



ADA Training

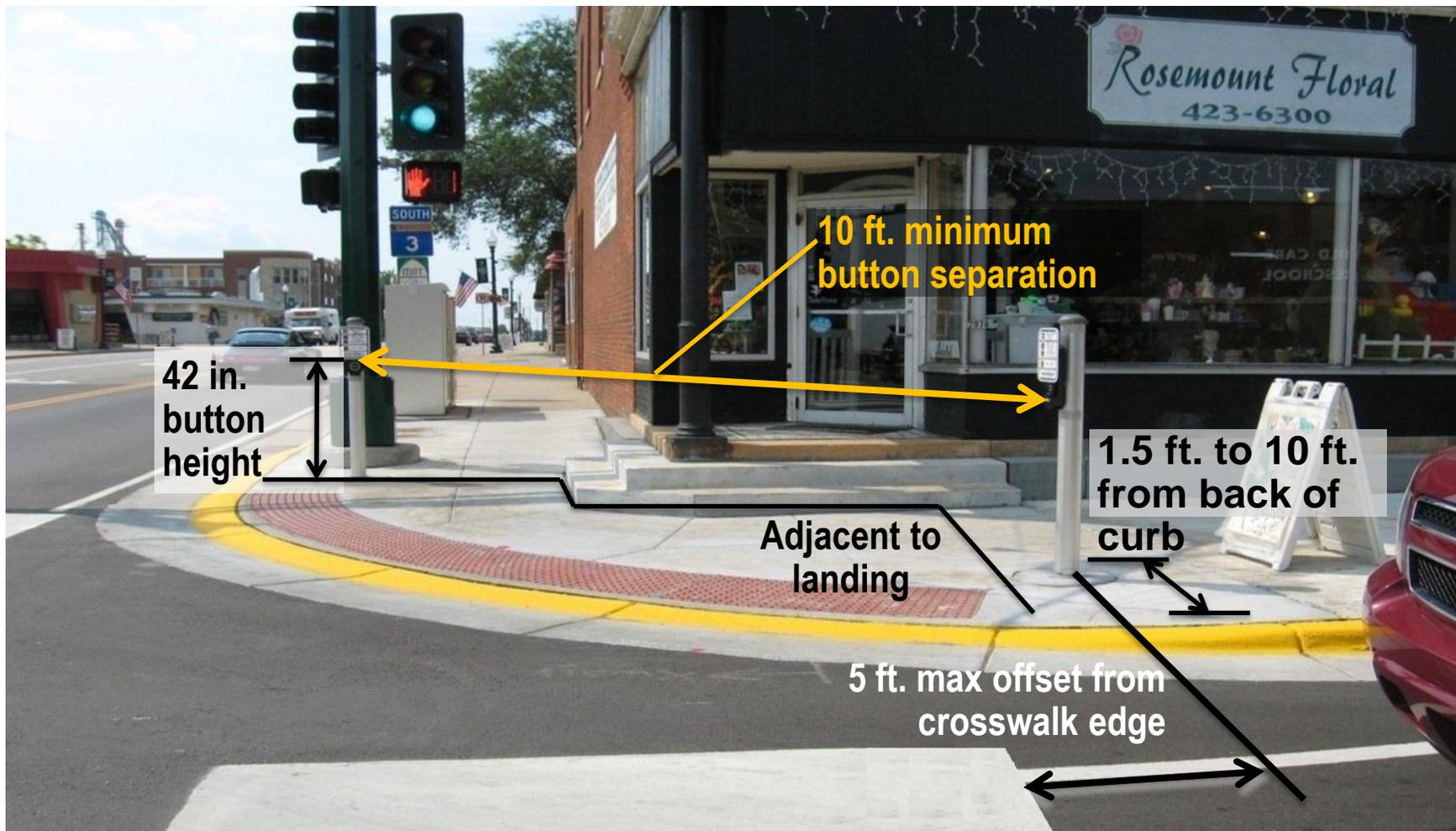
Accessible Pedestrian Signal (APS)

2018
MnDOT

APS Design Considerations

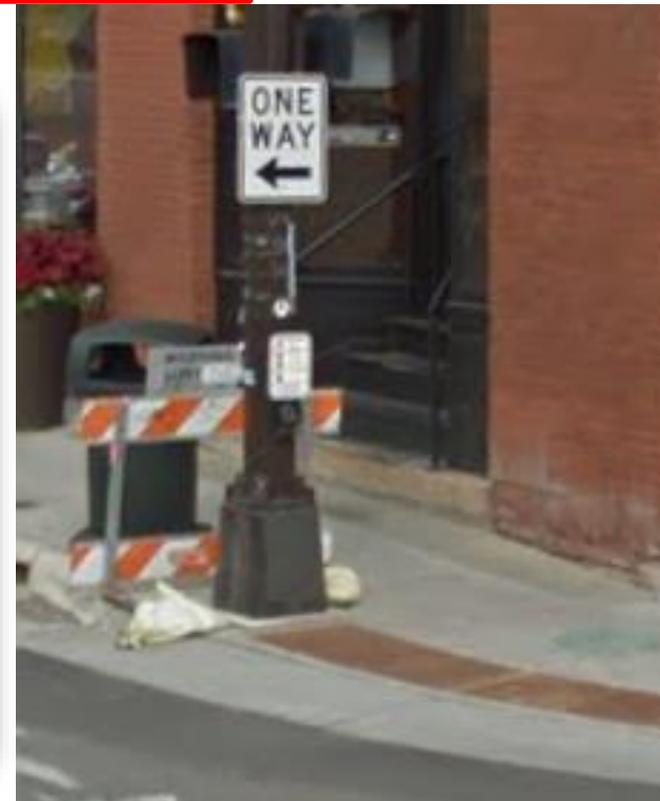
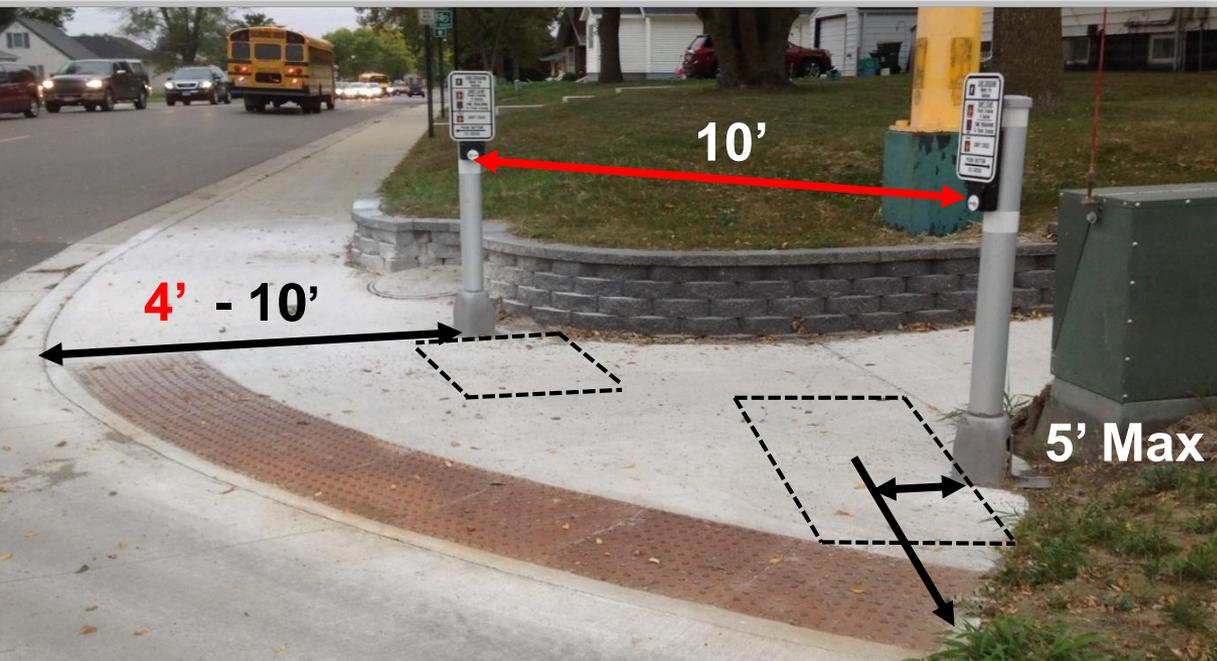
- Design quadrant first
 - MNMUTCD Criteria
 - MnDOT Criteria
 - Right-of-Way Needs
 - Signal Pole and Cabinet Placement
- Crosswalk Orientation
- Plan Format
- Other design elements:
 - Pork Chops/Islands,
 - Rural APS Design
 - Bumpouts with APS

MNMUTCD Push Button Criteria



Typical Push Button Location

- ② A MINIMUM 4 FT X 4 FT LANDING AREA SHALL BE PROVIDED ADJACENT TO EACH BUTTON, WITH A 2 PERCENT MAXIMUM SLOPE IN ALL DIRECTIONS.
- ③ BUTTONS SHALL BE WITHIN 5 FT OF THE OUTSIDE EDGE OF THE CROSSWALK.
- ④ BUTTONS SHALL BE BETWEEN 1.5 FT AND 10 FT FROM THE BACK OF CURB OR EDGE OF ROADWAY, MEASURED IN THE DIRECTION OF TRAVEL. **STANDALONE PUSH BUTTON STATIONS SHOULD BE 4' MINIMUM FROM THE BACK OF CURB TO AVOID KNOCKDOWNS.**
- ⑤ BUTTONS SHALL BE AT LEAST 10 FT APART.



Typical Push Button Location

Grass Blvd



Typical Push Button Location

Sidewalk at back of curb (Concrete Blvd)

When sidewalk is at the back of curb the push button should be placed toward the back of walk. This improves the MAR and allows the push button to not be in the middle of the walk.



Typical Push Button Location



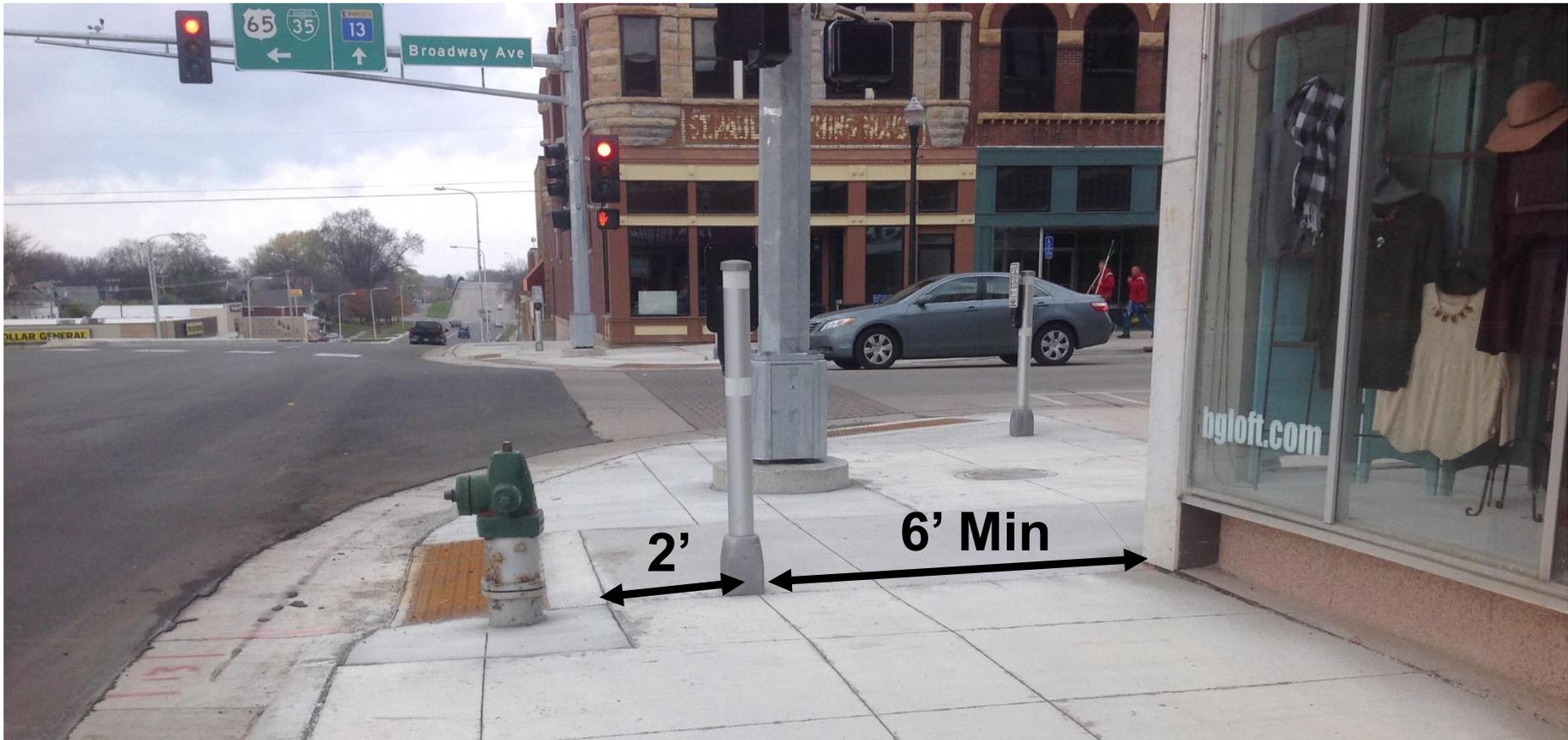


Maintenance Access Route (MAR)

- A MAR is the minimum clear distance between raised obstacles (i.e. push button stations, signal, lighting or utility poles, buildings, retaining walls, V curbs, hydrants, sign posts, etc.) needed for the mechanical removal of snow and ice.
- The MAR width is dependent on the anticipated snow and ice equipment utilized – 6' for sidewalks and 8' - 10' for shared use paths.
- The MAR is only required on the same route as a PAR, does not need to meet 2% cross slope requirements, and should be a paved surface at signalized quadrants.

