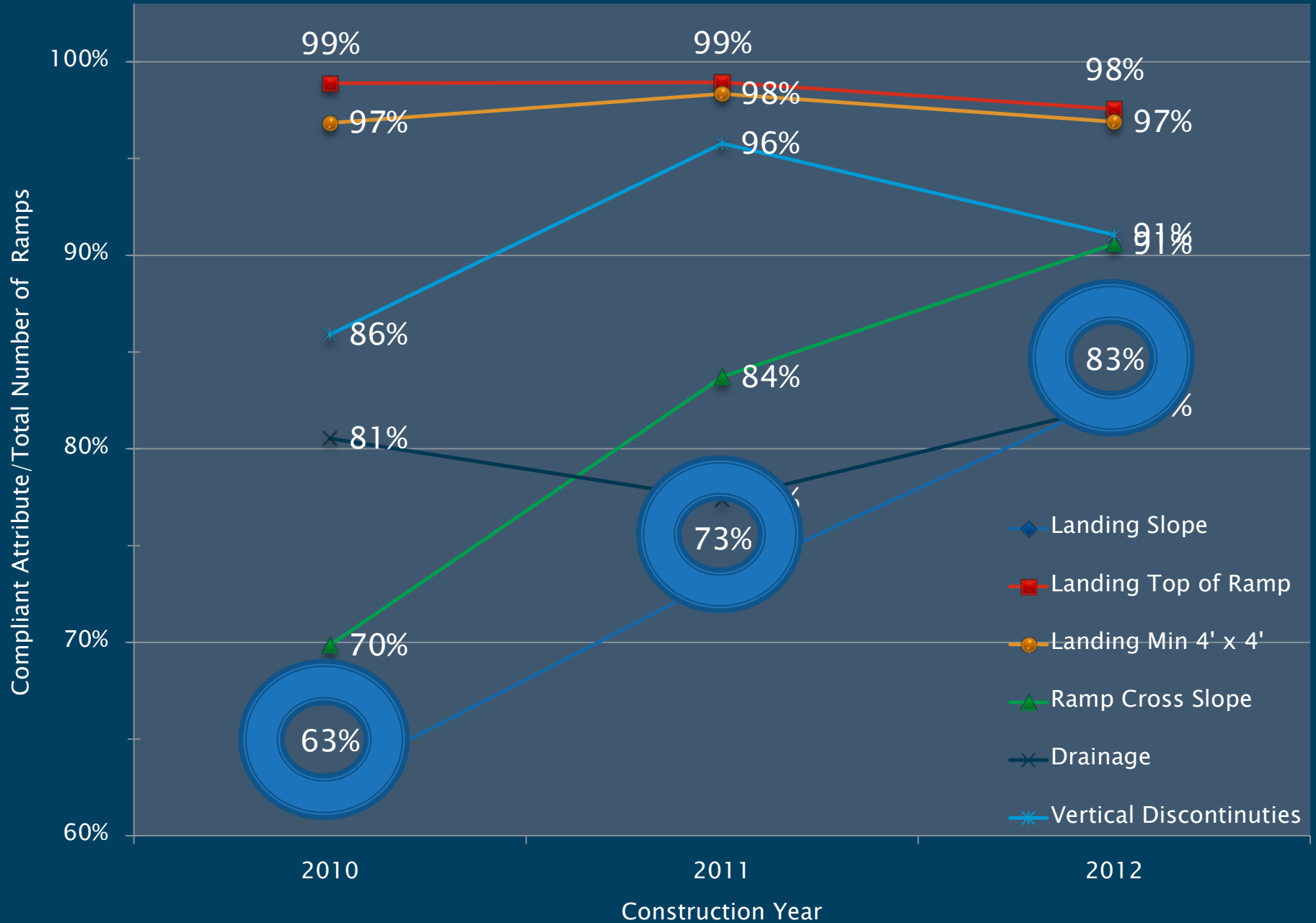
Your Destination... Our Priority



Statewide Curb Ramps



Compliant Curb Ramp Attributes by Percentage



Compliance Checklists

MnDOT ADA Compliance Checklist (Curb Ramp)

SP: ? City: District:

Intersection: ? Quadrant: ?

Ramp Type: Perpendicular ? Const. Year: ?

Attach a photo of the completed quadrant by clicking here ->
DO NOT use Safari on iPads to upload files: (6 MB max)

(1) Minimum 4' wide pedestrian access route (PAR) maintained? ? Yes No

(2) Landing meets min. 4'x4' and perpendicular grade break(s)? ? Yes No

(3) Are landing(s) located at the top of each ramp and at change(s) in direction and at inverse grades? ? Yes No

(4) Landing slopes (%): ? TH TH SS SS
Initial Secondary Initial Secondary

(5) Ramp's running slope (%): ? TH TH SS SS
Initial Secondary Initial Secondary

(6) Ramp's cross slope (%): ? TH TH SS SS
Initial Secondary Initial Secondary

(7) Gutter flow line slope (%): ? TH SS

(8) Gutter inslope (%): ? TH SS **TH = Trunk Highway**
SS = Side Street

(9) Roadway cross slope (%): ? TH SS

(10) Do truncated domes cover the entire curb opening and are they properly oriented? ? Yes No

(11) Are gutter line and ramps draining properly? ? Yes No

(12) Are there any vertical discontinuities greater than 1/4"? ? Yes No

(13) Do ramps comply with Spec 2521.3? ? Yes No

(14) Are ramps fully compliant? ?
 If NO, check the reason(s) below. Explain why the ramp didn't meet compliance and how the ramp has been improved from the pre-construction condition (see ADA Compliance Checklist Guidance for more info and attach pages if needed). ?
 Topography Structure(s) Utilities Contractor MnDOT

(15) Was the curb ramp able to be built according to the plan details? ? Yes No
 If NO, explain:

Printed Name: Date (mm/dd/yyyy):

I certify that the information entered on this form is accurate to the best of my knowledge and that I fully understand the checklist standards and am qualified to carry out the inspection.

Pg 1

ADA Project Compliance Submittal*

*To be completed by the Project Engineer/Supervisor

SP#: City: TH(s):

Project Engineer/Supervisor:

Project Chief Inspector:

Lead ADA Inspector:

Prime Contractor:

Project Description (Stand alone, Mill and Overlay, Reconstruction, etc...)

MnDOT/Consultant (please state Firm name) Designer of record

Project Designed by:

List of Sub-Contractor(s) working on ADA:
 (rate 1 to 5 for each contractor, 1 being poor and 5 being excellent)

Type	Contractor	Rating	Remarks
<input type="text"/> select...	<input type="text"/>	<input type="text"/> 0	<input type="text"/>

Did Contractor(s) provide a responsible person familiar with PROWAG to be on site during all ADA construction as per Special Provisions 1803? Yes No
 PROWAG Specialist:

Number of APS Quadrants Number of NON APS Quadrants

Was a portion of any quadrant required to be rebuilt or redone? Yes No

Number of REDO's

How many ramps needed to be redone were contractor's responsibility? -

How many ramps needed to be redone were MnDOT's responsibility? -

How many were plan errors? -

Other -

Number of NON-COMPLIANT ramps due to:
 Topography Utilities Structure(s)

Additional Remarks

I certify that the information entered on this form and the submitted compliance checklist forms are accurate to the best of my knowledge and were completed by me or under my direct supervision.



ADA Design Submittal



ADA Project Design Submittal*

*To be completed by the Project Designer

SP#: City: TH(s):

Project Description (Stand alone, Mill and Overlay, Reconstruction, etc...)

Project Designed by: MnDOT/Consultant (please state Firm name) Designer of record

Survey Crew Chief:

Number of Quadrants Number of Quadrants w/ APS

State the number of non-compliant elements in Plans:

Attach documentation along with alternatives considered for the non-compliant design elements. Include mitigation steps taken and reason(s) why it still can't be compliant.

Example of documentation includes but is not limited to:
Design plans with calculations, review and analysis of ADA field walk recommendations, emails, photographs, correspondences with public/local agency, etc.

ZIP THE FILE TOGETHER BEFORE ATTACHING!

If ANY ped ramps are proposed to be excluded from the project, attach ALL compliance checklist forms for existing curb ramps to verify compliance.

ZIP THE FILE TOGETHER BEFORE ATTACHING!

Number of Curb Ramps Not Compliant	[Ramp slope > 8.3%:	<input type="text"/>
		Landing slope > 2.0%:	<input type="text"/>
		No 4 ft PAR:	<input type="text"/>
Number of Curb Ramps Not Compliant due to Roadway	[Inslope/X-walk > 5%:	<input type="text"/>
		Flowlines > 2%:	<input type="text"/>
Number of Curb Ramps in Plan w/ Flowlines	[between 2% - 3% w/ Note:	<input type="text"/>
		> 3% w/ Profiles:	<input type="text"/>
Total number of Push Buttons:			<input type="text"/>
Number of Push Buttons that don't meet	[Offset/Setback/Separation/Landing Criteria:	<input type="text"/>
		< 6 ft MAR:	<input type="text"/>
		Button < 2 ft from grade break & back of walk:	<input type="text"/>

I certify that the information entered on this form and the submitted compliance checklist forms are accurate to the best of my knowledge and were completed by me or under my direct supervision.

Submit to ADA Compliance



- ROW needs
- ADA on all CPR, M&Os, and thin overlay projects (Determined by DOJ & FHWA)
- Shoulder upgrades in rural areas
- ADA construction considerations
 - Sidewalks & Driveways
 - Utilities
 - Signals
 - Drainage

Tech Memo 12-12-TS-06

Shoulder Width Standards for State Highways

- Where there are no adjacent sidewalks and pedestrians are required to travel on shoulders, the minimum smooth, paved shoulder width is 4 feet.

Scope Enhancement Funds

	District	Formula Target ¹	SP	Description	Construction Cost Estimate ³	
					FY14	FY15
Finalist Projects	1	\$505,000	6925-134	London Rd. sidewalk replacement	\$280,000	-
			3608-48	International Falls sidewalk replacement	-	\$340,000
	2	\$290,000	0406-15	Entrance replacement in Bemidji	-	\$310,000
			6802-27	Sidewalk gap in Roseau	-	\$25,000
	3	\$530,000	Did not submit projects for consideration		-	-
	4	\$305,000	1401-173	Sidewalk replacement in Moorhead	-	\$500,000
				ROW acquisition process	-	\$200,000
			8402-17	Sidewalk replacement in Morris	-	\$253,000
				Sidewalk replacement in Wendell	-	\$50,000
	M	\$2,220,000	6222-162	Sidewalk replacement in White Bear Lake	\$366,000	-
			1908-84	APS at Robert St. and Mendota Rd.	\$30,000	-
			2785-330	CSAH 6 sidewalk	\$16,500	-
			6215-99	Sidewalk replacement on Snelling Ave, St Paul	-	\$509,000
			6215-100	Snelling BRT – Ped ramps/APS in St Paul	-	\$125,000
	6	\$560,000	2513-92	Sidewalk replacement in downtown Red Wing	-	\$630,000
			2404-41	Sidewalk replacement in Albert Lea	\$520,000	-
	7	\$315,000	5212-27	Vets bridge in Mankato (Curb ramps & APS)	-	\$200,000
			7205-112	Sidewalk replacement in Winthrop (TH 19)	-	\$200,000
	8	\$275,000	8712-31	Sidewalk replacement in Granite Falls	-	\$100,000
	8		8708-14	New sidewalk in Canby	\$40,600	-
Reserved for consultant contracts					\$95,000	\$250,000
Program funding	\$5,000,000		Estimated Preliminary Totals		\$1.3481M²	\$3.692M²
Current Unallocated Funding Open To Additional Project Solicitation					-\$40,100	



