

# MINNESOTA DEPARTMENT OF TRANSPORTATION ANOKA COUNTY

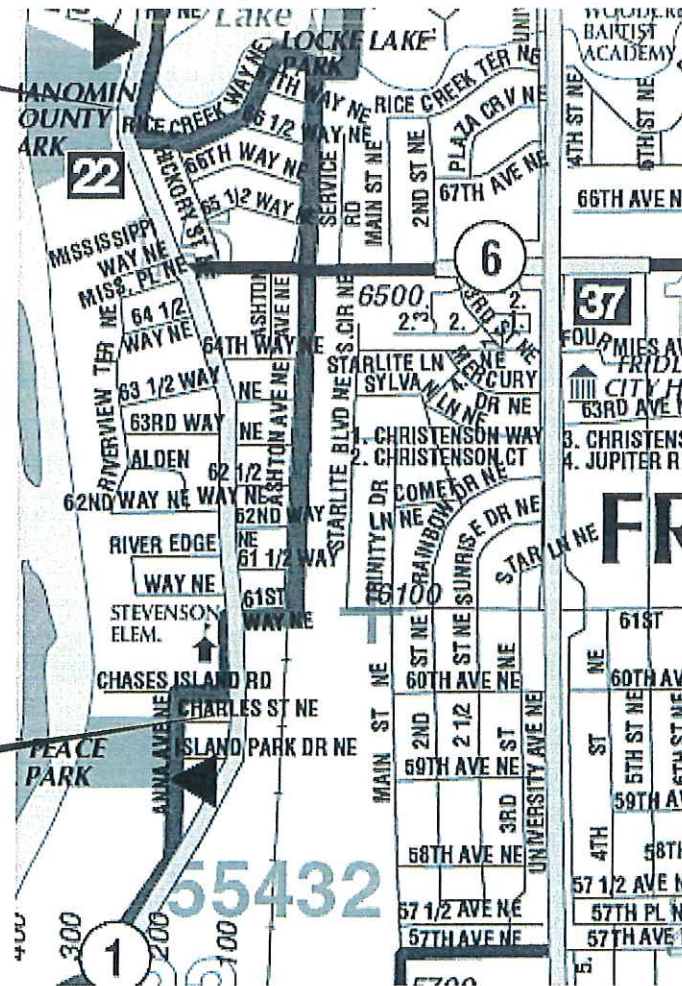
CONSTRUCTION PLAN FOR \_\_\_\_\_ MILL BITUMINOUS, BITUMINOUS SURFACING, CURB & GUTTER, AND STORM SEWER REPAIRS

LOCATED ON CSAH 1 BETWEEN CHARLES STREET NE AND BRIDGE #02541

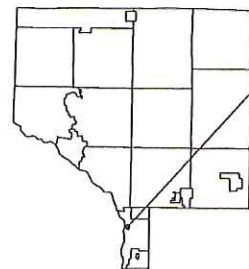
	CSAH 1	
GROSS LENGTH	4,937.00 FEET	0.935 MILES
EXCEPTIONS-LENGTH	0.00 FEET	0.000 MILES
NET LENGTH	4,937.00 FEET	0.935 MILES

END SAP 002-601-051  
CSAH 1, LNB STA: 61+05  
CSAH 1, LSB STA: 61+26

BEGIN SAP 002-601-051  
CSAH 1, LNB STA: 11+68  
CSAH 1, LSB STA: 11+68



PROJECT LOCATION



GOVERNING SPECIFICATIONS  
THE 2018 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM AND BE INSTALLED IN ACCORDANCE TO THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MNMUTCD), AND PART VI, "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS."

THIS PLAN CONTAINS 36 SHEETS

### INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2-3	STATEMENT OF ESTIMATED QUANTITIES
4-5	TABULATIONS
6	TYPICAL SECTIONS
7-10	DETAILS
11-12	CONSTRUCTION PLAN
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19-22	DRIVEWAY AND SIDEWALK DETAILS
23	PERMANENT MARKING TABULATION
24-25	TEMPORARY SIGNING, PERMANENT SIGNING, AND STRIPING
26	TRAFFIC CONTROL QUANTITY
27-31	SIGNING AND STRIPING DETAILS
32-36	ORIGINAL SIGNAL PLANS (FOR REFERENCE ONLY)

Approved 4/30/2018  
CITY OF FRIDLEY ENGINEER

Approved 4/30/2018  
ANOKA COUNTY ENGINEER

DATE 5/2/18  
DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY

DATE 5/2/18  
STATE AID ENGINEER: APPROVED FOR STATE AID FUNDING

CITY OF FRIDLEY  
ANOKA COUNTY  
MN/DOT TRANSPORTATION DISTRICT - METRO  
SECTIONS 15 & 22  
TOWNSHIP 30 NORTH  
RANGE 24 WEST

DESIGN DESIGNATION (CSAH 01)			
ESAL 20	1,913,819	FUNCTIONAL CLASSIFICATION	A MINOR ARTERIAL
R VALUE	60	NO. OF TRAFFIC LANES	4
ADT (2018)	18000	NO. OF PARKING LANES	0
PROJ. ADT (2038)	18000	DESIGN SPEED	40 MPH
PROJ. HCA DT (2038)	1062	STOPPING SIGHT DISTANCE BASED ON:	
SOIL FACTOR	N/A	HEIGHT OF EYE	3.5'
		HEIGHT OF OBJECT	2.0'
		DESIGN SPEED NOT ACHIEVED AT:	
		STA. _____ TO STA. _____	MPH _____

NO	DATE	BY	CHKD	APPR	REVISION	
	04/26/2018					2:27:01 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
PRINT NAME: JOSEPH J. MACPHERSON  
SIGNATURE:   
DATE: 4-30-18 LICENSE NO. 46732

DRAWN BY: SRK DATE: 04/26/2018  
DESIGN BY: SRK DATE: 04/26/2018  
CHECKED BY: HG DATE: 04/26/2018

ANOKA COUNTY  
HIGHWAY DEPT.

STATE AID PROJECT 002-601-051

TITLE SHEET  
Sheet 1 of 36 Sheets



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STATEMENT OF ESTIMATED QUANTITIES				
NOTES	ITEM NUMBER	ITEM DESCRIPTION	UNIT	TOTAL PROJECT QUANTITIES ESTIMATED
	2013.601	SURVEY EQUIPMENT	LUMP SUM	1
	2021.501	MOBILIZATION	LUMP SUM	1
2	2104.502	REMOVE CASTING	EACH	69
2	2104.502	REMOVE DRAINAGE STRUCTURE	EACH	20
3	2104.502	SALVAGE SIGN	EACH	48
2	2104.503	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LIN FT	4488
1,2	2104.503	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	16144
	2104.503	REMOVE PIPE SEWERS	LIN FT	360
1,2	2104.503	REMOVE CURB & GUTTER	LIN FT	14644
	2104.504	REMOVE CONCRETE DRIVEWAY PAVEMENT	SQ YD	129
1	2104.504	REMOVE BITUMINOUS PAVEMENT	SQ YD	3934
	2104.518	REMOVE BITUMINOUS WALK	SQ FT	1055
2	2104.518	REMOVE CONCRETE WALK	SQ FT	3114
2	2104.518	REMOVE CONCRETE MEDIAN	SQ FT	11212
	2104.618	REMOVE BRICK PAVERS	SQ FT	1544
4, 5	2211.509	AGGREGATE BASE CLASS 5	TON	130
	2231.509	BITUMINOUS PATCHING MIXTURE	TON	797
6	2232.504	MILL BITUMINOUS SURFACE (2.0")	SQ YD	39689
7	2232.604	MILL BITUMINOUS PAVEMENT (SPECIAL)	SQ YD	1481
	2357.506	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	2051
8	2360.509	TYPE SP 12.5 WEARING COURSE MIXTURE (4,C)	TON	251
29	2360.509	TYPE SP 12.5 WEARING COURSE MIXTURE (4,E)	TON	4564
9	2360.509	TYPE SP 12.5 BITUMINOUS MIXTURE FOR PATCHING	TON	85
	2503.503	12" CP PIPE SEWER	LIN FT	270
	2503.503	15" CP PIPE SEWER	LIN FT	70
	2503.503	18" CP PIPE SEWER	LIN FT	20
	2503.602	CONNECT TO EXISTING STORM SEWER	EACH	36
10	2504.602	ADJUST GATE VALVE	EACH	23
12	2506.502	CASTING ASSEMBLY	EACH	80
11	2506.503	CONSTRUCT DRAINAGE STRUCTURE DESIGN 96-4020	LIN FT	5.6
	2506.503	RECONSTRUCT DRAINAGE STRUCTURE	LIN FT	24.3
13	2506.602	GROUT AND CLEAN OUT CATCH BASIN OR MANHOLE	EACH	11
	2506.602	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL (24" PVC)	EACH	9
	2506.602	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL (30" PVC)	EACH	11
14	2521.518	4" CONCRETE WALK	SQ FT	12498
	2521.518	6" CONCRETE WALK	SQ FT	2139
1	2531.503	CONCRETE CURB AND GUTTER DESIGN B612 (MOD)	LIN FT	7400
1	2531.503	CONCRETE CURB AND GUTTER DESIGN B618	LIN FT	8388
	2531.504	6" CONCRETE DRIVEWAY PAVEMENT	SQ YD	129
	2531.618	TRUNCATED DOMES	SQ FT	248
27	2540.602	MAIL BOX SUPPORT	EACH	17
15	2550.602	LOOP DETECTOR DESIGN NMC	EACH	35
16,17,24	2563.601	TRAFFIC CONTROL (STAGE 1)	LUMP SUM	1
16,17,25	2563.601	TRAFFIC CONTROL (STAGE 2)	LUMP SUM	1
16,17,26	2563.601	TRAFFIC CONTROL (STAGE 3)	LUMP SUM	1
	2563.610	POLICE OFFICER	hour	85
18	2563.613	PORTABLE CHANGEABLE MESSAGE SIGN	UNIT DAY	20
3	2564.602	INSTALL SIGN	EACH	48
10	2565.602	APS RELOCATE PUSH BUTTON	EACH	8
19	2573.502	STORM DRAIN INLET PROTECTION	EACH	65
	2574.507	COMMON TOPSOIL BORROW	CU YD	66
20	2575.504	EROSION CONTROL BLANKETS CATEGORY 0	SQ YD	241
21	2581.503	REMOVABLE PREFORMED PAVEMENT MARKING TAPE	LIN FT	392
21	2582.503	4" BROKEN LINE PAINT	LIN FT	1958
22, 23	2582.518	PAVEMENT MESSAGE PREFORM THERMOPLASTIC	SQ FT	1902
22	2582.503	4" SOLID LINE MULTI-COMPONENT	LIN FT	20451
22	2582.503	4" BROKEN LINE MULTI-COMPONENT	LIN FT	1920

THE FOLLOWING STANDARD PLATES, APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION SHALL APPLY ON THIS PROJECT.

MNDOT STANDARD PLATES	
PLATE NUMBER	DESCRIPTION
4006L	MANHOLE OR CATCH BASIN
4020J	MANHOLE OR CATCH BASIN (2 SHEETS)
4026A	CONCRETE ENCASED CONCRETE ADJUSTING RINGS
4101D	RING CASTING FOR MANHOLE OR CATCH BASIN
4110F	COVER CASTING FOR MANHOLE
4154B	CATCH BASIN GRATE CASTINGS
7038A	DETECTABLE WARNING SURFACE
7100H	CONCRETE CURB AND GUTTER
7113A	CONCRETE APPROACH NOSE DETAIL
8000J	CHANNELIZERS (3 SHEETS)
9350A	MAILBOX SUPPORT (SWING-AWAY TYPE)

NO	DATE	BY	CKD	APPR	REVISION	04/26/2018	2:27:34 PM
NAME: P:\118-01-00\CSAH_01_(CharlesSt-RickardRd)\Base\PROPOSED\PROPOSED.dgn							

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ANOKA COUNTY  
HIGHWAY DEPT.

STATE AID PROJECT 002-601-051

STATEMENT OF ESTIMATED QUANTITIES  
 Sheet 2 of 36 Sheets



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**CONSTRUCTION NOTES**

1	ITEM INCLUDES CURB REPLACEMENT QUANTITIES NOT SHOWN ON THE PLAN, USED TO REPLACE SEGMENTS OF DETERIORATED CURB AS DIRECTED BY THE ENGINEER.
2	REFERENCE SHEET 7 FOR REMOVAL DETAILS.
3	ITEM USED FOR SIGNS IN MEDIAN REPLACEMENT AREAS.
4	PRIOR TO PLACEMENT, EXCAVATION AND DISPOSAL OF EXISTING GRADING MATERIAL IS INCIDENTAL TO AGGREGATE BASE
5	ITEM USED FOR NEW CONCRETE WALK.
6	DETAIL MILLING AROUND MANHOLES, CATCH BASINS, GATE VALVES, AND ALONG CURB LINE IS INCIDENTAL TO THIS ITEM.
7	ITEM USED FOR MILLING STREET APPROACHES AND/OR DETAIL MILLING AREAS AS IDENTIFIED IN THE PLAN.
8	ITEM FOR STREET APPROACHES. STREET APPROACHES SHALL BE PAVED AFTER MAINLINE, AND BEFORE FINAL STRIPING.
9	ITEM INCLUDES BITUMINOUS PATCHING AROUND NEW CURB, STORM STRUCTURE REPAIRS, AND ANY POTHOLES. 6" GRAVEL BASE PLACEMENT INCIDENTAL TO PATCH.
10	ITEM SHALL BE ADJUSTED ONLY AS NECESSARY AS DETERMINED BY THE ENGINEER.
11	PAY HEIGHT IS MEASURED FROM INVERT OF OUTLET PIPE TO BOTTOM OF CASTING, PLUS AN ALLOWANCE OF 0.70 FEET FOR THE DEPTH OF THE CONCRETE BASE, REGARDLESS OF ITS ACTUAL THICKNESS.
12	ITEM INCLUDES FULL REPLACEMENT OF CASTING ADJUSTMENT RINGS. SEE STORM TABULATIONS FOR RING HEIGHTS.
13	ITEM INCLUDES GROUTING OF INVERTS, DOGHOUSES, RINGS, AND CASTINGS AS REQUIRED (SEE DRAINAGE TAB, PAGE 3-5).
14	ITEM INCLUDES CONCRETE MEDIAN.
15	FULL LOOP REPLACEMENT REQUIRED. CONTRACTOR SHALL CONTACT ANOKA COUNTY TO DETERMINE PLACEMENT. SIGNAL PLANS ARE INCLUDED AT THE END OF THIS PLAN. INCLUDES ADVANCE LOOPS ON SIDE STREETS. (OUTSIDE OF MILL AREA, NOT SHOWN IN PLANS.)
16	CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN TEMPORARY SIGNAGE WHENEVER EXISTING SIGNAGE IS REMOVED. TEMPORARY SIGNAGE SHALL BE INCIDENTAL TO TRAFFIC CONTROL.
17	ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO, AND BE INSTALLED IN ACCORDANCE WITH, THE MOST CURRENT REVISION OF THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. "DO NOT PASS, PASS WITH CARE, NO CENTER STRIPE, AND STOP HERE ON RED SIGNS SHALL BE INPLACE WHENEVER PERMANENT PAVEMENT MARKINGS ARE NOT
18	2 MESSAGE BOARDS, ONE ON THE EACH END OF PROJECT, WILL BE INSTALLED 10 DAYS PRIOR TO ANY CONSTRUCTION; REFERENCE STRIPING PLAN FOR DETAILS.
19	ALL DRAINAGE STRUCTURES AFFECTED BY THIS PROJECT MUST HAVE INLET PROTECTION.
20	TYPE 1 FERTILIZER AND TYPE 25-151 SEED ARE INCIDENTAL TO THIS ITEM.
21	CENTERLINE AND LANE DESIGNATION SKIPS SHALL APPLIED AS SOON AS POSSIBLE ON EACH NEW LIFT OF PAVEMENT; SKIPS MUST BE INPLACE BEFORE THE CONTRACTOR LEAVES FOR THE DAY. CONTRACTOR IS TO REMOVE PRIOR TO FINAL PAINT
22	FINAL STRIPING SHALL BE INSTALLED WITHIN 72 HOURS OF COMPLETION OF MAINLINE WEAR COURSE PAVING.
23	INCLUDES ALL THERMOPLASTIC STOP BARS, GORE AREA HATCHING, CROSSWALKS, LANE DESIGNATION ARROWS, AND PAVEMENT MESSAGES.
24	STAGE 1 ENCOMPASSES ALL TRAFFIC CONTROL REQUIRED FOR THE COMPLETION OF WORK ALONG THE LEFT-TURN AND LEFT-THRU LANES (INCLUDING BUT NOT LIMITED TO REPLACEMENT OF CURB, MEDIAN, AND WALK, SIGNAL LOOP DETECTOR REPLACEMENT, PATCHING, AND RESTORATION). NO PERMANENT LEFT-TURN LANE CLOSURES WILL BE ALLOWED. LEFT-TURN LANES MAY ONLY BE CLOSED DURING THOSE TIMES THAT THE SIGNAL SYSTEMS ARE IN "FLASHING OPERATION" (SEE THE SPECIAL PROVISIONS FOR TIME RESTRICTIONS ON "FLASHING OPERATION" OF TRAFFIC SIGNALS). A TRAFFIC CONTROL LAYOUT/PLAN SHALL BE PROVIDED BY THE CONTRACTOR TO THE ENGINEER FOR REVIEW AND APPROVAL AT LEAST 14 DAYS PRIOR TO COMMENCING WORK. ALL TRAFFIC CONTROL MUST BE COMPLIANT WITH THE MOST CURRENT REVISIONS OF BOTH THE MMUTCD AND THE MN/DOT TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS FIELD MANUAL.
25	STAGE 2 ENCOMPASSES ALL TRAFFIC CONTROL REQUIRED FOR THE COMPLETION OF WORK ALONG THE RIGHT-THRU LANES, RIGHT-TURN LANES, AND SHOULDERS (INCLUDING BUT NOT LIMITED TO REPLACEMENT OF CURB, MEDIAN, AND WALK, SIGNAL LOOP DETECTOR REPLACEMENT, PATCHING, AND RESTORATION). NO PERMANENT RIGHT-TURN LANE CLOSURES WILL BE ALLOWED. RIGHT-TURN LANES MAY ONLY BE CLOSED DURING THOSE TIMES THAT THE SIGNAL SYSTEMS ARE IN "FLASHING OPERATION" (SEE THE SPECIAL PROVISIONS FOR TIME RESTRICTIONS ON "FLASHING OPERATION" OF TRAFFIC SIGNALS). A TRAFFIC CONTROL LAYOUT/PLAN SHALL BE PROVIDED BY THE CONTRACTOR TO THE ENGINEER FOR REVIEW AND APPROVAL AT LEAST 14 DAYS PRIOR TO COMMENCING WORK. ALL TRAFFIC CONTROL MUST BE COMPLIANT WITH THE MOST CURRENT REVISIONS OF BOTH THE MMUTCD AND THE MN/DOT TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS FIELD MANUAL.
26	STAGE 3 ENCOMPASSES ALL TRAFFIC CONTROL REQUIRED FOR THE COMPLETION OF MILLING, BITUMINOUS PAVING, RESTORATION, AND ANY AND ALL REMAINING WORK THAT IS NOT INCLUDED IN STAGES 1 OR 2. A TRAFFIC CONTROL LAYOUT/PLAN SHALL BE PROVIDED BY THE CONTRACTOR TO THE ENGINEER FOR REVIEW AND APPROVAL AT LEAST 14 DAYS PRIOR TO COMMENCING WORK. ALL TRAFFIC CONTROL MUST BE COMPLIANT WITH THE MOST CURRENT REVISIONS OF BOTH THE MMUTCD AND THE MN/DOT TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS FIELD MANUAL.
27	MAILBOXES SHALL BE INSTALLED AT THE EXISTING MAILBOX LOCATION OR AS DIRECTED BY THE LOCAL POSTAL AUTHORITY, CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE LOCAL POSTAL AUTHORITY. MAILBOX REMOVAL AND ALL MATERIALS NECESSARY FOR INSTALLATION ARE INCIDENTAL TO THIS ITEM.
28	RING HEIGHT TOTAL OF 38 LIN FT IS INCLUDED IN RECONSTRUCT DRAINAGE STRUCTURE TOTAL.
29	ALL PAVING SHALL BE PULLED IN THE SAME DIRECTION AS TRAFFIC FOR THAT LANE(S) OF TRAVEL.

**BASIS OF PLANNED QUANTITIES**

2575	SEED MIXTURE 25-151	200 LBS / ACRE
2357	BITUMINOUS MATERIAL FOR TACK COAT	0.05 GAL / SQ YD
2211	AGGREGATE BASE CLASS 5	1.8 TONS / CU YD
2360	ALL BITUMINOUS PAVEMENT	115 LBS / SQ YD / IN

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 PRINT NAME: JOSEPH J. MACPHERSON  
 SIGNATURE: *[Signature]*  
 DATE: 4-20-18 LICENSE NO. 46732

DRAWN BY: SRK DATE: 04/26/2018  
 DESIGN BY: SRK DATE: 04/26/2018  
 CHECKED BY: HG DATE: 04/26/2018



**ANOKA COUNTY  
 HIGHWAY DEPT.**

STATEMENT OF ESTIMATED QUANTITIES

STATE AID PROJECT 002-601-051

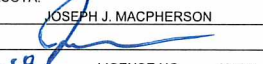

Sheet 3 of 36 Sheets



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STORM DRAINAGE TAB																	
NUMBER	TYPE	ACTION	NEW CASTING	FURNISH AND INSTALL CASTING ASSEMBLY	ADJUST CASTING (RING HEIGHT)	REMOVE DRAINAGE STRUCTURE	GROUT CATCH BASIN OR MANHOLE	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL	12" CP PIPE SEWER	15" CP PIPE SEWER	18" CP PIPE SEWER	DRAINAGE STRUCTURE 96-4020	RECONSTRUCT DRAINAGE STRUCTURE	SAWING CONCRETE PAVEMENT (FULL DEPTH)	REMOVE CURB & GUTTER	CONNECT TO EXISTING STORM SEWER	SAWING BIT. PAVEMENT (FULL DEPTH)
					LIN FT	EACH	EACH	EACH	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	EACH
107	CB	RE-RING	A	1	0.4									5	10		14
108	CB	RECONSTRUCT STRUCTURE	B	1		1		1	20					4	10	2	14
109	CB	GROUT STRUCTURE	B	1			1										
110	CB	RE-RING	A	1	0.2									5	10		14
116	CB	RE-RING	A	1	0.6									5	10		14
117	CB	RECONSTRUCT STRUCTURE	B	1		1		1	20					4	10	2	14
118	CB	RECONSTRUCT STRUCTURE	B	1		1		1	20					4	10	2	14
119	CB	RECONSTRUCT STRUCTURE	A	1		1		1	10					?	10	1	
121	CB	RE-RING	A	1	0.8									5	10		14
123	CB	RE-RING	A	1	0.2									5	10		14
124	CB	RECONSTRUCT STRUCTURE	A	1		1		1	20					5	10	2	14
126	CB	GROUT STRUCTURE	A	1			1										
129	CB	RECONSTRUCT STRUCTURE	B	1		1		1	20					4	10	2	14
130	CB	RECONSTRUCT STRUCTURE	B	1		1		1	10					4	10	1	14
131	CB	RECONSTRUCT STRUCTURE	A	1		1		1	10					5	10	1	14
132	CB	RECONSTRUCT STRUCTURE	A	1		1		1	20					5	10	2	14
135	CB	RE-RING	B	1	0.6									4	10		14
136	CB	RECONSTRUCT STRUCTURE	B	1		1		1	20					4	10	2	14
138	CB	RECONSTRUCT STRUCTURE	A	1		1		1	10					5	10	1	14
139	CB	RECONSTRUCT STRUCTURE	A	1		1		1	10					5	10	1	14
140	CB	GROUT STRUCTURE	A	1			1										
142	CB	RECONSTRUCT STRUCTURE	A	1		1		1	10		10			5	10	2	14
143	CB	RE-RING	A	1	0.2									5	10		
145	CB	RECONSTRUCT STRUCTURE	A	1		1		1	10	10				5	10	2	14
146	CB	RE-RING	B	1	1.3									4	10		14
147	CB	RECONSTRUCT STRUCTURE	B	1		1		1	30					4	10	3	14
149	CB	GROUT STRUCTURE	A	1			1										
150	CB	RE-RING	A	1	0.4									5	10		14
153	CB	RECONSTRUCT STRUCTURE	A	1		1		1		20				5	10	2	14
154	CB	RECONSTRUCT STRUCTURE	B	1		1		1		20				4	10	2	14
155	CB	RECONSTRUCT STRUCTURE	B	1		1		1	10	10				4	10	2	14
156	CB	RECONSTRUCT STRUCTURE	A	1		1		1	10					5	10	1	14
157	CB	RE-RING	A	1	0.4									5	10		14
159	CB	RE-RING	B	1	0.6									4	10		14
160	CB	RE-RING	A	1	1.0									5	10		14
161	CB	RE-RING	A	1	1.0									5	10		14
162	CB	RE-RING	B	1	0.6									4	10		14
163	CB	RE-RING	A	1	1.4									5	10		14
164	CB	GROUT STRUCTURE	A	1			1										
165	CB	RECONSTRUCT STRUCTURE	A	1		1		1	10	10	10			5	10	3	14
166	CB	RE-RING	A	1	1.2									5	10		14
169	CB	RE-RING	B	1	1.0									4	10		14
170	CB	RE-RING	A	1	0.8									5	10		14
171	CB	RE-RING	B	1	0.8									4	10		14
172	CB	RE-RING	A	1	1.8									5	10		14
<b>SUB-TOTAL</b>				<b>45</b>	<b>15.3</b>	<b>20</b>	<b>5</b>	<b>20</b>	<b>270</b>	<b>70</b>	<b>20</b>	<b>0</b>	<b>0.0</b>	<b>180</b>	<b>400</b>	<b>36</b>	<b>532</b>