MAR & PB Centered on Landing

- ⑥ PROVIDE A MAINTENANCE ACCESS ROUTE (MAR) WHEREVER POSSIBLE FOR SNOW REMOVAL PURPOSES. A MAR REQUIRES A 6 FT MINIMUM CLEAR DISTANCE BETWEEN A PUSH BUTTON AND ANY OBSTRUCTIONS, INCLUDING BUILDINGS, V-CURB, ELECTRICAL FOUNDATIONS, SIGNAL CABINETS, OR ANOTHER PUSH BUTTON.
- ⑦ BUTTON SHOULD BE 2 FT MINIMUM FROM RAMP GRADE BREAK AND BACK OF WALK.



MAR Takes Priority

- Push Button Offset from Grade Break
 - Min. 0.75'
 - Preferred min. 2.0'
- Maintain a 6.0' Maintenance Access Route



Push Button in Middle of Walk

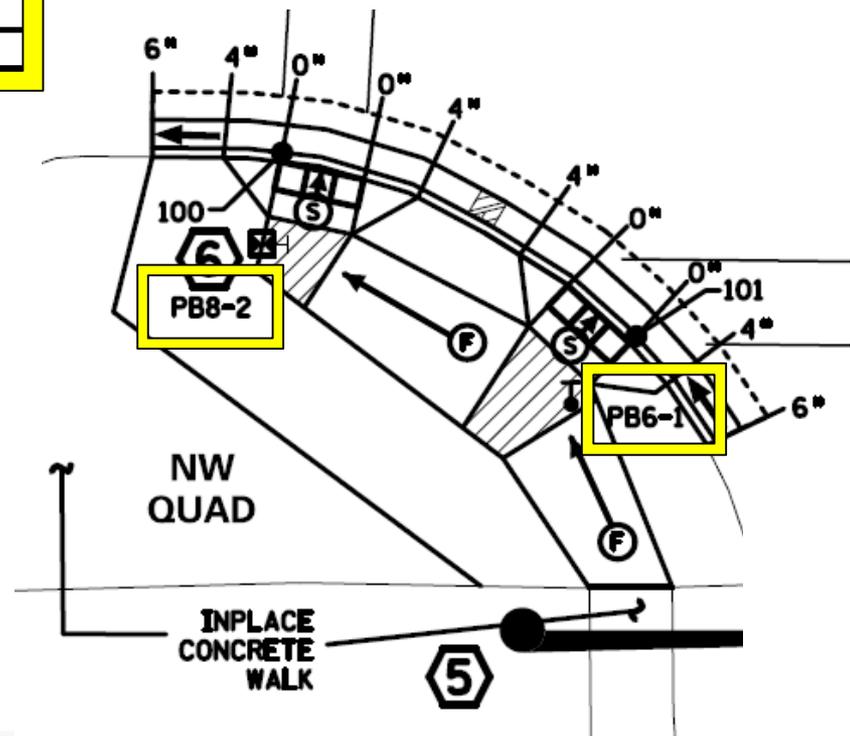


Signal Control Points Push Button Table

SIGNAL CONTROL POINTS			DISTANCE TO FRONT OF LANDING (FT)	DISTANCE TO BACK OF LANDING (FT)
POINT NO.	X	Y		
PB8-1	555973.5471	186473.9606	2	6
PB2-2	555916.2765	186470.6450	2	6
PB2-1	555930.3865	186471.5934	9	1
PB4-2	ON POLE 3	ON POLE 3	8	2
PB4-1	555986.7955	186457.9452	4.5	1

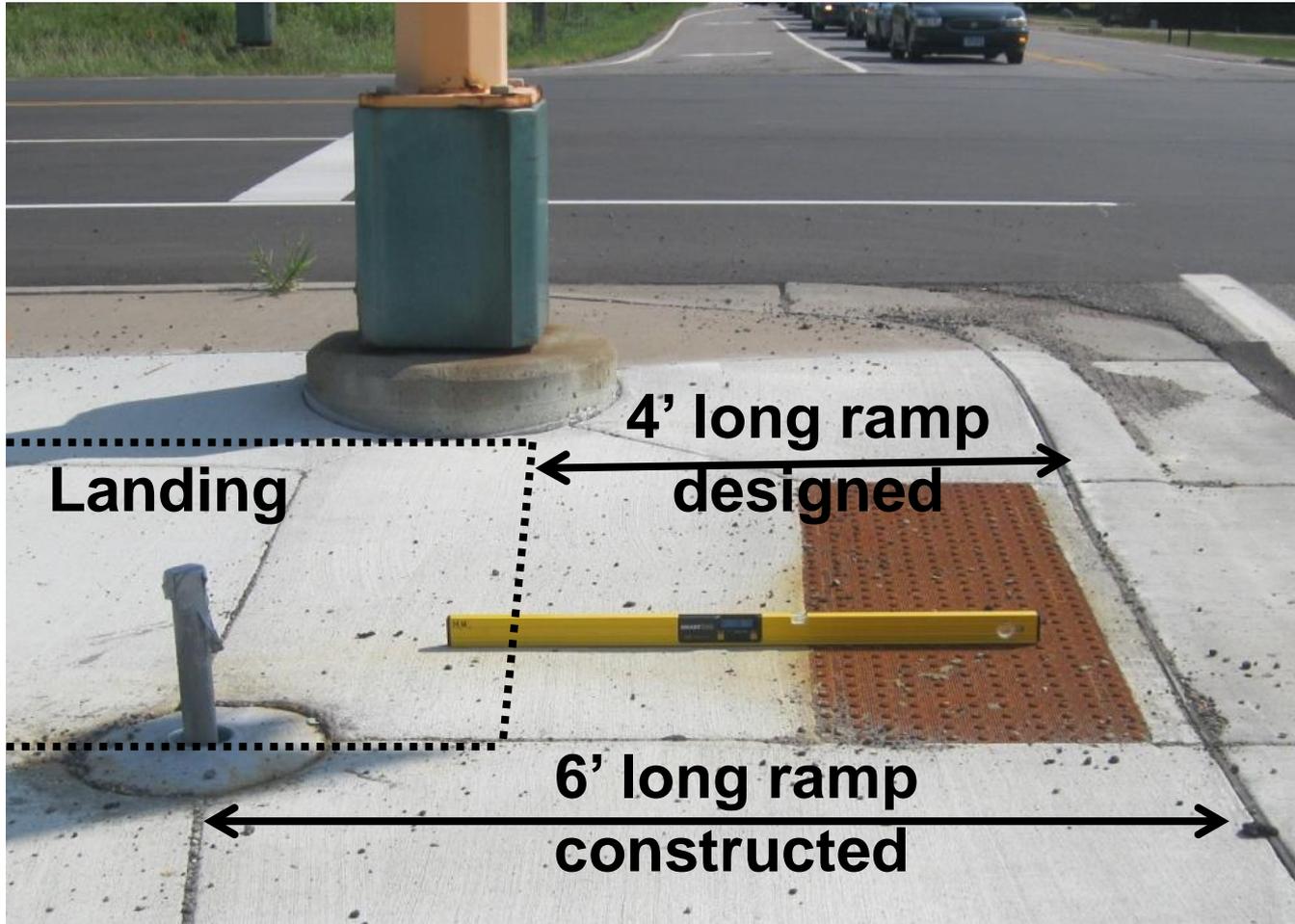
PB6-1	555986.7955	186457.9452	2	6.5
PB8-2	ON POLE 6	ON POLE 6	2	2

POLE 1	573230.7002	253778.9766
POLE 2	573089.5181	253699.4266
POLE 3	573175.1256	253599.9369
POLE 4	555986.7955	186457.9452
POLE 5	573281.4871	253680.3494
POLE 6	573198.8601	253778.9766

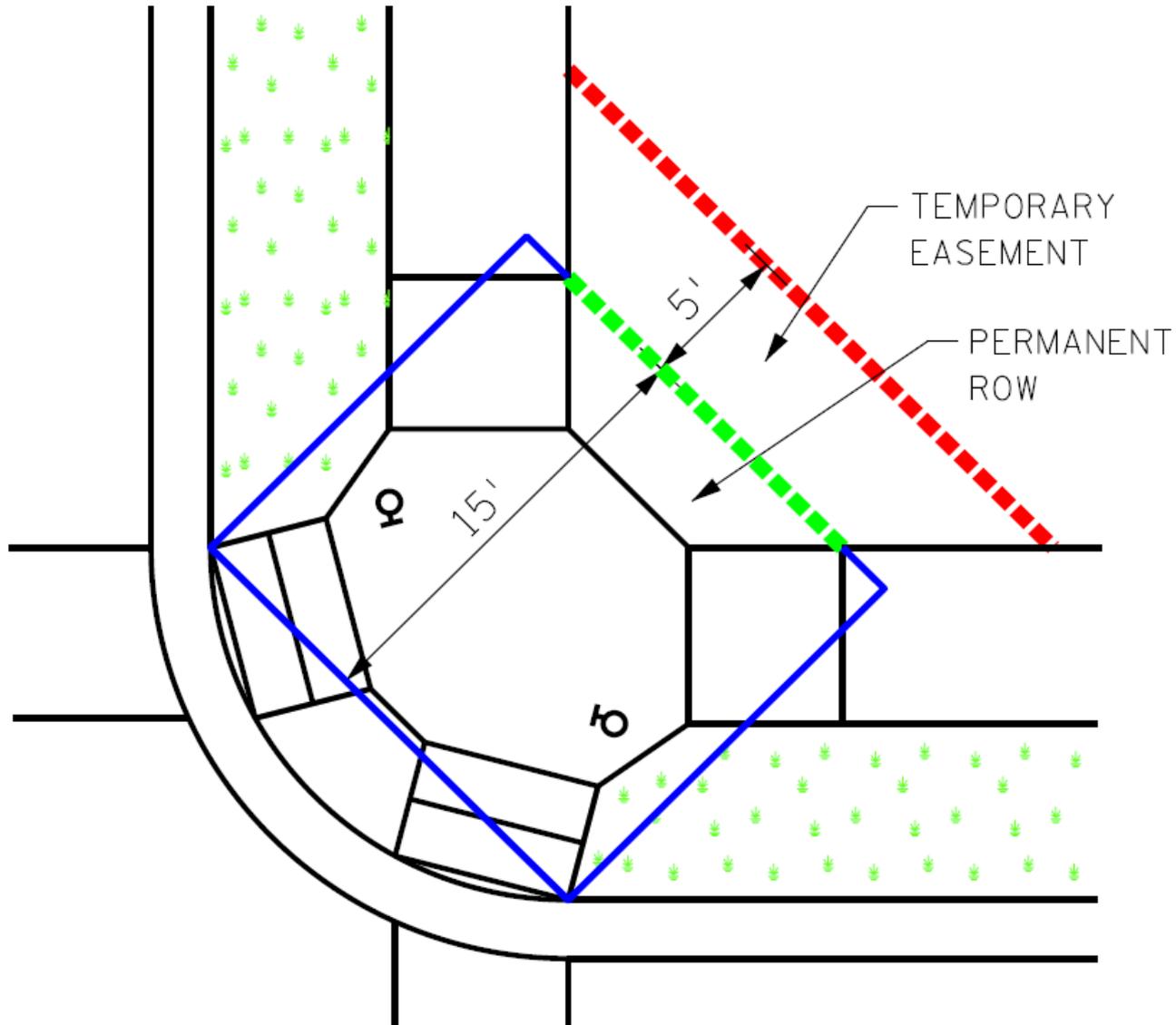


- 0.75' min. is the distance a push button can be from a grade break
- 2' min preferred