ADA Program Implementation

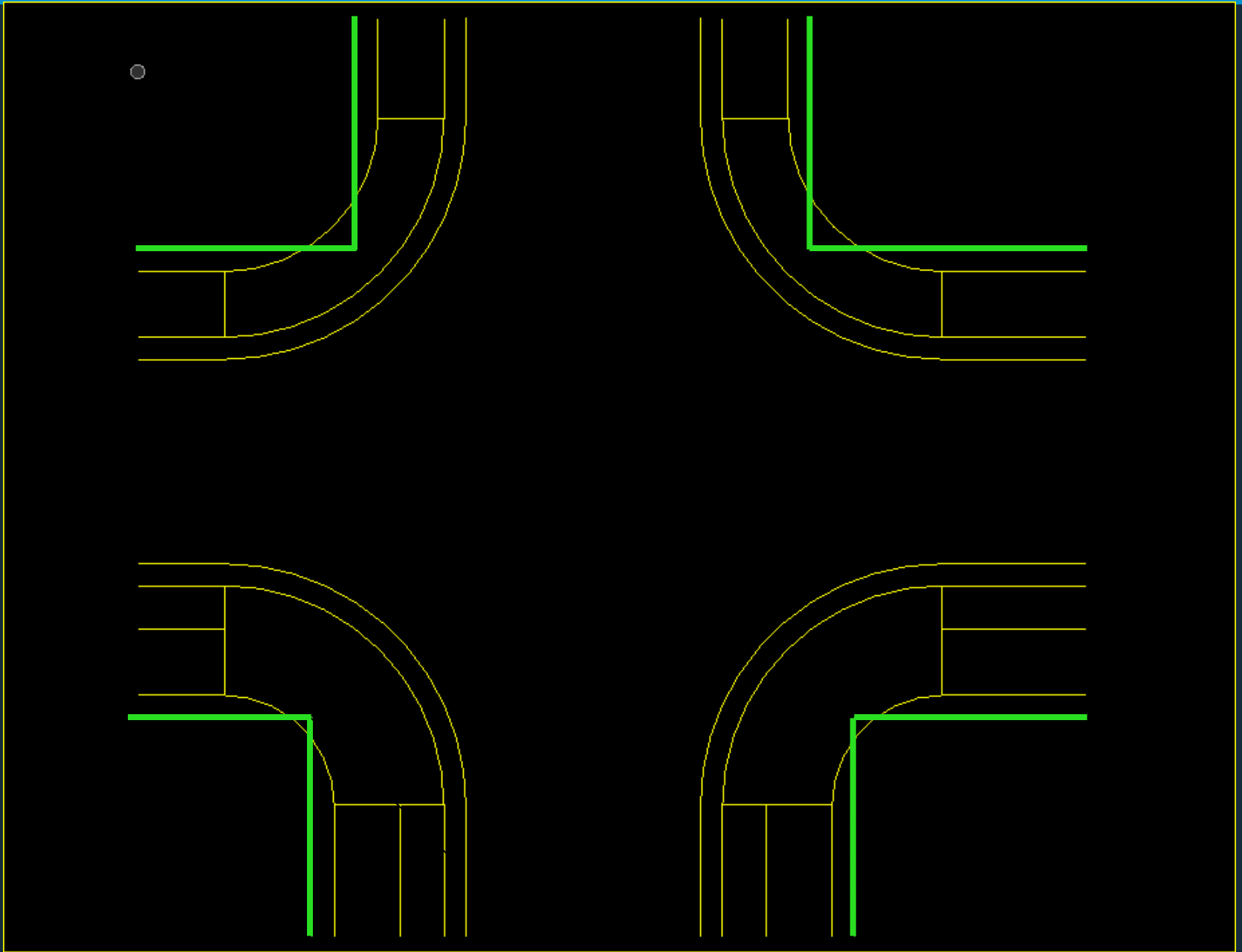


Letting Year	ADA Ops Field Walk	Permanent ROW	Funding
'14	Complete	n/a	ADA Scope Enhancement
'15	Partial	n/a	ADA Scope Enhancement
'16	Partial	n/a	ADA Work Plan
'17	To be done	Part of Project	ADA Work Plan
'18	Priority Only	Part of Project	All ADA needs scoped
'19	Priority Only	Part of Project	All ADA needs scoped
'20 and beyond all ADA needs scoped and integrated			

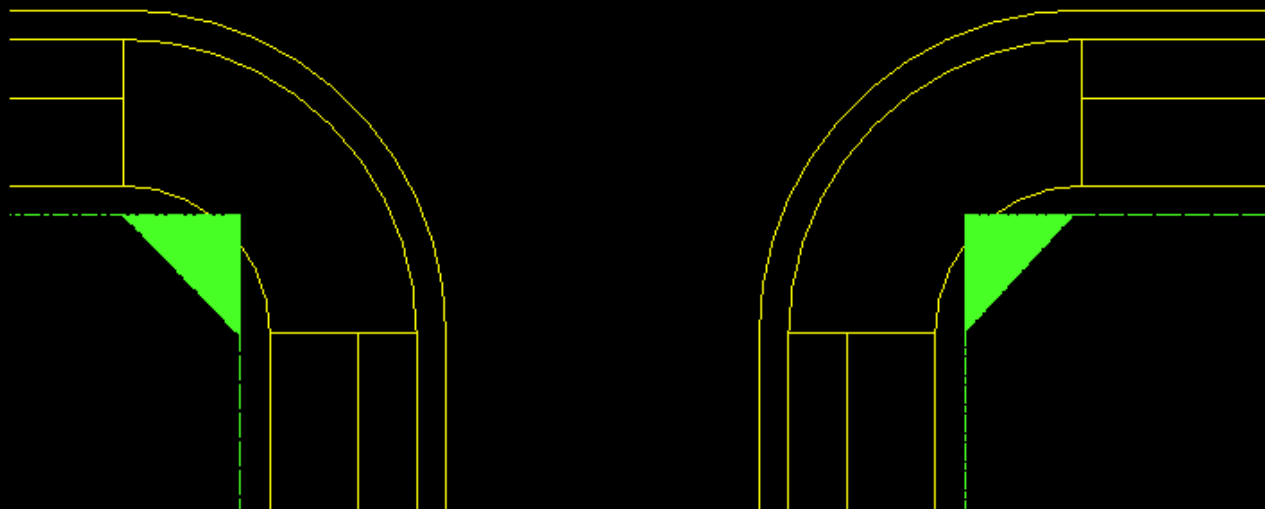
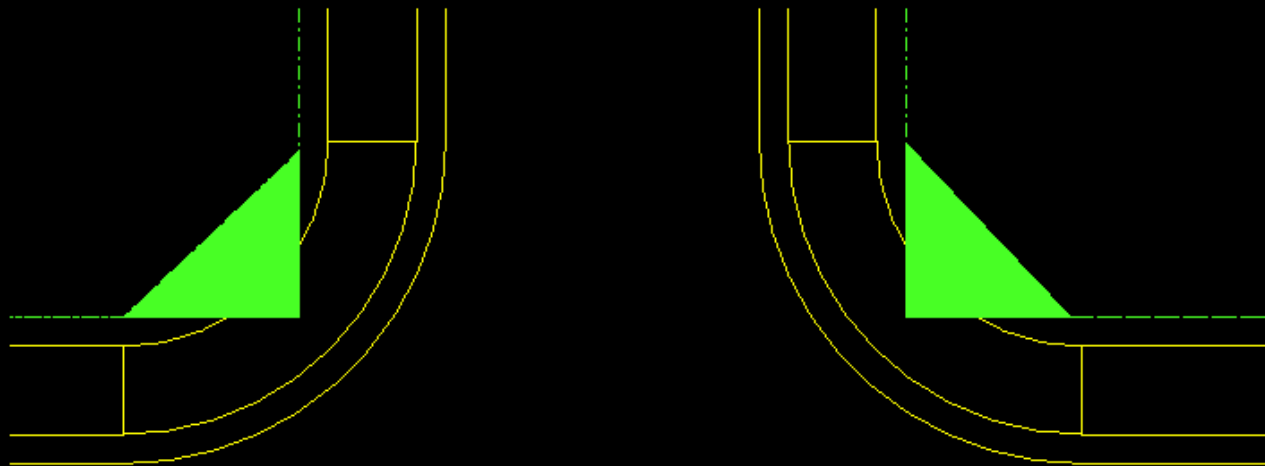
GIS Inventory



TYPICAL ROW AT AN INTERSECTION

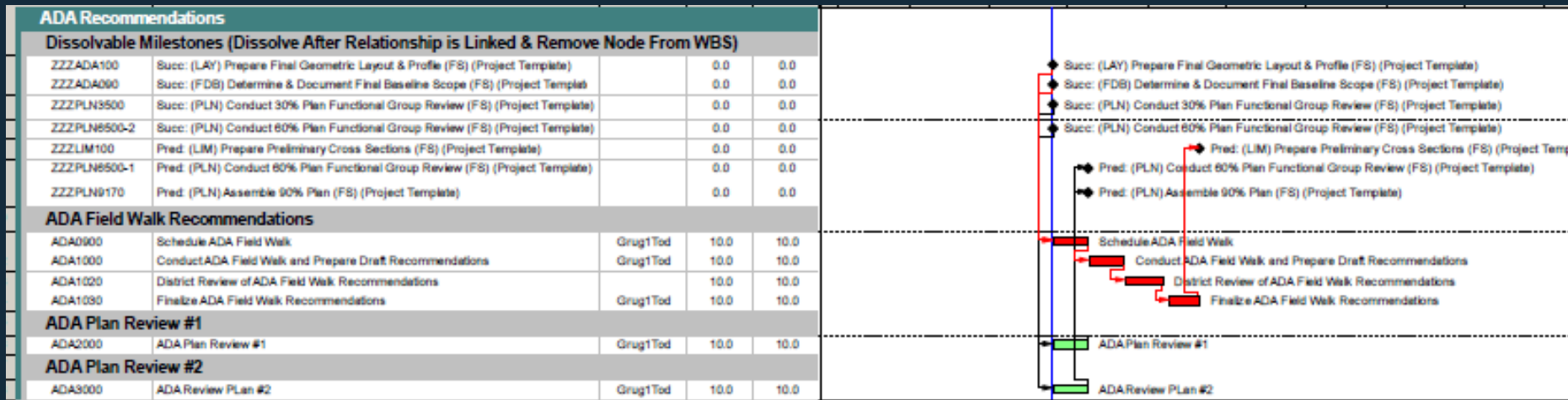


PERMANENT ROW NEEDED FOR ADA



- 1) Project Scoping – ADA (separate fragnet)
- 2) Schedule Field Walk
- 3) Conduct Field and Prepare Recommendations
- 4) District Review of Field Walk Recommendations (District Statuses)
- 5) Finalize Field Walk Recommendations
- 6) Design Review #1
- 7) Design Review #2

P6 ADA Fragnet



- Submit needs to ADA unit by April 1st for upcoming year
- Coordinate date and time with ADA unit (please do not schedule field walks without consulting with the unit)
- Project Manager, Designer, Technician, Traffic, Land Management, Local Agencies

Conduct Field Walk.