① NOTE: ESTIMATED 10' OF CPP CALCULATED FOR EACH CONNECTION.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. PRINT NAME: JOSEPH J. MACPHERSON SIGNATURE:  DATE: 4-30-18 LICENSE NO. 46732										DRAWN BY: SRK DATE: 04/26/2018 DESIGN BY: SRK DATE: 04/26/2018 CHECKED BY: HG DATE: 04/26/2018		 <b>ANOKA COUNTY HIGHWAY DEPT.</b>		STATE AID PROJECT 002-601-051		TABULATIONS Sheet 4 of 36 Sheets	
NO	DATE	BY	CKD	APPR	REVISION	04/26/2018	2:51:42 PM	NAME: P:\18-01-00\CSAH_01_(CharlesSt-RickardRd)\Base\PROPOSED\PROPOSED.dgn									



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NUMBER	TYPE	ACTION	NEW CASTING	FURNISH AND INSTALL CASTING ASSEMBLY	ADJUST CASTING (RING HEIGHT)	REMOVE DRAINAGE STRUCTURE	GROUT CATCH BASIN OR MANHOLE	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL	12" CP PIPE SEWER	15" CP PIPE SEWER	18" CP PIPE SEWER	DRAINAGE STRUCTURE 96-4020	RECONSTRUCT DRAINAGE STRUCTURE	SAWING CONCRETE PAVEMENT (FULL DEPTH)	REMOVE CURB & GUTTER	CONNECT TO EXISTING STORM SEWER	SAWING BIT. PAVEMENT (FULL DEPTH)
					LIN FT	EACH	EACH	EACH	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	EACH	LIN FT
113	STRM MH	RE-RING	A-7D	1	0.4												32
127	STRM MH	RECONSTRUCT STRUCTURE	A-7D	1								5.6					32
137	STRM MH	GROUT STRUCTURE	A-7D	1			1										
138A	STRM MH	GROUT STRUCTURE	A-7D	1			1										
141	STRM MH	RE-RING	A-7D	1	0.8												32
144	STRM MH	GROUT STRUCTURE	A-7D	1			1										
201	STRM MH	RE-RING	A-7D	1	0.8												32
202	STRM MH	GROUT STRUCTURE	A-7D	1			1										
206	STRM MH	GROUT STRUCTURE	A-7D	1			1										
207	STRM MH	RECONSTRUCT STRUCTURE	A-7D	1									3.9				32
208	STRM MH	GROUT STRUCTURE	A-7D	1			1										
105	SAN MH	RE-RING	A-7D	1	0.8												32
114	SAN MH	RE-RING	A-7D	1	0.4												32
115	SAN MH	RE-RING	A-7D	1	1.0												32
120	SAN MH	RE-RING	A-7D	1	0.4												32
122	SAN MH	RECONSTRUCT STRUCTURE	A-7D	1									7.2				32
128	SAN MH	RECONSTRUCT STRUCTURE	A-7D	1									4.7				32
151	SAN MH	RE-RING	A-7D	1	1.0												32
154A	SAN MH	RE-RING	A-7D	1	2.0									14	20		14
200	SAN MH	RE-RING	A-7D	1	1.0												32
203	SAN MH	RE-RING	A-7D	1	0.2												32
204	SAN MH	RE-RING	A-7D	1	1.0												32
205	SAN MH	RE-RING	A-7D	1	0.4												32
209	SAN MH	RE-RING	A-7D	1	0.2												32
210	SAN MH	RE-RING	A-7D	1	1.8												32
211	SAN MH	RE-RING	A-7D	1	0.6												32
212	SAN MH	RE-RING	A-7D	1	2.2												32
212A	SAN MH	RE-RING	A-7D	1	1.0									13	20		14
213	SAN MH	RE-RING	A-7D	1	2.2												32
213A	SAN MH	RE-RING	A-7D	1	2.6									19	20		14
214	SAN MH	RE-RING	A-7D	1	0.6									4	10		14
215	SAN MH	RE-RING	A-7D	1	0.6									4	10		14
215A	SAN MH	RECONSTRUCT STRUCTURE	A-7D	1									3.8	8	20		28
216	SAN MH	RE-RING	A-7D	1	1.0									5	10		32
218	SAN MH	RECONSTRUCT STRUCTURE	A-7D	1													32
<b>SUB-TOTAL</b>				<b>35</b>	<b>23.0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5.6</b>	<b>24.3</b>	<b>67</b>	<b>110</b>	<b>0</b>	<b>802</b>
<b>TOTALS</b>				<b>80</b>	<b>38.3</b>	<b>20</b>	<b>11</b>	<b>20</b>	<b>270</b>	<b>70</b>	<b>20</b>	<b>5.6</b>	<b>24.3</b>	<b>247</b>	<b>510</b>	<b>36</b>	<b>1334</b>

① NOTE: ESTIMATED 10' OF CPP CALCULATED FOR EACH CONNECTION.

ASSEMBLY	RING OR FRAME CASTING	COVER OR GRATE CASTING	CURB BOX	DESCRIPTION	NOTES	QUANTITY
A-7D	700-7	716	-	STD. PLATE: 4101D, 4110F	CASTING COVER STAMPED "STORM SEWER"	11
A-7D	700-7	716	-	STD. PLATE: 4101D, 4110F	CASTING COVER STAMPED "SANITARY SEWER"	24
A	SEE DETAILS - SHEET 8					29
B	SEE DETAILS - SHEET 8					16
ALL CASTING HEIGHTS ARE TO BE FIELD VERIFIED.						
ALL MANHOLE COVERS SHALL BE STAMPED AS STORM SEWER OR SANITARY SEWER.						
NEW CASTINGS TO BE INSTALLED AFTER ASPHALT MILLING IS COMPLETED.						
MANHOLE CASTINGS TO BE RECESSED 1/4" FROM TOP OF FINISHED MAT.						

LOCATION	LSB SHDLR (B618)	CENTER MEDIAN (B612)	LNB SHDLR (B618)
CHARLES ST - 61ST WAY	37	1500	725
61ST WAY - 62ND WAY	260	379	529
62ND WAY - 63RD WAY	563	776	509
63RD WAY - 63RD 1/2 WAY	334	0	229
63RD 1/2 WAY - MISSISSIPPI ST	931	2504	655
MISSISSIPPI ST - RICE CREEK BRIDGE	1300	1619	1284
<b>TOTALS (LF)</b>	<b>3425</b>	<b>6778</b>	<b>3931</b>

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PRINT NAME: JOSEPH J. MACPHERSON

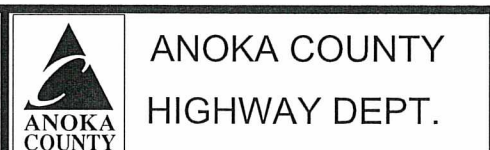
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DATE: 4.20.18 LICENSE NO. 46732

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TABULATIONS

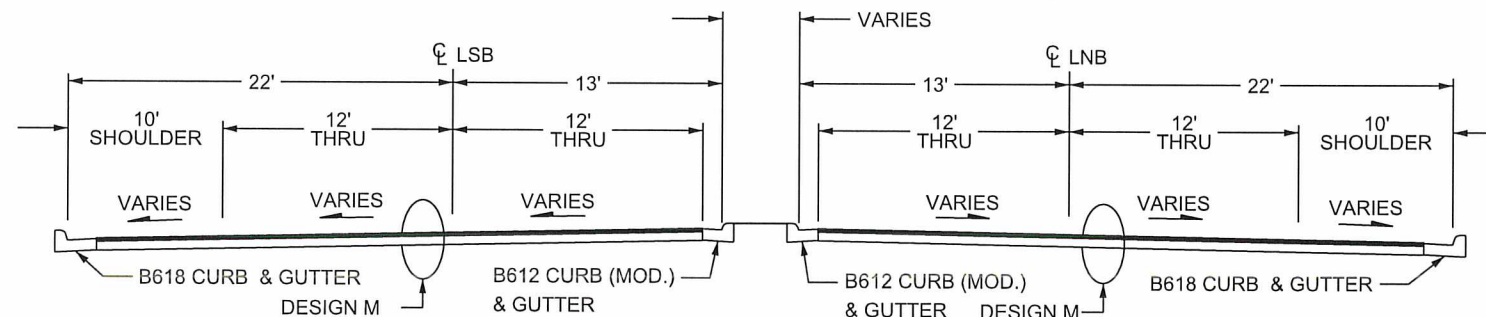
Sheet 5 of 36 Sheets



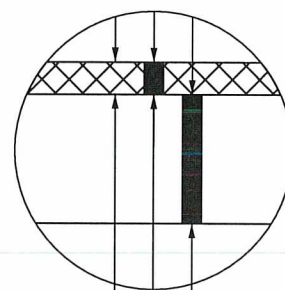
srkerr

### EAST RIVER ROAD(CSAH 1)

TYPICAL MAINLINE  
LNB 12+38 - 61+05 (TURN LANES EXEMPT)  
LSB 12+30 - 61+26 (TURN LANES EXEMPT)



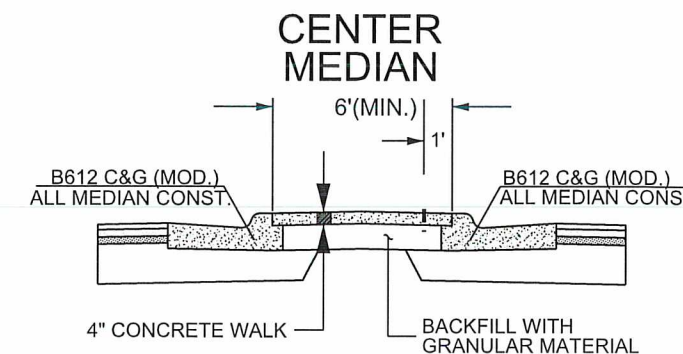
#### DESIGN M MILL SECTION



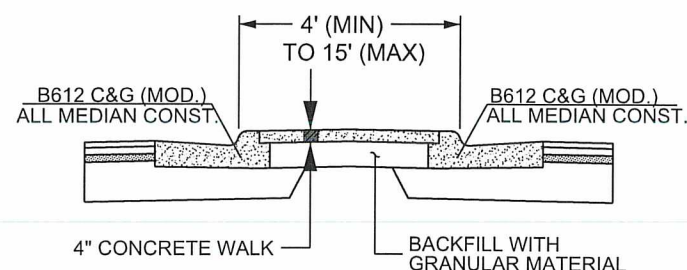
2.0" MILL BITUMINOUS  
2.0" BITUMINOUS WEAR(SPWEB440E)  
REMAINING BITUMINOUS

#### SAWCUT DETAIL

NOTE:SAWCUT IN CENTER MEDIAN WHERE DISTANCE BETWEEN BACK OF CURBLINES IS GREATER THAN SIX FEET.



#### CENTER MEDIAN DETAIL



### EAST RIVER ROAD (CSAH 1) TYPICAL LSB TURN LANES

#### RIGHT TURN LANE

12+30 - 14+80

#### LEFT TURN LANE

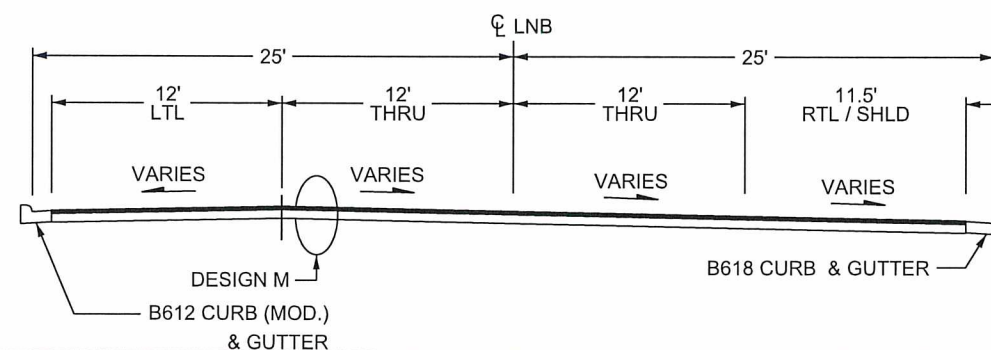
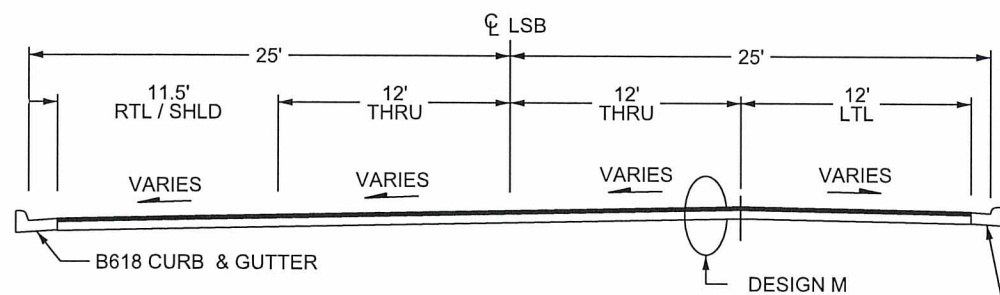
20+05 - 25+00  
30+00 - 31+00  
47+50 - 50+25  
58+35 - 60+00

#### LEFT TURN LANE

16+15 - 19+15  
26+35 - 27+35  
32+35 - 33+20  
43+65 - 46+60

#### RIGHT TURN LANE

16+15 - 19+25  
55+70 - 57+25



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SIGNATURE: *[Signature]*

DATE: 4-20-18 LICENSE NO. 46732

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TYPICAL SECTIONS

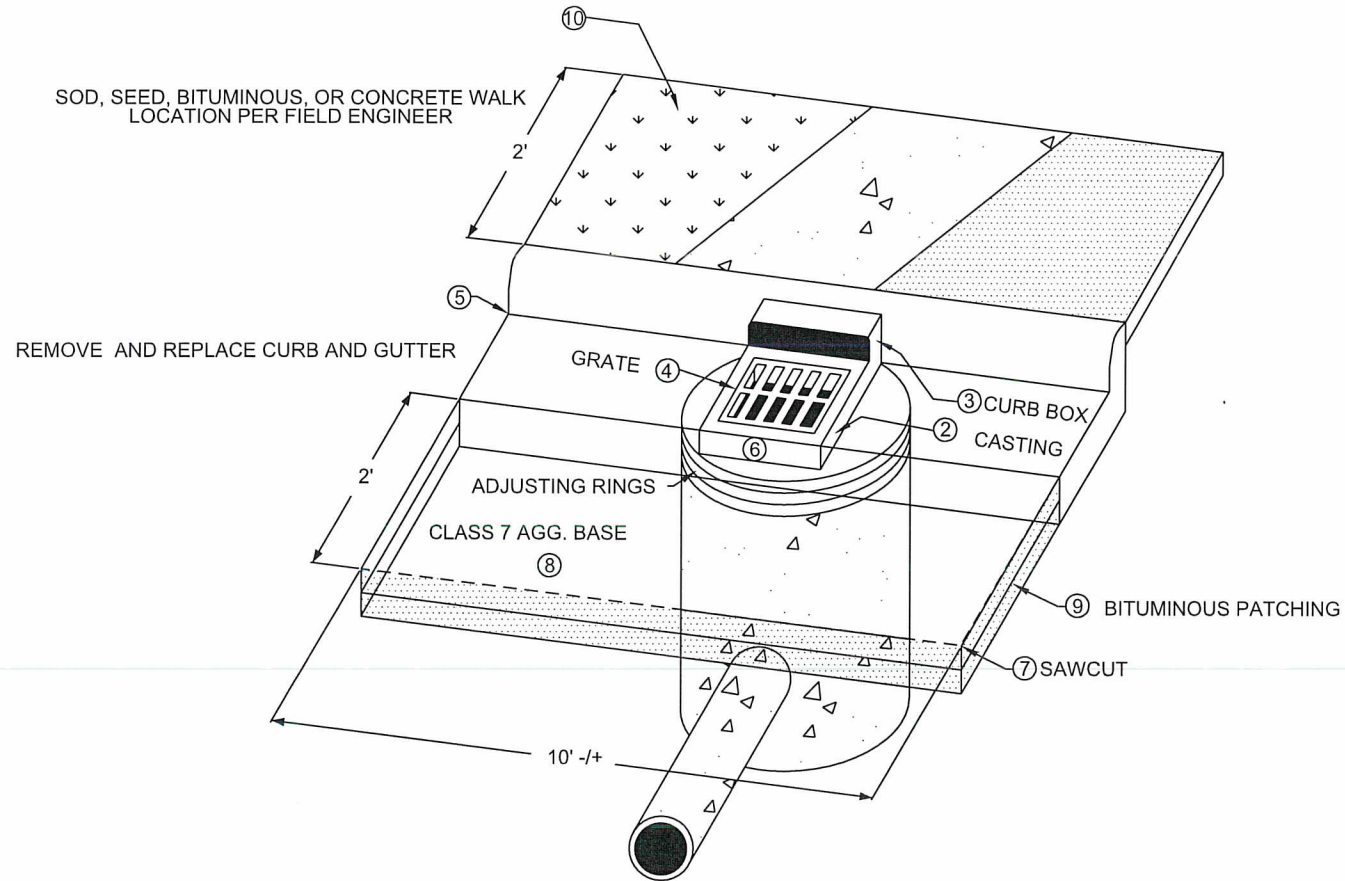
Sheet 6 of 36 Sheets



srker

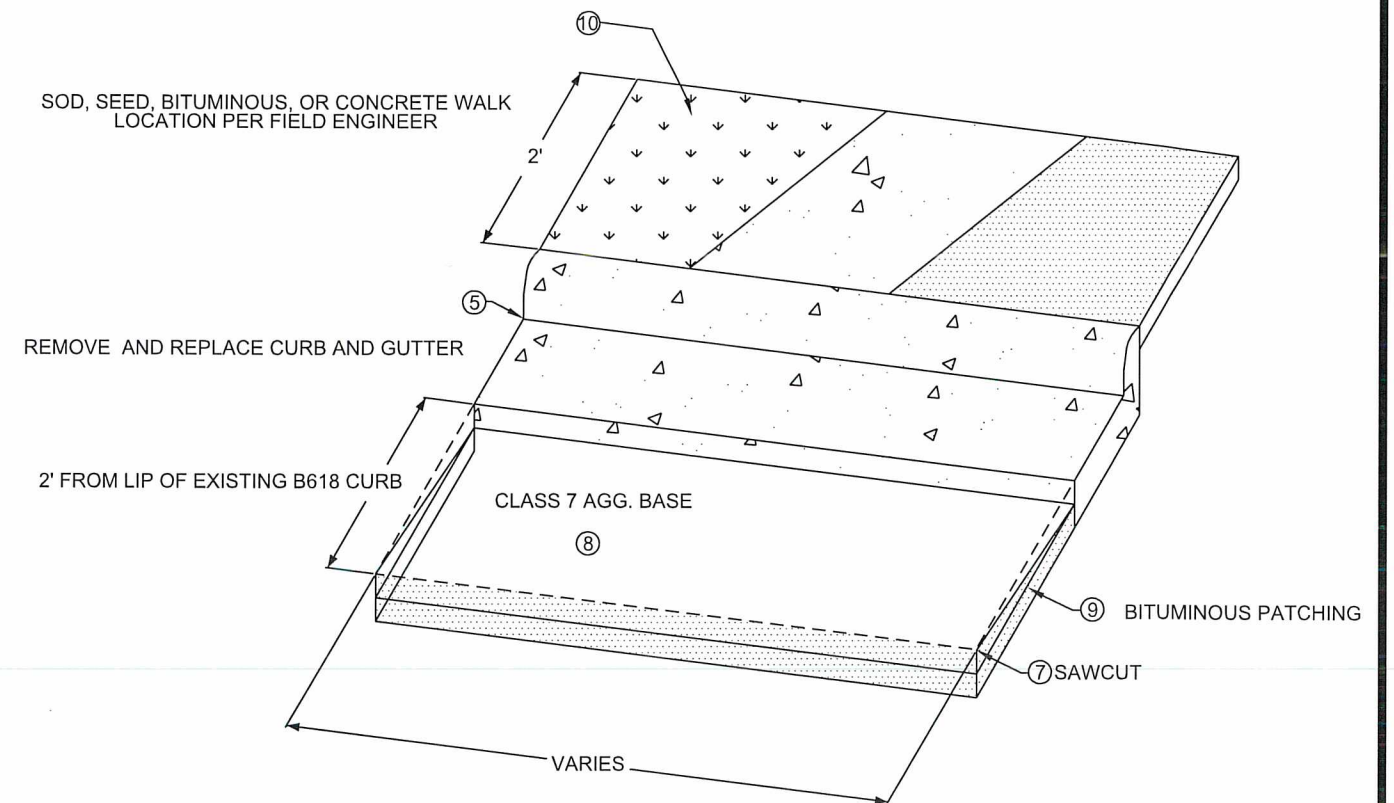
### CATCH BASIN DETAIL

SEE STRUCTURE TAB FOR LOCATION  
(PAGES 4 - 5)



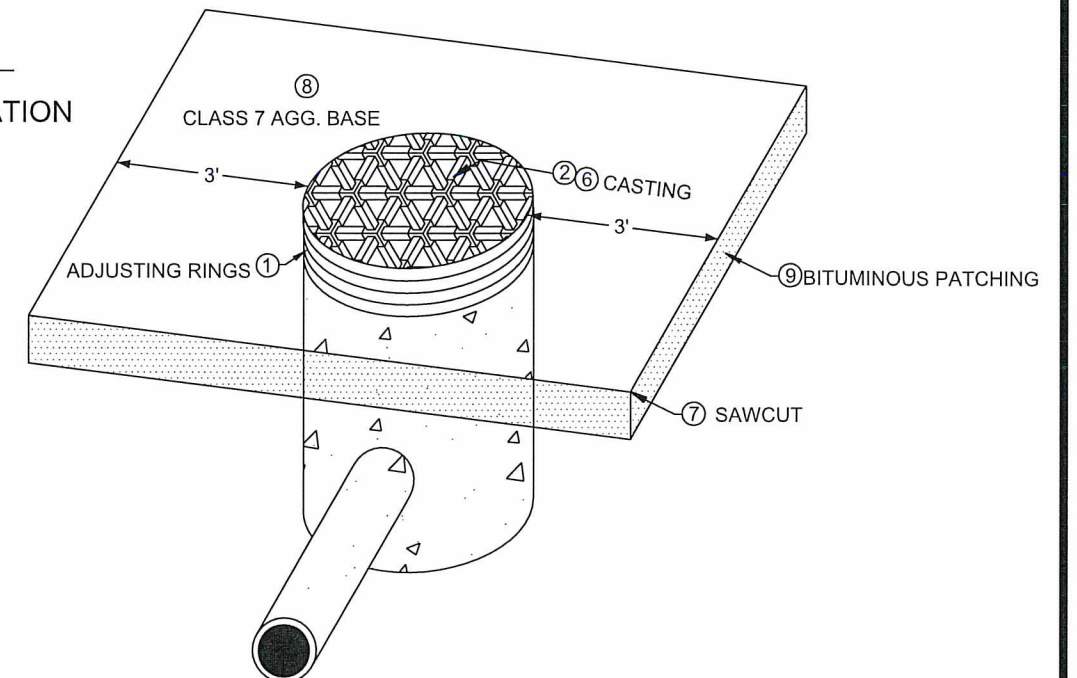
### NEW CURB DETAIL

SEE PLAN FOR LOCATION



### MANHOLE DETAIL

SEE STRUCTURE TAB FOR LOCATION  
(PAGES 4 - 5)



### NOTES

FOR TRAFFIC CONTROL AT CATCH BASIN AND MANHOLE REPAIRS REFER TO THE MINNESOTA MANUAL ON TEMPORARY TRAFFIC CONTROL LAYOUTS FIELD MANUAL.