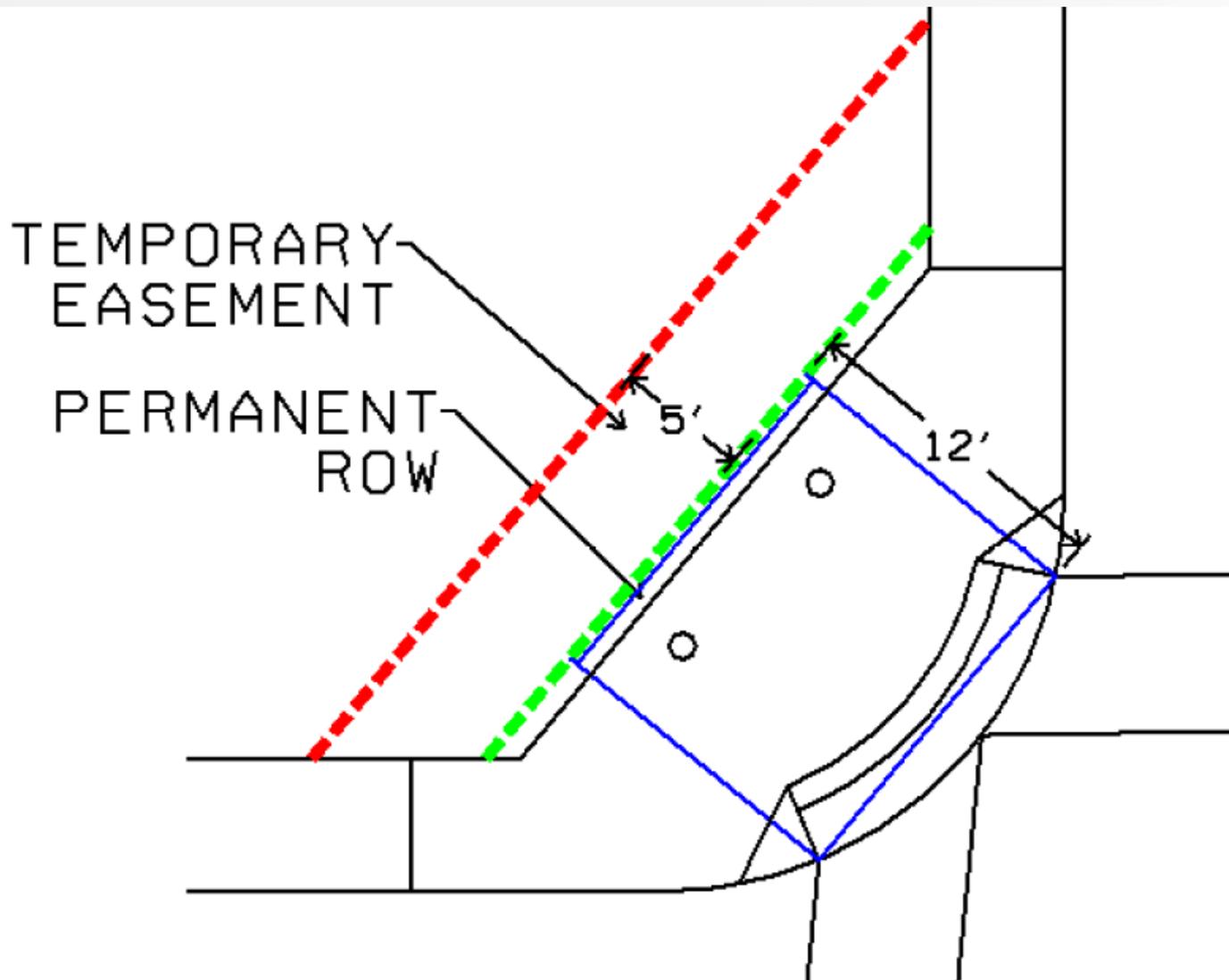
Signal Control Points Push Button Table



ROW needs at Signalized Intersections (grass blvds)



ROW needs at Signalized Intersections (no blvd)



Signal Pole in Middle of Trail



Signal Pole in Middle of Ramp



Signal Pole in Middle of Landing



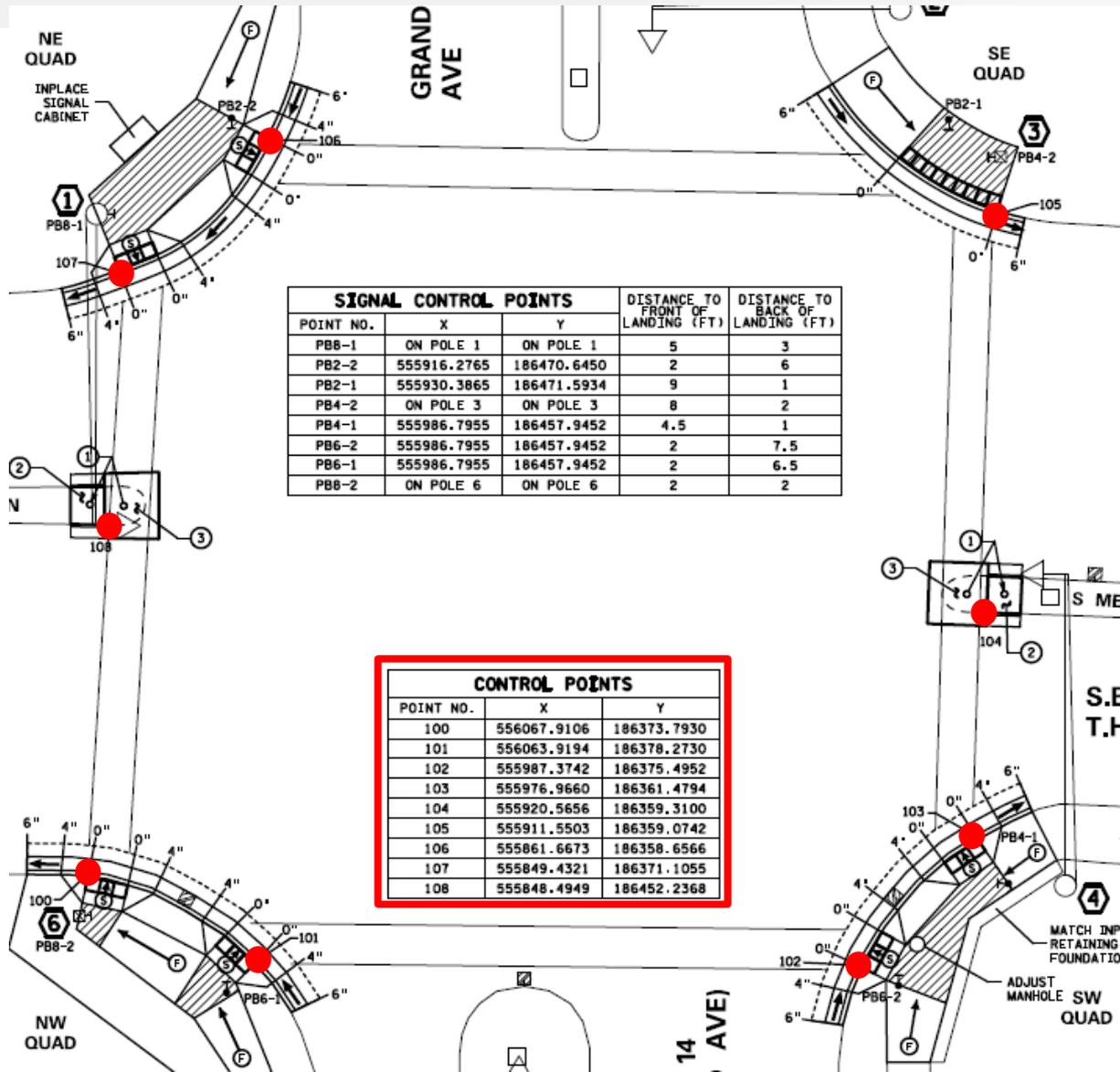
Signal Pole in Middle of Landing



Cabinet in Middle of Walk



Control Points



Example APS Intersection

SIGNAL APS UPGRADE EXAMPLE PLAN

Only one intersection per sheet

Include (x,y) for the center of all proposed push button, pedestal and signal pole locations. The point numbers will cross reference with the Signal Plan.

20" or 30" scale if needed to fit



See MnDOT Standard Legend on ADA Website

LEGEND

- INPLACE SIGNAL POLE
- INPLACE PEDESTAL
- PEDESTRIAN PUSH BUTTON STATION
- PEDESTRIAN PUSH BUTTON
- CONTROL POINTS AT GUTTER FLOW LINE
- TRUNCATED DOMES (SEE STANDARD PLATE 703B)
- CONSTRUCT CONCRETE CURB & GUTTER
- BITUMINOUS TREATMENT-SEE TABULATIONS
- CURB HEIGHT
- LANDING AREA - 4' X 4' MIN. DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
- INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
- INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
- DRAINAGE FLOW ARROW

POINT NO.	X	Y	DISTANCE TO FRONT OF LANDING (FT)	DISTANCE TO BACK OF LANDING (FT)
PBB-1	ON POLE 1	ON POLE 1	5	3
PB2-2	555916.2765	186470.6450	2	6
PB2-1	555930.3865	186471.5934	9	1
PB4-2	ON POLE 3	ON POLE 3	8	2
PB4-1	555986.7955	186457.9452	4.5	1
PBB-2	555986.7955	186457.9452	2	7.5
PBB-1	555986.7955	186457.9452	2	6.5
PBB-2	ON POLE 6	ON POLE 6	2	2

Distances from push button to front and back of landing included to provide the 6 ft MAR (Maintenance Access Route), or the 4 ft min. PAR, and to emphasize that 2 ft min. is achieved from all grade breaks thus providing usable landings adjacent to the push buttons.

POINT NO.	X	Y
100	556067.9106	186373.7930
101	556063.9194	186378.2730
102	555987.3742	186375.4952
103	555976.9660	186361.4794
104	555920.5656	186359.3100
105	555911.5503	186359.0742
106	555861.6673	186358.6566
107	555849.4321	186371.1055
108	555848.4949	186452.2368

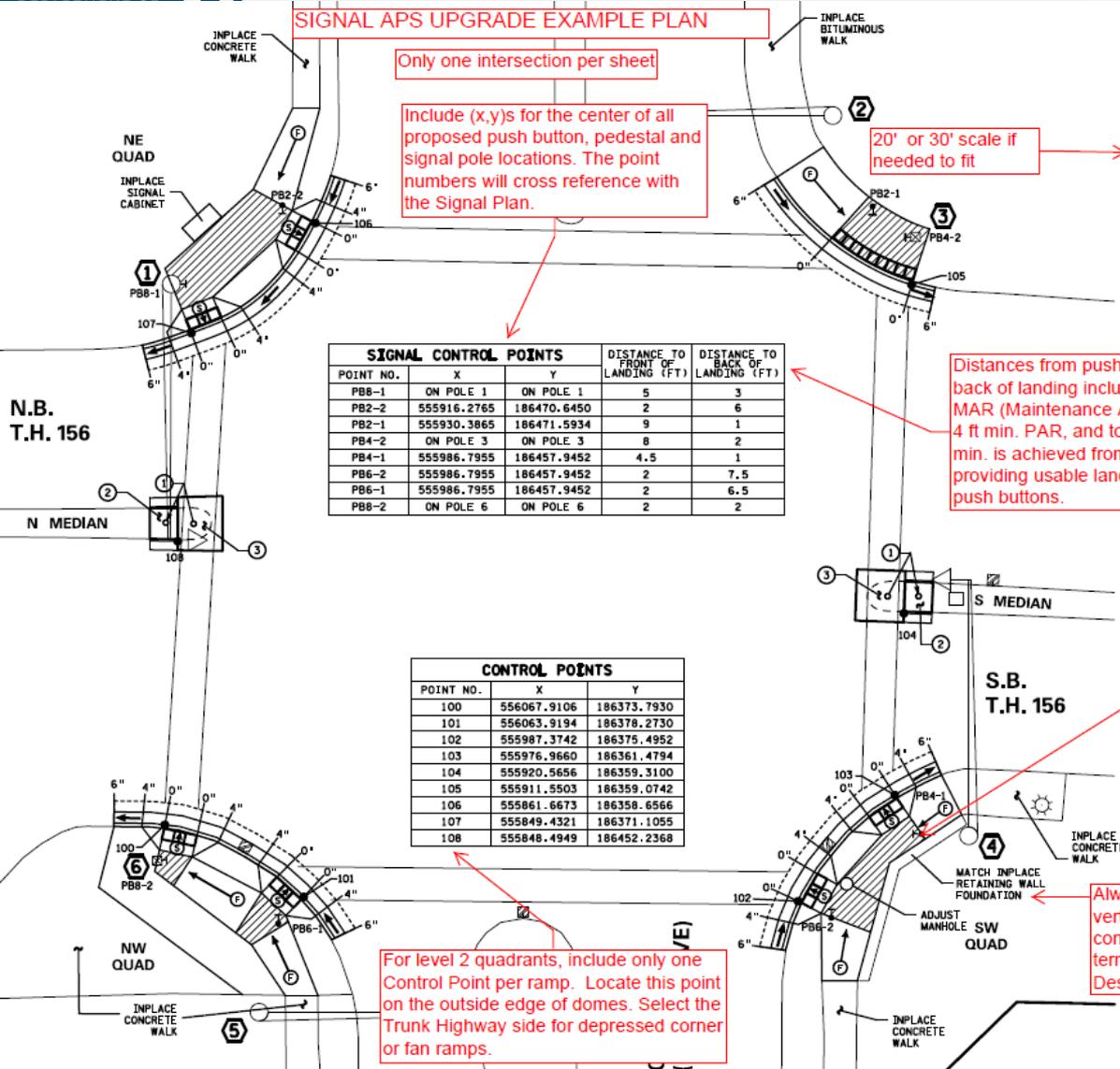
Push buttons quite often need to be located at the back of walk such that a maintainable clear distance of 6 ft can be achieved between raised obstacles (MAR)

- GENERAL NOTES:
- PROVIDE A SAWCUT AT THE REMOVAL LIMIT OR THE NEAREST JOINT OF THE CONCRETE WALK AND CONCRETE CURB & GUTTER. ALL SAWCUTS SHALL BE INCIDENTAL.
 - LANDINGS SHALL BE CONNECTED TO EXISTING SIDEWALKS MAINTAINING A 4' WIDE (MINIMUM) PEDESTRIAN ACCESS ROUTE WITH A CROSS SLOPE THAT DOES NOT EXCEED 2.0% AND A RUNNING SLOPE THAT DOES NOT EXCEED 8.3%.
 - ALL PERPENDICULAR RAMPS ARE 4' LONG UNLESS OTHERWISE NOTED
 - THE OUTSIDE EDGE OF CROSSWALK MARKINGS SHALL LINE UP WITH THE OUTSIDE EDGE OF TRUNCATED DOMES.