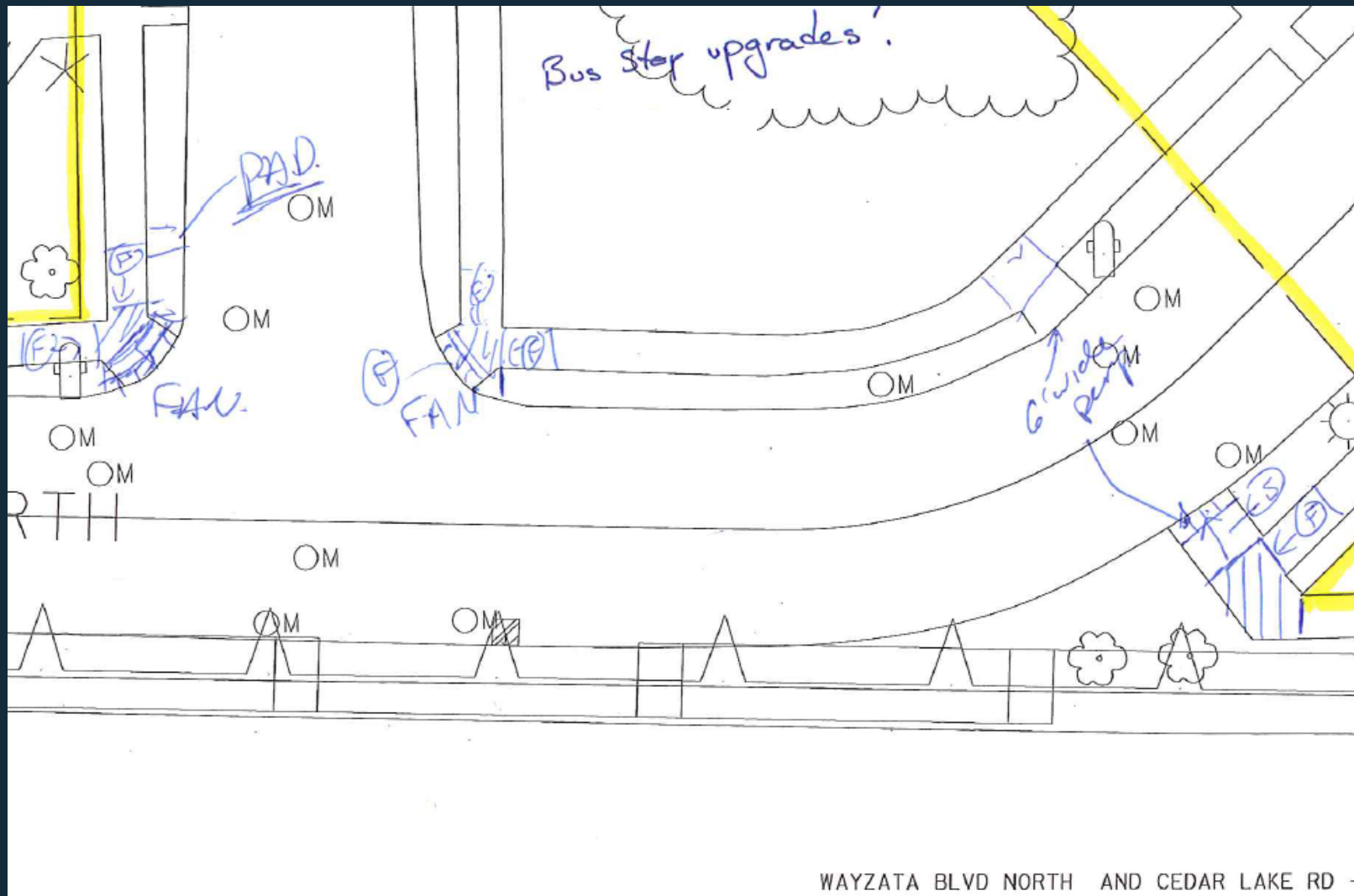
Conduct Field Walk & Prepare Recs.



- Final project scope needed
 - Pavement, bridge, signals, etc.
- 20'-scale topo showing utilities and ROW
- Recommendations documented and distributed within two weeks by ADA
- Project Manager and/or Designer need to consult ADA unit if recommendations are not feasible
- Occur between April and November (no snow or ice)

Prepare Recommendations

- Example redline recommendations



- Preliminary sidewalk profiles
- 20'-scale sidewalk and intersection details needed for Level 2 and Level 3
- MnDOT ADA Legend
- MnDOT ADA Standards
- Typicals, Profiles, Cross-sections, Removals, Construction, and Construction Details
- Submit between 30% and 60% plans
- Justify when review comments are not incorporated

Design Review – Stage 1

Plan Review Stage 1				
Item No.	Description	LEVEL		
		L 1	L 2	L 3
1	Followed ADA Project Design Guide (PDG) and Curb Ramp Guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Followed preferred Curb Ramp Design, APS Design, Sidewalk Design and Driveway Design Criteria	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Utilized ADA Standard Legend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Show Right-Of-Way		<input type="checkbox"/>	<input type="checkbox"/>
5	All Surface Utilities (Shown + Field Verified)		<input type="checkbox"/>	<input type="checkbox"/>
6	20' (preferred) or 30' scale ADA details to fit an entire intersection on ONE sheet		<input type="checkbox"/>	<input type="checkbox"/>
7	Determine Crossing Locations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Design Review – Stage 1 (cont.)

Item No.	Description	L 1	L 2	L 3
8	Pick Curb Ramp Types	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Existing flowlines from 2-3% need a construction note stating to table the flowline to less than 2% either on the Tabs for level 1's or on the ADA details for 2 and 3's.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Flow line's over 3% need to be labeled & Include X, Y, Z or profile that brings it to compliance			<input type="checkbox"/>
11	Show Crosswalk and Push Button Locations, including push button table from signal guidance		<input type="checkbox"/>	<input type="checkbox"/>
12	For APS pushbuttons located on signal poles, include the APS Pole Mounting Adaptor with a note in the signal plans		<input type="checkbox"/>	<input type="checkbox"/>
13	For APS pushbuttons located on existing pedestals, ensure 3 saddle adaptors are labeled in the Plan for each pedestal		<input type="checkbox"/>	<input type="checkbox"/>
14	Contractor Friendly Terms, i.e. maintain 4" step height, match doorway threshold etc.			<input type="checkbox"/>



Design Review – Stage 1 (cont.)

Item No.	Description	L 1	L 2	L 3
15	Specify all non-compliant components to nearest foot and whole percent (slopes and ramp lengths)		<input type="checkbox"/>	<input type="checkbox"/>
16	Directional curb shown properly (built integral with the curb and gutter)		<input type="checkbox"/>	<input type="checkbox"/>
17	2' Continuous Depth Dome Coverage with no "step through"		<input type="checkbox"/>	<input type="checkbox"/>
18	Talked with property owner on preference of side treatment (i.e. v-curb, grading, bit patch etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

* Use Standard Plan slope ranges in Level 2 or 3 designs unless there's extreme topography



- Requirements of Design Review #1 met
- Preliminary SEQ, tabs, Soils and Construction Notes
- Standard Plates
- Standard Plans
- Submit between 60% and 90% plans
- Justify when review comments are not incorporated

Design Review – Stage 2

Plan Review Stage 2					
Item No.	Description	LEVEL			
		L 1	L 2	L 3	
1	ADA Pay Items Included in Plans	<input type="checkbox"/>			
	ADA Concrete Walk	CHECK ALL ADA PAY ITEMS BEING USED			
	ADA Concrete Curb & Gutter				<input type="checkbox"/>
	Mill and Patch Bituminous Pavement				<input type="checkbox"/>
	Remove and Replace Bituminous Pavement				<input type="checkbox"/>
	Site Restoration				<input type="checkbox"/>
	Drill and Grout Reinforcement Bars				<input type="checkbox"/>



Design Review – Stage 2 (cont.)

Item No.	Description	L 1	L 2	L 3
2	Radial Domes are used whenever the domes are placed at the back of curb (label radius). These radial domes must be tabbed out separately from the rectangular domes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Typical Sections Shown in Plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Note for all Landings to be poured separately, language matching the ADA special provisions from 1803	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	ADA Special Provisions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Design Review – Stage 2 (cont.)

Item No.	Description	L 1	L 2	L 3
6	Standard Plates, Standard Plans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Show Striping or Outline of Striping on ADA Detail Sheet		<input type="checkbox"/>	<input type="checkbox"/>
8	X, Y for Push Buttons Stations, New Signal Poles, and Zero Height Curb		<input type="checkbox"/>	<input type="checkbox"/>
9	Survey control/Datum shown in Plan		<input type="checkbox"/>	<input type="checkbox"/>
10	X, Y, Z or radius and profile for all Curb & Gutter modifications			<input type="checkbox"/>
11	Landscape/Construction Plans show a compliant joint detail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



- Submit full copy of plan set
- Prior to CO turn-in review if possible
- If sheets change due to other's comments, ADA needs to be made aware of changes

- Continuous dialogue between Design and ADA unit
- If scope changes at any time during the project, ADA needs to be notified
- Recommendations may change 😊
- ~1/3 of design time of ADA facilities should be in the field
- Additional field walks with ADA unit may be necessary

ADA Preferred Designs



“All designs need to be ADA compliant unless all alternatives have been explored and the results have been documented. While ADA compliance is the minimum standard that must be met, but in order to meet the long term objectives, all designs must also be constructible, maintainable, and address the range of pedestrian user needs.

The ADA Preferred Designs were created to implement best practices and incorporate lessons learned into a manner that provides construction tolerances and meets the long term maintenance and usability needs.”

ADA Preferred Designs



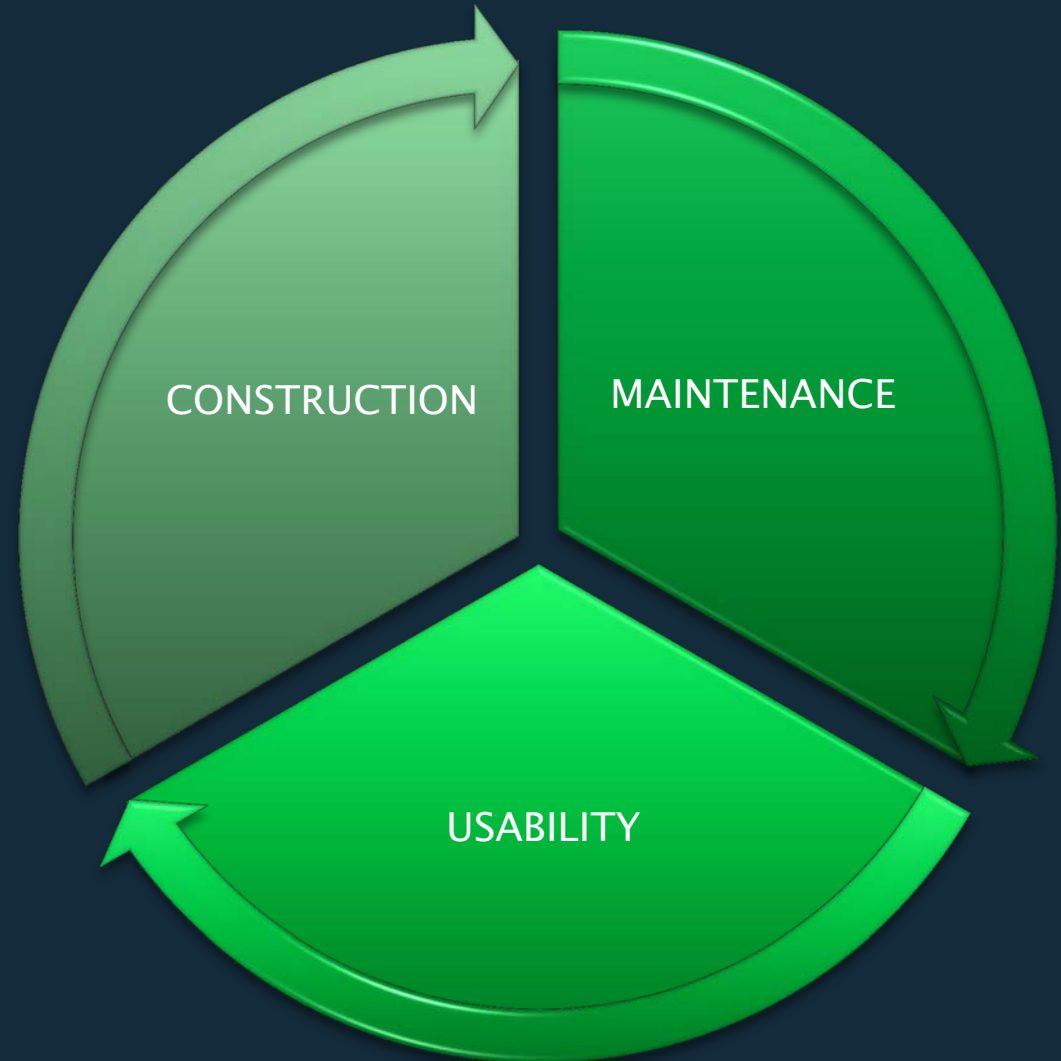
REASONS FOR PREFERRED

{C} = CONSTRUCTION

{M} = MAINTENANCE

{U} = USABILITY

Design to the nearest minimum half foot increment, one foot increment (preferred) for all ADA and APS Applications.