- ① CONCRETE ENCASED CONCRETE ADJUSTING RINGS STANDARD PLATE 4026A
- ② RING AND FRAME CASTING; REFERENCE CASTING ASSEMBLIES SUMMARY CHART FOR CASTING TYPE
- ③ CURB BOX MATCHES CASTING REFERENCE CHART FOR CASTING TYPE
- ④ GRATE CASTING; REFERENCE CASTING ASSEMBLIES SUMMARY CHART FOR CASTING TYPE
- ⑤ CONCRETE CURB AND GUTTER DESIGN B STANDARD PLATE 7100G, FORM CURB TO FIT CASTING
- ⑥ INSTALLATION OF CATCH BASIN OR MANHOLE CASTINGS; REFERENCE STANDARD PLATE PER TYPE OF CASTING
- ⑦ SAWCUT BITUMINOUS PAVEMENT / CONCRETE CURB FULL DEPTH.
- ⑧ ADD AND COMPACT AGGREGATE BASE CLASS 7 AROUND REPAIRED STRUCTURE. ITEM INCIDENTAL TO ENTIRE STRUCTURE REPAIR
- ⑨ REMOVE VARIABLE DEPTH BITUMINOUS, PATCH WITH 2, 3" LIFTS OF BITUMINOUS, TOP LIFT SHOULD TAPER TO BOTTOM LIFT AT CURB.
- ⑩ REPLACE DISTURBED AREA BEHIND CATCH BASIN WITH EITHER SOD (RESIDENTIAL AREAS), EROSION CONTROL BLANKET, BITUMINOUS ,OR CONCRETE

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 PRINT NAME: JOSEPH J. MACPHERSON  
 SIGNATURE: *[Signature]*  
 DATE: 4-26-18 LICENSE NO. 46732

DRAWN BY SRK DATE 04/26/2018  
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DETAILS  
Sheet 7 of 36 Sheets

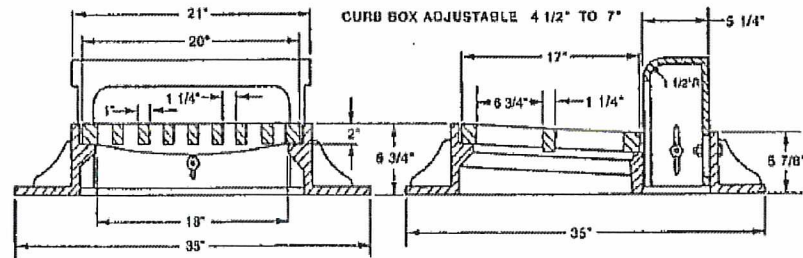


skerr

FRAME RING AND CASTING TYPE A (SHOULDER CASTING)

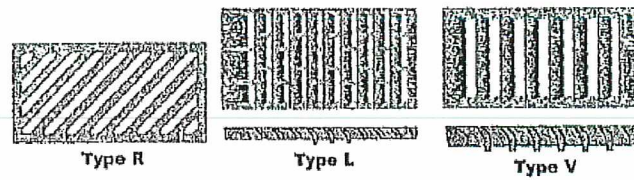
Combination Inlet Frame, Grate, Curb Box

Heavy Duty

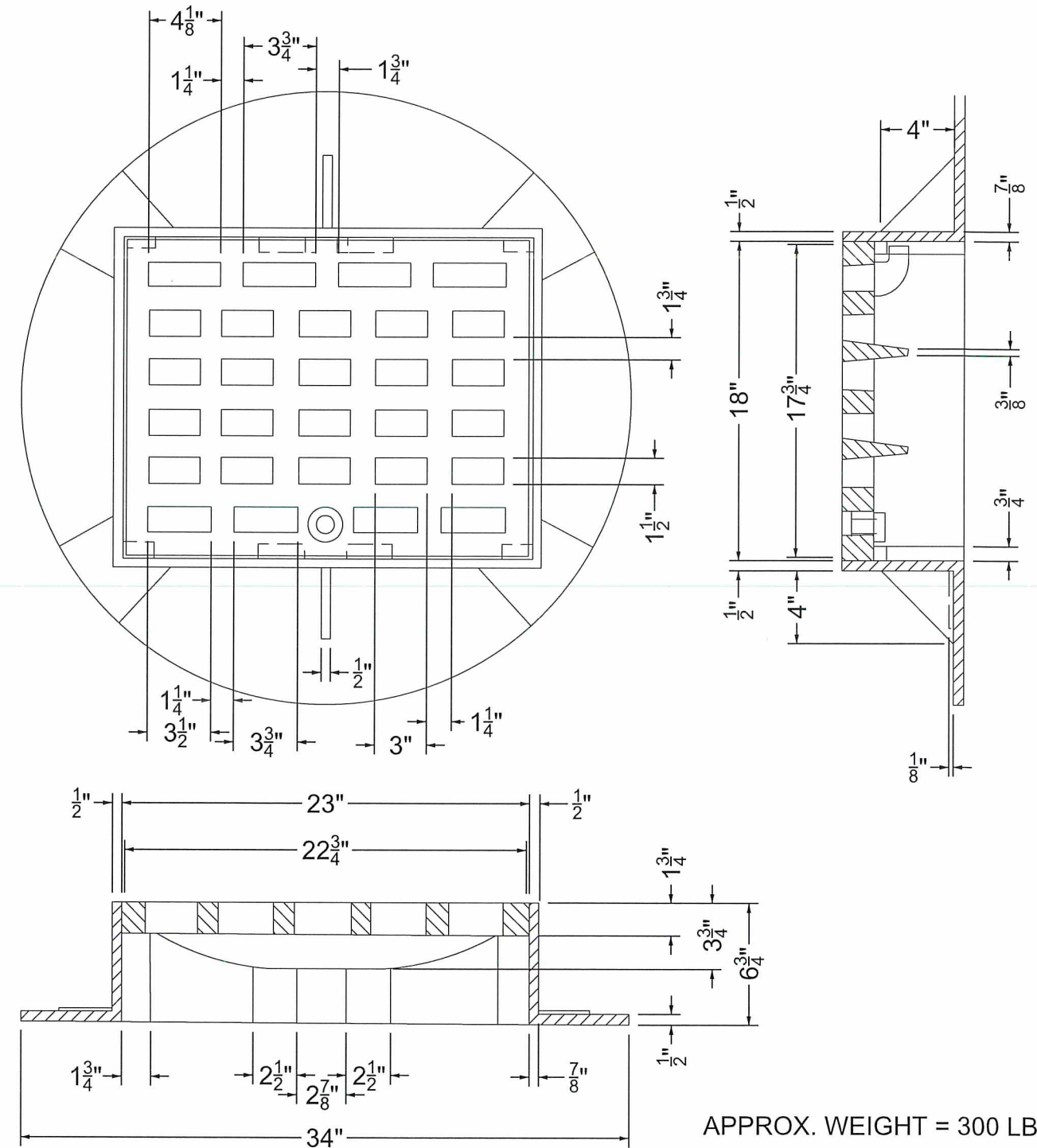


Standard Grate (shown): Type A

Alternate Grate(s):



FRAME RING AND CASTING TYPE B (ISLAND CASTING)



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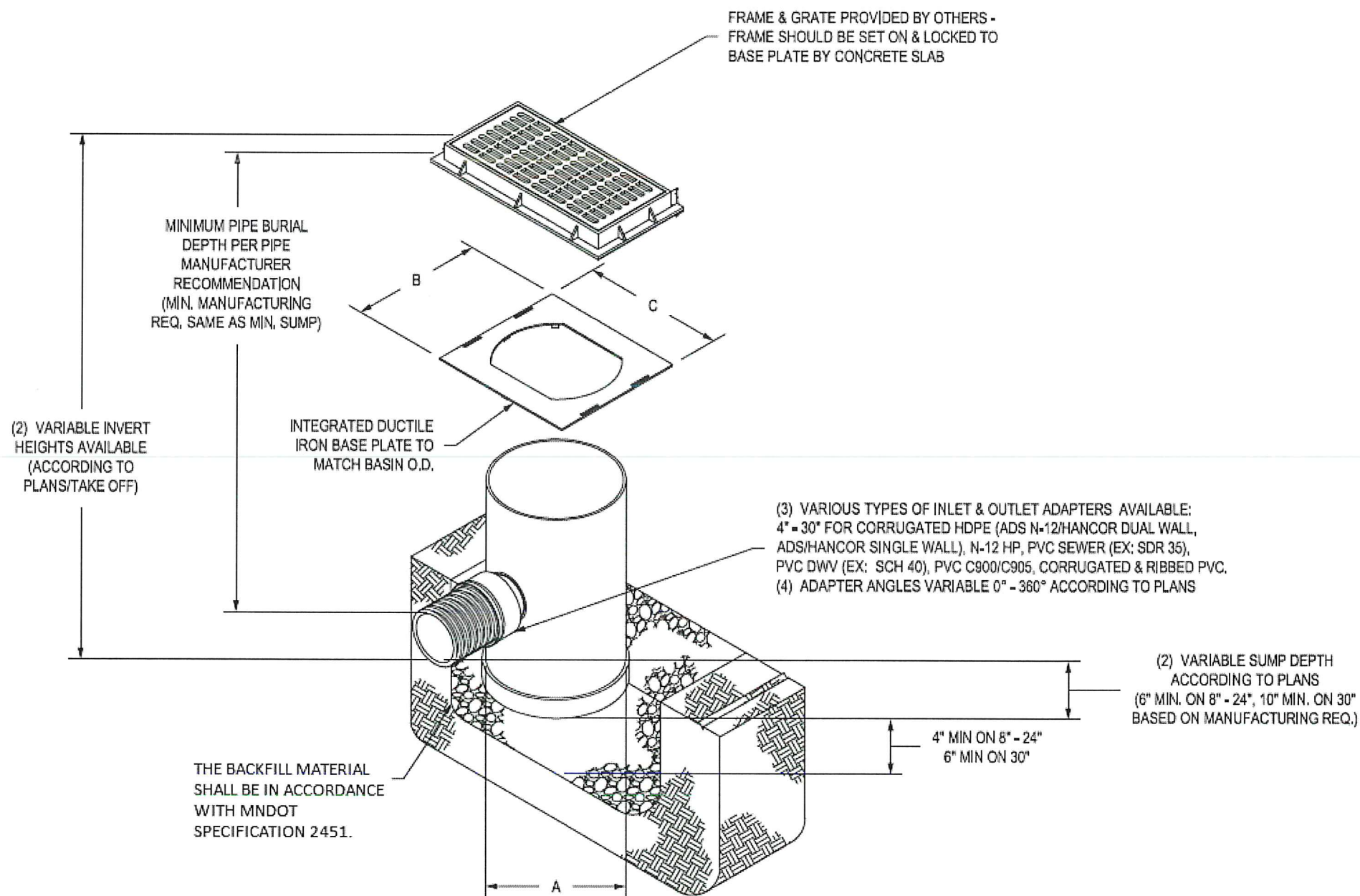
STATE AID PROJECT 002-601-051

DETAILS

Sheet 8 of 36 Sheets



## NYLOPLAST STRUCTURE WITH DUCTILE IRON BASE PLATE



NO	DATE	BY	CHKD	APPR	REVISION	DATE	TIME
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PRINT NAME: JOSEPH J. MACPHERSON

SIGNATURE: *Joseph J. MacPherson*

DATE: 4-20-18 LICENSE NO. 46732

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DESIGN BY: SRK DATE: 04/26/2018

CHECKED BY: HG DATE: 04/26/2018



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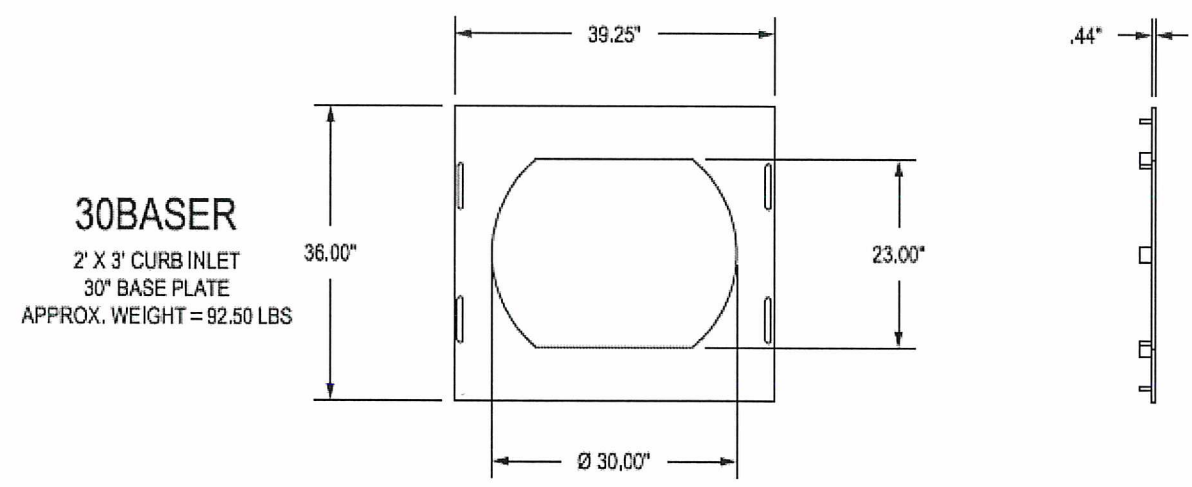
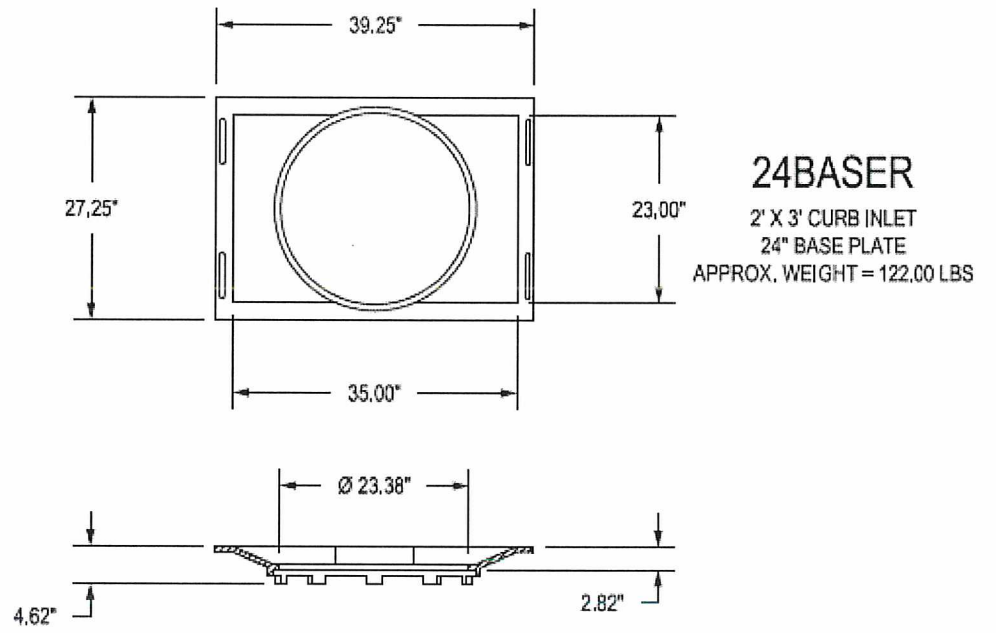
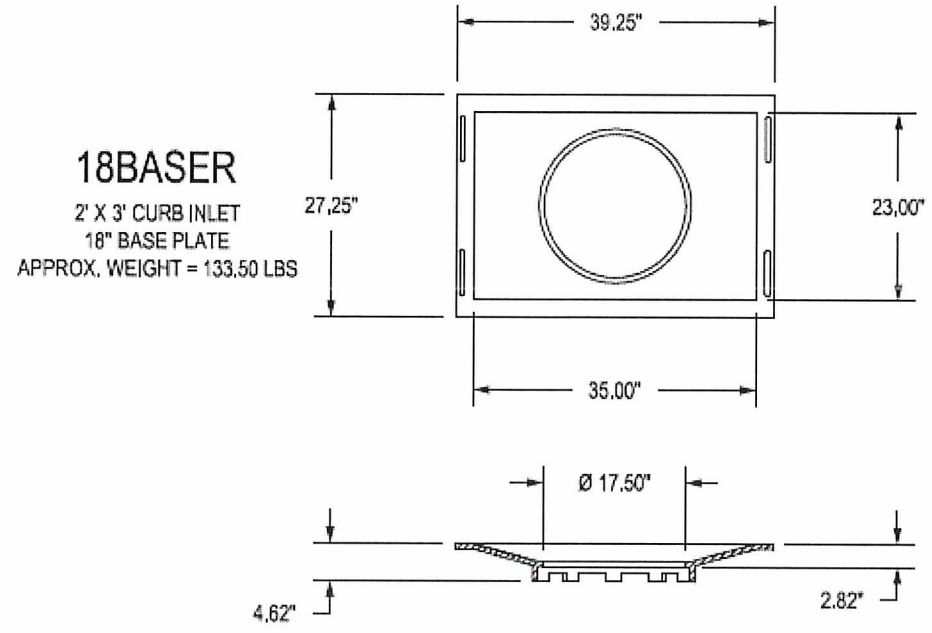
STATE AID PROJECT 002-601-051

DETAILS

Sheet 9 of 36 Sheets



srkerr



DIMENSIONS ARE FOR REFERENCE ONLY  
ACTUAL DIMENSIONS MAY VARY  
DIMENSIONS ARE IN INCHES  
QUALITY: MATERIALS SHALL CONFORM TO ASTM A536  
GRADE 70-50-05  
PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT

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						04/26/2018	2:37:39 PM

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CHECKED BY: HG DATE: 04/26/2018



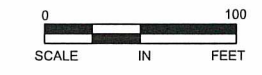
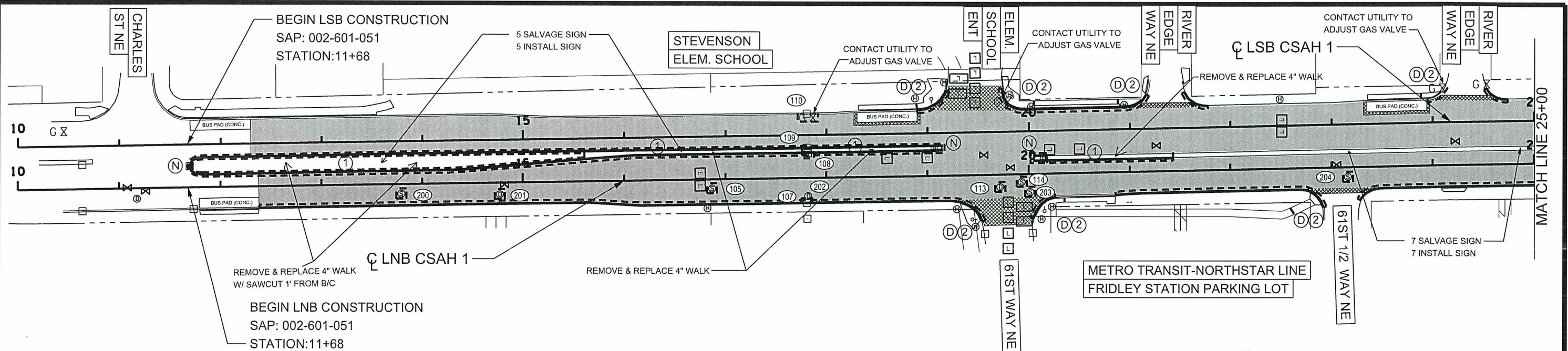
**ANOKA COUNTY  
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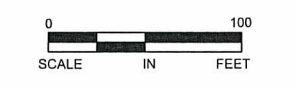
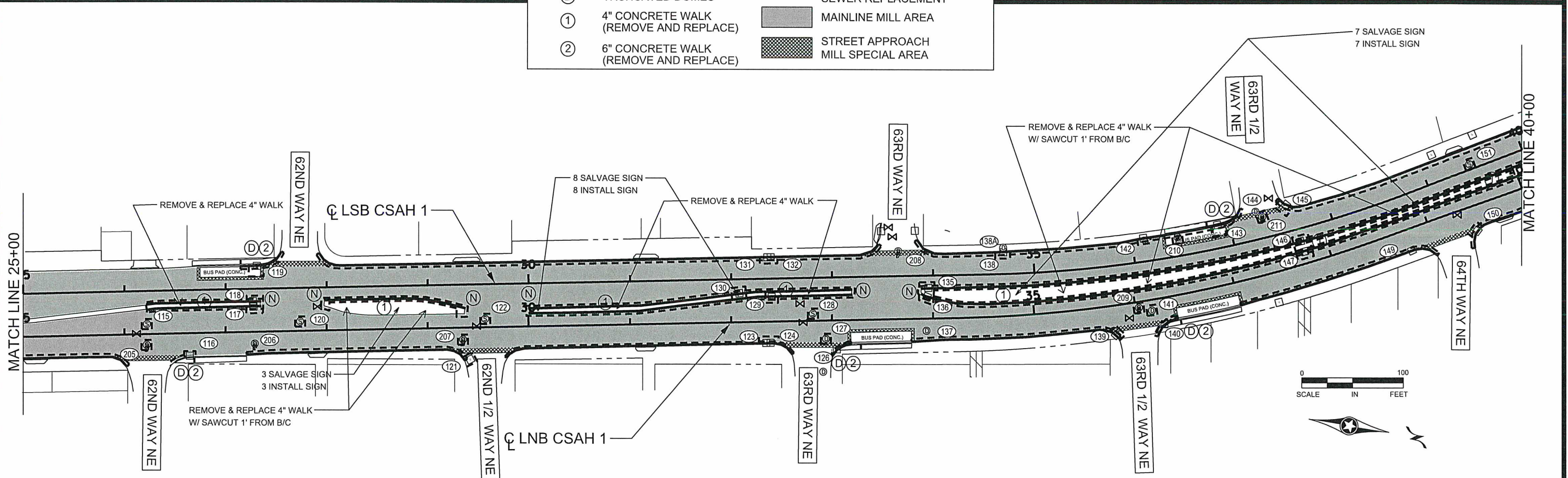
DETAILS  
Sheet 10 of 36 Sheets



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LEGEND			
—	REMOVE CURB & GUTTER		REMOVE BRICK PAVERS
	APRX. LOOP LOCATION		ADJUST GATE VALVE
	CONCRETE APPROACH NOSE (STD PLATE 7113)	- - -	SAWCUT / CURB & STORM SEWER REPLACEMENT
	TRUNCATED DOMES		MAINLINE MILL AREA
	4" CONCRETE WALK (REMOVE AND REPLACE)		STREET APPROACH MILL SPECIAL AREA
	6" CONCRETE WALK (REMOVE AND REPLACE)		



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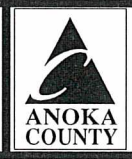
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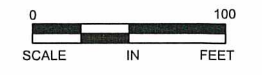
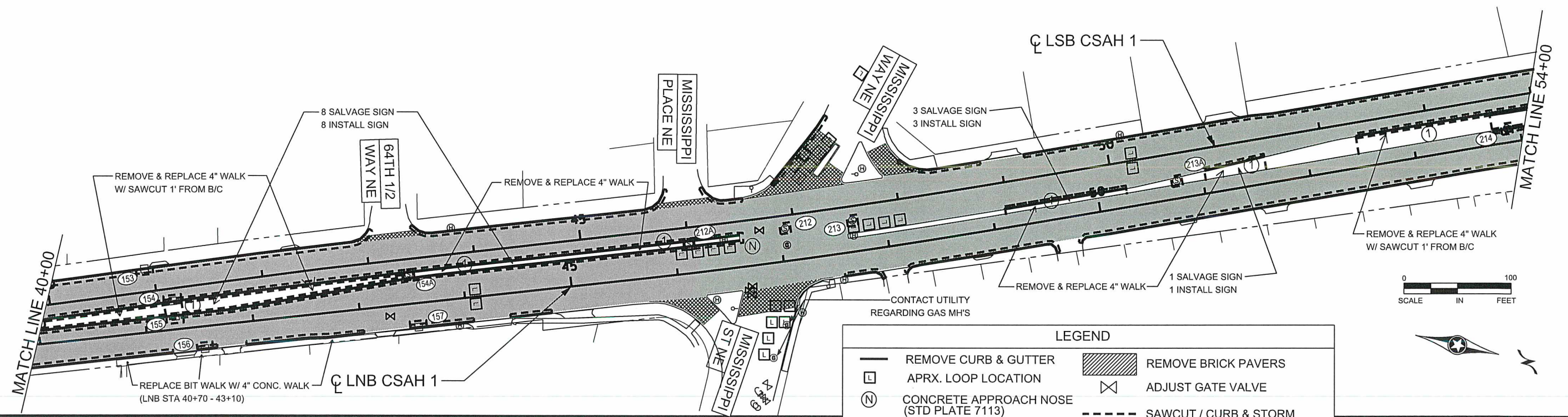
**ANOKA COUNTY**  
**HIGHWAY DEPT.**