Always explain vertical tie-ins using contractor friendly terms or the Designer's Intent.

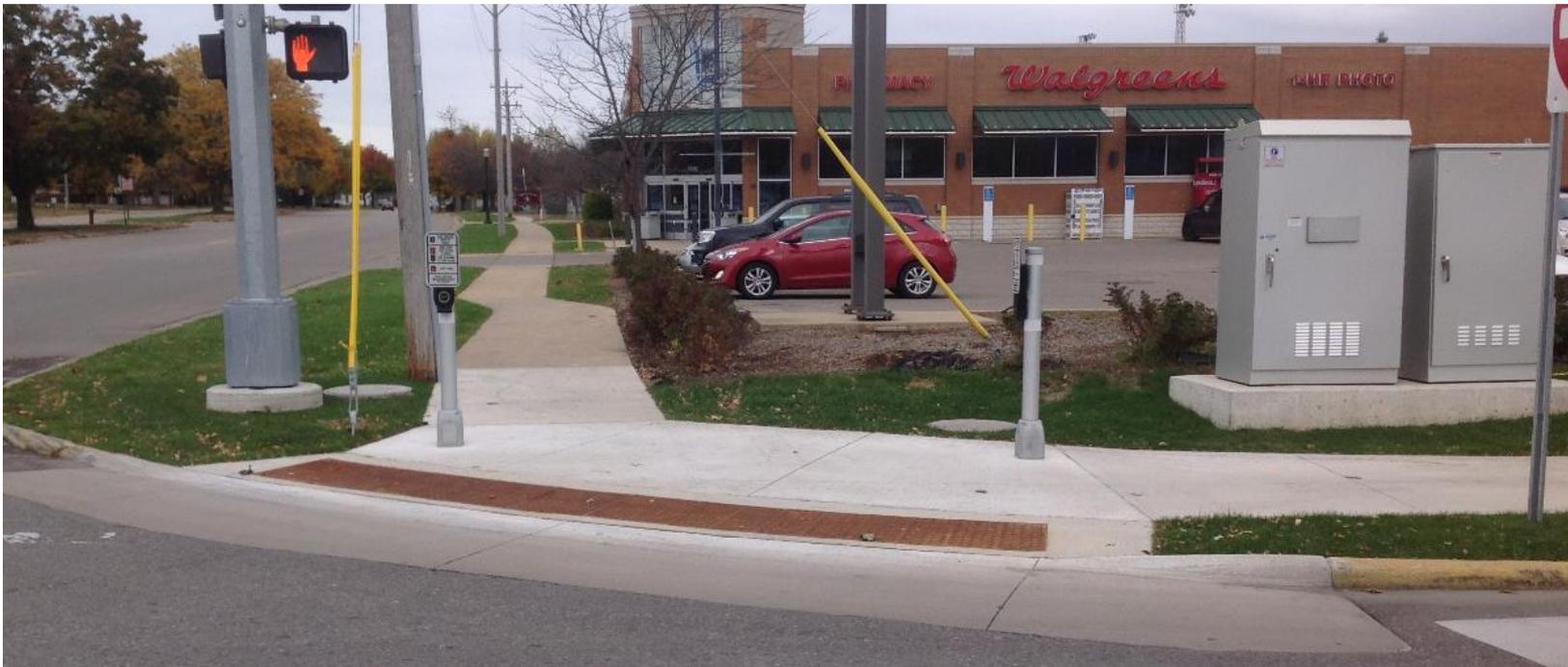
- 1 SALVAGE AND INSTALL SIGN.
- 2 SHORTEN MEDIAN NOSE TO MAKE ROOM FOR NEW CROSSWALK. CONSTRUCT CONCRETE NOSE - SEE STANDARD PLATE 7113.
- 3 CONSTRUCT CONCRETE PAVEMENT TO FILL THE AREA WHERE THE CONCRETE MEDIAN NOSE IS TO BE REMOVED. MATCH INPLACE PAVEMENT THICKNESS.

For level 2 quadrants, include only one Control Point per ramp. Locate this point on the outside edge of domes. Select the Trunk Highway side for depressed corner or fan ramps.

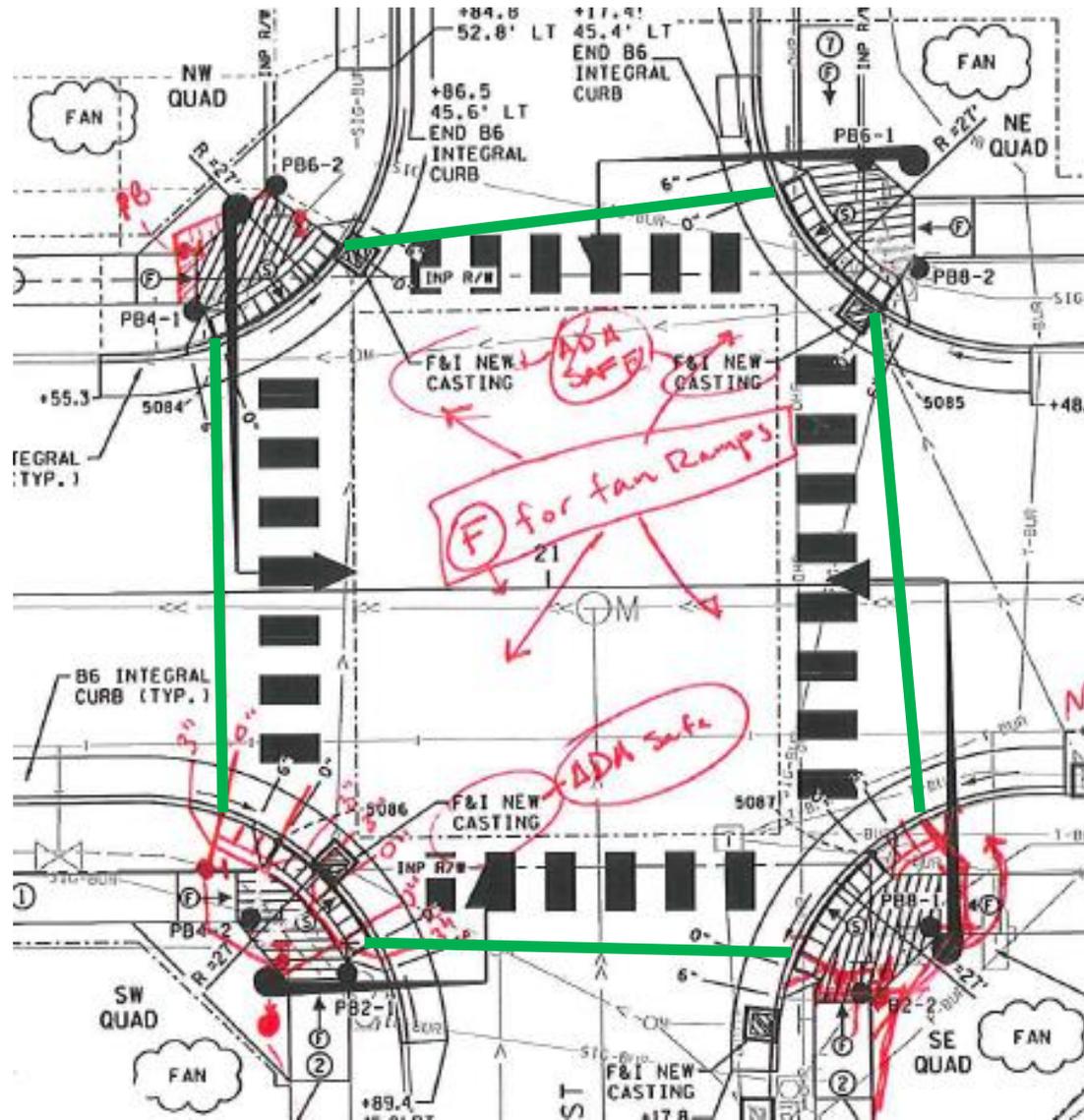


Example APS Intersection

- Show all proposed and existing signal components:
 - hand holes, cabinets, push buttons, pedestals, signal poles
 - Must be shown on the ADA detail sheet (20-30 scale)
- Proposed hand holes should be located outside the PAR

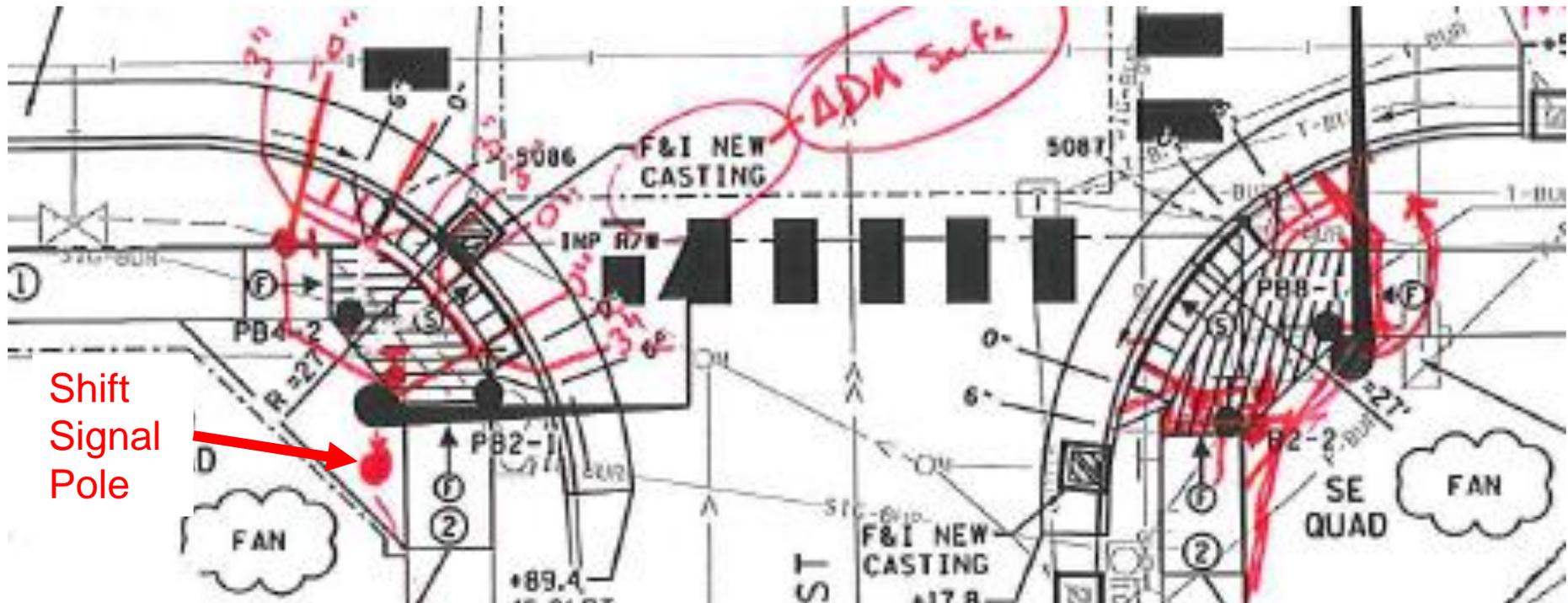


“Floating” Crosswalk



“Floating” Crosswalk

- PB2-1 – Located on a ramp grade break, too close to the road, adequate MAR?
- PB2-2 – Located in middle of walk