ADA Preferred Designs



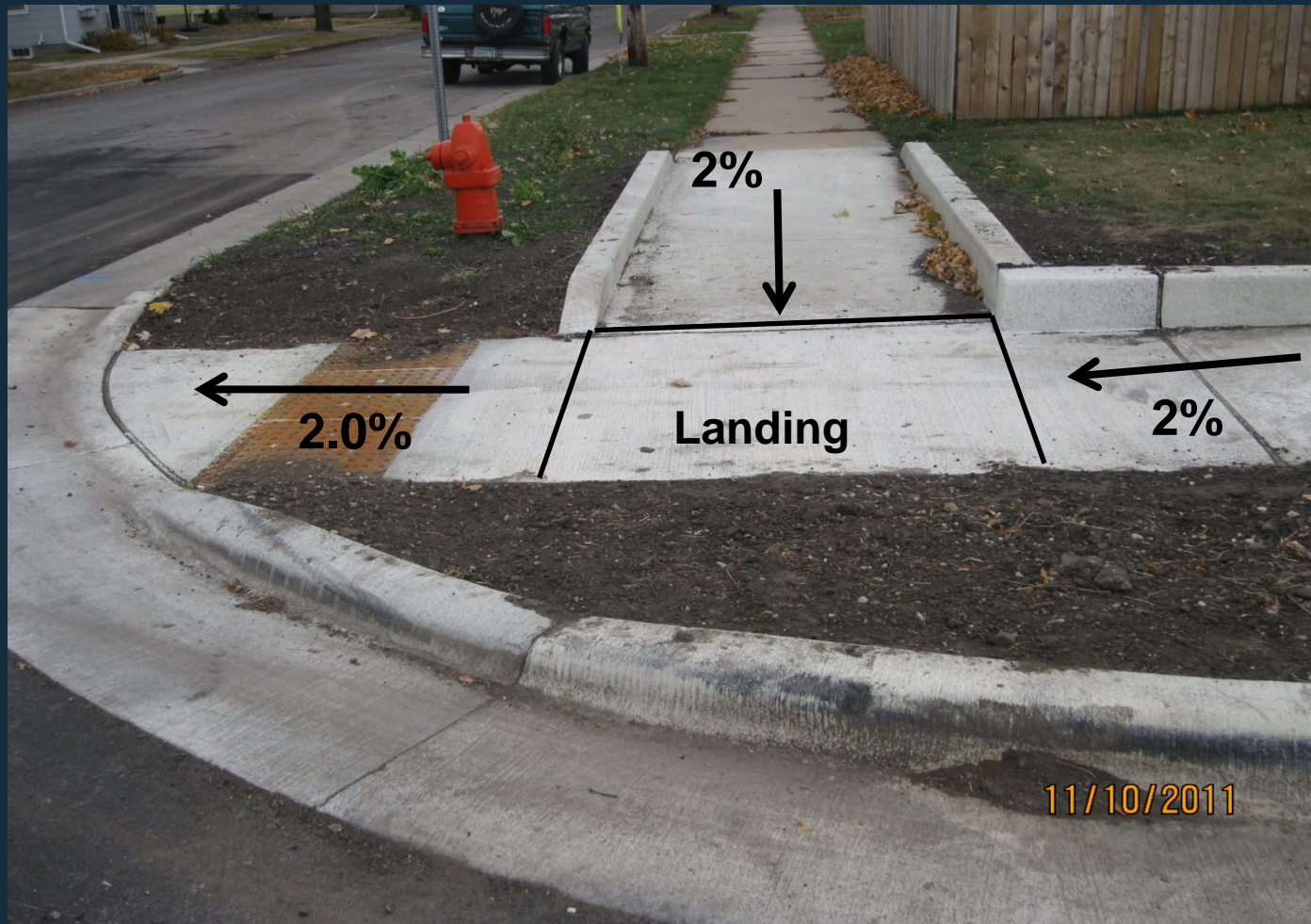
PREFERRED CURB RAMP DESIGN CRITERIA

ITEM		MIN	MAX	PREFERRED	REASON
LANDING		4' X 4'	VARIES	5' X 5'	C & U
RAMP SLOPE	(F)	2.0%	5.0%	4.0%	C, M & U
	(S)	5.0%	8.3%	7.0%	
	FAN	2.0%	8.3%	5.0%	
<p>ONCE YOU HAVE REACHED THE 3" MIN CURB HEIGHT, THE CURB HEIGHT SHOULD MATCH PAR HEIGHT. SHOW INTERMEDIATE CURB HEIGHTS WHEN (1) LANDING ELEVATIONS ARE LESS THAN THE TYPICAL CURB SECTION OR (2) BLVD'S ARE LESS THAN 3 FEET AT THE CURB RAMP OR (3) WHEN SIDEWALK IS AT BACK OF CURB.</p>					M & U
RAMP WIDTH		4'	VARIES	6' APS/COMMERCIAL AREAS MATCH TRAIL WIDTH	M & U
RAMP LENGTH		3'	15'	4' MIN 6' MAX	C & U
LANDING & RAMP CROSS SLOPE		POSITIVE FLOW	2.0%	1.0% MIN 1.5% MAX	C
FLOWLINE		POSITIVE FLOW	2.0%	1.0% MIN 1.5% MAX	C
ROADWAY CROSS SLOPE		POSITIVE FLOW	5.0%	1.0% MIN 5.0% MAX	C & U

ADA Curb Ramp Construction



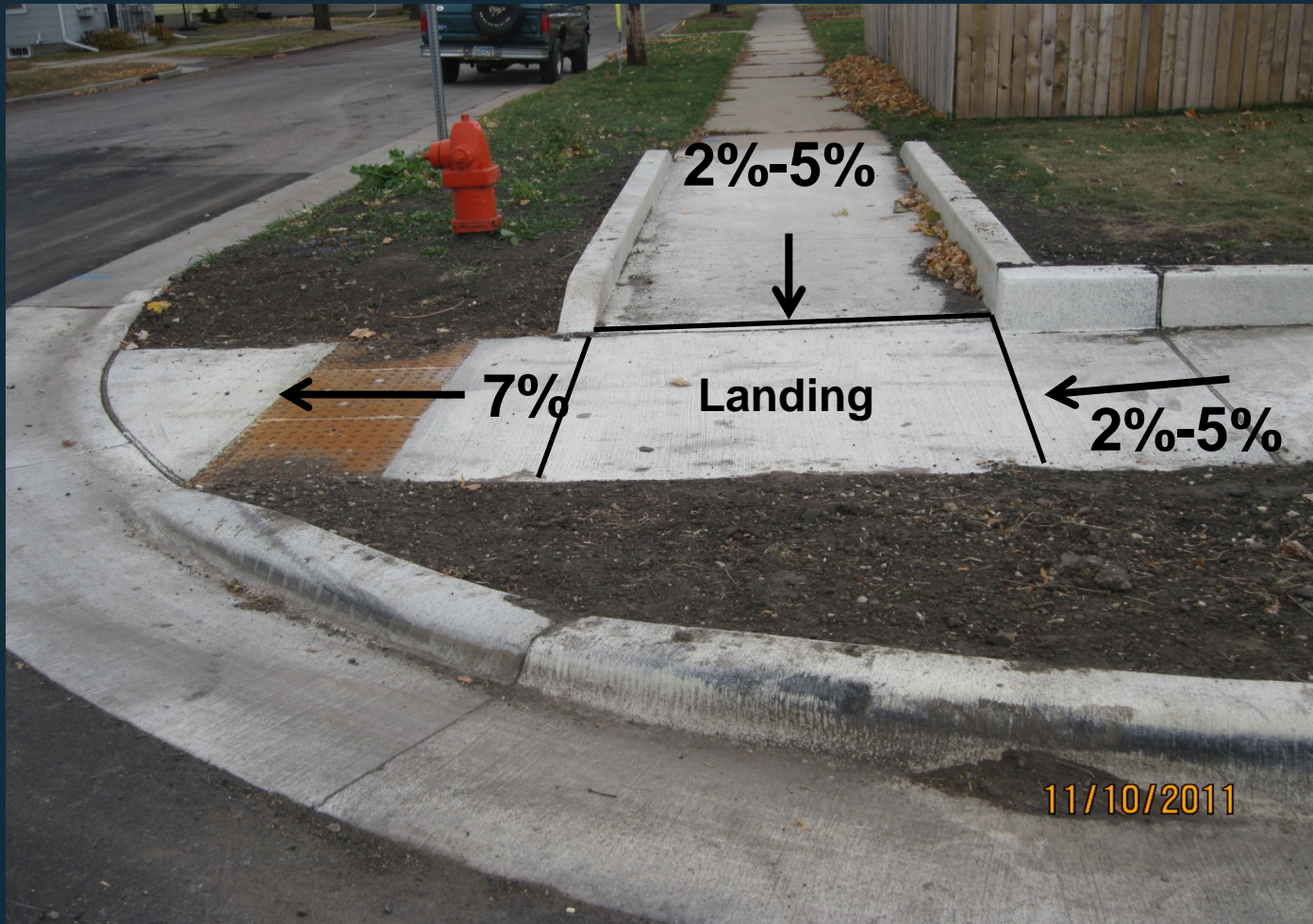
- Curb ramp is complaint, but it fits poorly into its surroundings, and will be difficult to maintain.



Curb Ramp Construction



- Slopes shown are preferred and side slopes could have been grade flush, thus eliminating V-curb.