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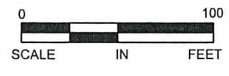
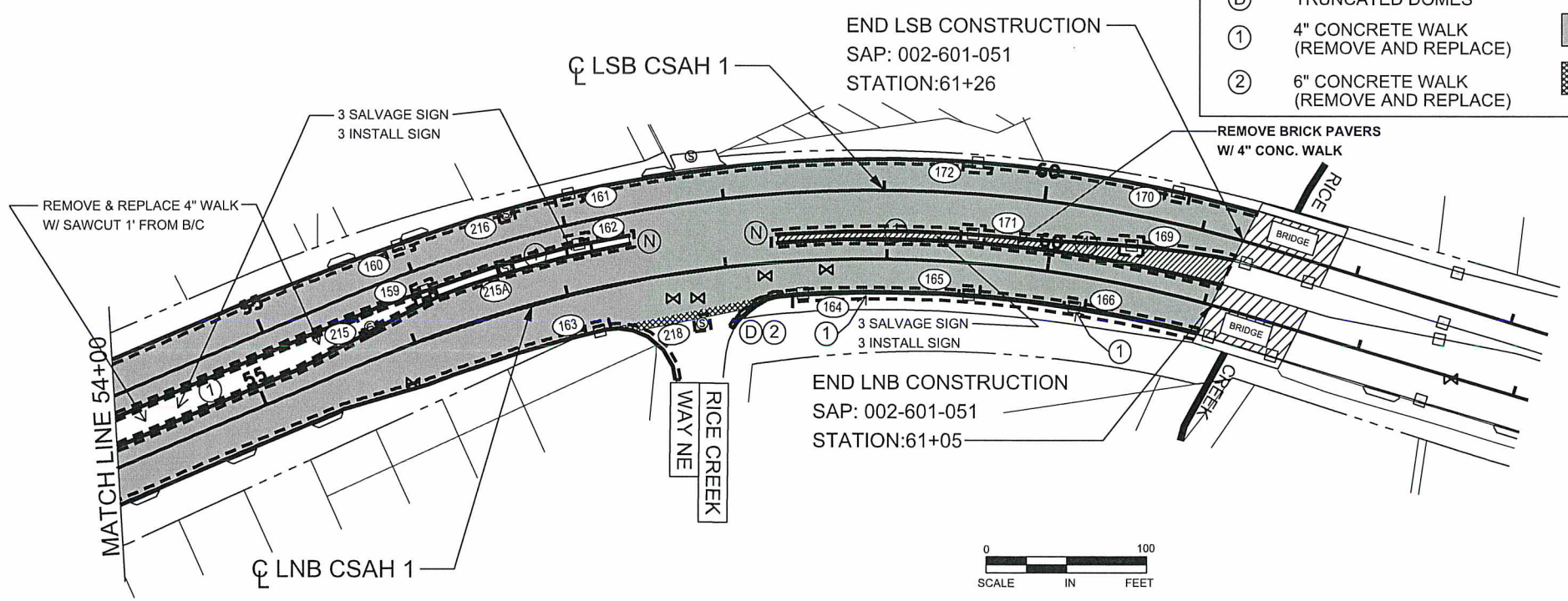
CONSTRUCTION PLAN  
STA 12+38 TO 40+00  
Sheet 11 of 36 Sheets



srker



LEGEND	
—	REMOVE CURB & GUTTER
□	APRX. LOOP LOCATION
⊙	CONCRETE APPROACH NOSE (STD PLATE 7113)
⊖	TRUNCATED DOMES
①	4" CONCRETE WALK (REMOVE AND REPLACE)
②	6" CONCRETE WALK (REMOVE AND REPLACE)
▨	REMOVE BRICK PAVERS
⊗	ADJUST GATE VALVE
- - -	SAWCUT / CURB & STORM SEWER REPLACEMENT
■	MAINLINE MILL AREA
▨	STREET APPROACH MILL SPECIAL AREA



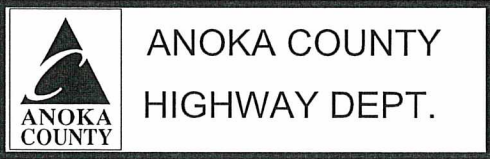
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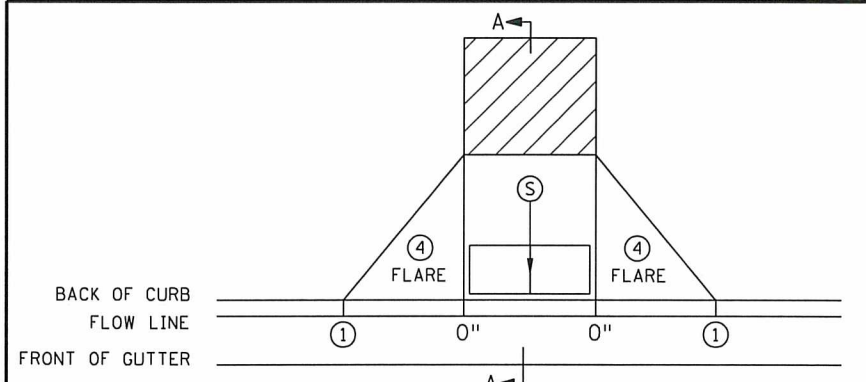


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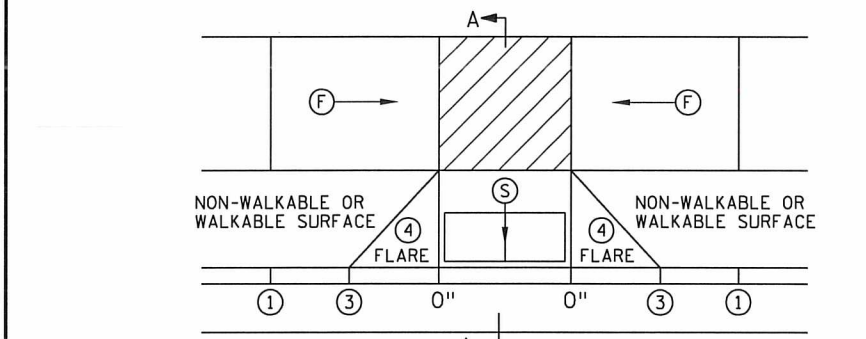
CONSTRUCTION PLAN  
 STA 40+00 TO 61+05  
 Sheet 12 of 36 Sheets



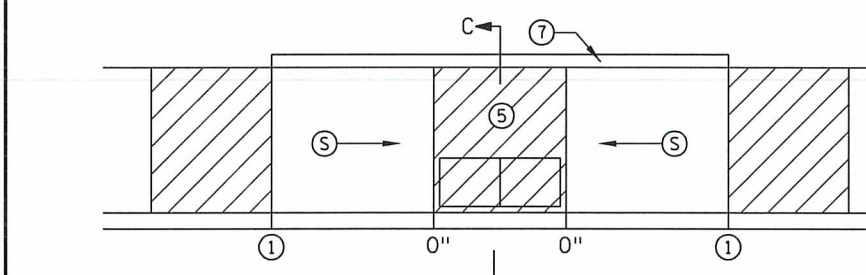
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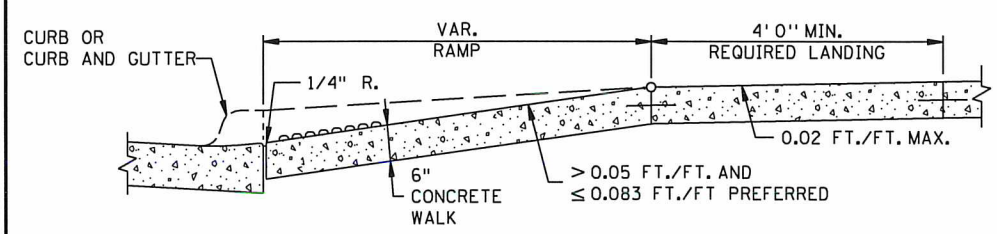
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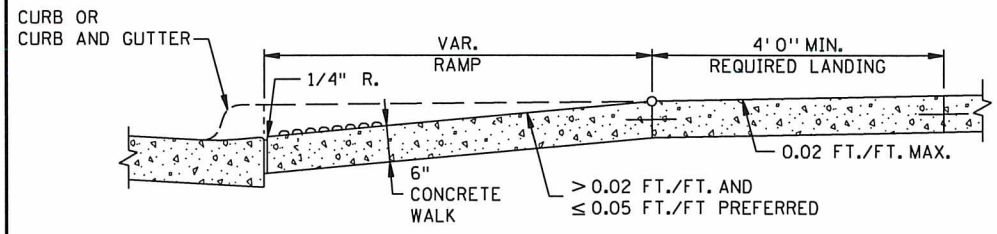
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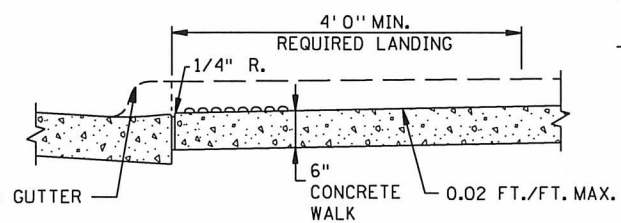
PARALLEL



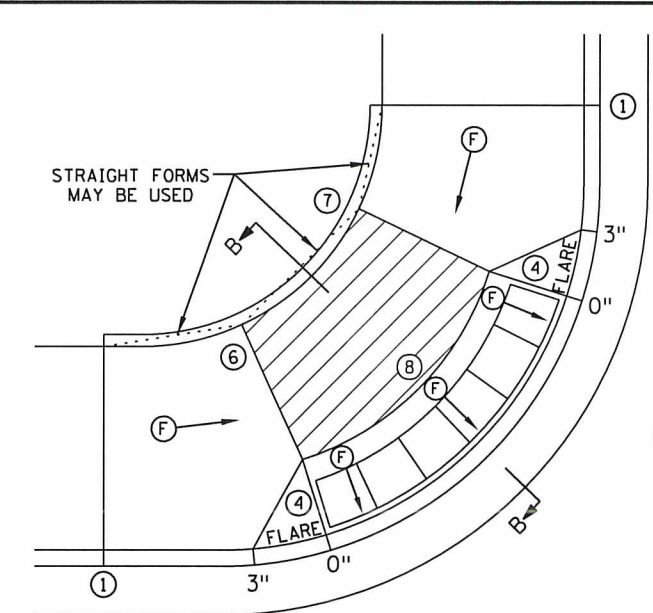
SECTION A-A  
PERPENDICULAR/TIERED/DIAGONAL



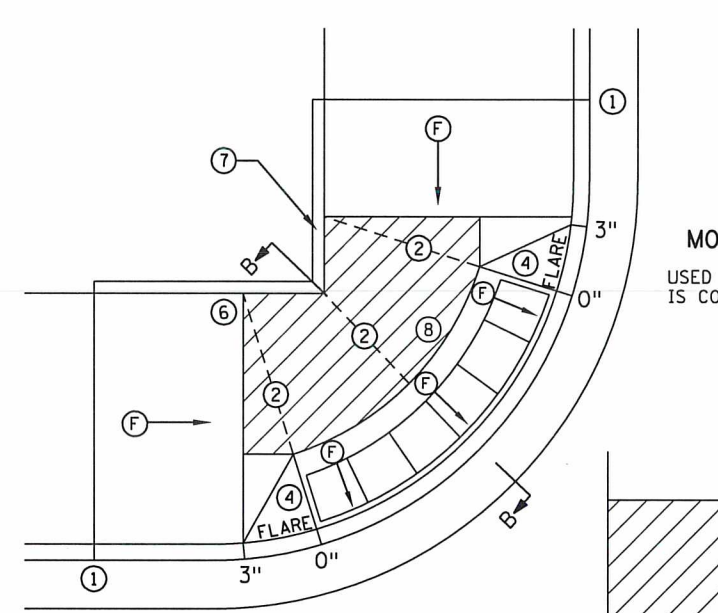
SECTION B-B  
FAN



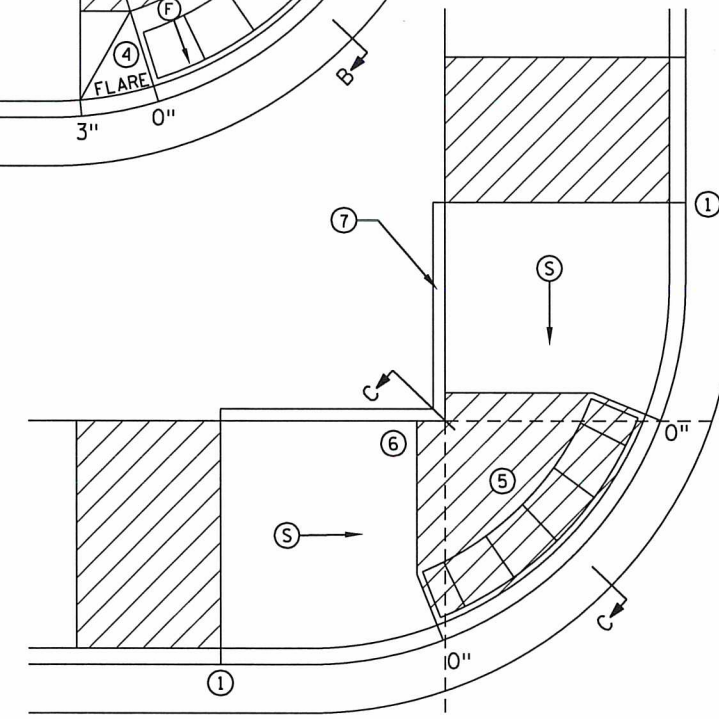
SECTION C-C  
PARALLEL/DEPRESSED CORNER



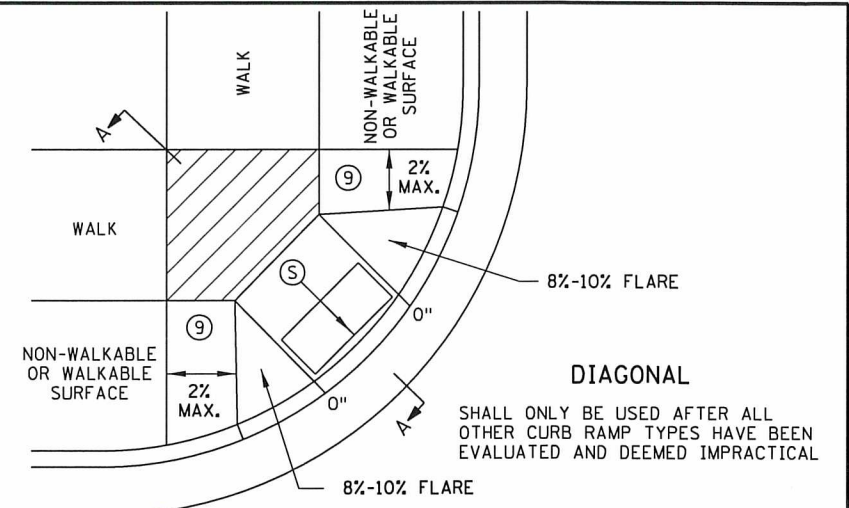
FAN ⑩



MODIFIED FAN ⑩  
USED WHEN RIGHT-OF-WAY IS CONSTRAINED



DEPRESSED CORNER



NOTES:

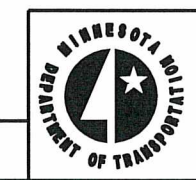
- LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE GREATER THAN 2%.
  - INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, 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, THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH. (EXCEPT AS STATED IN ⑥ 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 PROVISIONS - PROSECUTION OF WORK (ADA).
  - 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 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 A 7' MIN TOP RADIUS GRADE BREAK REQUIRED TO BE CONSTRUCTIBLE.
  - ⑨ PAVE FULL WALK WIDTH.
  - ⑩ "S" SLOPES ON FANS SHALL ONLY BE USED WHEN ALL OTHER FEASIBLE OPTIONS HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.

LEGEND	
THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.	
(S)	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%.
(F)	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%.
[Hatched Box]	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

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 APPROVED: JANUARY 23, 2017  
 OPERATIONS ENGINEER

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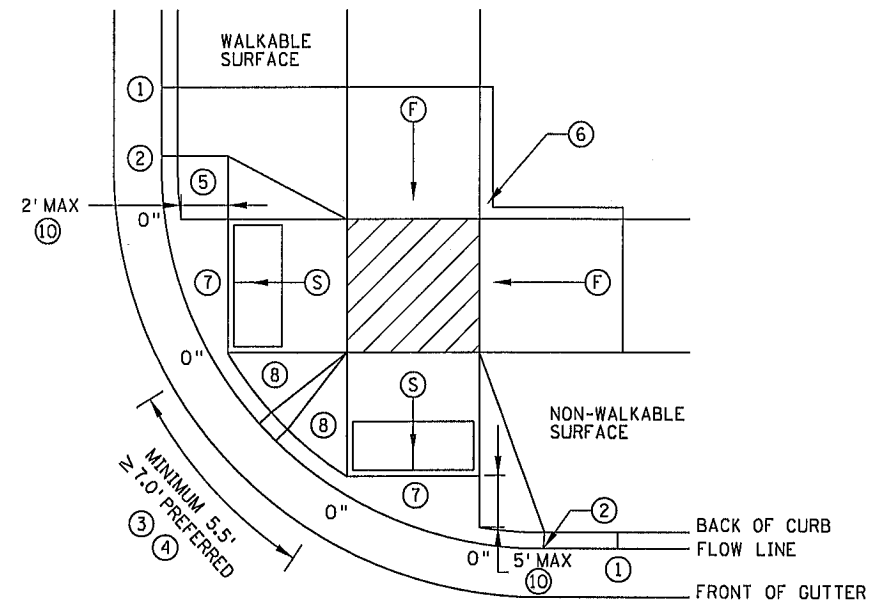
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 STATE DESIGN ENGINEER

APPROVED:  
 1-23-2017

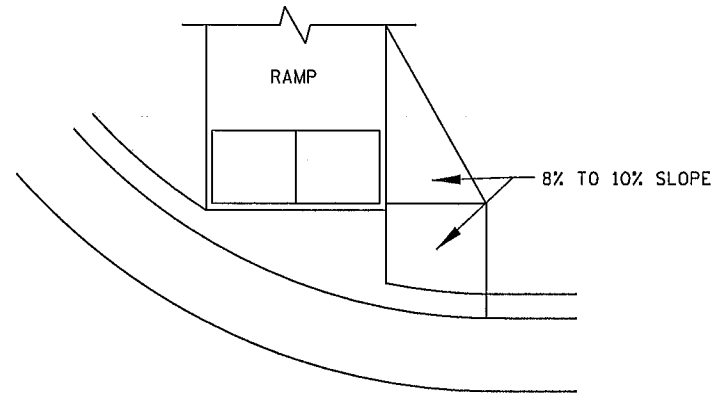
PEDESTRIAN CURB RAMP DETAILS (1 OF 6)  
 STANDARD PLAN 5-297.250  
 13 OF 36



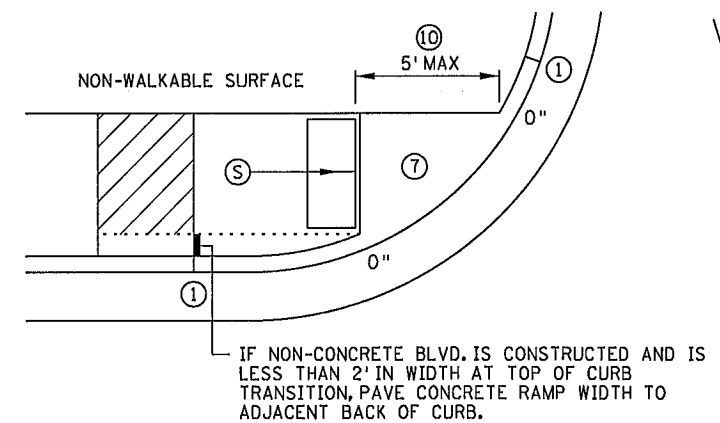
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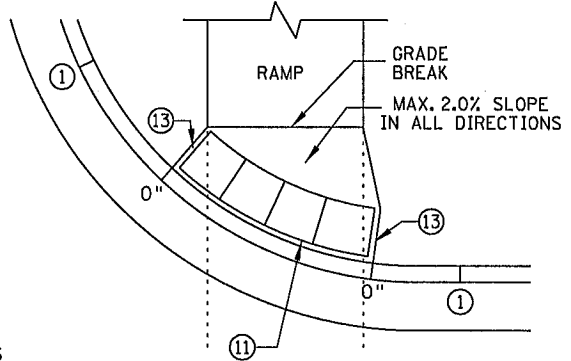
COMBINED DIRECTIONAL ⑨



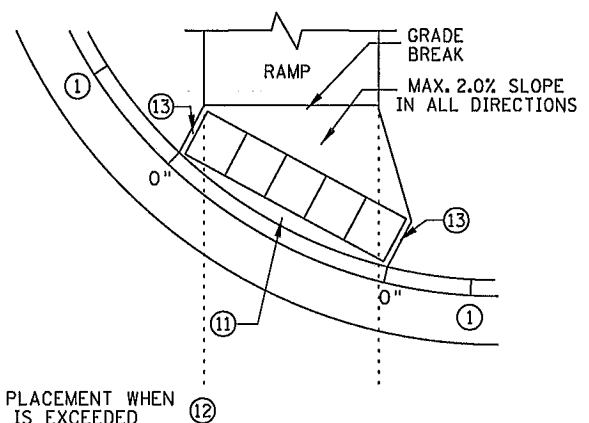
DIRECTIONAL RAMP WALKABLE FLARE



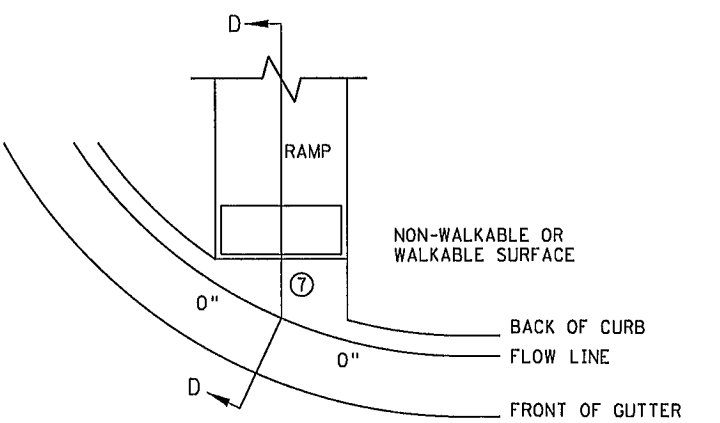
STANDARD ONE-WAY DIRECTIONAL ⑨



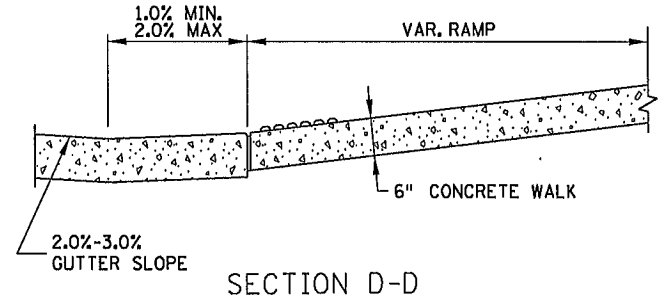
ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB



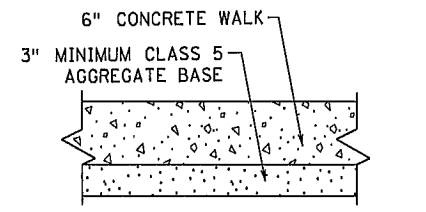
DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED



CURB FOR DIRECTIONAL RAMPS ⑭



SECTION D-D



TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER

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 (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.