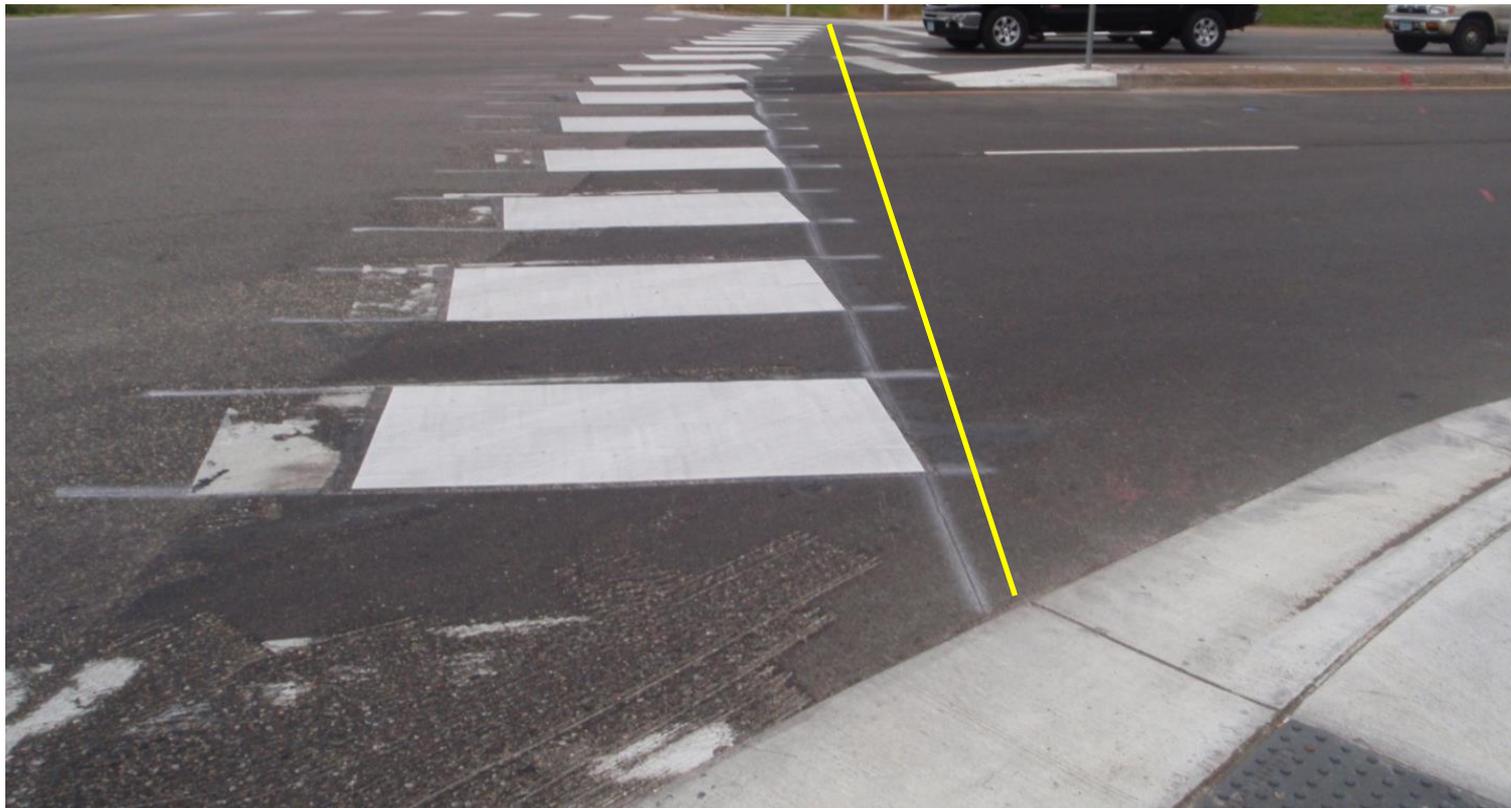


“Floating” Crosswalk



Crosswalk Striping

Crosswalks shall be striped in a straight alignment between the outside edge of detectable warning, with no kinks unless shown kinked in the plan.



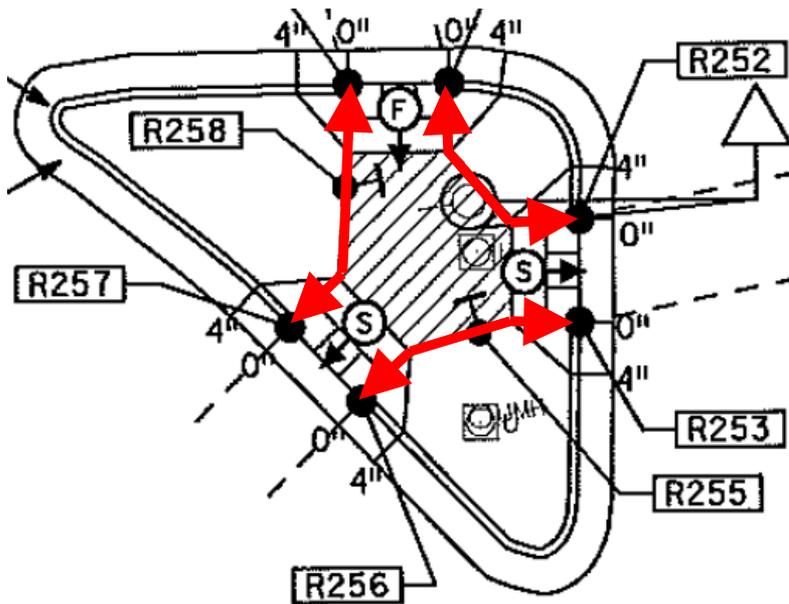
Detectable Edge Best Practice

- Mill pavement and/or edge of sidewalk
- Wayfinding for visually impaired users

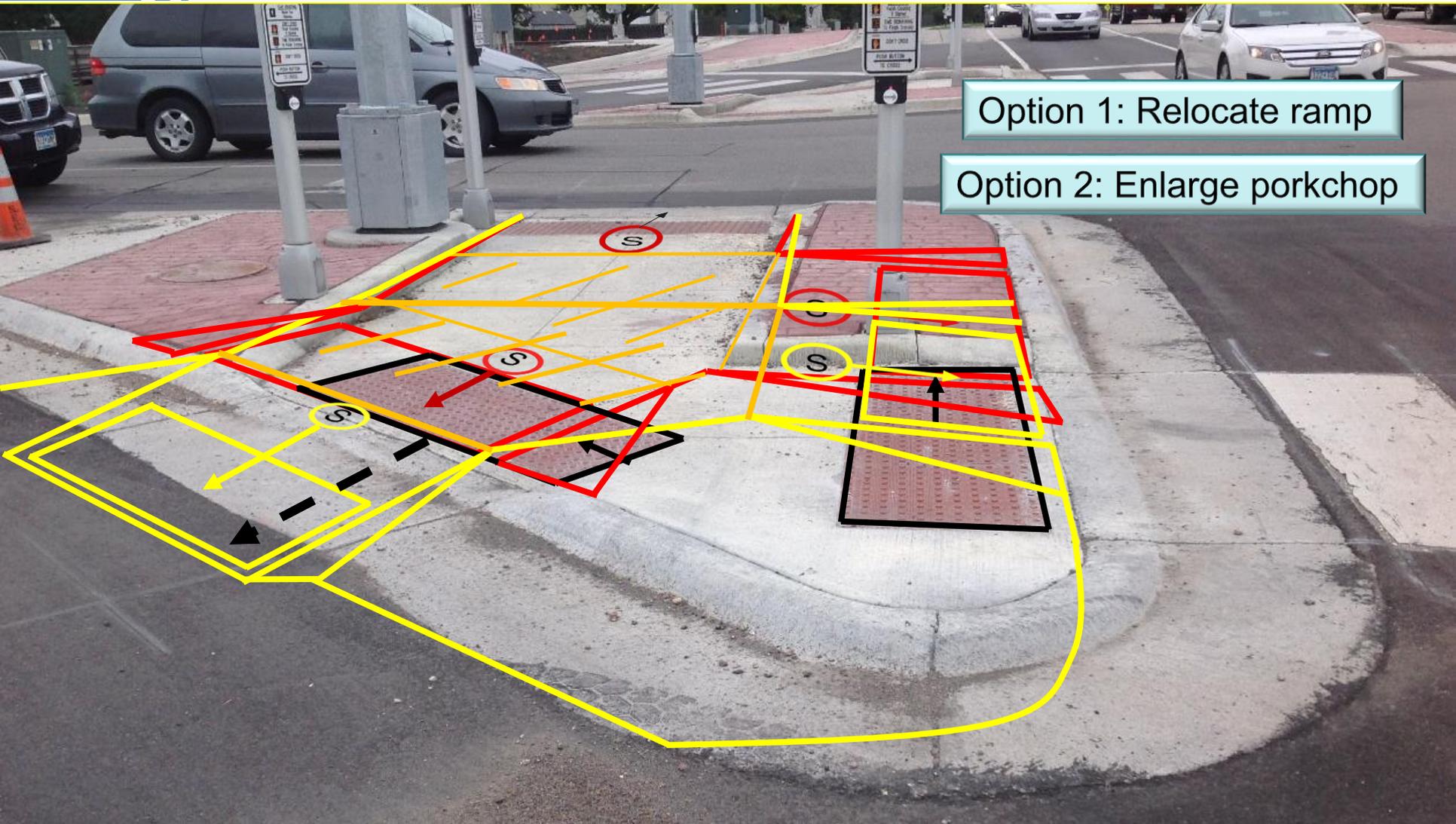


Urban Median Islands

- 12' min. (measured from back of curb to back of curb) is needed on the short leg to allow enough room to build pedestrian ramps and landings.



Urban Median Islands

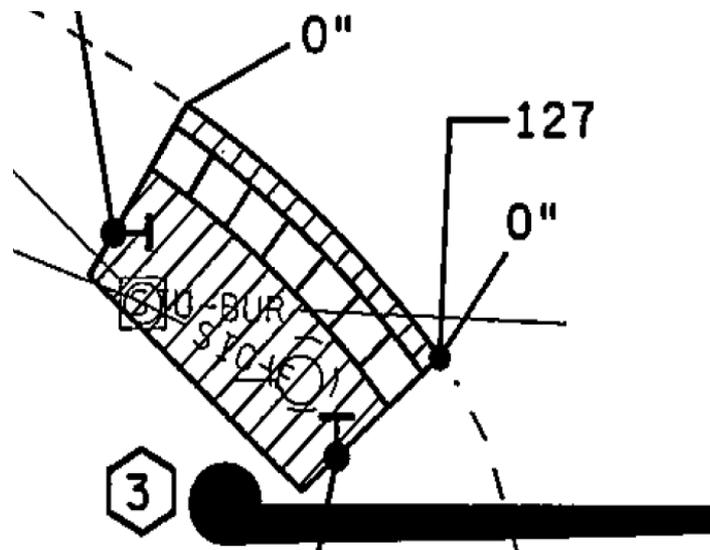


Option 1: Relocate ramp

Option 2: Enlarge porkchop

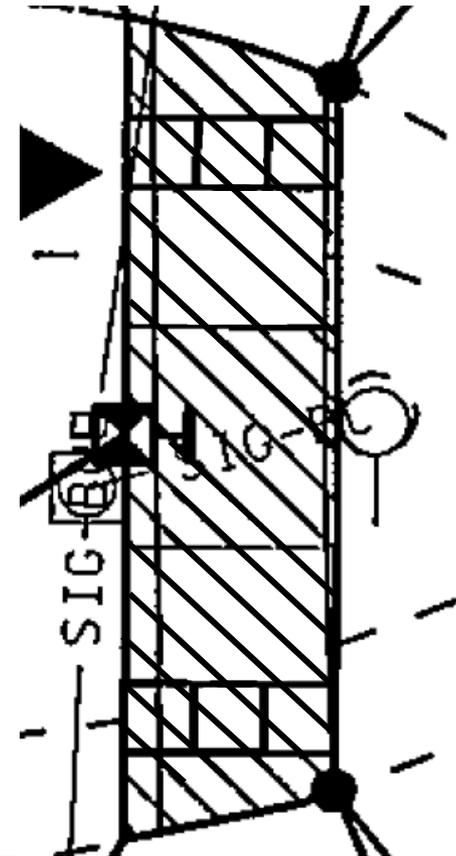
Rural Pad

- A rural pad is a depressed corner with no curb and gutter that flows away from the road to the ditch



Rural Median Islands

- Typically should be kept rural (flat) so the existing drainage patterns are maintained