ADA Preferred Design



Designs at maximum or minimum slopes doesn't allow for construction tolerances



ADA Preferred Landing Design



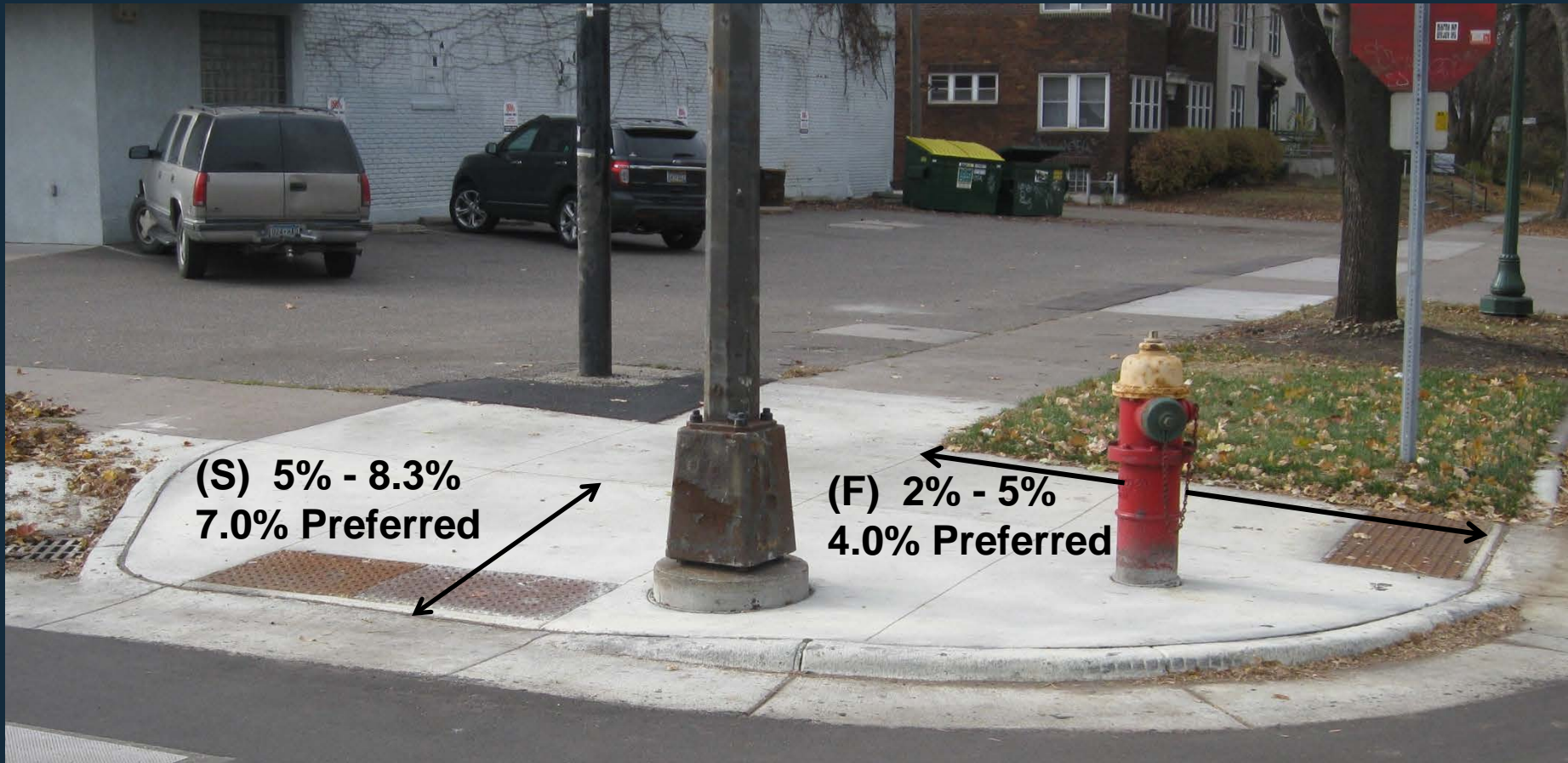
ITEM	MIN	MAX	PREFERRED	REASON	GUIDANCE
LANDING	4' X 4'	VARIABLES	5' X 5'	C & U	MATCH PAR's, enlarge landings to achieve perpendicular grade breaks



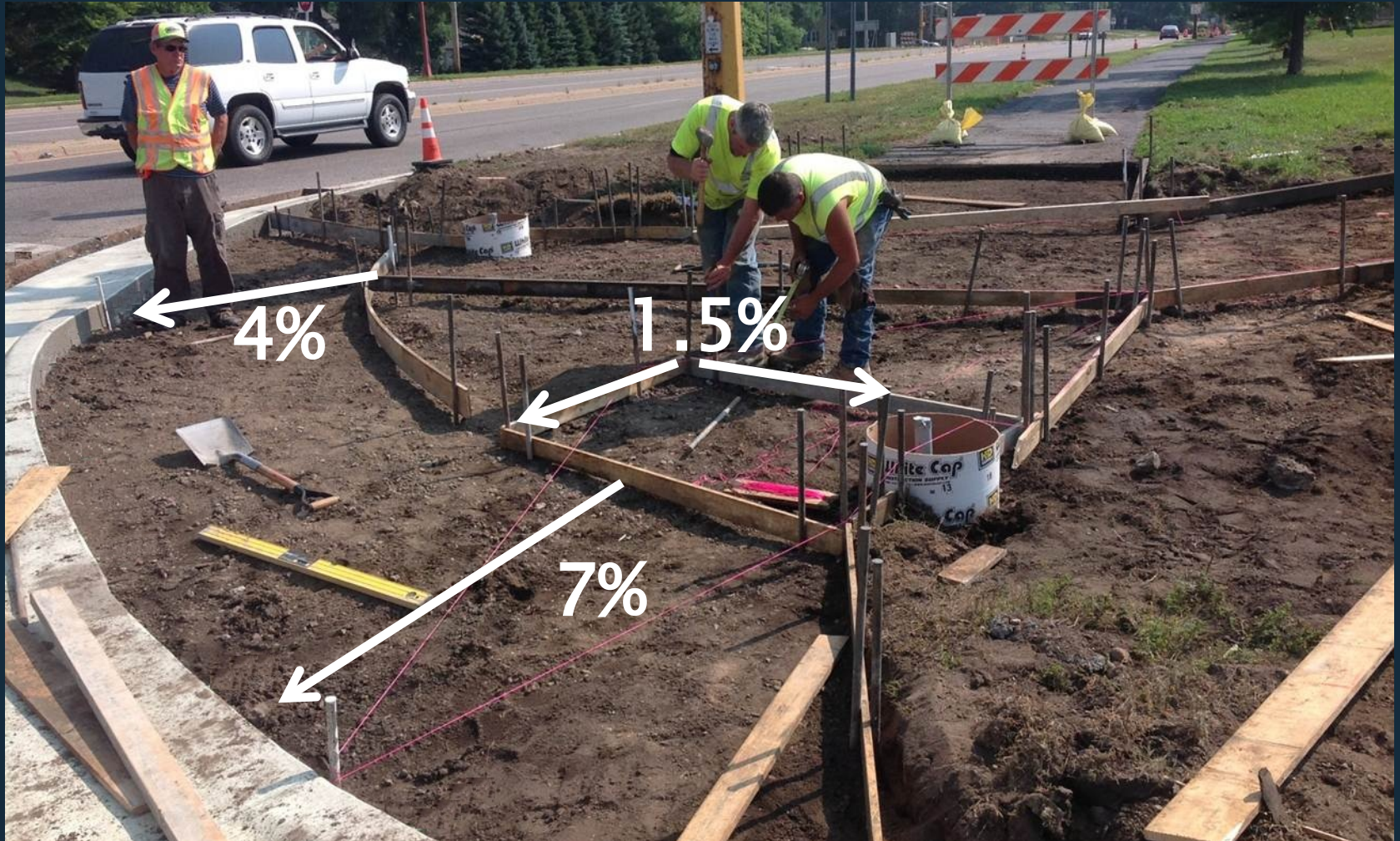
ADA Preferred Ramp Slope



- (1) Maintains drainage in gutter
- (2) Blend in better with surrounding terrain
- (3) Reduce removal limits while minimizing v-curb