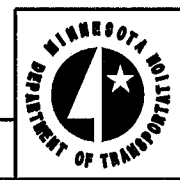
- ① MATCH FULL CURB HEIGHT.
- ② 3" HIGH CURB WHEN USING A 3' LONG RAMP  
4" HIGH CURB WHEN USING A 4' LONG RAMP.
- ③ 3" MINIMUM CURB HEIGHT (5.5' MIN. DISTANCE REQUIRED BETWEEN DOMES)  
4" PREFERRED (7' MIN. DISTANCE REQUIRED BETWEEN DOMES).
- ④ THE "BUMP" IN BETWEEN THE RAMPS SHOULD NOT BE IN THE PATH OF TRAVEL FOR COMBINED DIRECTIONAL RAMPS. IF THIS OCCURS MODIFY THE RAMP LOCATION OR SWITCH RAMP TO A FAN/DEPRESSED CORNER.
- ⑤ 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.
- ⑥ 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.
- 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.
- ⑧ 8% TO 10% WALKABLE FLARE.
- ⑨ PLACE DOMES AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.
- ⑩ 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. 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.
- ⑪ 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.
- ⑫ 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.
- ⑬ THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
- ⑭ 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.	
(S)	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%.
(F)	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%.
[Hatched Box]	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

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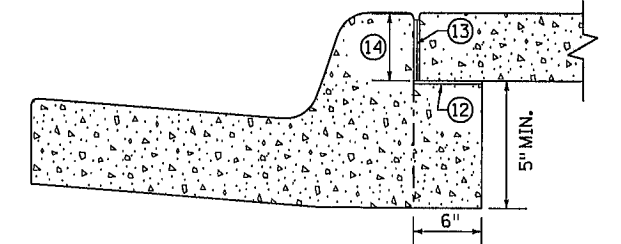
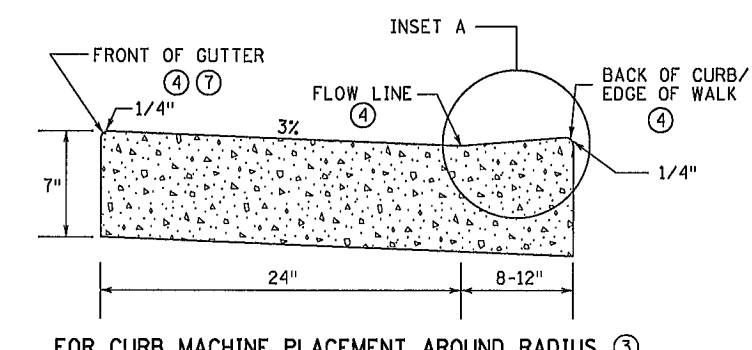
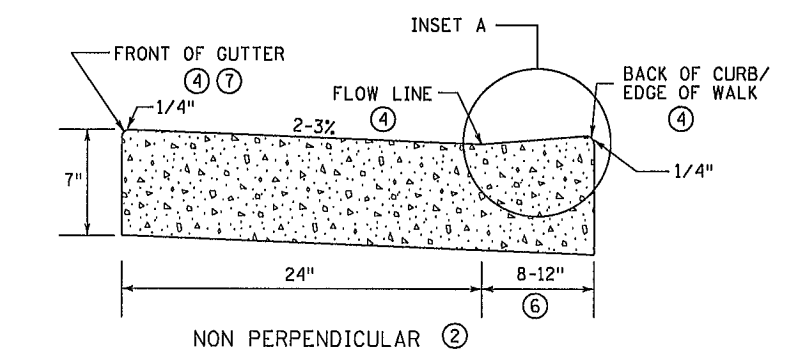
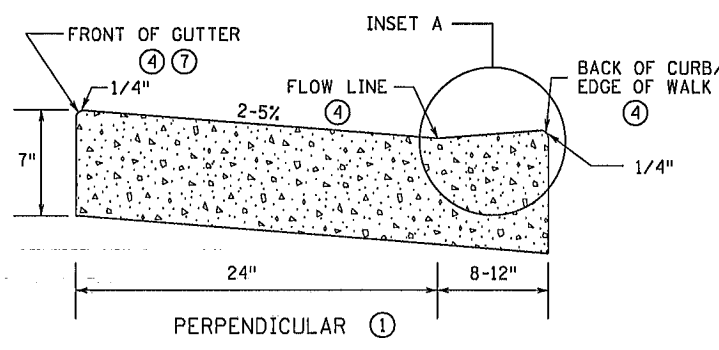
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PEDESTRIAN CURB RAMP DETAILS (2 OF 6)	
STANDARD PLAN 5-297.250	14 OF 36

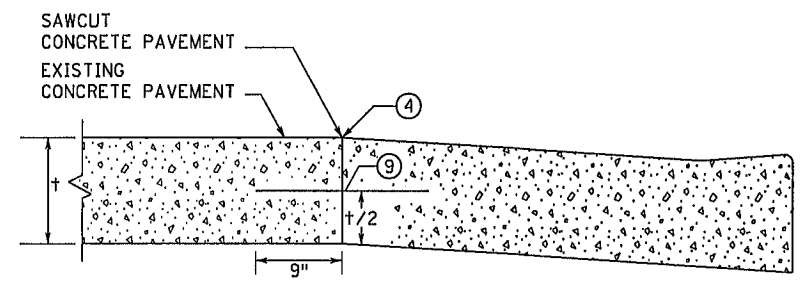
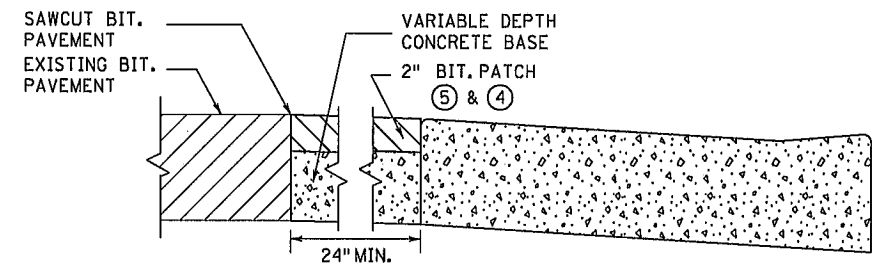
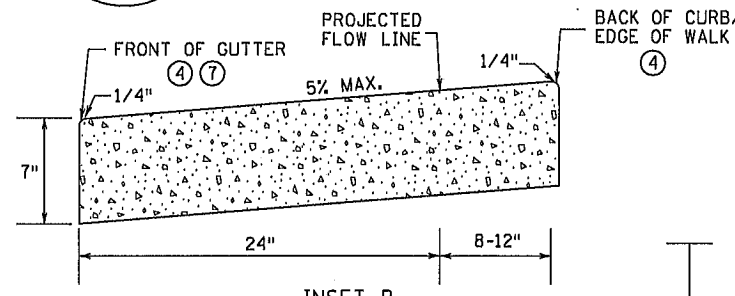
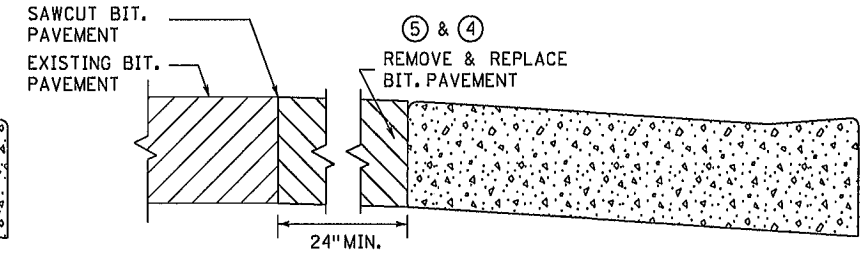
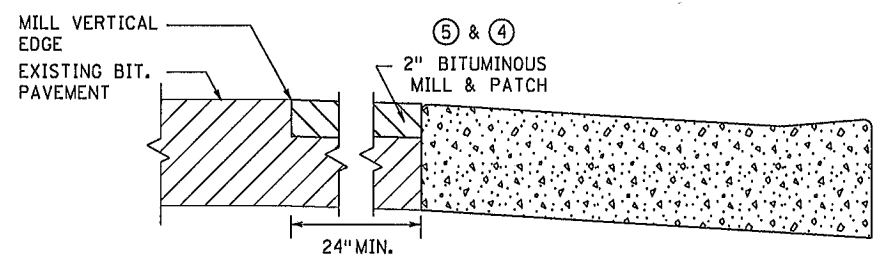
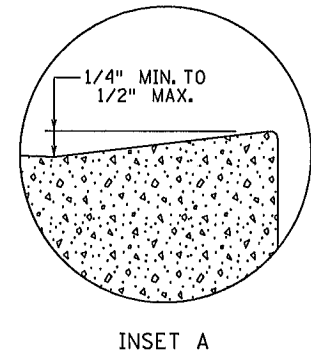
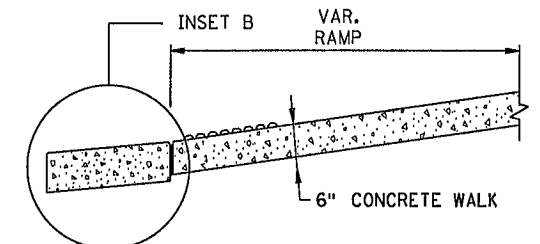


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OPTIONAL SILL CURB WHEN SIDEWALK IS AT BACK OF CURB  
CONCRETE SILL TO BE USED ONLY WHEN SPECIFIED IN THE PLAN.

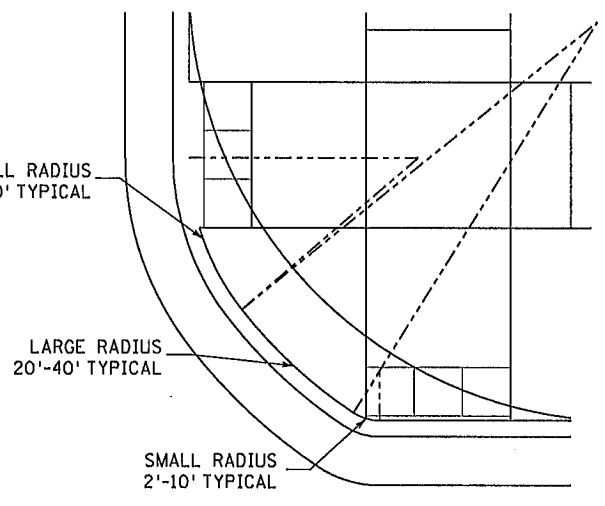
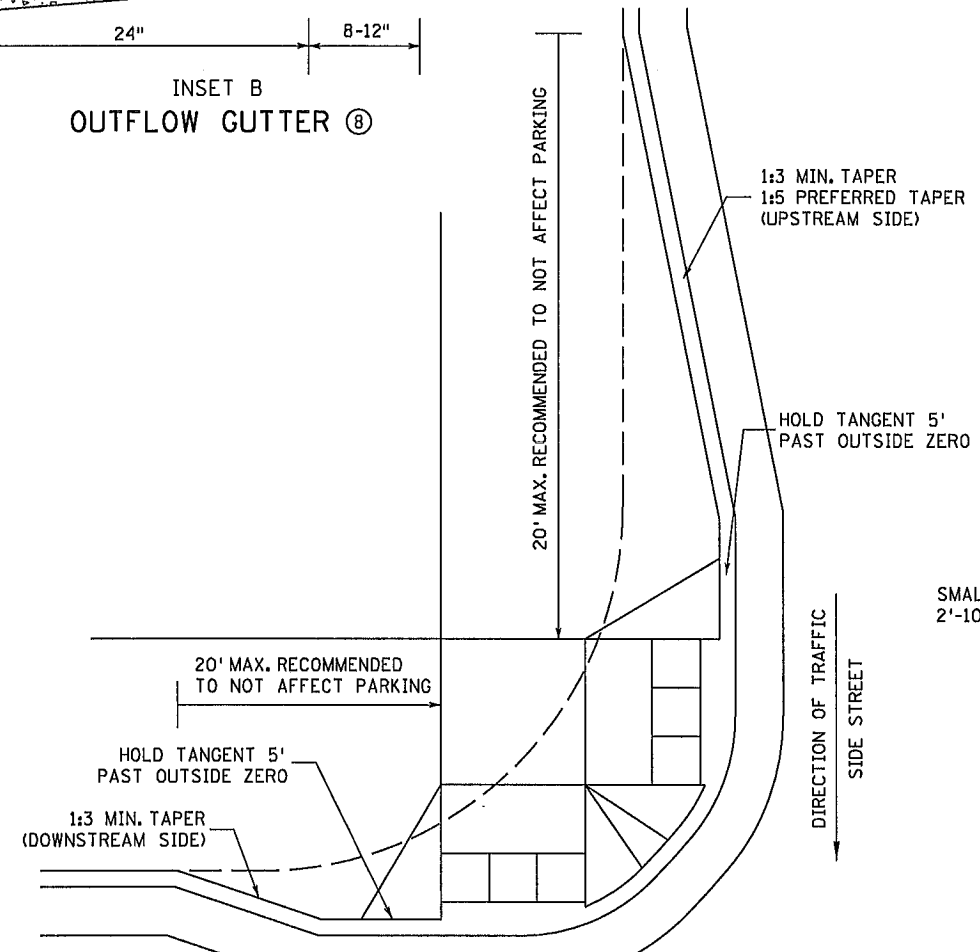
PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL



ONLY ALLOWED PER ENGINEER'S APPROVAL

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

- NOTES:**  
 POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM. NO PONDING SHALL BE PRESENT IN THE PAR.  
 ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE SHALL NOT BE GREATER THAN 1/4 INCH.
- FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: PERPENDICULAR, TIERED PERPENDICULAR, PARALLEL, AND DIAGONAL RAMP.
  - FOR USE AT CURB RAMPS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: FANS & DEPRESSED CORNERS.
  - BEGIN GUTTER SLOPE TRANSITION 10' OUTSIDE OF ALL CURB RAMPS.
  - THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4".
  - ELEVATION CHANGE TAKES PLACE FROM THE EXISTING TO NEW FRONT OF GUTTER. PATCH IS USED TO MATCH THE NEW GUTTER FACE INTO THE EXISTING ROADWAY.
  - VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS. SEE SHEET 2 FOR DIRECTIONAL CURB SLOPE REQUIREMENTS.
  - TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION. TOP 1.5" OF THE GUTTER FACE MUST BE A FORMED EDGE. PAR GUTTER SHALL NOT BE OVERLAID.
  - SHOULD BE USED AT VERTICALLY CONSTRAINED AREAS WHEN AT A DRAINAGE HIGH POINT OR SUPER ELEVATED ROADWAY SEGMENTS.
  - DRILL AND GROUT NO. 4 EPOXY-COATED 18" LONG TIE BARS AT 30" CENTER TO CENTER INTO EXISTING CONCRETE PAVEMENT 1' MINIMUM FROM ALL JOINTS.
  - HELPS PROVIDE TWO SEPARATE RAMPS, REDUCES THE DOME SETBACK LENGTH AND MINIMIZES DIRECTIONAL CURB. THIS RADIUS DESIGN CLOSELY FOLLOWS THE TURNING VEHICLE PATH WHILE OPTIMIZING CURB RAMP LENGTH.
  - CURB EXTENSIONS SHOULD BE USED IN VERTICALLY CONSTRAINED AREAS, USUALLY IN DOWNTOWN ROADWAY SEGMENTS WHERE ON-STREET PARKING IS AVAILABLE. CURB EXTENSIONS SHOULD BE CONSIDERED FOR APS INTERSECTIONS WHERE SPACE IS LIMITED. PUSH BUTTONS MUST MEET APS CRITERIA AS DESCRIBED IN THE PUSH BUTTON LOCATION DETAIL SHEET.
  - PLACE BOND BREAKER BETWEEN WALK AND TOP OF SILL.
  - 1/2" PREFORMED JOINT FILLER PER MNDOT SPEC. 3702.
  - DIMENSION TO BE SAME AS SIDEWALK THICKNESS, 4" MIN.



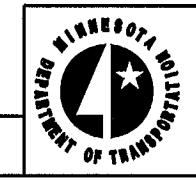
COMBINED DIRECTIONAL (COMPOUND RADIUS)

ADA CURB EXTENSION WITH COMPOUND RADIUS (BUMP OUT)

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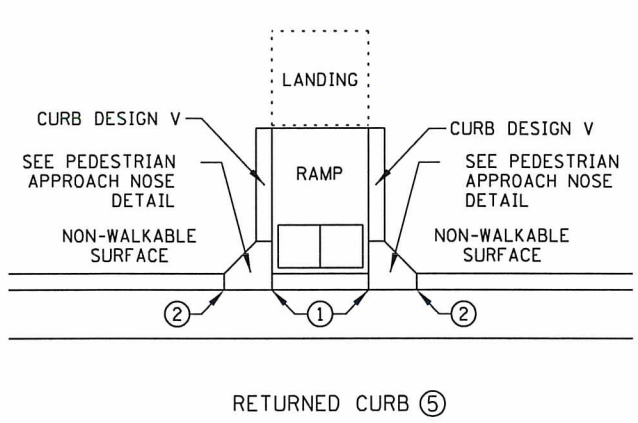
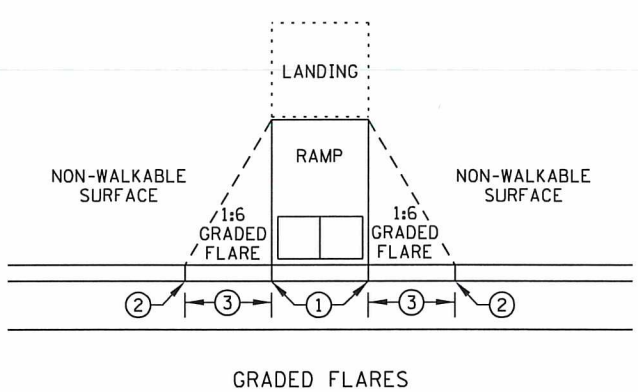
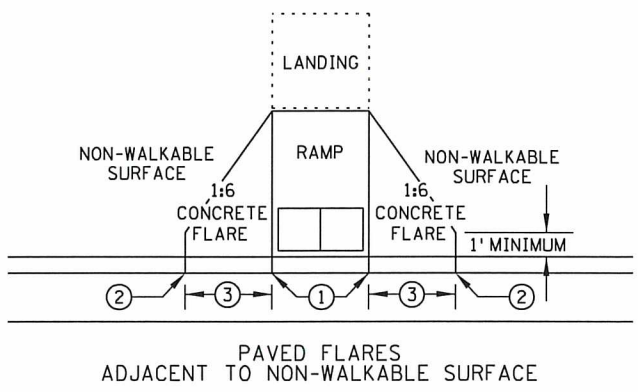
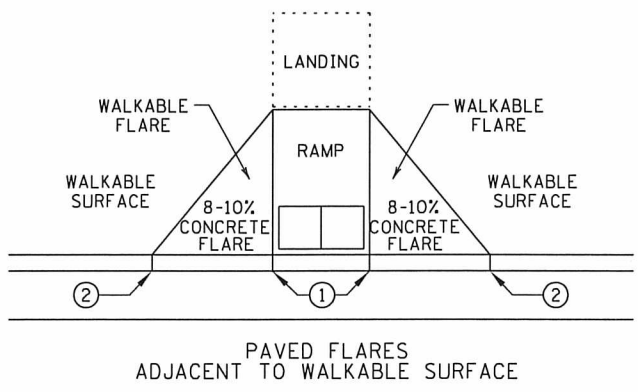
REVISOR:  
 Tom J...  
 STATE DESIGN ENGINEER

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 1-23-2017

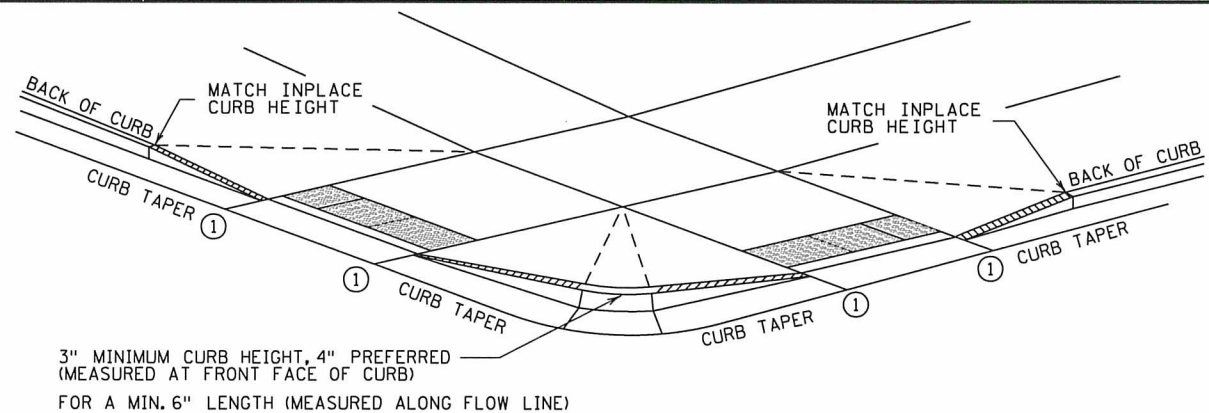
PEDESTRIAN CURB RAMP DETAILS (3 OF 6)  
 STANDARD PLAN 5-297.250  
 15 OF 36



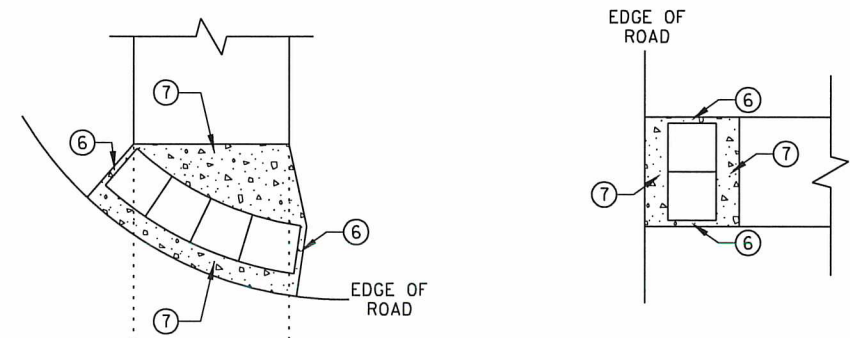
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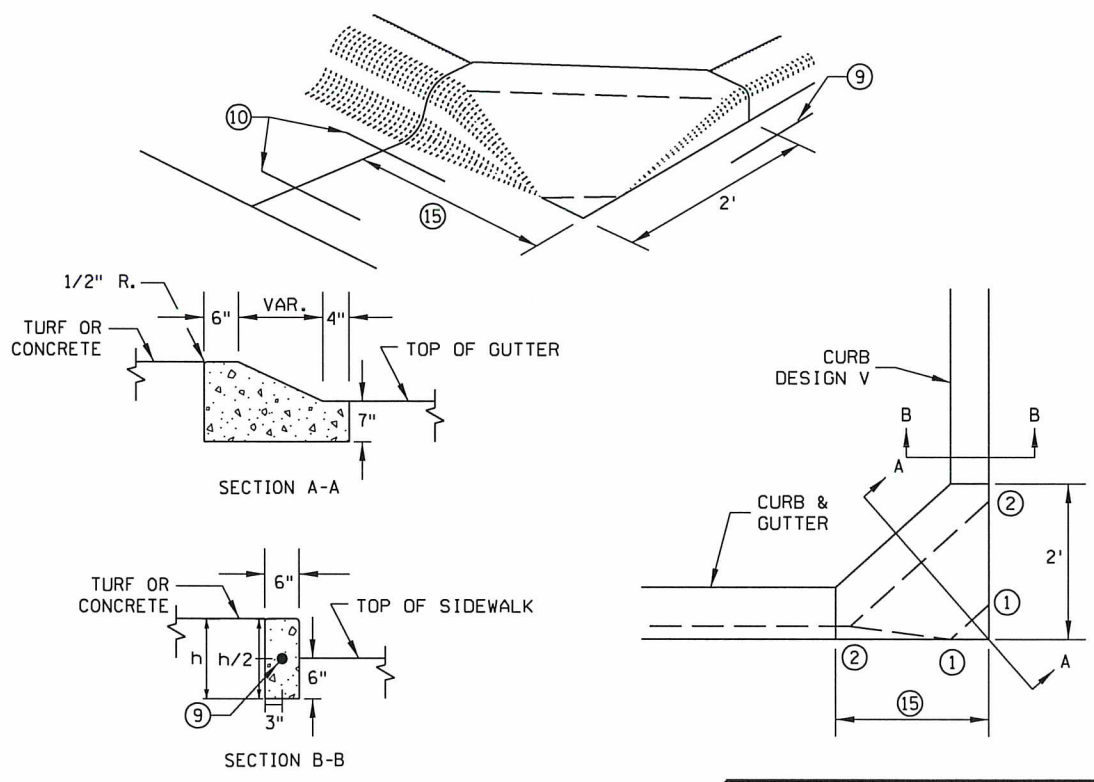
TYPICAL SIDE TREATMENT OPTIONS ④ ⑪



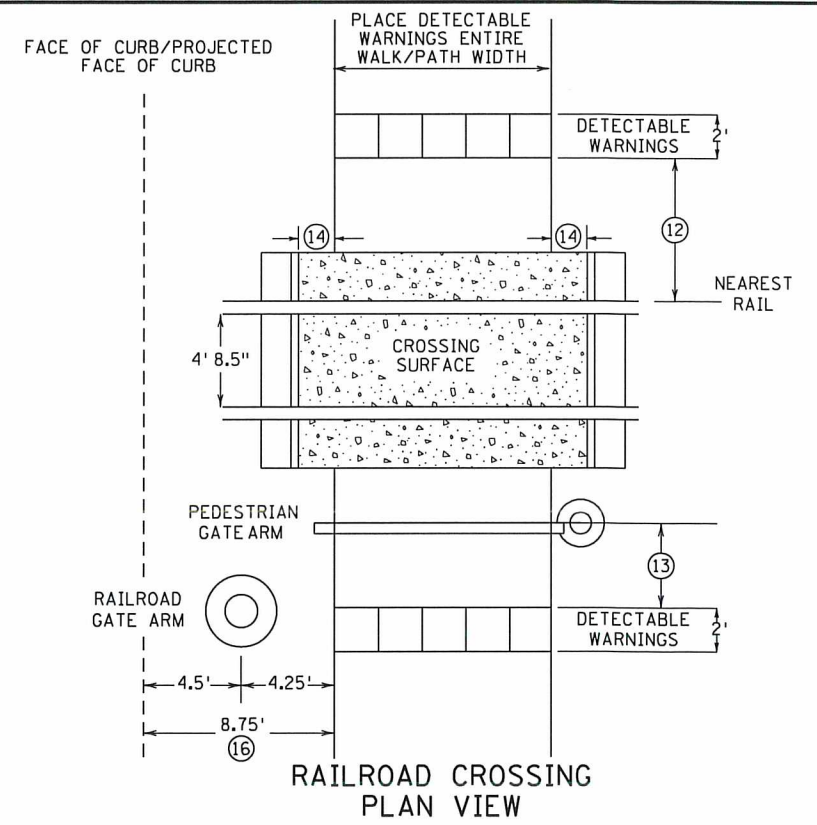
DETECTABLE EDGE WITH ⑧ CURB AND GUTTER



DETECTABLE EDGE WITHOUT CURB AND GUTTER



PEDESTRIAN APPROACH NOSE DETAIL (FOR RETURNED CURB SIDE TREATMENT)



- 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 RAMP 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 WHEREVER THERE IS ZERO-INCH HIGH CURB. CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3" OF THE EDGE OF THE DETECTABLE WARNINGS AND UNIFORMLY RISES TO A 3-INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TAPER AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILITY STANDARDS.
  - 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' LONG 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 BOULEVARD 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.