Typical Push Button Placement

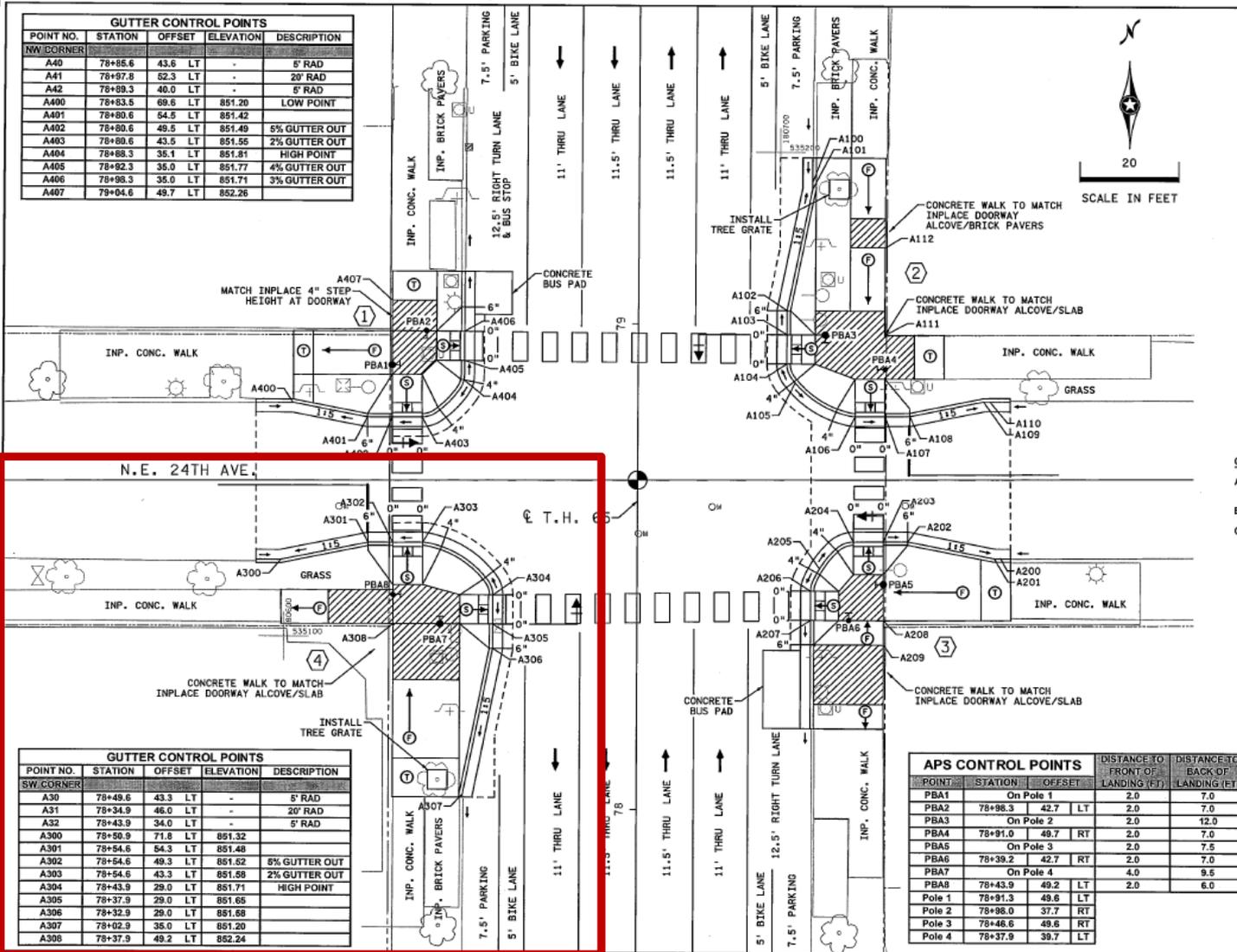
Combined Directional Ramps with APS typically work well at large bump-outs with compound radii due to the required 10' min. push button (PB) separation needed, and the 2' min. PB setback from grade breaks.



APS Example Intersection



APS Example Intersection



GUTTER CONTROL POINTS				
POINT NO.	STATION	OFFSET	ELEVATION	DESCRIPTION
NW CORNER				
A40	78+85.6	43.6 LT	-	5' RAD
A41	78+97.8	52.3 LT	-	20' RAD
A42	78+89.3	40.0 LT	-	5' RAD
A490	78+83.5	69.6 LT	851.20	LOW POINT
A491	78+80.6	54.5 LT	851.42	
A492	78+80.6	48.5 LT	851.49	5% GUTTER OUT
A493	78+80.6	43.5 LT	851.55	2% GUTTER OUT
A494	78+88.3	35.1 LT	851.81	HIGH POINT
A495	78+92.3	35.0 LT	851.77	4% GUTTER OUT
A496	78+98.3	35.0 LT	851.71	3% GUTTER OUT
A497	79+04.6	49.7 LT	852.26	
SE CORNER				
A10	78+92.0	35.0 RT	-	5' RAD
A11	79+00.9	47.1 RT	-	20' RAD
A12	78+86.3	43.8 RT	-	5' RAD
A100	78+29.4	35.0 RT	851.30	LOW POINT
A101	79+28.0	35.0 RT	851.32	
A102	79+03.0	30.0 RT	851.74	
A103	78+98.0	30.0 RT	851.82	
A104	78+92.0	30.0 RT	851.88	
A105	78+86.1	31.7 RT	851.92	HIGH POINT
A106	78+81.3	43.8 RT	851.75	5% GUTTER OUT
A107	78+81.4	49.8 RT	851.68	4% GUTTER OUT
A108	78+81.4	54.8 RT	851.57	
A109	78+84.5	69.8 RT	851.31	
A110	78+84.5	71.0 RT	851.28	LOW POINT
A111	78+98.0	49.7 RT	852.39	
A112	79+16.0	49.7 RT	852.46	

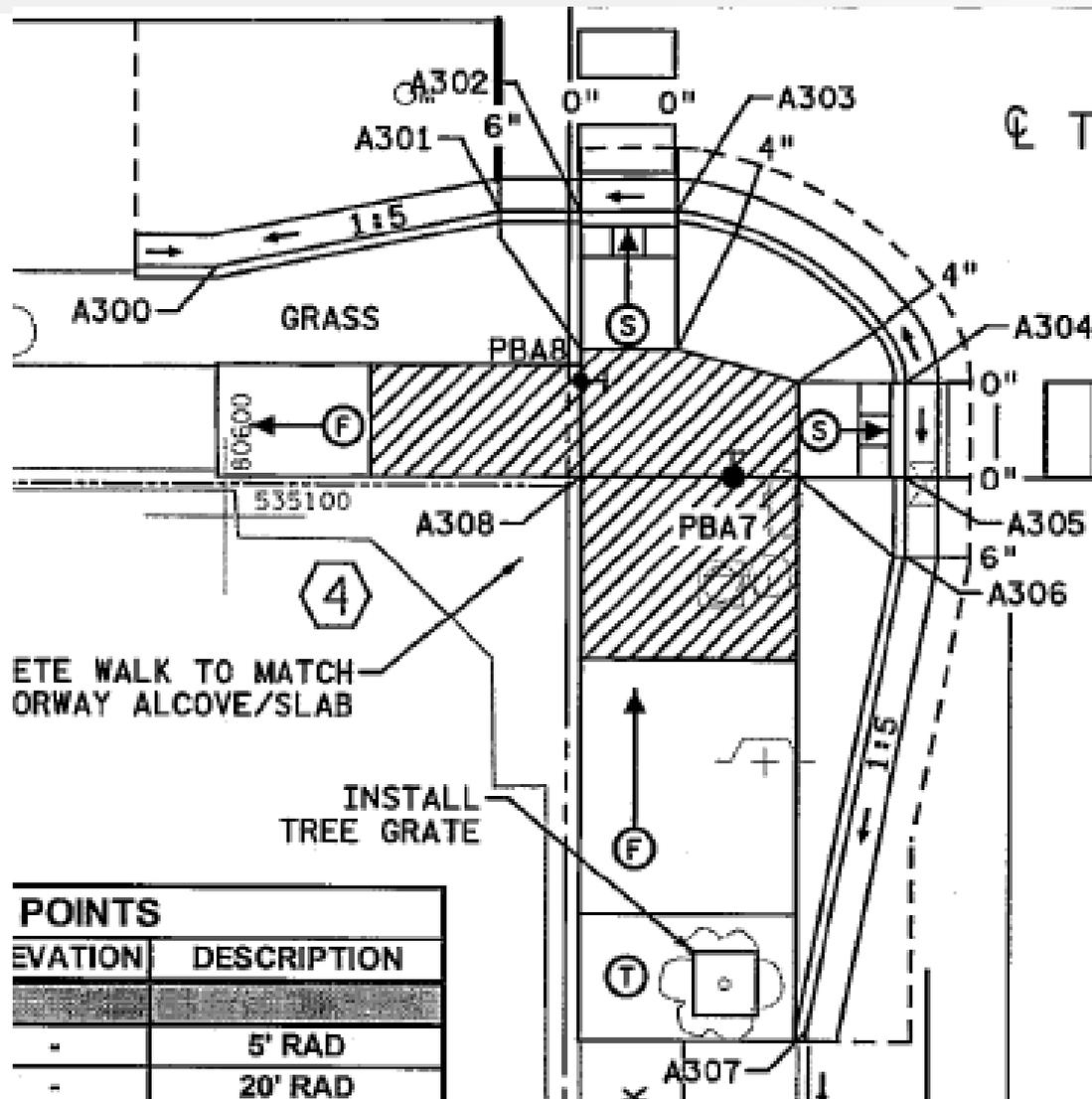
- GENERAL NOTES:**
- THE CROSS SLOPE OF THE PEDESTRIAN ACCESS ROUTE SHALL NOT EXCEED 0.020 FT/FT.
 - CONTROL POINT OF CURB & GUTTER IS AT FLOW LINE.
 - ALL STATIONS AND OFFSETS ARE BASED OFF THE INPLACE T.H. 65 ALIGNMENT.

LEGEND	
	EXISTING R/W
	PROPERTY LINE
	INPLACE SIGNAL POLE
	PROPOSED SIGNAL POLE
	PEDESTRIAN PUSH BUTTON STATION
	PEDESTRIAN PUSH BUTTON
	INPLACE SIGNAL
	CONTROL POINTS AT GUTTER FLOW LINE
	TRUNCATED DOMES (SEE STANDARD PLATE T038)
	BITUMINOUS PAVING - SEE TABULATIONS
	CURB HEIGHT
	LANDING AREA - 4' X 4' MIN. DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
	CROSS SLOPE TRANSITION PANEL(S)
	DRAINAGE FLOW ARROW

GUTTER CONTROL POINTS				
POINT NO.	STATION	OFFSET	ELEVATION	DESCRIPTION
SW CORNER				
A30	78+49.6	43.3 LT	-	5' RAD
A31	78+34.9	46.0 LT	-	20' RAD
A32	78+43.9	34.0 LT	-	5' RAD
A300	78+50.9	71.8 LT	851.32	
A301	78+54.6	84.3 LT	851.48	
A302	78+54.6	49.3 LT	851.62	8% GUTTER OUT
A303	78+54.6	43.3 LT	851.88	2% GUTTER OUT
A304	78+43.9	29.0 LT	851.71	HIGH POINT
A305	78+37.9	29.0 LT	851.65	
A306	78+32.9	29.0 LT	851.68	
A307	78+02.9	35.0 LT	851.20	
A308	78+37.9	49.2 LT	852.24	

APS CONTROL POINTS					DISTANCE TO FRONT OF LANDING (FT)	DISTANCE TO BACK OF LANDING (FT)
PBA1		On Pole 1			2.0	7.0
PBA2	78+98.3	42.7	LT		2.0	7.0
PBA3		On Pole 2			2.0	12.0
PBA4	78+91.0	49.7	RT		2.0	7.0
PBA5		On Pole 3			2.0	7.5
PBA6	78+98.2	42.7	RT		2.0	7.0
PBA7		On Pole 4			4.0	9.5
PBA8	78+43.9	49.2	LT		2.0	6.0
Pole 1	78+91.3	49.6	LT			
Pole 2	78+98.0	37.7	RT			
Pole 3	78+46.6	49.6	RT			
Pole 4	78+37.9	39.7	LT			

APS Example Intersection



APS Example Intersection

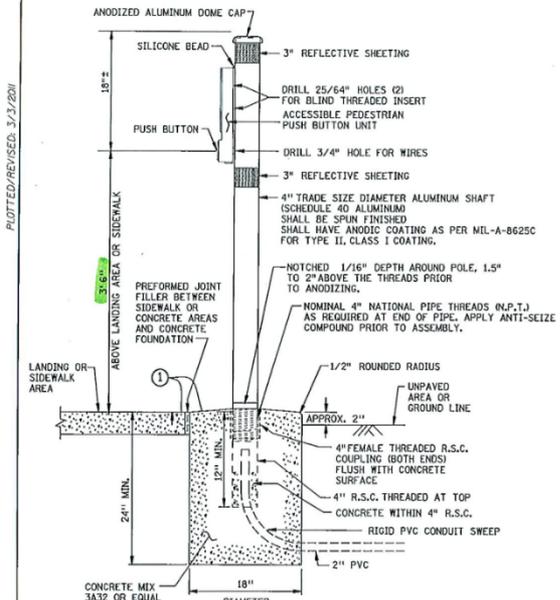


APS Hardware & Details

- Push Button Station
- Pole Mounting Adaptors
- Push Button Spacers (Saddle Adaptors)
- Signal Plan Detail
- Pedestal Foundation Standard Plate