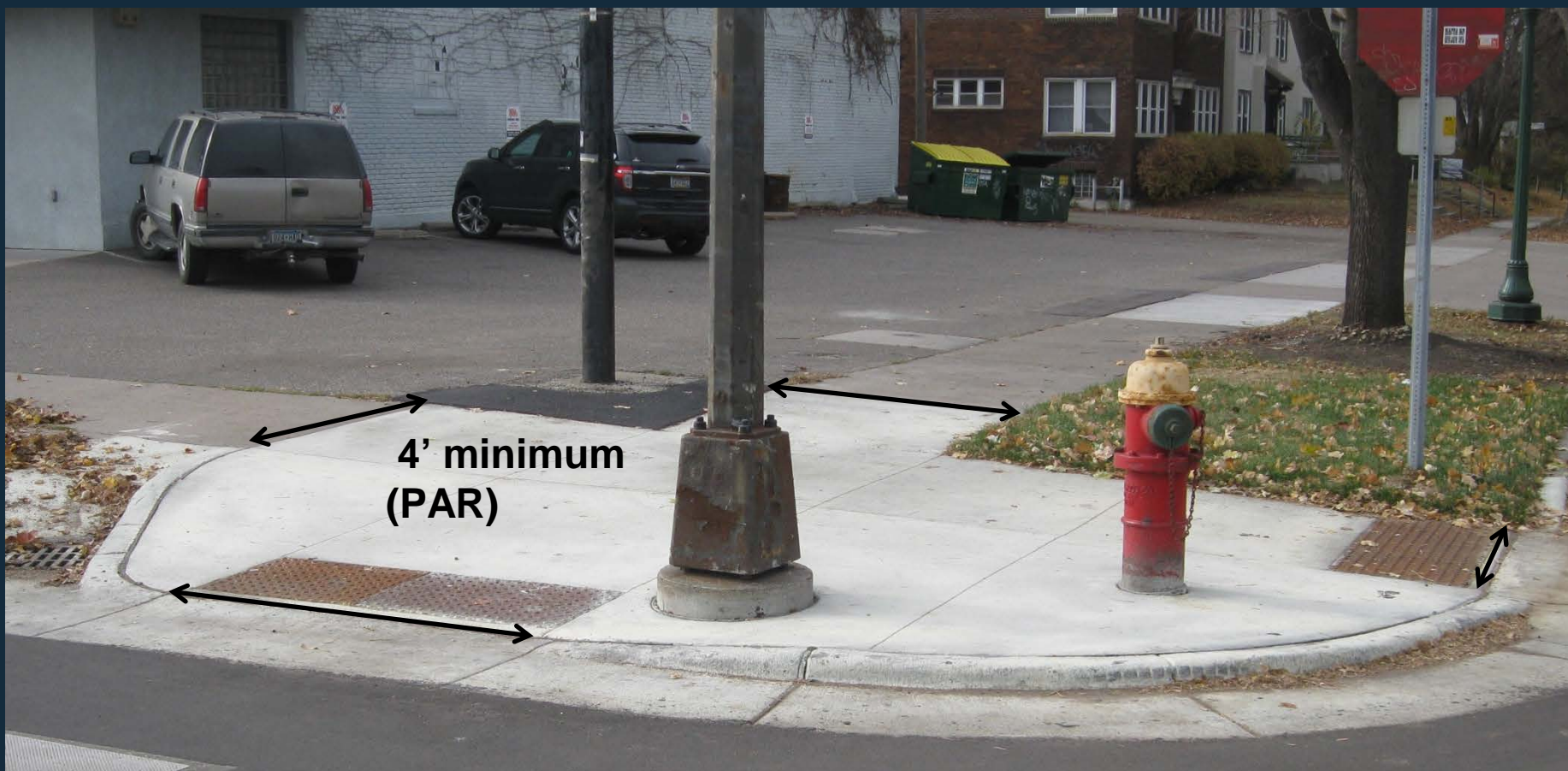


ADA Preferred Design



ADA Preferred Ramp Width

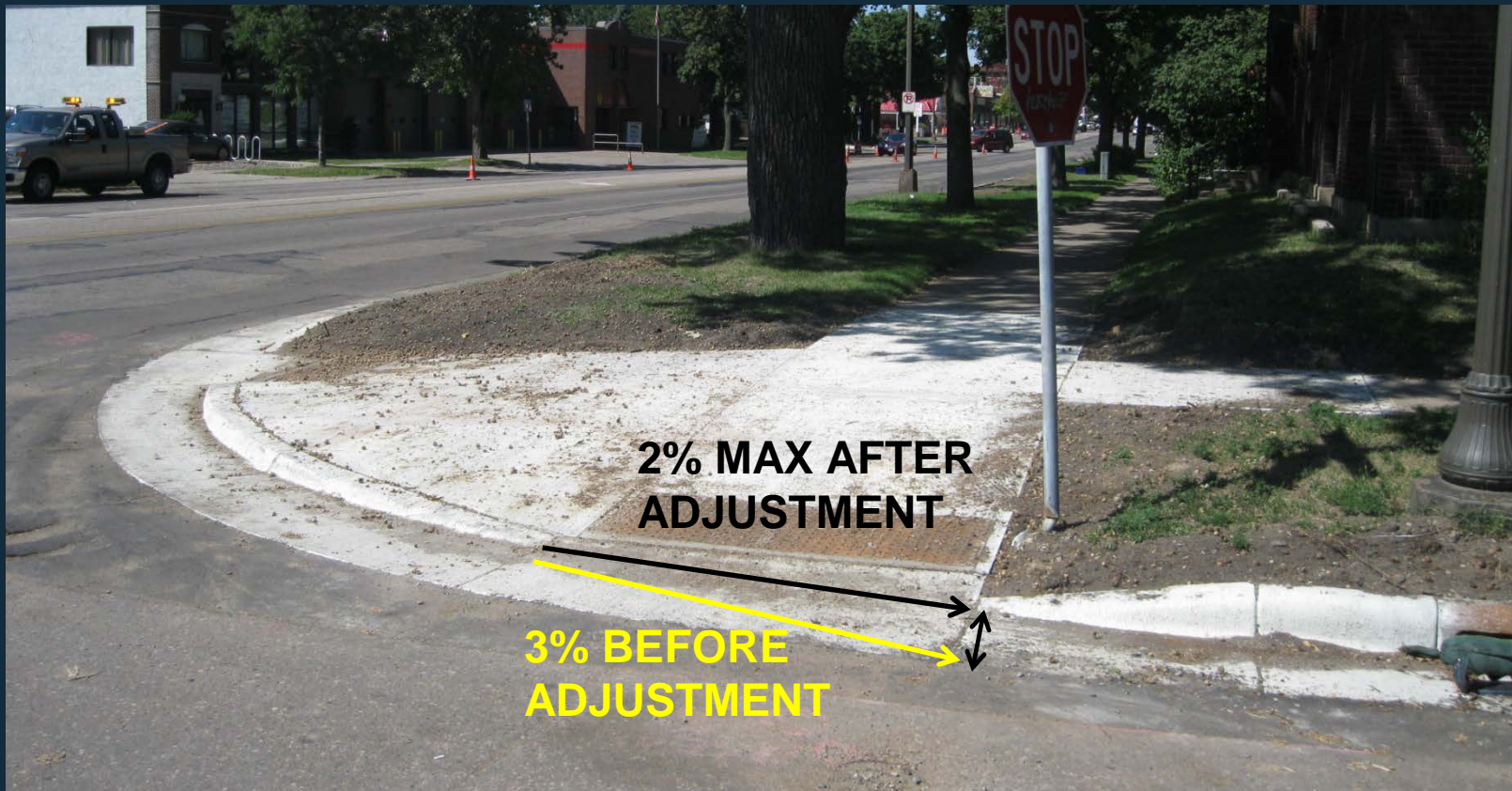
Ramp width should always match the PAR.
6' preferred width for APS and commercial



ADA Preferred Curb Ramp Design

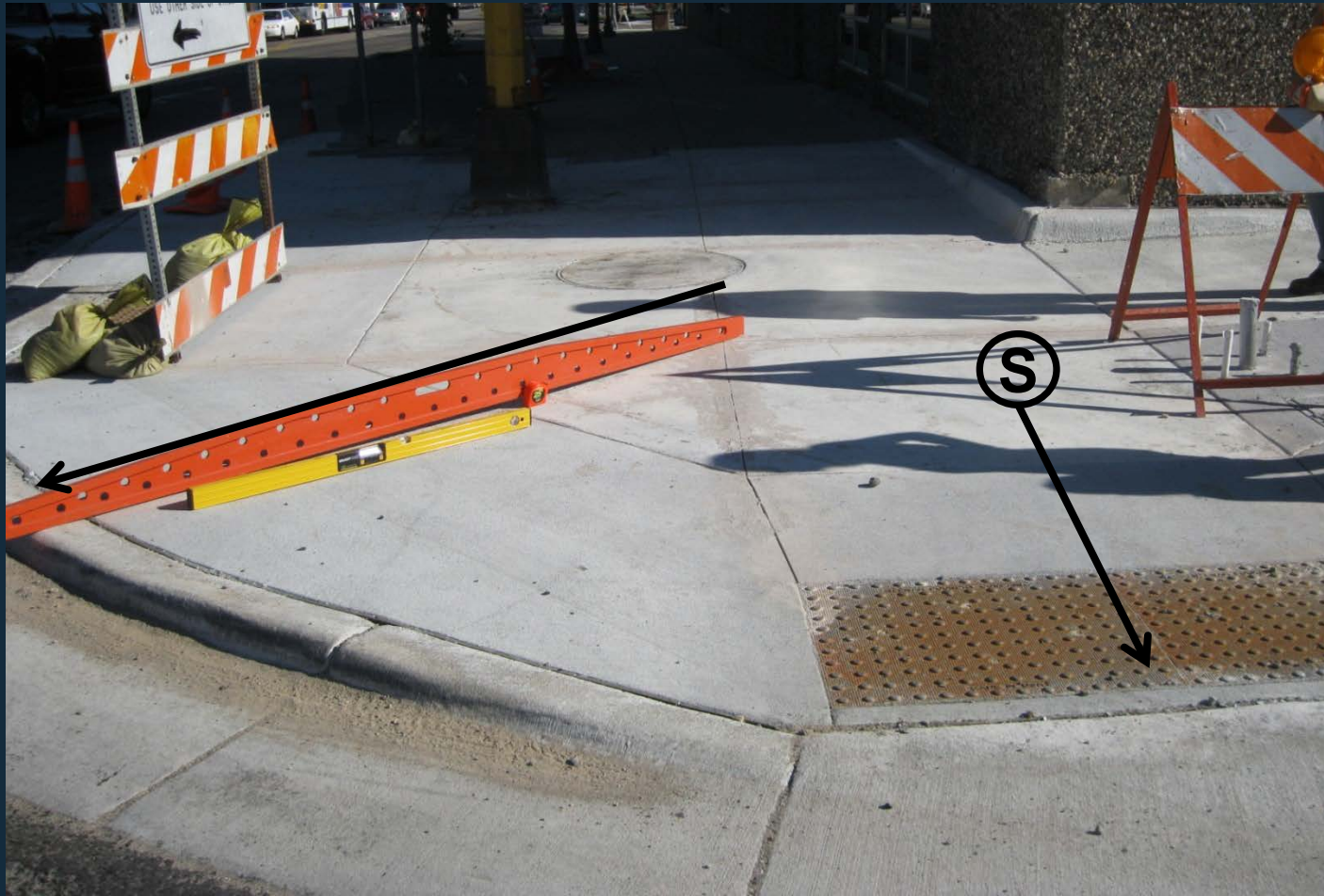


- Spec. 2531 Concrete Curb and Gutter ADA : if gutter flow line exceeds 2% The flow line should be adjusted to allow a flatter slope, but still provide positive drainage



Ramp Slope

This ramp should have risen up to a 4" curb height to maintain drainage and eliminate v-curb. Landing should be higher than the top of curb.



Ramp Slope

The ramp should have been steeper (S) to allow the landing height to be higher than the top of curb.



Side Treatments

- (Sheet 2 Note 2) One Way Directional Ramps:
- A longer curb transition may be used to reduce reverse grade boulevard.



Side Treatments



- (Sheet 2 Note 2) One Way Directional Ramps:
- A longer curb transition may be used to reduce reverse grade boulevard.



ADA Preferred Ramp Design



When inverse grades are present minimize the elevation of the PAR unless proven necessary to maintain drainage.



ADA Removal limits

Increase removal limits to avoid (Tenting)
or inverse grades of PAR



ADA Preferred APS Design



ITEM	MIN	MAX	PREFERRED	REASON
Push Button Station Setback	1.5'	10'	4' MIN URBAN, 6-8' MIN RURAL, 9.5' MAX	M
Push Button from grade break or back of walk	0.75'	-	2' MIN	U
Maintenance Access Route (MAR)	6'	-	-	M & U
Push Button offset from outside edge of crosswalk	0'	5'	-	U
Push Button Separation	10'	-	10.5 MIN	C

REASONS FOR PREFERRED

{C} = CONSTRUCTION

{M} = MAINTENANCE

{U} = USABILITY

ADA Preferred APS Design

MIN	MAX	PREFERRED	REASON
1.5'	10'	4' MIN URBAN, 6-8' MIN RURAL, 9.5' MAX	M



ADA Preferred APS Design



Push Button from Grade Break or back of walk

Min. 0.75'

Preferred
Min. 2.0'

Maintain 6.0'
Maintenance
Access Route

The MAR
criteria trumps
this preferred
criteria



ADA Preferred APS Design

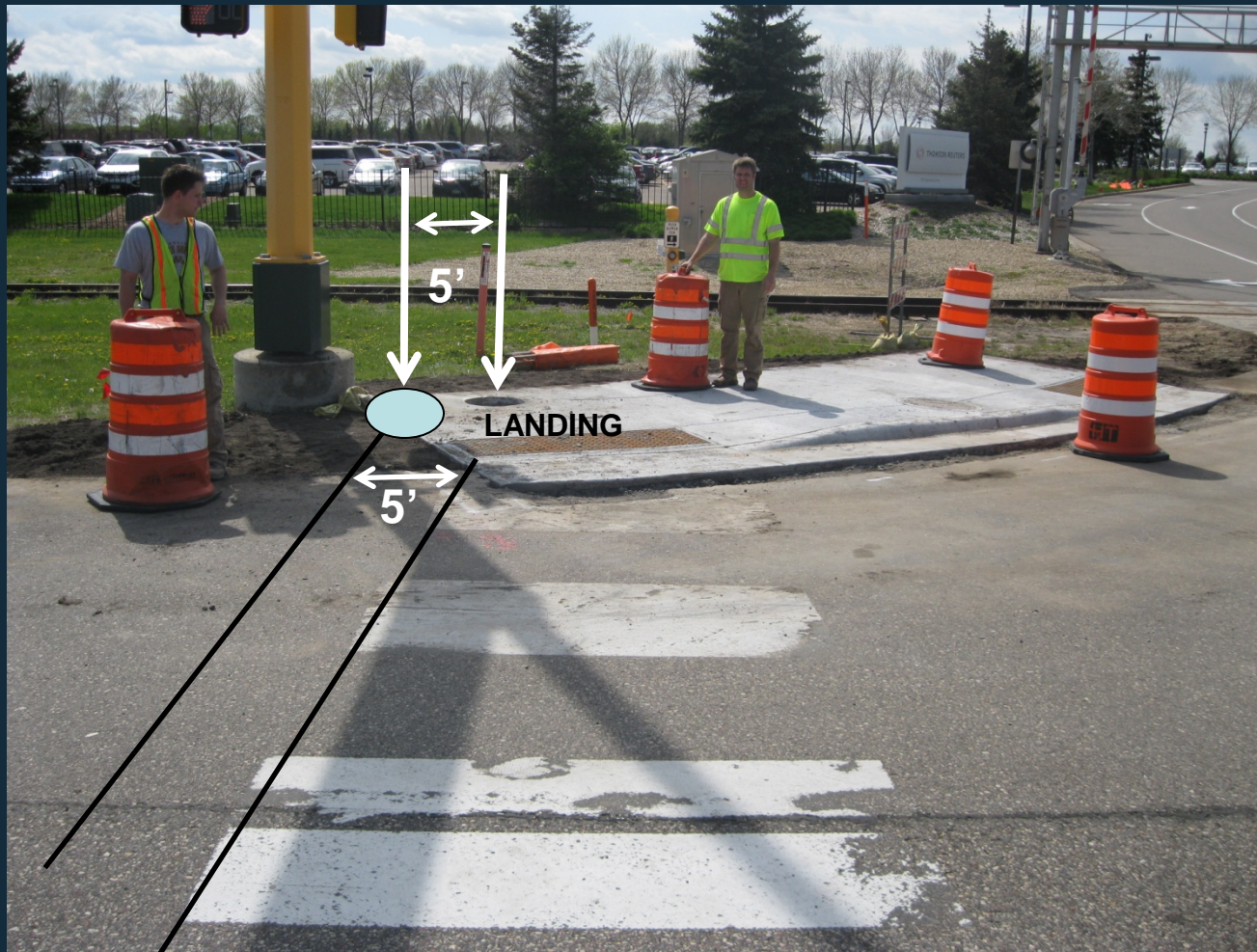
Locate push buttons (PB) 6' min. from obstructions whenever possible to allow an adequate MAR.