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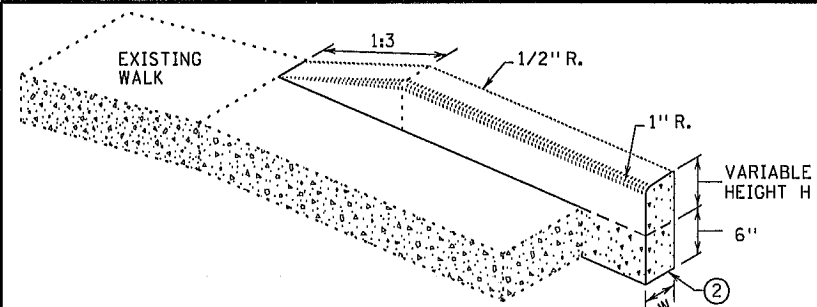
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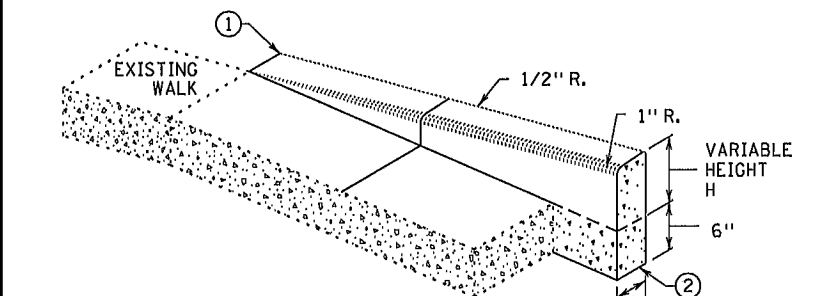
PEDESTRIAN CURB RAMP DETAILS (4 OF 6)  
STANDARD PLAN 5-297.250  
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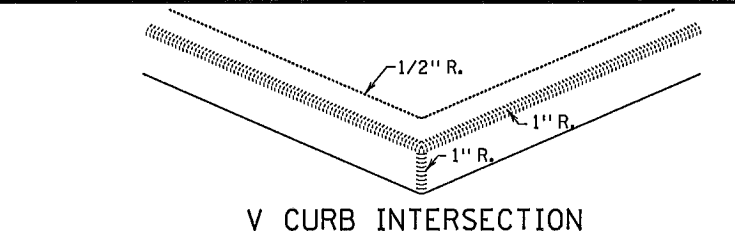
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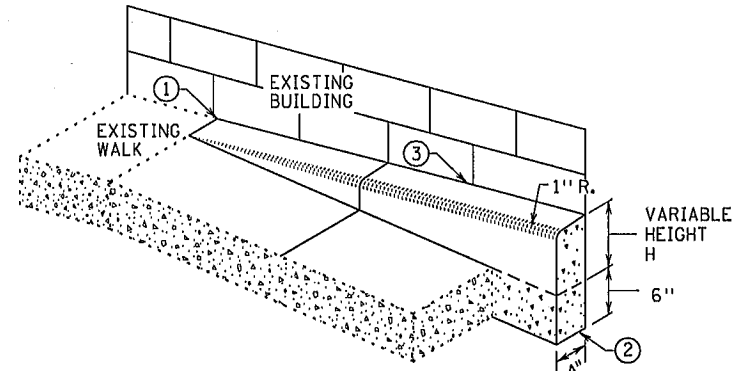
V CURB ADJACENT TO LANDSCAPE  
CURB WITHIN SIDEWALK LIMITS



V CURB ADJACENT TO LANDSCAPE  
CURB OUTSIDE SIDEWALK LIMITS

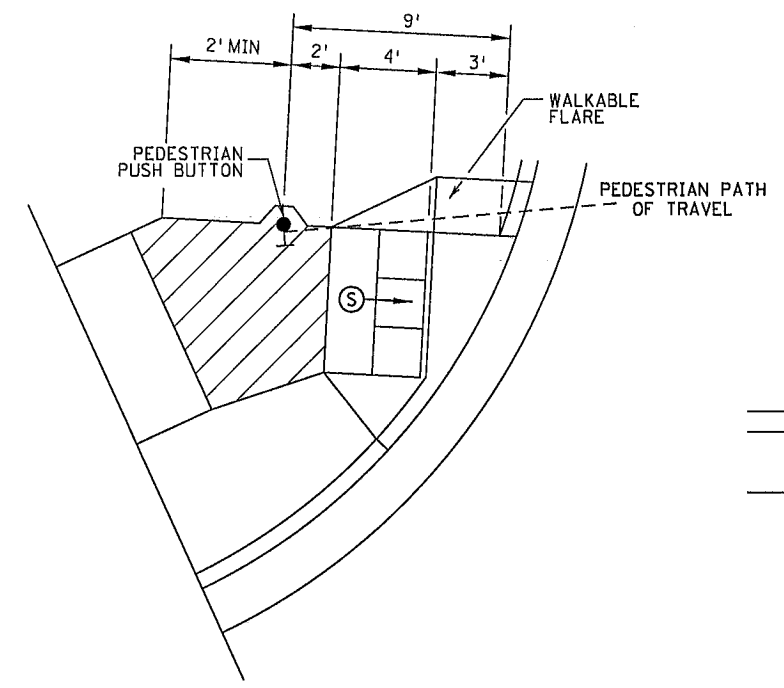


V CURB INTERSECTION



V CURB ADJACENT TO BUILDING  
OR BARRIER

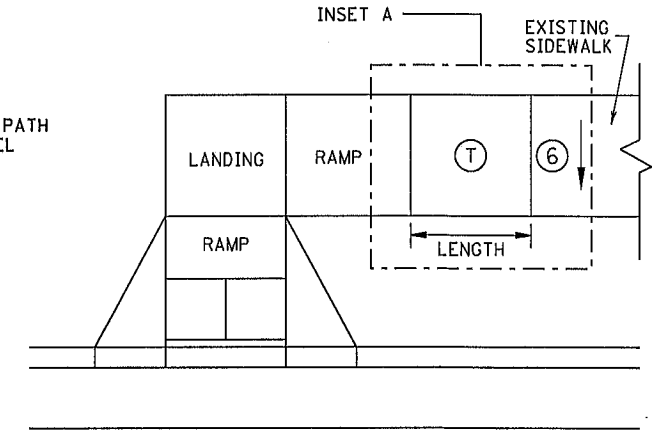
CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
< 6"	4"
≥ 6"	6"



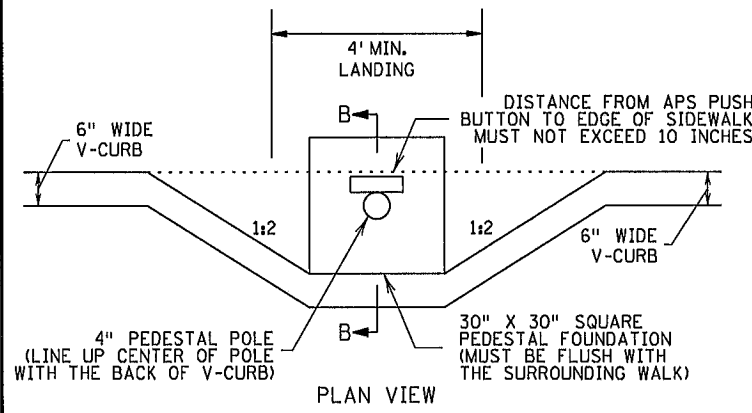
SEMI-DIRECTIONAL RAMP (3,4,9)

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

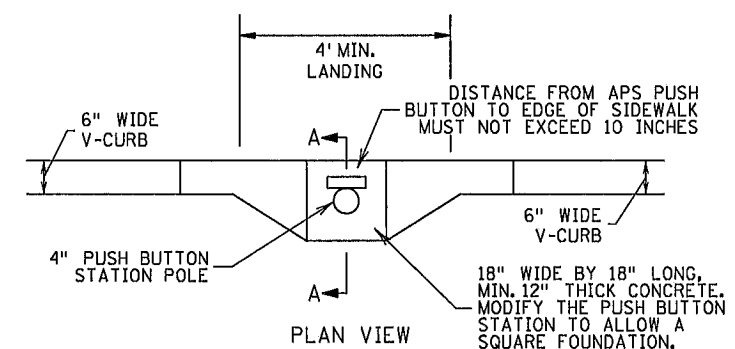
PRIMARILY USED FOR APS APPLICATIONS  
WHERE THE PAR DOES NOT CONTINUE PAST  
THE PUSH BUTTON (DEAD-END SIDEWALK)



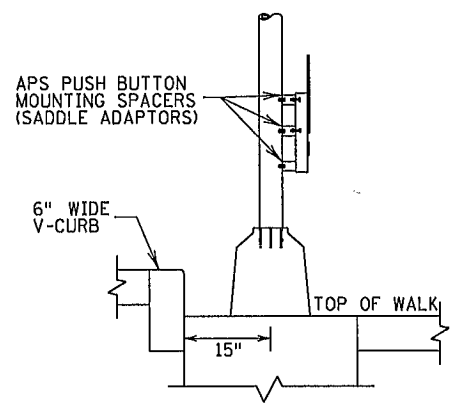
TRANSITION PANEL (4,5)



PLAN VIEW

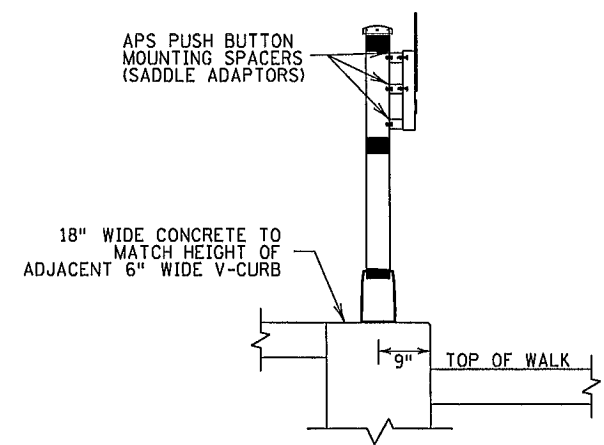


PLAN VIEW



SECTION B-B

SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)



SECTION A-A

PUSH BUTTON STATION (V-CURB)

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

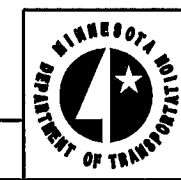
THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT, IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

- 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%.
- 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.
- 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.

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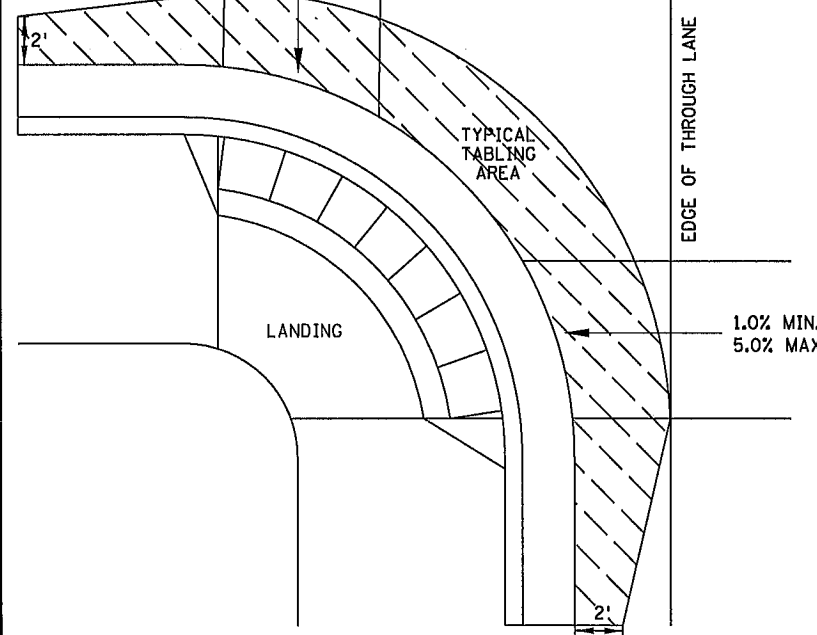
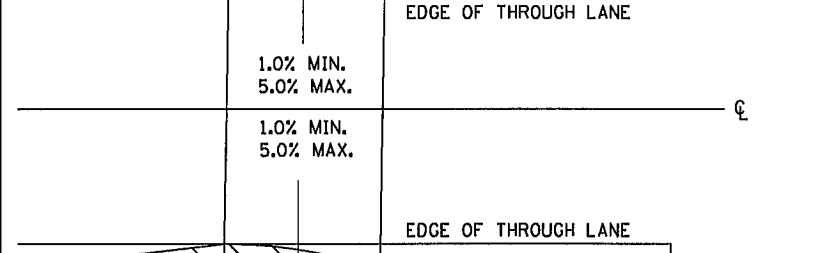
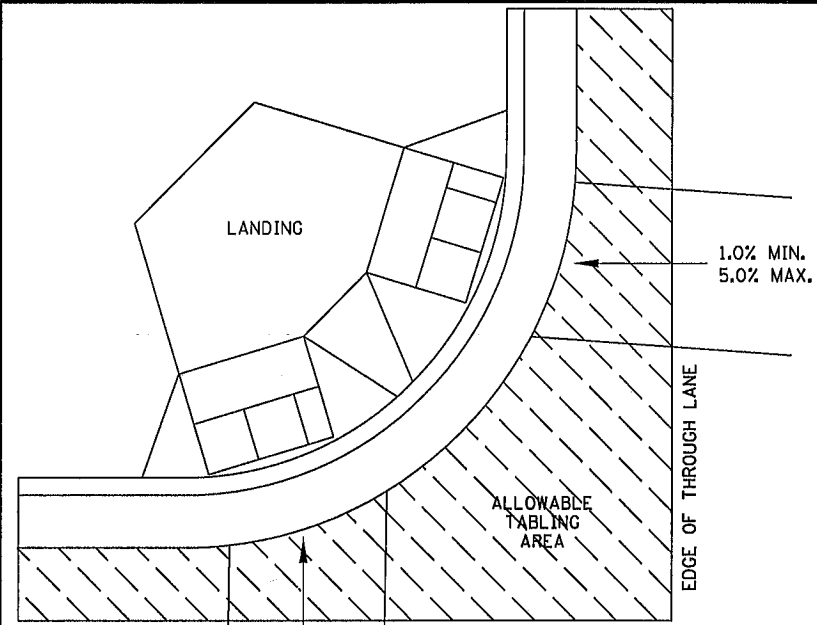
PEDESTRIAN CURB RAMP DETAILS (5 OF 6)  
STANDARD PLAN 5-297.250  
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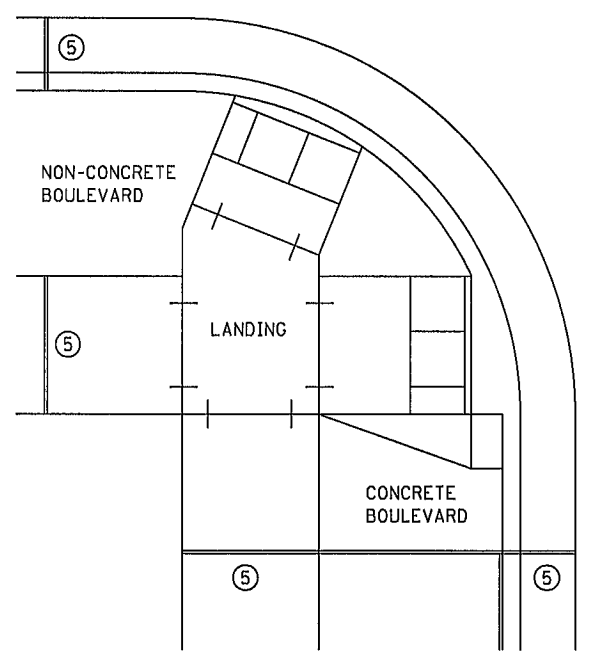
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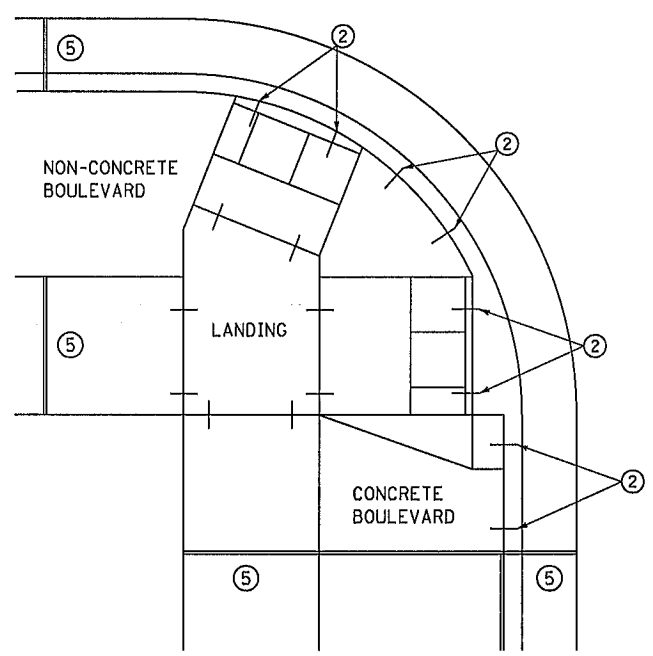
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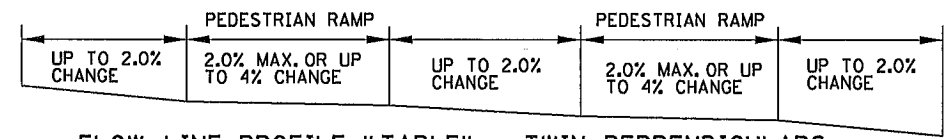
CURB LINE AND ROAD CROSSING ADJUSTMENTS



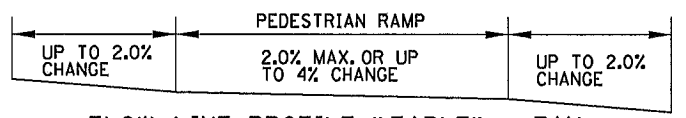
EXPANSION MATERIAL PLACEMENT FOR CONCRETE AND BITUMINOUS ROADWAYS



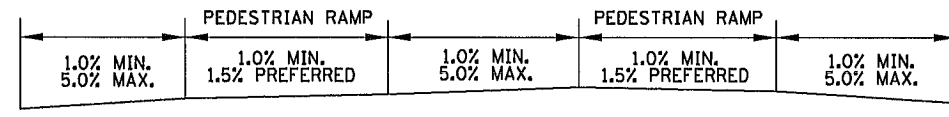
OPTIONAL CURB LINE REINFORCEMENT PLACEMENT ON BITUMINOUS ROADWAYS



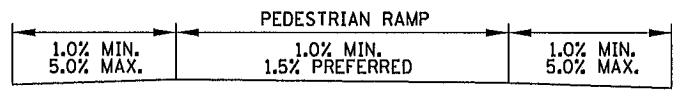
FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



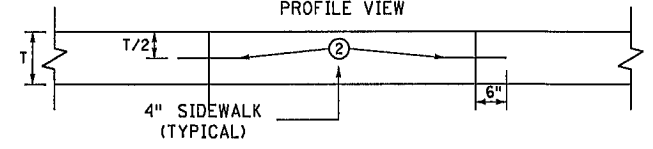
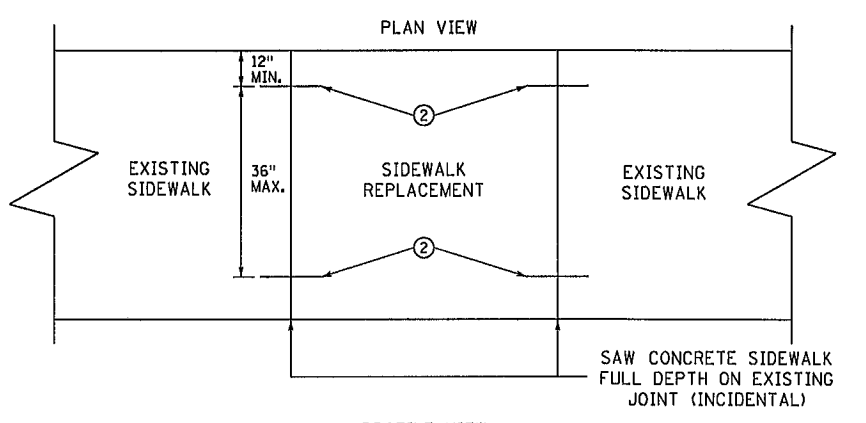
FLOW LINE PROFILE "TABLE" - FAN



FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS

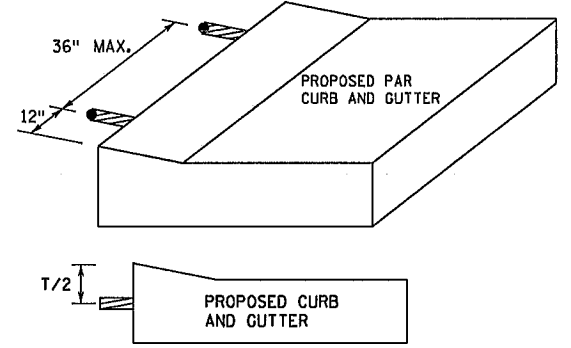


FLOW LINE PROFILE RAISE - FAN

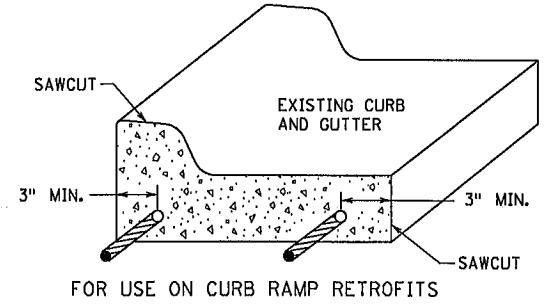


OPTIONAL SIDEWALK REINFORCEMENT

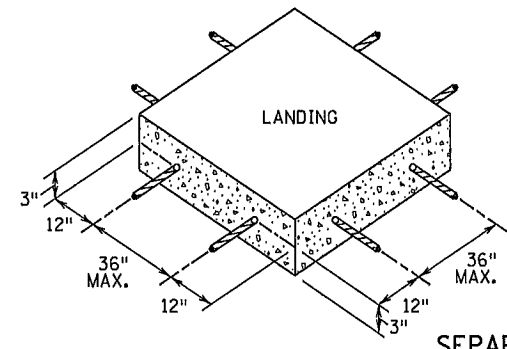
SIDEWALK REINFORCEMENT TO BE USED ONLY WHEN SPECIFIED IN THE PLAN.