Discontinued Push Button Station - Detail

PEDESTRIAN PUSH BUTTON STATION



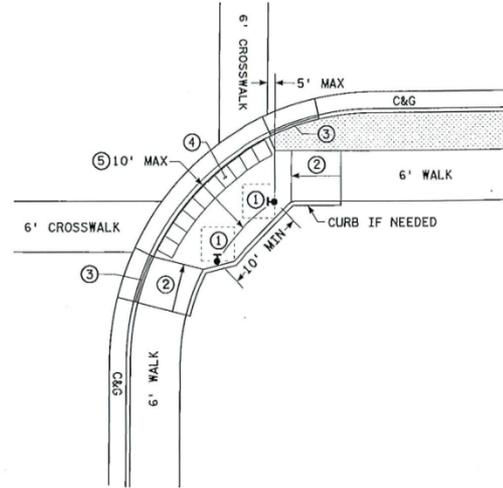
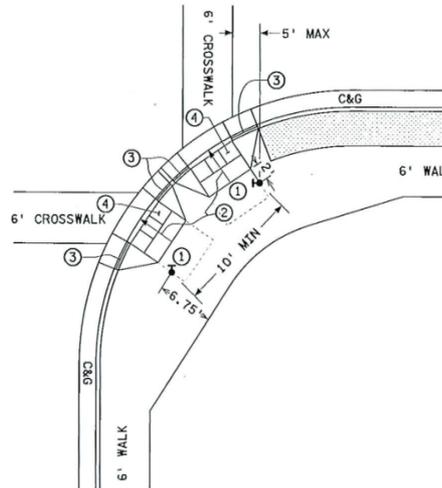
NOTES:

- PLACEMENT AND ORIENTATION OF THE PUSH BUTTON STATION IS CRITICAL, MOUNT THE BUTTON SO THAT THE FACE IS PARALLEL WITH THE ASSOCIATED CROSSWALK. SCREW IN POST TO A TIGHTENED POSITION BEFORE MOUNTING ACCESSIBLE PEDESTRIAN PUSH BUTTON UNIT TO THE POST.
- BLIND THREADED INSERTS (RIVET NUT) MUST BE INSERTED USING MANUFACTURERS SPECIFIC INSTALLATION TOOL. NO OTHER METHOD OF INSTALLATION IS ACCEPTABLE.
- BLIND THREADED INSERTS SHALL BE ZINC PLATED STEEL WITH 1/4" - 20 UNC THREADS. INSERT SHALL BE SUITABLE FOR USE ON A MOUNTING SURFACE WALL THICKNESS OF .337". APPROVED BLIND THREADED INSERTS CAN BE FOUND ON THE MN/DOT QUALIFIED PRODUCTS LIST.
- MOUNTING BOLTS SHALL BE 1/4" - 20 STAINLESS STEEL. APPLY BRUSH ON ANTI SEIZE COMPOUND TO BOLTS PRIOR TO ASSEMBLY.
- APPLY A BEAD OF 100% SILICONE SEALANT ALONG THE TOP OF THE PUSH BUTTON UNIT WHERE IT COMES IN CONTACT WITH THE 4" POST.
- THE REFLECTIVE SHEETING SHALL BE WHITE AT INTERSECTION CORNERS AND SHALL BE YELLOW WHEN USED IN CENTER MEDIANS. SEE MN/DOT SIGNING QUALIFIED PRODUCTS LIST (DPL) FOR APPROVED SIGN SHEETING.
- ANTI-SEIZE COMPOUND MUST BE USED ON THE MOUNTING BOLTS WHEN THE PEDESTRIAN SIGN IS MOUNTED.

① THE CONCRETE FOUNDATION SHALL BE CAST IN-PLACE AND CONSTRUCTED FLUSH WITH THE SURROUNDING SIDEWALK.

GUIDELINES FOR LOCATING APS PUSH BUTTONS:

- THIS IS A GENERAL DETAIL INTENDED TO SHOW THE REQUIREMENTS OF APS PUSH BUTTON LOCATION. FOR PROJECT SPECIFIC DETAILS REGARDING PEDESTRIAN RAMP LAYOUT, SEE THE PEDESTRIAN CURB RAMP AND SIDEWALK DETAILS.
- BUTTONS SHALL BE WITHIN 5' OF THE OUTSIDE EDGE OF THE CROSSWALK.
- THE FACE OF THE BUTTON SHALL BE PARALLEL WITH THE CROSSWALK.
- A MIN. 4'X4' LANDING AREA SHALL BE PROVIDED ADJACENT TO EACH BUTTON.
- BUTTONS SHALL BE WITHIN 10' OF THE BACK OF CURB OR EDGE OF ROADWAY.
- BUTTONS SHALL BE AT LEAST 10' APART.



- ① 4'X4' MINIMUM LANDING AREA ADJACENT TO PUSH BUTTON. (2% SLOPE MAX.)
- ② RAMP - SLOPE (5% PREFERRED 8% MAX).
- ③ CURB TAPER SECTION AT 1:10 (10X) (HEIGHT OF CURB IS TAPERED TO 0").
- ④ DETECTABLE WARNING SURFACE (TRUNCATED DOMES) - RADIUS SECTIONS WHERE SPECIFIED.
- ⑤ DISTANCE FROM THE BACK OF CURB TO PUSH BUTTON STATION.

TYPICAL APS PEDESTRIAN PUSH BUTTON LOCATION

BY	DATE	REVISIONS

SYSTEM ID: 20219 T.E. 5306
METER ADDRESS: N. RAMP TH 10/FOLEY BLVD
MASTER ID: 21996 T.E.

ACCESSIBLE PEDESTRIAN SIGNAL (APS)
PEDESTRIAN PUSH BUTTON STATION
TYPICAL APS PUSH BUTTON LOCATION DETAIL

S.A.P. NO.	DRAWN BY: MDK	CKD BY: BTJ	DATE: 2/24/11
CERTIFIED BY: <i>Michael P. DeBeauvoir</i>	L.C. NO. 19863	DATE: 2/24/11	

STATE PROJ. NO. 0215-63 (T.H. 10)

SHEET NO. 73 OF 83 SHEETS
Pn 73/87

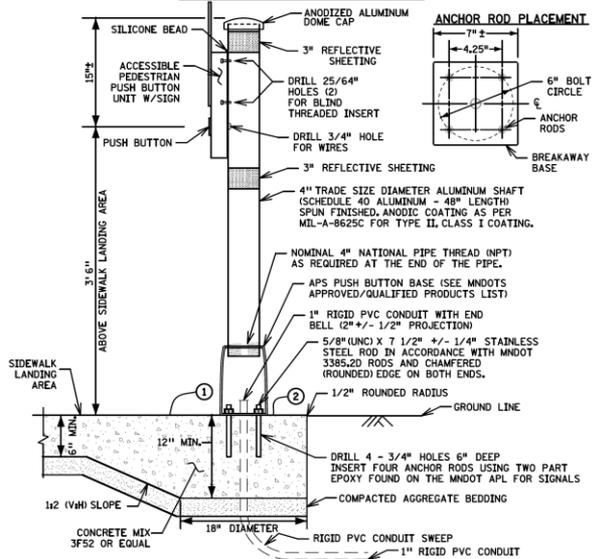
DISTRICT #: METRO
PROJECT NAME: Minnesota
PATH & FILENAME: TP-PWP-0137023-01-mhshd.dgn

Discontinued Push Button Station - Detail



Current APS Push Button Station - Detail

APS PUSH BUTTON STATION



NOTES:

- PLACEMENT AND ORIENTATION OF THE PUSH BUTTON STATION IS CRITICAL. MOUNT THE BUTTON SO THAT THE FACE IS PARALLEL WITH THE ASSOCIATED CROSSWALK. SCREW IN SHAFT TO A TIGHTENED POSITION BEFORE MOUNTING ACCESSIBLE PEDESTRIAN PUSH BUTTON UNIT TO THE SHAFT.
- ORIENT ACCESS OPENING ON THE BREAKAWAY PEDESTAL DIRECTLY BELOW THE APS BUTTON.
- PLUMB THE PUSH BUTTON STATION WITH LEVELING SHIMS IN ACCORDANCE WITH STANDARD PLATE 8129.
- INSTALL BLIND THREADED INSERTS USING MANUFACTURER'S SPECIFIC INSERTION TOOL.
- USE ZINC PLATED STEEL 1/4 - 20 UNC BLIND THREADED INSERTS SUITABLE FOR MOUNTING ON SURFACE WALL THICKNESS OF .337. APPROVED BLIND INSERTS ARE LISTED ON MNDOT'S APPROVED/QUALITY PRODUCTS LIST WEBSITE FOR TRAFFIC SIGNALS.
- USE APS 1/4 - 20 STAINLESS STEEL MOUNTING BOLTS. APPLY BRUSH ON ANTI SEIZE COMPOUND TO BOLTS PRIOR TO ASSEMBLY.
- APPLY A BEAD OF 100% SILICONE SEALANT ALONG THE TOP OF THE PUSH BUTTON UNIT WHERE IT COMES IN CONTACT WITH THE 4" SHAFT.
- USE WHITE REFLECTIVE SHEETING AT INTERSECTION CORNERS AND YELLOW REFLECTIVE SHEETING IN CENTER MEDIANS. APPROVED TUBE DELINEATOR SHEETING IS LISTED ON MNDOT'S APPROVED/QUALIFIED PRODUCTS LIST WEBSITE FOR SIGNING.
- AN 18" X 6" FIBER FORMING TUBE MAY BE USED FOR THE LOWER HALF OF THE FOUNDATION WHEN CONDITIONS DO NOT ALLOW FOR THE 18" X 6" HOLE TO STAND OPEN.
- THE PUSH BUTTON STATION FOUNDATION IS MONOLITHIC (POURED AT ONE TIME) WITH THE SIDEWALK. PROVIDE A 1/2 (VH) SLOPE GRADE WHERE THE 6" MIN SIDEWALK DEPTH TRANSITIONS TO THE 12" MIN FOUNDATION DEPTH. MAINTAIN THE COMPACTED AGGREGATE BEDDING AND THICKNESS USED FOR THE SIDEWALK THROUGHOUT THE SLOPE AND FOUNDATION GRADING. PROVIDE 1/2 (VH) SLOPE GRADING 360 DEGREES FOR THE TRANSITION FROM THE SIDEWALK TO THE FOUNDATION WHEN THE FOUNDATION IS NOT LOCATED NEAR EDGE OF SIDEWALK AND IS SURROUNDED BY CONCRETE WALK.
 - ENSURE CONCRETE CONTROL JOINTS AND EDGE OF CONCRETE WALK ARE A MINIMUM 9" FROM THE CENTER OF THE PUSH BUTTON FOUNDATION.

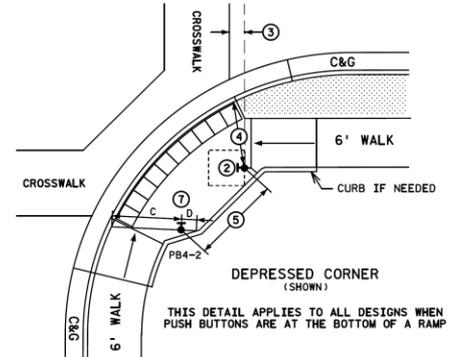
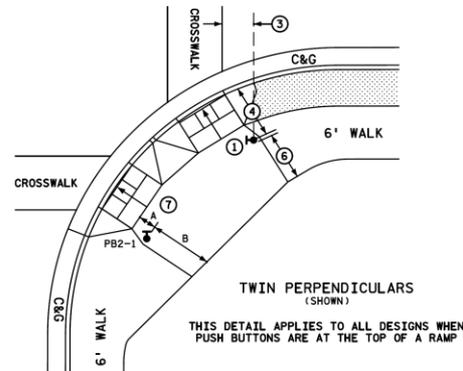
TYPICAL APS PEDESTRIAN PUSH BUTTON LOCATION

THIS IS A GENERAL DETAIL INTENDED TO SHOW THE REQUIREMENTS OF APS PUSH BUTTON LOCATION. FOR PROJECT SPECIFIC INFORMATION REGARDING PEDESTRIAN RAMP LAYOUT AND PUSH BUTTON LOCATIONS, SEE THE PLAN.

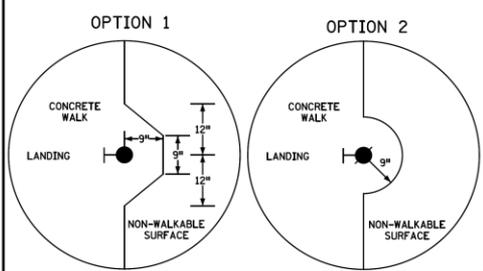
SUPPLEMENTAL GUIDANCE FOR CONSTRUCTING COMPLIANT APS PUSH BUTTONS:

- THE FACE OF THE BUTTON SHALL BE PARALLEL WITH THE OUTSIDE EDGE OF CROSSWALK.
- A MINIMUM 4 FT X 4 FT LANDING AREA SHALL BE PROVIDED ADJACENT TO EACH BUTTON, WITH A 2 PERCENT MAXIMUM SLOPE IN ALL DIRECTIONS.
- BUTTONS SHALL BE WITHIN 5 FT OF THE OUTSIDE EDGE OF THE CROSSWALK.
- BUTTONS SHALL BE BETWEEN 1.5 FT AND 10 FT FROM THE BACK OF CURB OR EDGE OF ROADWAY, MEASURED IN THE DIRECTION OF TRAVEL. STANDALONE PUSH BUTTON STATIONS SHOULD BE 4' MINIMUM FROM THE BACK OF CURB TO AVOID KNOCKDOWNS.
- BUTTONS SHALL BE AT LEAST 10 FT APART.
- PROVIDE A MAINTENANCE ACCESS ROUTE (MAR) WHEREVER POSSIBLE FOR SNOW REMOVAL PURPOSES. A MAR REQUIRES A 6 FT MINIMUM CLEAR DISTANCE BETWEEN A PUSH BUTTON AND ANY OBSTRUCTIONS, INCLUDING BUILDINGS, V-CURB, ELECTRICAL FOUNDATIONS, SIGNAL CABINETS, OR ANOTHER PUSH BUTTON.
- BUTTON SHOULD BE 2 FT MINIMUM FROM RAMP GRADE BREAK AND BACK OF WALK.