Move PB to the back of landing when a 6' MAR can't be achieved.

ADA Preferred APS Design

Push Button offset is 5' Max. from the outside edge of crosswalk/domes



ADA Preferred APS Design



ITEM	MIN	MAX	PREFERRED	REASON	GUIDANCE
Push Button Separation	10'	-	10.5 MIN	C	Must meet MIN. MAR criteria at Porkchops



ADA Preferred APS Design

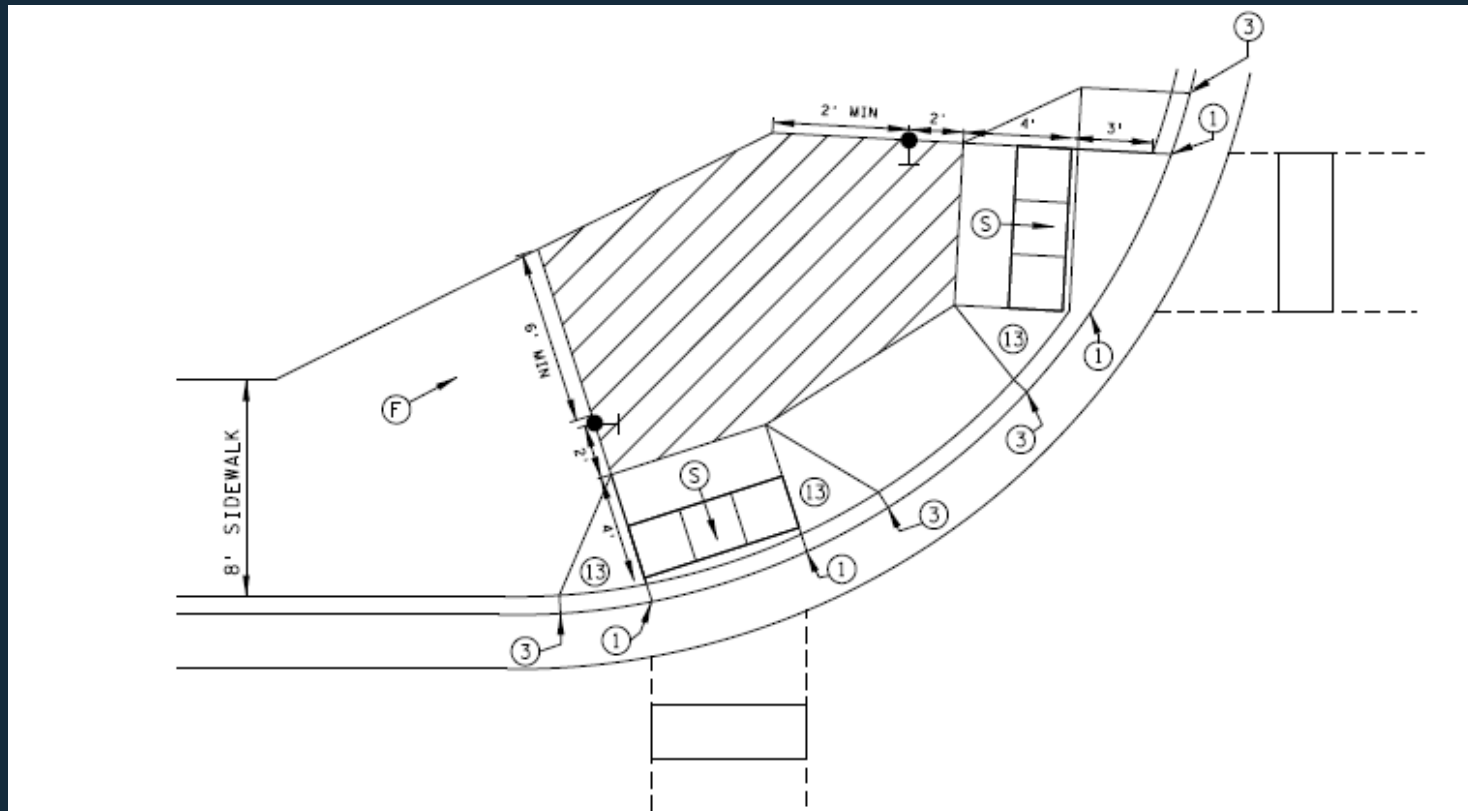


Locate Push buttons outside PAR whenever possible.
Keep all Pushbuttons out of the middle of the walk/trails.
Allowable PB encroachment:
2' on 10' trails and 1' on 8' trails.



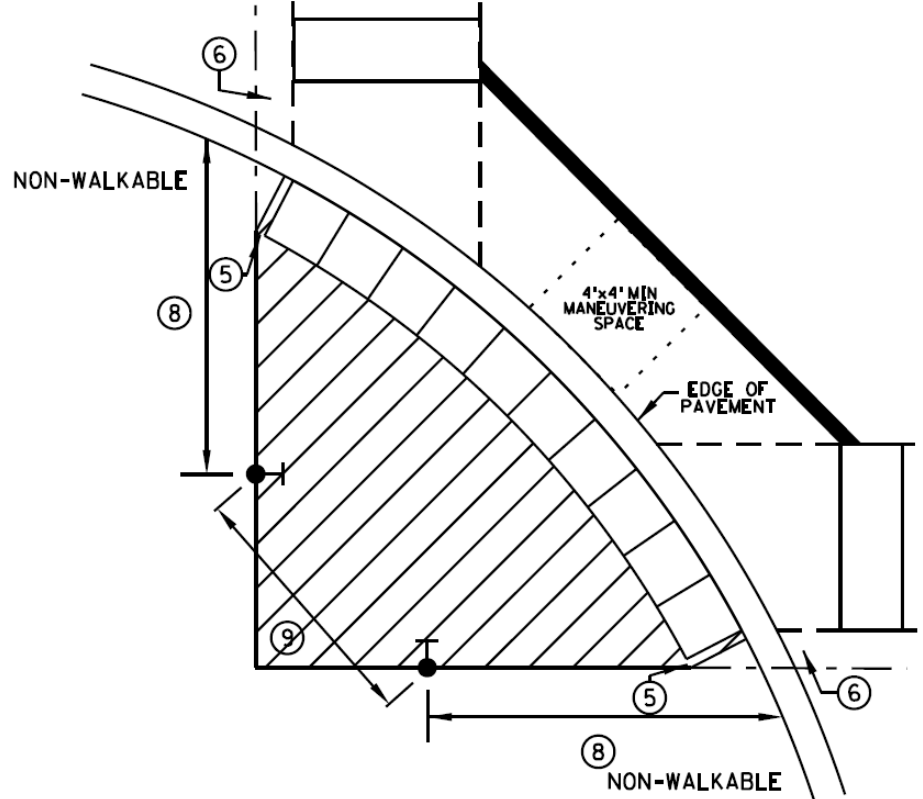
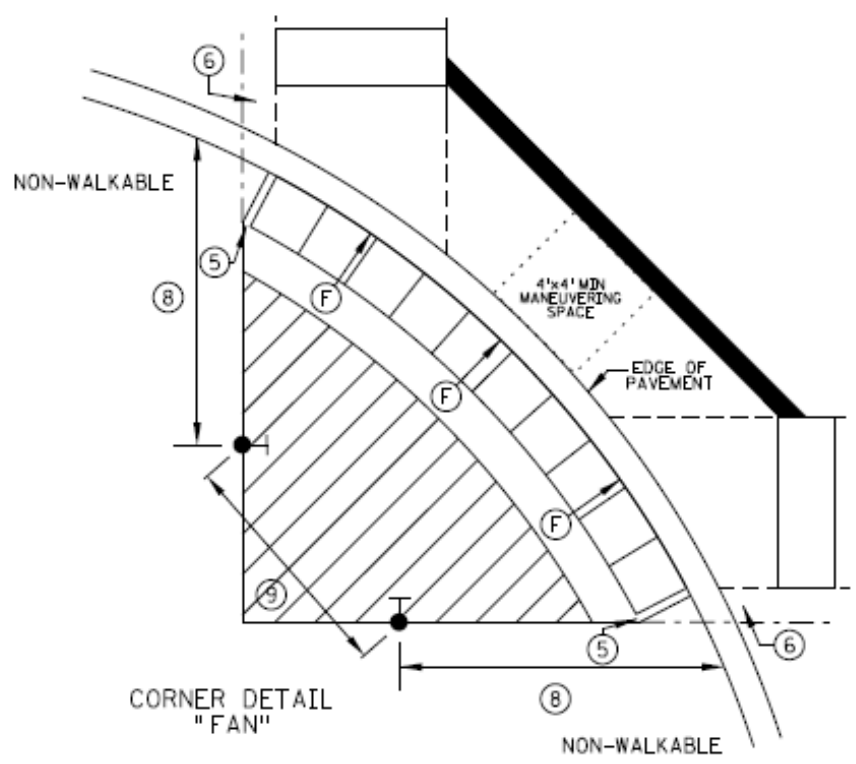
ADA Preferred Design

When a sidewalk dead-ends (i.e. on freeway ramps where the PAR doesn't continue down the freeway ramp) a semi-directional ramp is preferred over a perpendicular ramp. See the detail (3,4,9) below.



APS W/ DEAD-END SIDEWALK (3,4,9)

Rural Pad Designs



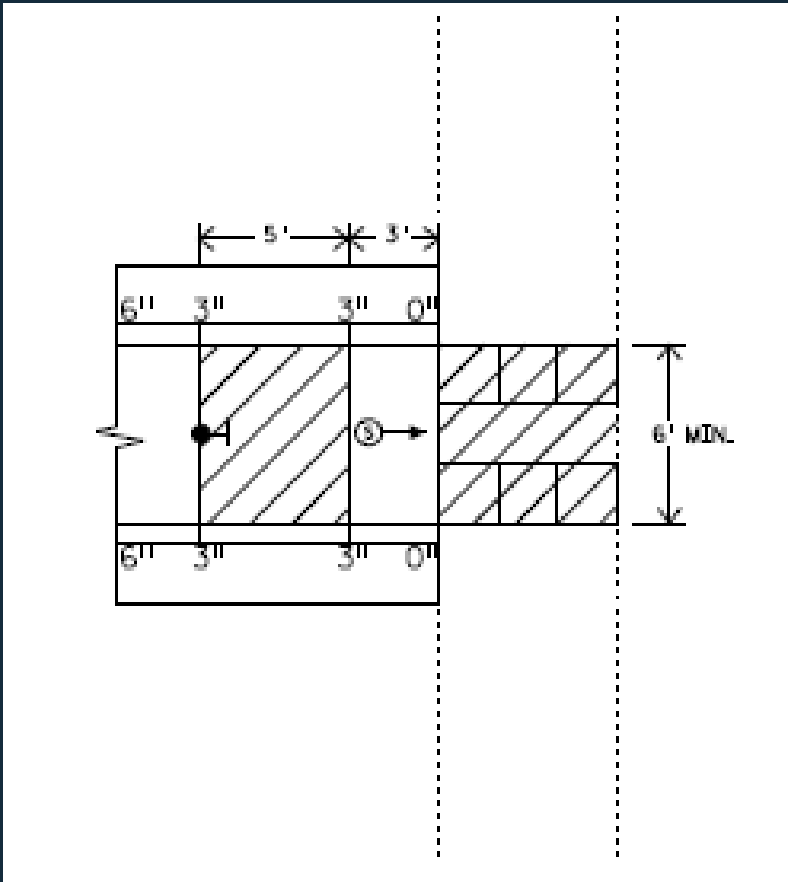
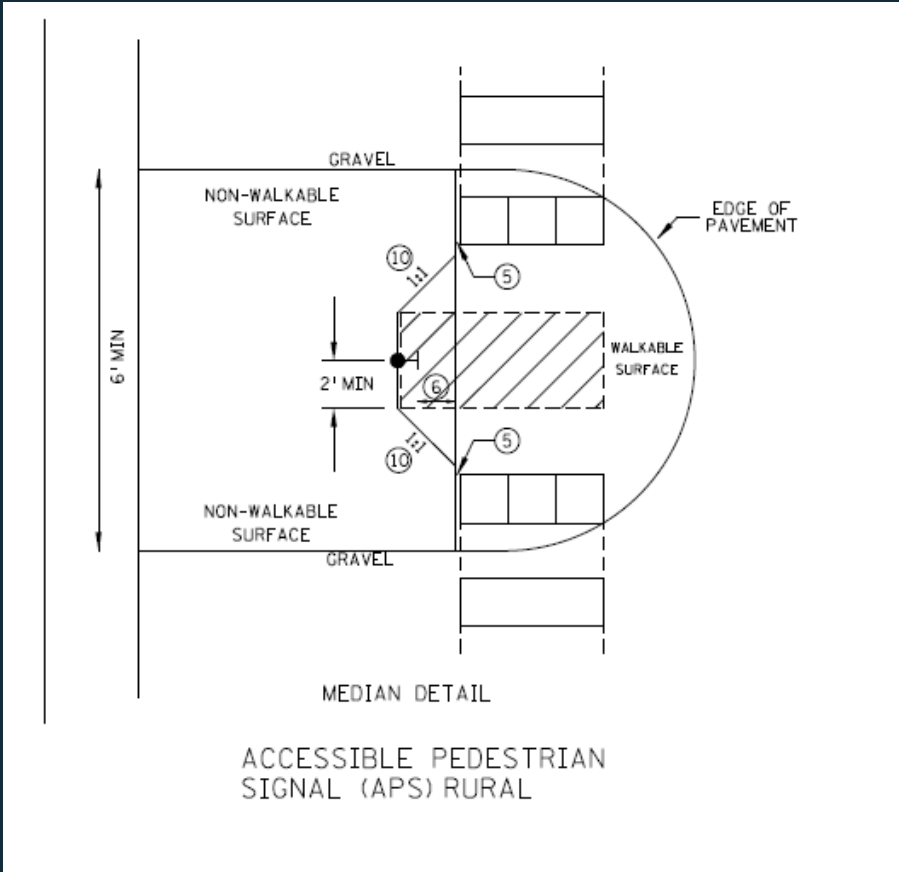
CORNER DETAIL
"DEPRESSED CORNER"