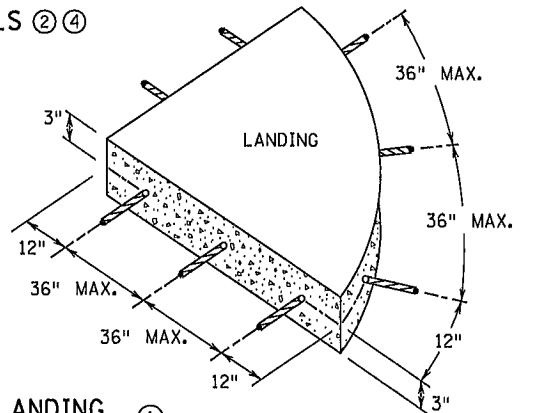
OPTIONAL CURB LINE REINFORCEMENT DETAILS



CURB AND GUTTER REINFORCEMENT



SEPARATE LANDING POUR REINFORCEMENT



"TABLING" OF CROSSWALKS MEANS MAINTAINING LESS THAN 2% CROSS SLOPE WITHIN A CROSSWALK, IS REQUIRED WHEN A ROADWAY IS IN A STOP OR YIELD CONDITION AND THE PROJECT SCOPE ALLOWS.

RECONSTRUCTION PROJECTS: ON FULL PAVEMENT REPLACEMENT PROJECTS "TABLING" OF ENTIRE CROSSWALK SHALL OCCUR WHEN FEASIBLE.

MILL & OVERLAY PROJECTS: "TABLING" OF FLOW LINES, IN FRONT OF THE PEDESTRIAN RAMP, IS REQUIRED WHEN THE EXISTING FLOW LINE IS GREATER THAN 2%. WARPING OF THE BITUMINOUS PAVEMENT CAN NOT EXTEND INTO THE THROUGH LANE. TABLE THE FLOW LINE TO 2% OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA:

- 1) 1.0% MIN. CROSS-SLOPE OF THE ROAD
- 2) 5.0% MAX. CROSS-SLOPE OF THE ROAD
- 3) "TABLE" FLOW LINE UP TO 4% CHANGE FROM EXISTING SLOPE IN FRONT OF PEDESTRIAN RAMP
- 4) UP TO 2% CHANGE IN FLOW LINE FROM EXISTING SLOPE BEYOND THE PEDESTRIAN CURB RAMP

STAND-ALONE ADA RETROFITS: FOLLOW MILL & OVERLAY CRITERIA ABOVE HOWEVER ALL PAVEMENT WARPING IS DONE WITH BITUMINOUS PATCHING ON BITUMINOUS ROADWAYS AND FULL-DEPTH APRON REPLACEMENT ON CONCRETE ROADWAYS.

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

NOTES:

- ① TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING 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.
- ② 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.
- ③ DRILL AND GROUT 2 - NO. 4 X 12" LONG REINFORCEMENT BARS (EPOXY COATED). REINFORCEMENT REQUIRED FOR ALL CONSTRUCTION JOINTS WITHIN RADIUS.
- ④ THIS OPTIONAL CURB LINE REINFORCEMENT DETAIL SHOULD ONLY BE USED ON BITUMINOUS ROADWAYS WHEN SPECIFIED IN THE PLAN.
- ⑤ 1/2 IN. PREFORMED JOINT FILLER MATERIAL PER MNDOT SPEC. 3702.

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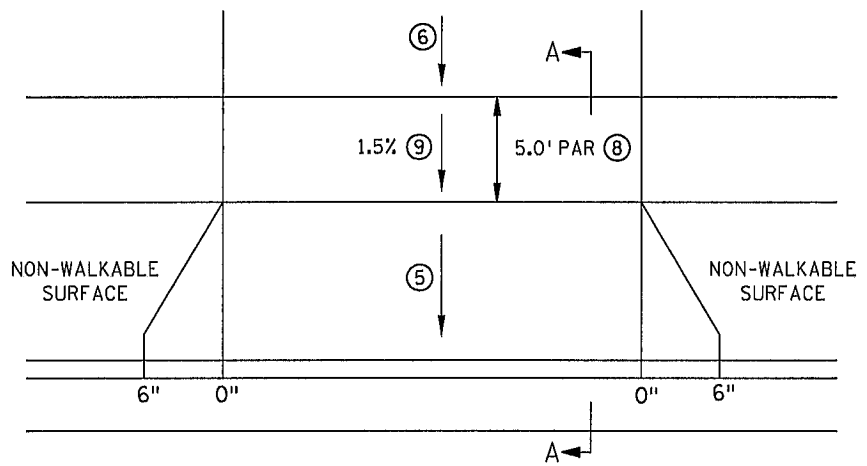
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PEDESTRIAN CURB RAMP DETAILS (6 OF 6)	
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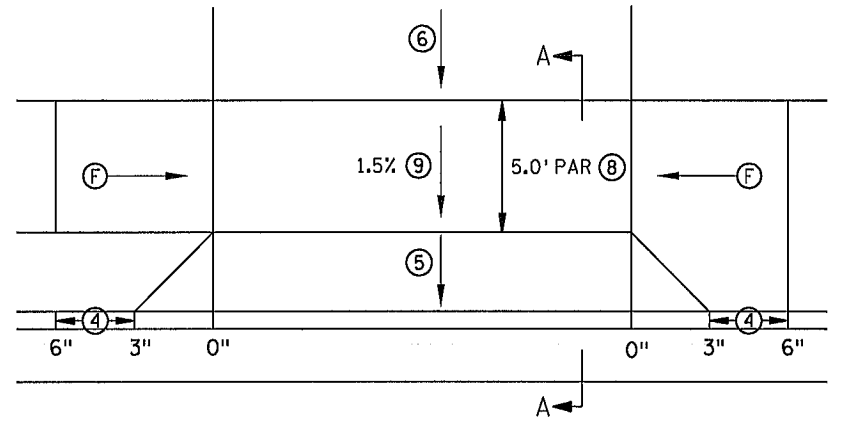
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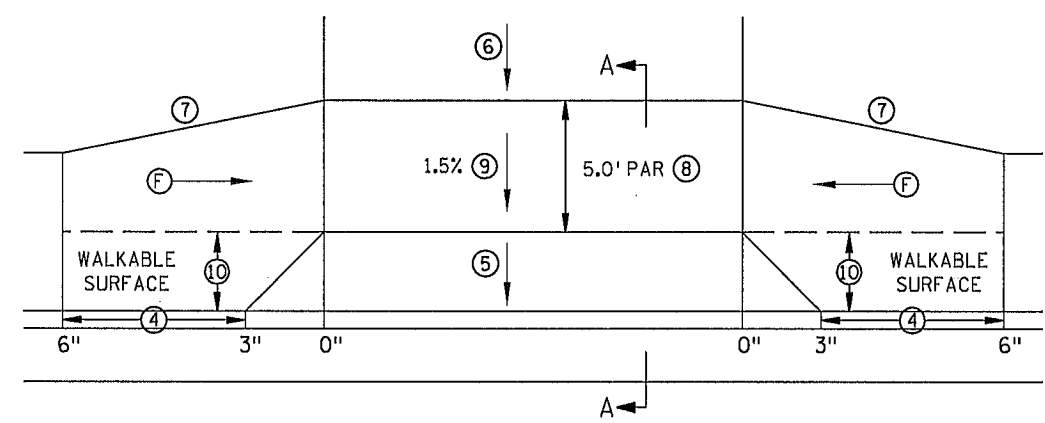
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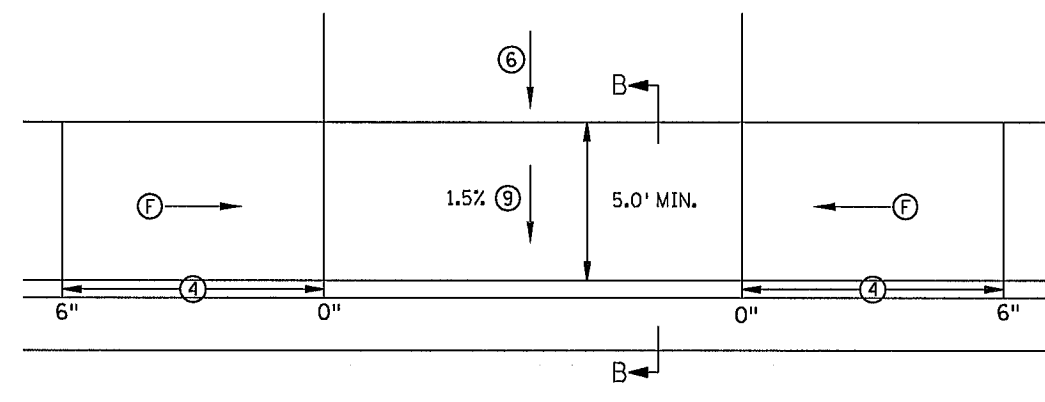
**PERPENDICULAR DRIVEWAY ①**



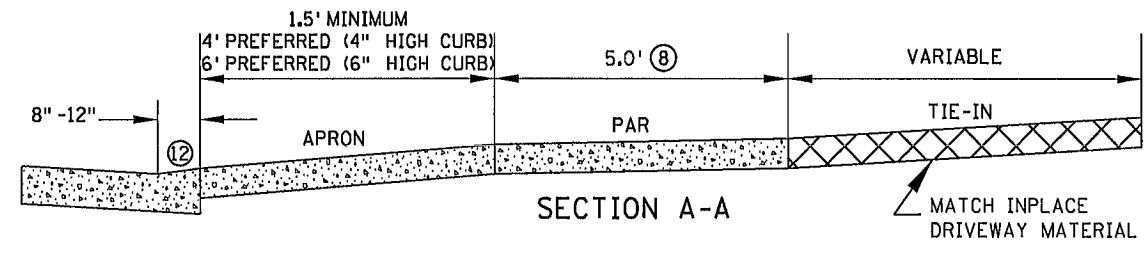
**TIERED PERPENDICULAR DRIVEWAY ②**



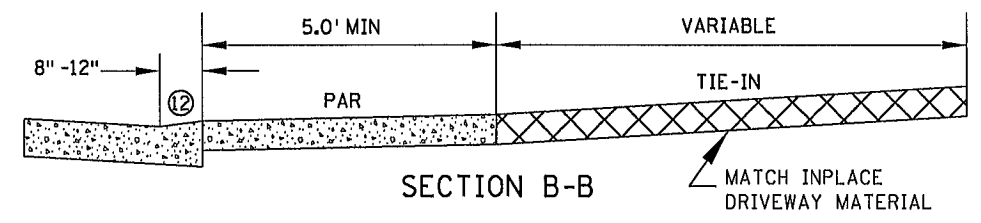
**TIERED PERPENDICULAR OFFSET DRIVEWAY**



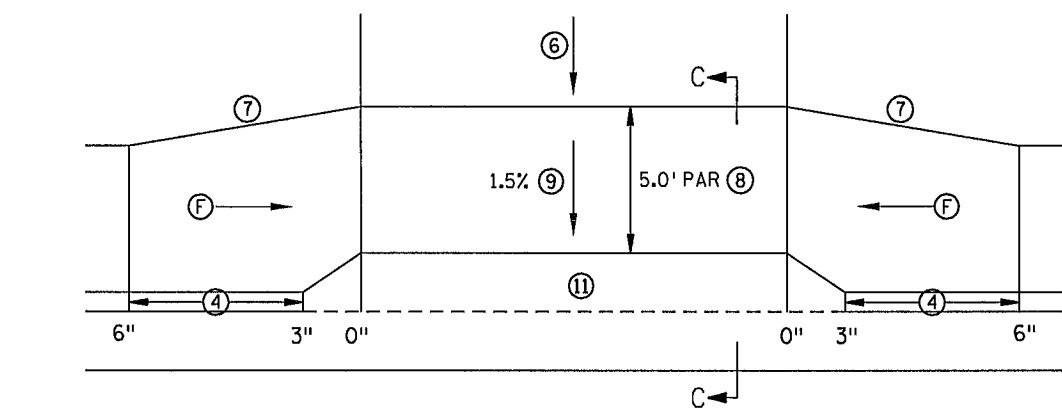
**PARALLEL DRIVEWAY ③**



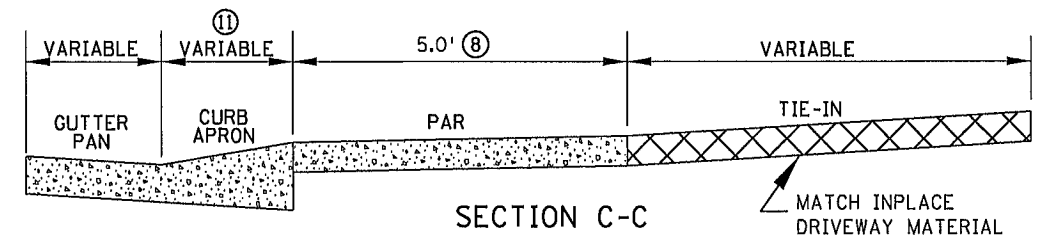
**SECTION A-A**



**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%. RAMPS 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. 1:5 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	
(F)	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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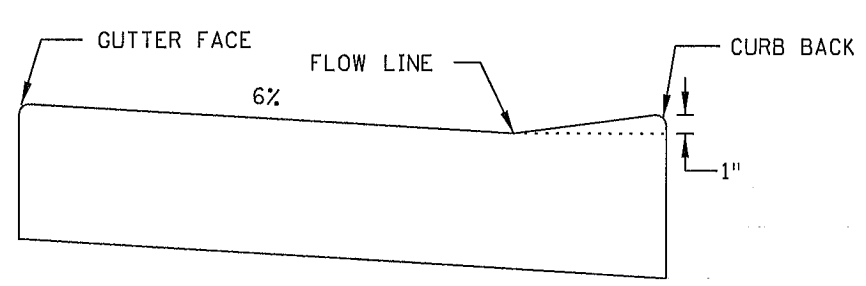


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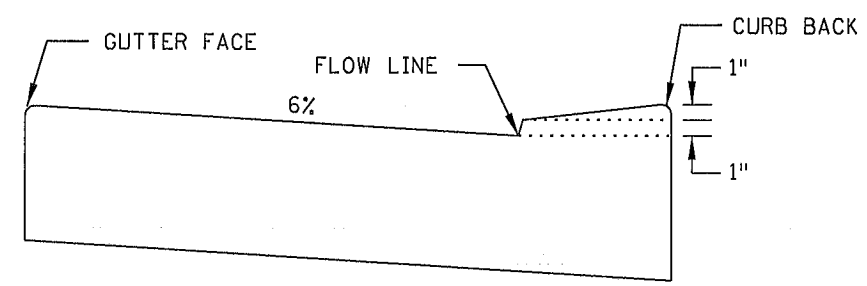
DRIVEWAY AND SIDEWALK DETAILS (1 OF 4)  
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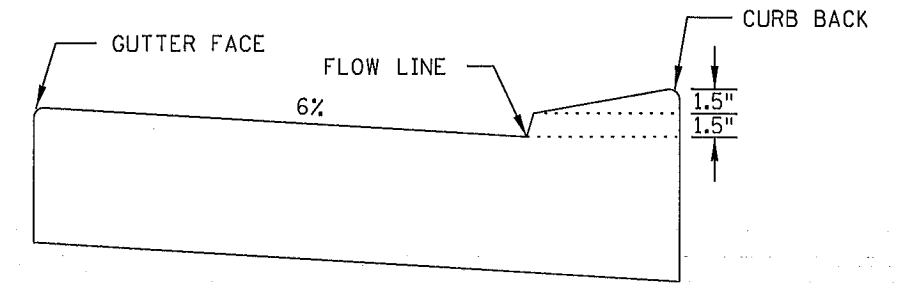
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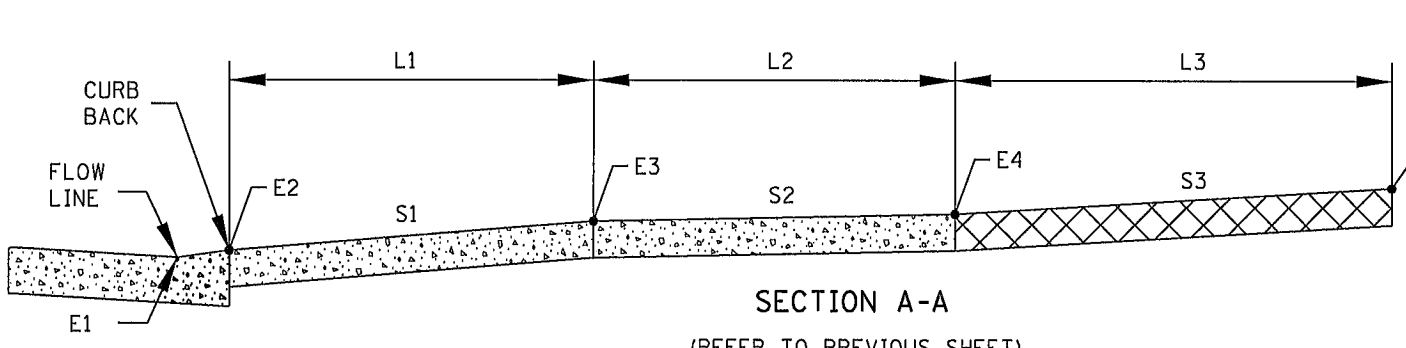
DW CURB STANDARD  
STANDARD CURB AT DRIVEWAY



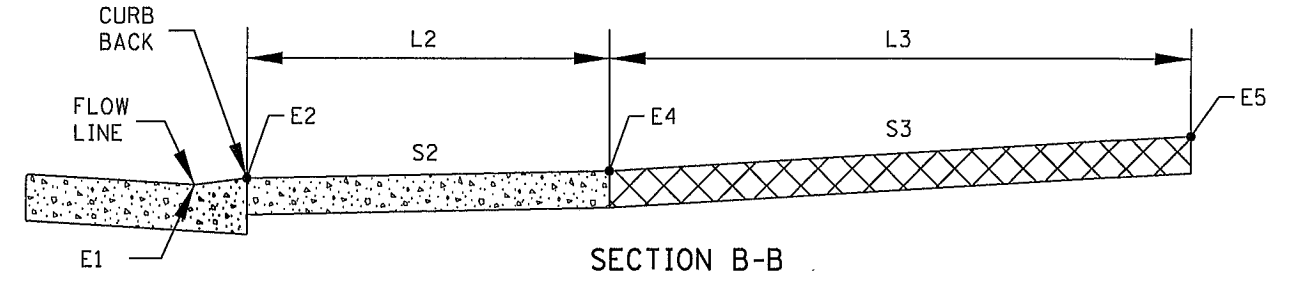
DW CURB TYPE 2  
VERTICALLY CONSTRAINED



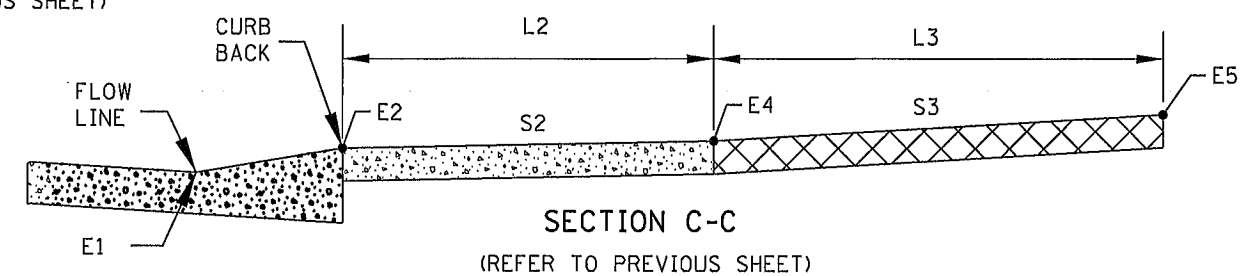
DW CURB TYPE 3  
VERTICALLY CONSTRAINED



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 ③	E1	E2	L1	S1	E3	L2	S2 ②	E4	L3	S3	EXISTING	E5	COMMENTS
						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.

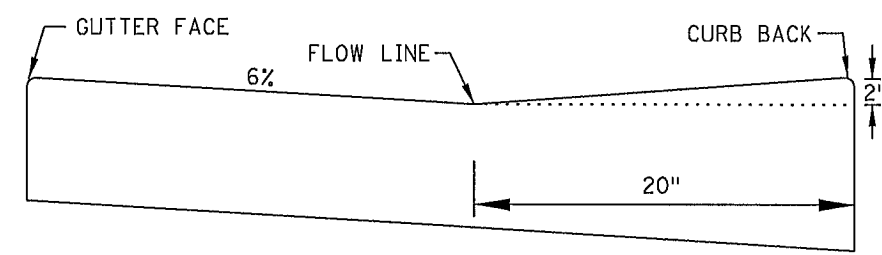
WHERE ROADWAY DRAINAGE IS A CONCERN (NEGATIVE SLOPED APRON) DW CURB TYPE 2 CAN BE USED TO HELP KEEP THE WATER ON PUBLIC RIGHT OF WAY.

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.

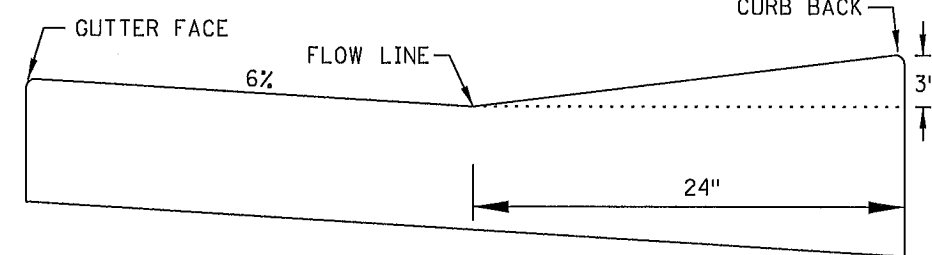
DW CURB TYPE 3 SHALL ONLY BE USED IN EXTREME TIE-IN CASES.