MUTCD
MnDOT



CONTRACTOR MUST USE OPTION 1 OR 2 WHEN THE APS PUSH BUTTON IS SHOWN AT THE EDGE OF WALK. OPTION USED (OR SELECTED) MUST BE THE SAME THROUGHOUT THE ENTIRE PROJECT.



SIGNAL NO.	X	Y	DISTANCE TO FRONT OF LANDING (FT)	DISTANCE TO BACK OF LANDING (FT)
PB2-1	-	-	A	B
PB4-2	-	-	C	D

- A - DISTANCE MEASURED FROM THE PUSH BUTTON TO THE FRONT OF LANDING/TOP OF RAMP
- B - CLEAR DISTANCE MEASURED FROM THE PUSH BUTTON TO THE BACK OF LANDING/EDGE OF WALK
- C - CLEAR DISTANCE MEASURED FROM THE PUSH BUTTON TO THE OUTSIDE EDGE OF DOMES IN THE DIRECTION OF TRAVEL
- D - CLEAR DISTANCE FROM THE PUSH BUTTON TO THE BACK OF LANDING MEASURED IN THE OPPOSITE DIRECTION OF TRAVEL

BY	DATE	REVISIONS	SYSTEM ID#	T.E.	S.A.P. NO.	DRAWN BY#	CKD BY#	DATE#04-15-16
			METER ADDRESS#	T.E.	CERTIFIED BY			
			MASTER ID#		STATE PROJ. NO.	(T.H.)	SHEET NO.	OF SHEETS

ACCESSIBLE PEDESTRIAN SIGNAL (APS)
APS PUSH BUTTON STATION
TYPICAL APS PUSH BUTTON LOCATION DETAIL

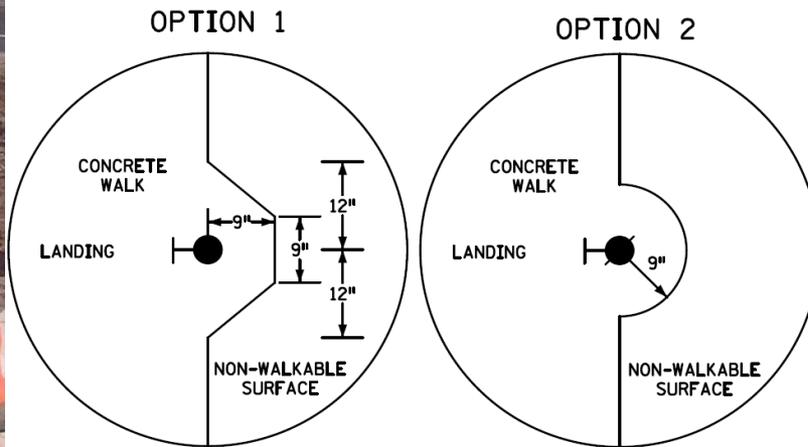
Licensed Professional Engineer

APS Push Button Station



APS Push Button Station

CONTRACTOR MUST USE OPTION 1 OR 2 WHEN THE APS PUSH BUTTON IS SHOWN AT THE EDGE OF WALK. OPTION USED (OR SELECTED) MUST BE THE SAME THROUGHOUT THE ENTIRE PROJECT.



Push Button on Signal Pole

The APS push button shall meet the vertical horizontal and crosswalk skew requirements.

Height and Reach

- 10" max horizontal reach
- 42" push button height



Pole Mounting Adaptor



Push Button on Pedestal



When a push button is placed on a new or previously existing pedestal pole, the push button shall be installed using 3 APS Push Button Spacers (Saddle Adaptors).

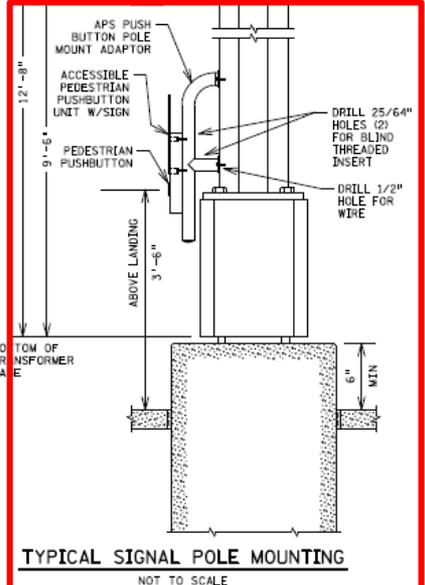
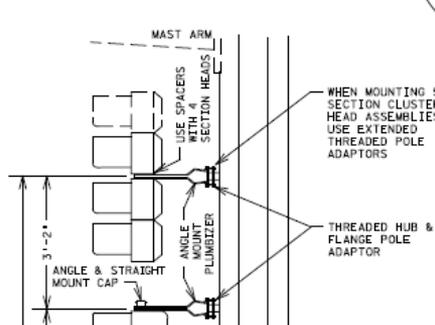
Saddle Adaptors on Pedestals



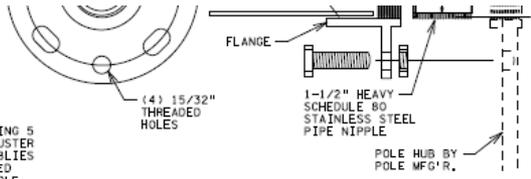
MnDOT Signal Plan Details

APS PB Pole Mounting Adaptor & Spacers

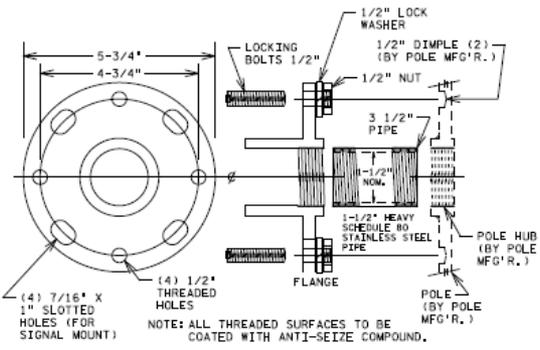
SECTION 11A CLUSTER HEAD DETAIL



TYPICAL SIGNAL POLE MOUNTING
NOT TO SCALE

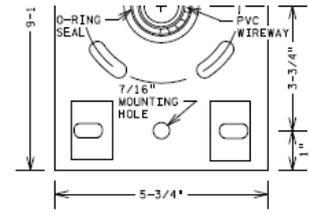


THREADED HUB AND FLANGE POLE ADAPTOR

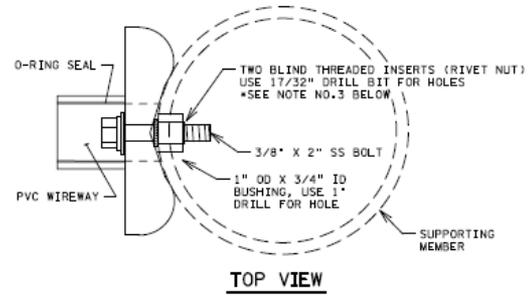


EXTENDED THREADED POLE ADAPTOR

- NOTES:
1. ALL THREADED SURFACES TO BE COATED WITH ANTI-SEIZE COMPOUND.
 2. USE SIGNAL HEAD MOUNTED SPACERS FOR 4 SECTION POLY HEADS.
 3. SEE STANDARD PLATE NUMBER 8123 FOR ADDITIONAL SIGNAL POLE DETAILS.
 4. EXTENDED THREADED POLE ADAPTOR ONLY USED WITH 5 SECTION CLUSTER HEADS.



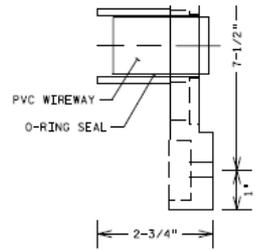
BOLT ON HUB & FLANGE



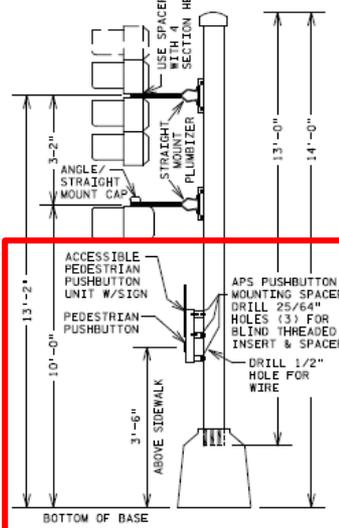
TOP VIEW



- NOTES:
1. ALL THREADED SURFACES TO BE COATED WITH ANTI-SEIZE COMPOUND.
 2. USE SIGNAL HEAD MOUNTED SPACERS FOR 4 SECTION POLY HEADS.
 3. BLIND THREADED INSERTS (RIVET NUT) MUST BE INSERTED USING MANUFACTURERS SPECIFIC INSERTION TOOL. NO OTHER METHOD IS ACCEPTABLE.
 4. SEE STANDARD PLATE NUMBER 8122 FOR ADDITIONAL PEDESTAL POLE DETAILS.



SIDE VIEW



TYPICAL PEDESTAL MOUNTING
NOT TO SCALE

BY	DATE	REVISIONS

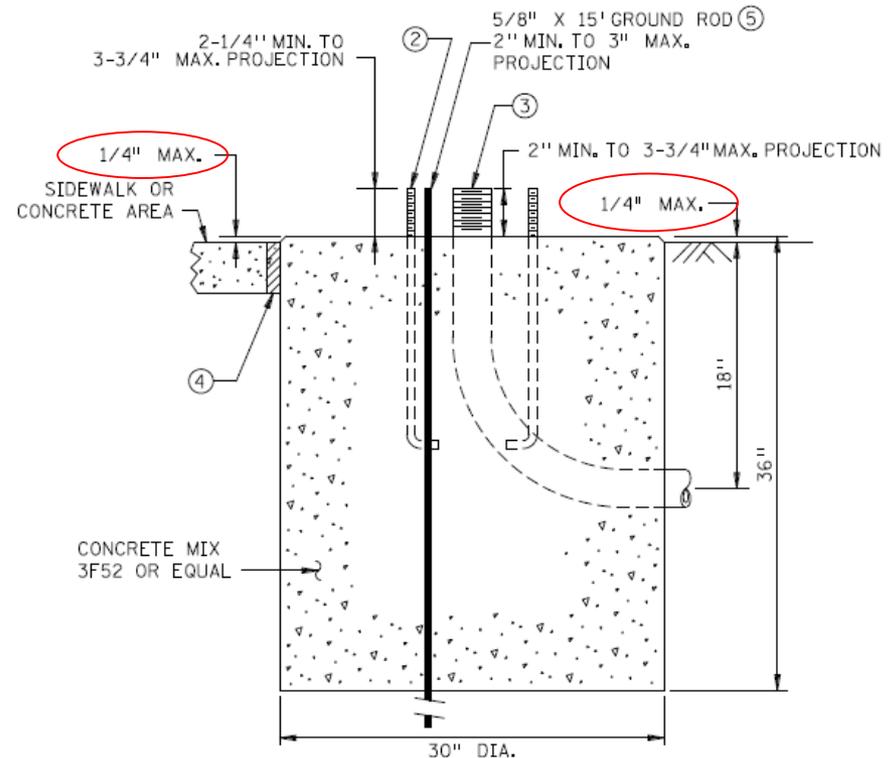
SYSTEM ID:	T.E.
METER ADDRESS:	
MASTER ID:	T.E.

POLE MOUNT DETAIL

S.A.P. NO.	DRAWN BY:	CKD BY:	DATE: 10-14-15
CERTIFIED BY:	LICENSED PROFESSIONAL ENGINEER		LIC. NO. _____ DATE: _____
STATE PROJ. NO.	(T.H.)	SHEET NO.	OF SHEETS

Standard Plate No. 8112I

- New Pedestal Foundations shall be constructed flush to within $\frac{1}{4}$ " of Landing.



SIDE SECTION

Push Button on Pedestal

Prosecution of Work (ADA)

Concrete for new foundation shall be placed either with or after the landing concrete is placed.



Signal Design – Construction Staging



Signal Design – Construction Staging

- Proposed signal poles should be placed behind existing signal poles to allow the existing poles to be active during construction. They should be placed 5' min. away from the existing pole location.
- Signal pedestal being relocated usually need temporary signal pedestals as to not disrupt vehicular traffic.



Rectangular Rapid Flashing Beacon (RRFB)



- ▶ Push Button needs to meet all APS requirements including audible message
- ▶ FHWA has rescinded interim approval of RRFB effective 12/21/17

Questions?