New ADA Details - DRAFT



APS Rural Median Detail

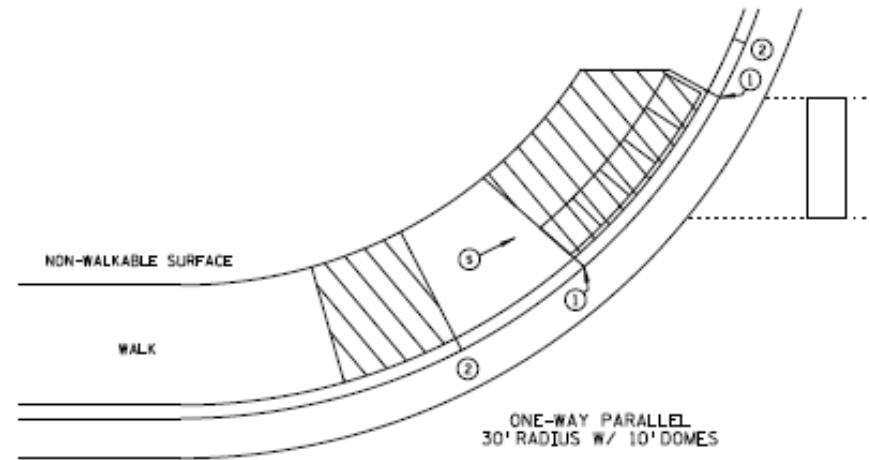
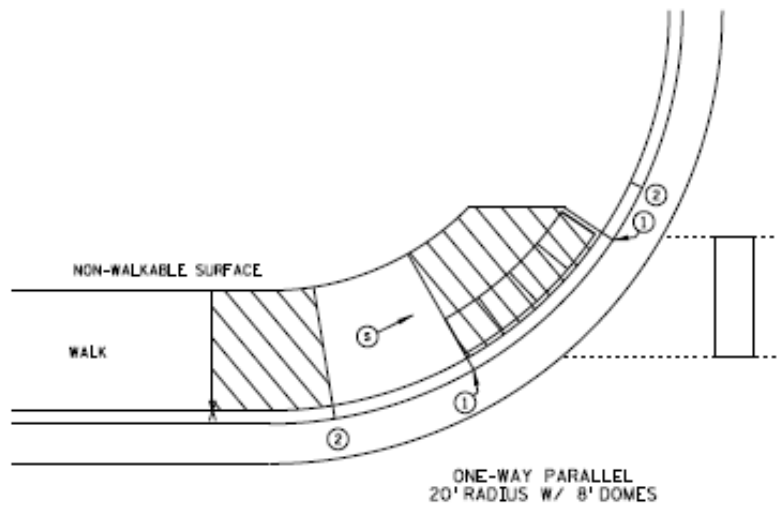
APS Urban Median Detail



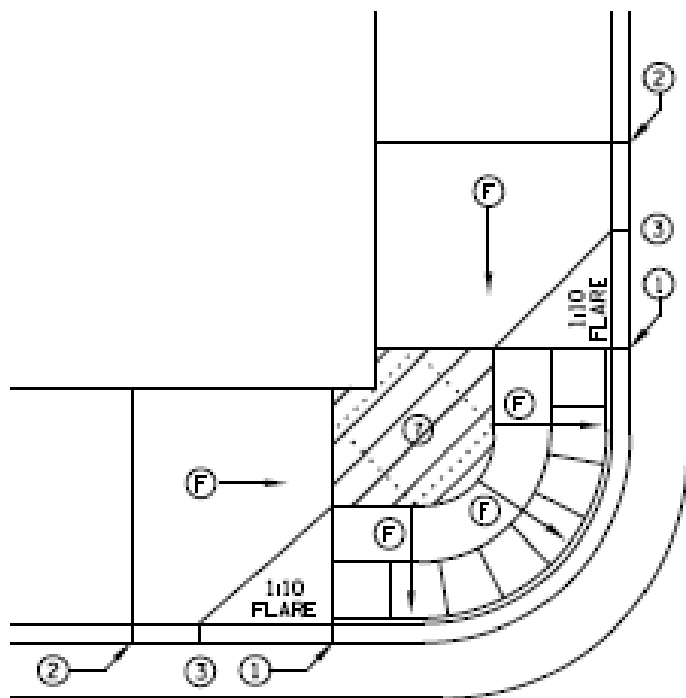
ADA Preferred Design



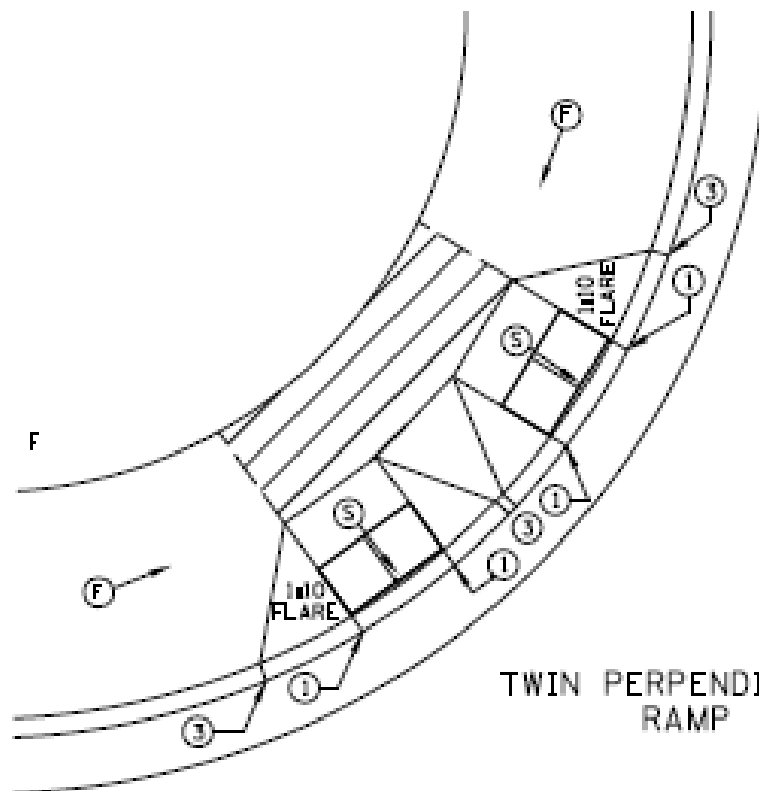
One-Way Parallel Ramp



ADA Preferred Design



MODIFIED FAN

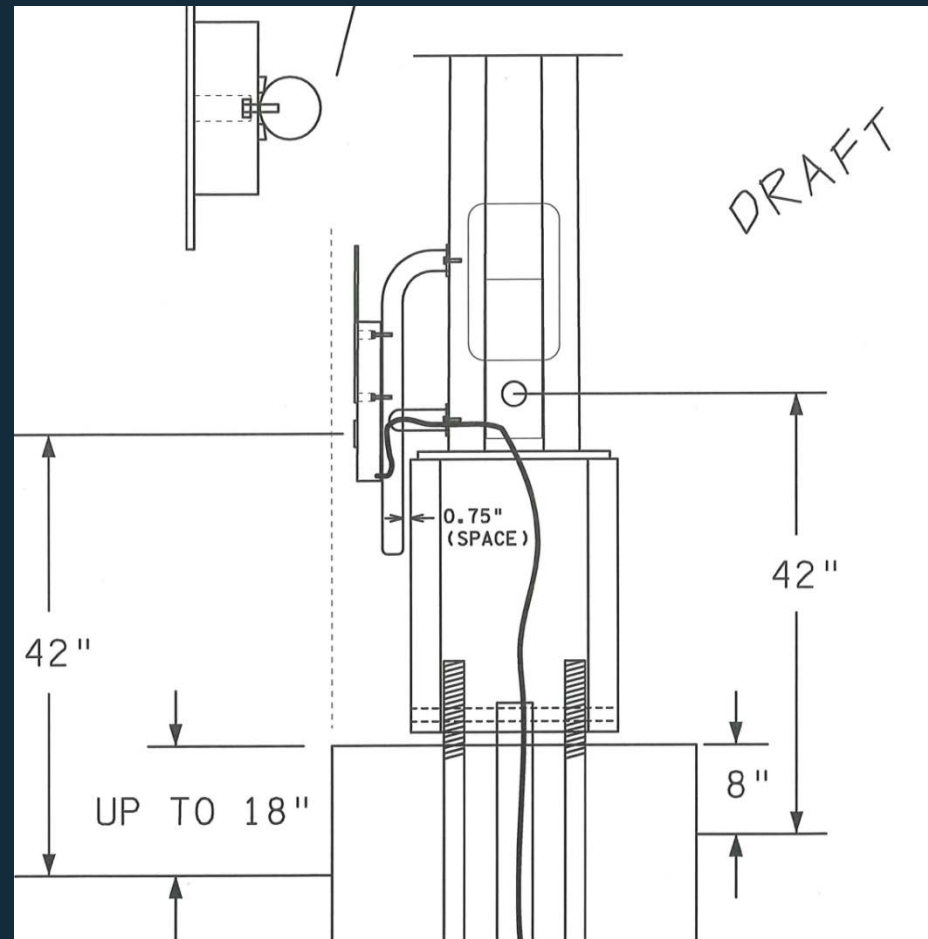


TWIN PERPENDICULAR RAMP

New APS Signal Pole Bracket



When installing new signal poles it's preferred to get them out of the way as to not obstruct the pedestrian facilities. Downtown and rural pads.



Pedestrian Signal Systems



APS Push Button Station and Location