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

DISTRICT #: \$\$\$@DISTRICT@\$\$  
USER NAME: \$\$\$@USER\$NAME@\$\$\$  
FILE NAME: \$\$\$@FILENAME@\$\$\$  
PATH & FILENAME: \$\$\$@PATH&FILENAME@\$\$\$

REVISIONS:  
APPROVED: JANUARY 23, 2017  
*[Signature]*  
OPERATIONS ENGINEER

SAP 002-601-051



*[Signature]*  
STATE DESIGN ENGINEER

REVISED:  
APPROVED:  
1-23-2017

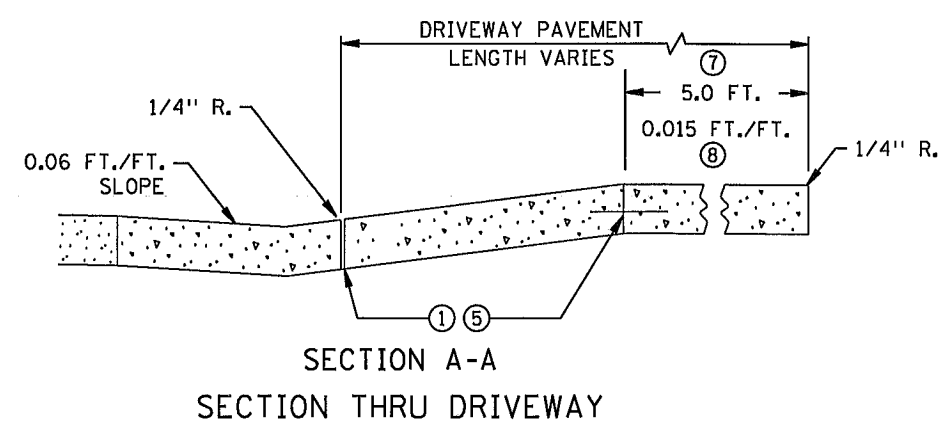
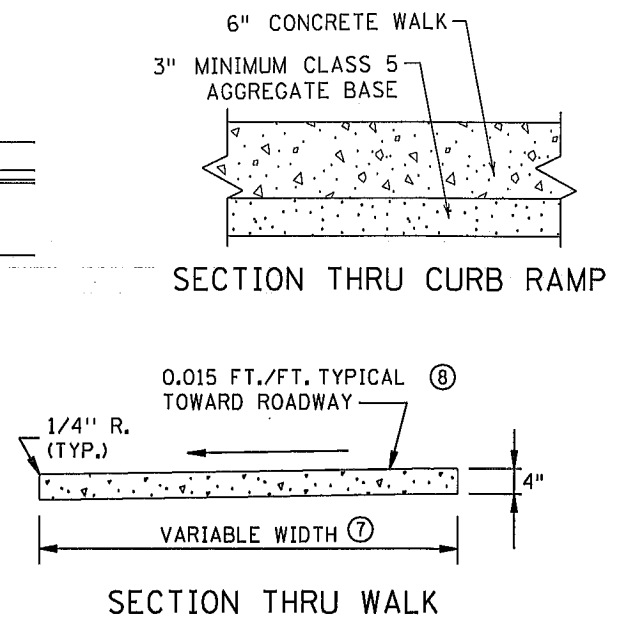
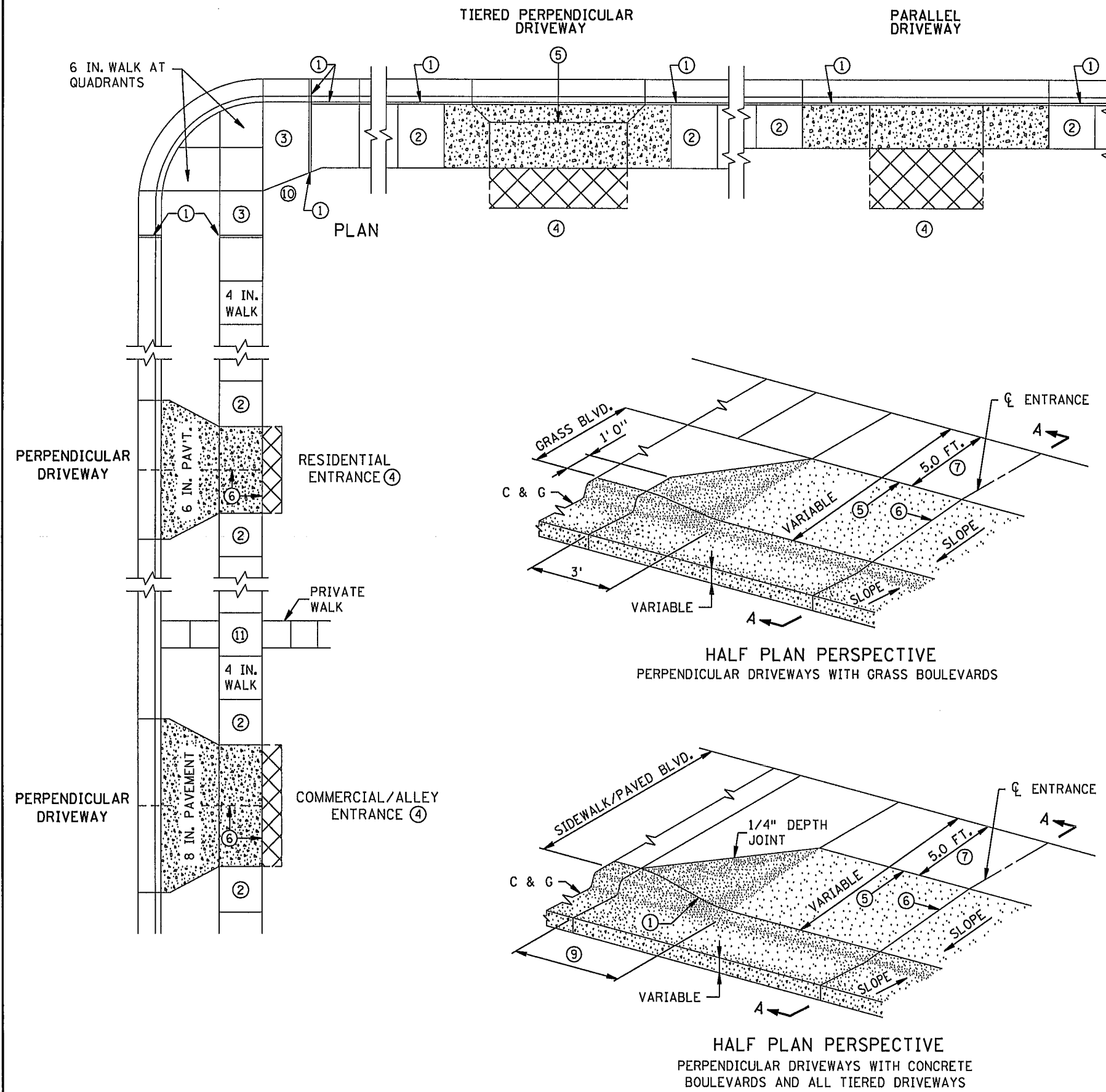
DRIVEWAY AND SIDEWALK DETAILS (2 OF 4)  
STANDARD PLAN 5-297.254 20 OF 36



PLOTTED/REVISED: \$\$\$@DATE@\$\$\$

DISTRICT #: \$\$\$@DISTRICT@  
 USER NAME: \$\$\$@USER@NAME@  
 PATH & FILENAME: \$\$\$@PATH@FILENAME@\$\$\$

FILE NAME: \$\$\$@FILENAME@



**NOTES:**

- TO MINIMIZE SIDEWALK "ROLLER COASTER" EFFECT IT IS DESIRABLE TO KEEP THE PAR ELEVATION CONTINUOUS OR AT LEAST IN THE UPPER HALF OF CURB HEIGHT. 4" HIGH CURB SHOULD BE USED INSTEAD OF 6" HIGH CURB TO HELP THIS PROBLEM WHEN APPLICABLE.
- 4" HIGH ADJACENT CURB IS PREFERRED WHEN BOULEVARDS 4' OR LESS ARE PRESENT MEASURED FROM THE BACK OF CURB. WHEN THE DRIVEWAY IS SLOPING DOWN FROM THE ROADWAY (NEGATIVE) 4" HIGH ADJACENT CURB SHOULD ALSO BE USED.
- SEE ROAD DESIGN MANUAL, CHAPTER 5, FOR GEOMETRIC DESIGN OF DRIVEWAYS.
- ① 1/2 IN. PREFORMED JOINT FILLER MATERIAL PER MnDOT SPEC. 3702, EXCEPT AT GRASS BOULEVARDS.
- ② TRANSITION DRIVEWAY THICKNESS TO WALK THICKNESS.
- ③ TRANSITION CURB RAMP THICKNESS TO WALK THICKNESS.
- ④ MATCH INPLACE DRIVEWAY WIDTH, MATERIAL TYPE AND THICKNESS.
- ⑤ TIE ONLY IF ADJACENT SECTIONS ARE NOT POURED MONOLITHICALLY. SEE SECTION A-A.
- ⑥ FORM CONTRACTION JOINT AS NEEDED TO PRODUCE APPROXIMATELY SQUARE PANELS (MAXIMUM WIDTH 15 FT. BETWEEN JOINTS).
- ⑦ 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.
- ⑧ THE PEDESTRIAN ACCESS ROUTE CROSS-SLOPE, SHALL NOT EXCEED 0.02 FT./FT. AS CONSTRUCTED.
- ⑨ 8% TO 10% FLARES SHALL BE USED WHEN ADJACENT TO WALKABLE SURFACES AND FOR ALL TIERED DRIVEWAYS WITH GRASS BOULEVARDS.
- ⑩ 1:10 MIN. SIDEWALK OFFSET TAPER REQUIRED FOR SIDEWALK REPLACEMENT PROJECTS. 1:3 MIN. AND 1:5 MIN. PREFERRED SIDEWALK OFFSET TAPER FOR DRIVEWAY REPLACEMENT.
- ⑪ LANDING REQUIRED, SEE NEXT SHEET FOR MORE INFORMATION.

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Tom [Signature]  
 STATE DESIGN ENGINEER

REVISED:  
 APPROVED:  
 1-23-2017

DRIVEWAY AND SIDEWALK DETAILS (3 OF 4)  
 STANDARD PLAN 5-297.254  
 21 OF 36

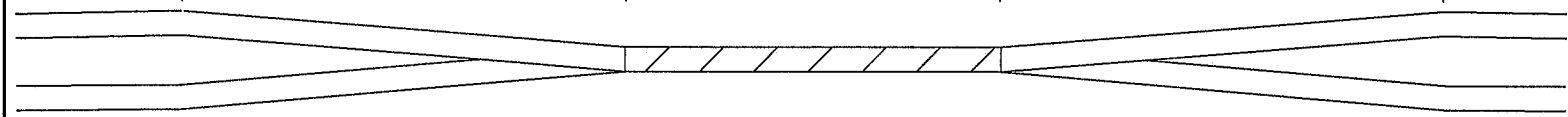


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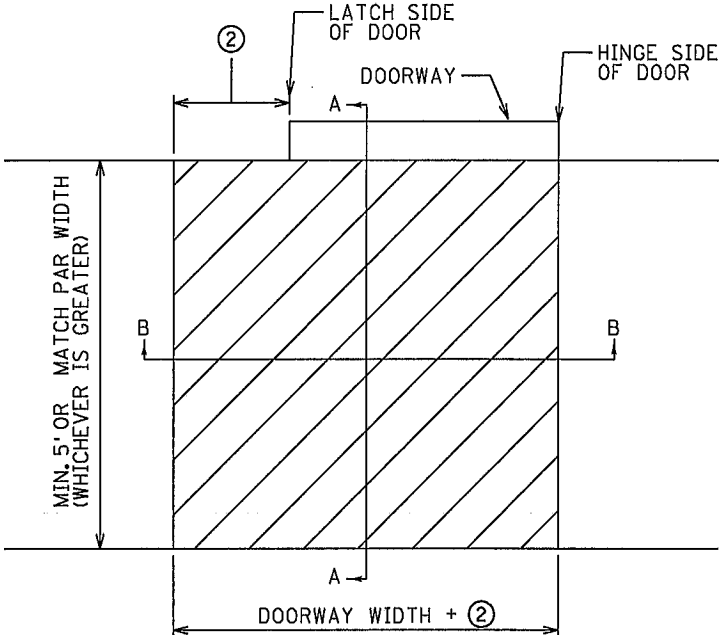
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FILE NAME: \$\$\$@FILENAME@

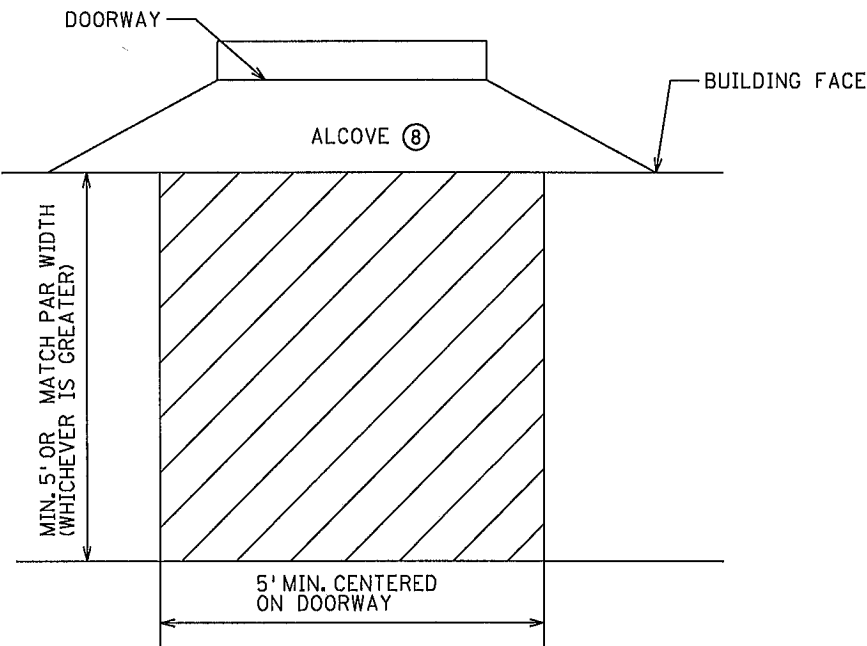
SIDEWALK PAR PROFILE      LANDING      SIDEWALK PAR PROFILE  
 MAX 5% LONGITUDINAL SLOPE (POSITIVE OR NEGATIVE)      MAX 2% CROSS SLOPE      MAX 5% LONGITUDINAL SLOPE (POSITIVE OR NEGATIVE)



SECTION VIEW B-B

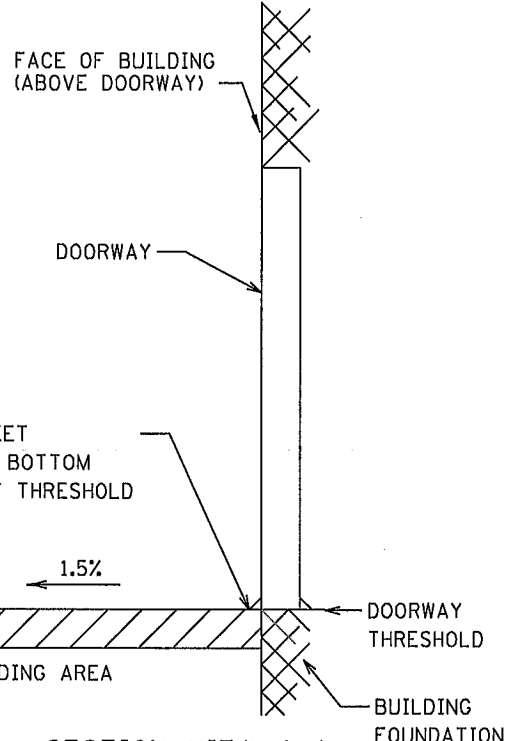


PLAN VIEW DOORWAY

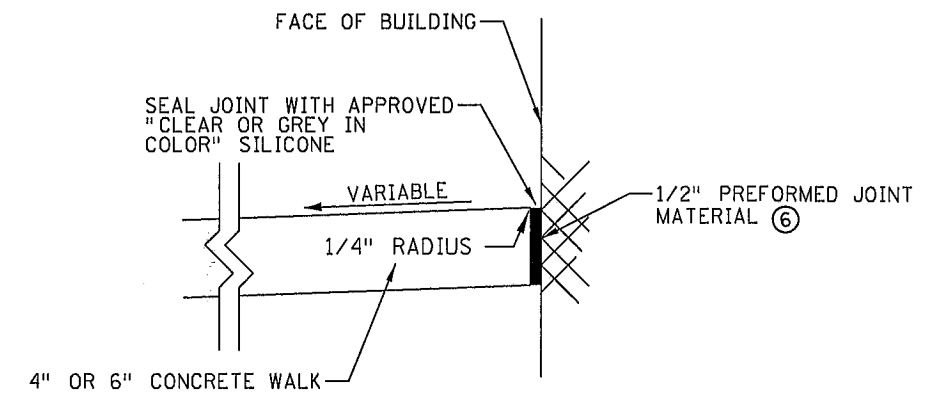


PLAN VIEW DOORWAY WITH ALCOVE

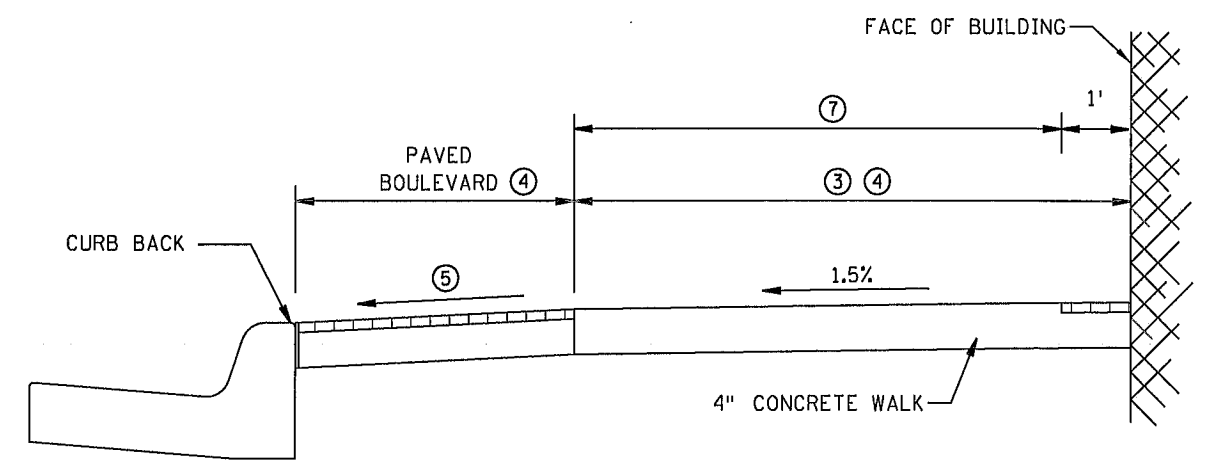
**SIDEWALK LANDING REQUIREMENTS ①**



SECTION VIEW A-A



BUILDING JOINT SEAL (INCIDENTAL)



DOWNTOWN SIDEWALK TYPICAL SECTION

**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.
- 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.
- ③ 6' MIN. PAR REQUIRED WHEN ADJACENT TO BUILDINGS.
- ④ 2/3 PAR TO 1/3 BOULEVARD SHOULD BE USED WHEN FEASIBLE.
- ⑤ 1%-5% FOR THE MAJORITY OF THE BLOCK, WITH EXCEPTIONS UP TO 8% IN CONSTRAINED AREAS. 10% MAX. FOR SHORT SECTIONS ALLOWED TO ACCOUNT FOR FIELD TOLERANCES.
- ⑥ FURNISH AND INSTALL BACKER ROD OF APPROPRIATE DIAMETER.
- ⑦ TO MINIMIZE VIBRATION AND ROLLING RESISTANCE, AREA SHOULD BE FREE OF PAVERS, STAMPED CONCRETE, AND/OR EXCESSIVE JOINTING.
- ⑧ 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:
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 1-23-2017

DRIVEWAY AND SIDEWALK DETAILS (4 OF 4)	
STANDARD PLAN 5-297.254	22 OF 36

**PERMANENT PAVEMENT MARKING PLAN**  
NOTES AND GUIDELINES

**GENERAL INFORMATION:**

THE ENGINEER'S INVOLVEMENT IN THE APPLICATION OF THE MATERIAL SHALL BE LIMITED TO FIELD CONSULTATION AND INSPECTION. ANOKA COUNTY HIGHWAY DEPARTMENT WILL PLACE NECESSARY "SPOTTING" AT APPROPRIATE POINTS TO PROVIDE HORIZONTAL CONTROL FOR STRIPING AND TO DETERMINE NECESSARY STARTING AND CUTOFF POINTS, LONGITUDINAL JOINTS, PAVEMENT EDGES AND EXISTING MARKINGS MAY SERVE AS HORIZONTAL CONTROL WHEN SO DIRECTED.

EDGE LINES AND LANE LINES ARE TO BE BROKEN ONLY AT INTERSECTIONS WITH PUBLIC ROADS AND AT PRIVATE ENTRANCES IF THEY ARE CONTROLLED BY A YIELD SIGN, STOP SIGN OR TRAFFIC SIGNAL. THE BREAK POINT IS TO BE AT THE START OF THE RADIUS FOR THE INTERSECTION OR AT MARKED STOP LINES OR CROSSWALKS.

A TOLERANCE OF 1/4 INCH UNDER OR 1/4 INCH OVER THE SPECIFIED WIDTH WILL BE ALLOWED FOR STRIPING PROVIDED THE VARIATION IS GRADUAL AND DOES NOT DETRACT FROM THE GENERAL APPEARANCE. BROKEN LINE SEGMENTS MAY VARY UP TO ONE-HALF FOOT FROM THE SPECIFIED LENGTHS PROVIDED THE OVER AND UNDER VARIATIONS ARE REASONABLY COMPENSATORY. ALIGNMENT DEVIATIONS FROM THE CONTROL GUIDE SHALL NOT EXCEED 1 INCH. MATERIAL SHALL NOT BE APPLIED OVER LONGITUDINAL JOINTS, ESTABLISHMENT OF APPLICATION TOLERANCES SHALL NOT RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY TO COMPLY AS CLOSELY AS PRACTICABLE WITH THE PLANNED DIMENSIONS.

**EPOXY:**

THE ROAD SURFACE SHALL BE CLEANED AT THE DIRECTION OF THE ENGINEER JUST PRIOR TO APPLICATION. PAVEMENT CLEANING SHALL CONSIST OF AT LEAST BRUSHING WITH A ROTARY BROOM (NON-METALLIC) OR AS RECOMMENDED BY THE MATERIAL MANUFACTURER AND ACCEPTABLE TO THE ENGINEER. NEW PORTLAND CEMENT CONCRETE SURFACES SHALL BE SANDBLAST CLEANED TO REMOVE ANY SURFACE TREATMENT AND/OR LAITANCE ON LOW SPEED (SPEED LIMIT 35 MPH OR LESS) URBAN PORTLAND CEMENT CONCRETE ROADWAYS. SANDBLAST CLEANING SHALL BE USED FOR ALL EPOXY PAVEMENT MARKINGS.

THE EPOXY MARKING APPLICATION SHALL IMMEDIATELY FOLLOW THE PAVEMENT CLEANING. GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE EPOXY RESIN LINE TO PROVIDE AN IMMEDIATE NO-TRACK SYSTEM.

AN EPOXY RESIN LINE 4" WIDE AND 15 MILL THICKNESS (WET), REQUIRES AN APPLICATION RATE OF ONE (1) GALLON OF COMPONENTS FOR 320 FEET OF LINE. GLASS BEADS SHALL BE APPLIED AT A POUND PER GALLON RATE SUFFICIENT TO ACHIEVE AN ACCEPTABLE NO-TRACK SYSTEM.

OPERATIONS SHALL BE CONDUCTED ONLY WHEN THE ROAD PAVEMENT SURFACE TEMPERATURES ARE 50 DEGREES FAHRENHEIT OR GREATER.

PERMANENT PAVEMENT MARKINGS SHALL NOT BE PLACED OVER TEMPORARY TAPE MARKINGS.

**PREFORMED THERMOPLASTIC:**

THE PREFORMED THERMOPLASTIC MARKINGS SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS ON CLEAN AND DRY SURFACES. SEE SPECIAL PROVISIONS FOR PREFORMED THERMOPLASTIC MARKING SPECIFICATIONS.

**PAINT:**

AT THE TIME OF APPLYING THE MARKING MATERIAL, THE APPLICATION AREA SHALL BE FREE OF CONTAMINATION. THE CONTRACTOR SHALL CLEAN THE ROADWAY SURFACE PRIOR TO THE LINE APPLICATION IN A MANNER AND TO THE EXTENT REQUIRED BY THE ENGINEER.

GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE PAINT LINE.

EXCEPT WHEN USED AS A TEMPORARY MARKING, PAVEMENT MARKINGS SHALL ONLY BE APPLIED IN SEASONABLE WEATHER WHEN AIR TEMPERATURE IS 50 DEGREES FARHENHEIT OR HIGHER AND SHALL NOT BE APPLIED WHEN THE WIND OR OTHER CONDITIONS CAUSE A FILM OR DUST TO BE DEPOSITED ON THE PAVEMENT SURFACE AFTER CLEANING AND BEFORE THE MARKING MATERIAL CAN BE APPLIED.

THE FILLING OF TANKS, POURING OF MATERIALS OR CLEANING OF EQUIPMENT SHALL NOT BE PERFORMED ON UNPROTECTED PAVEMENT SURFACES UNLESS ADEQUATE PROVISIONS ARE MADE TO PREVENT SPILLAGE OF MATERIAL.

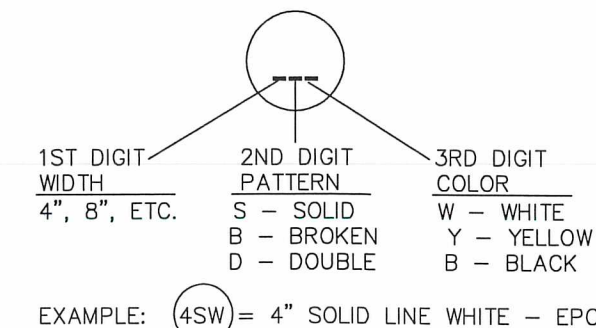
PERMANENT MARKING QUANTITIES		
ITEM	UNIT	TOTAL QUANTITY
4" SOLID LINE WHITE - EPOXY PAINT	LIN FT	11747
4" BROKEN LINE WHITE - EPOXY PAINT	LIN FT	1920
24" SOLID LINE WHITE - PREFORMED THERMOPLASTIC	LIN FT	279
3' X 6' ZEBRA CROSSWALK - PREFORMED THERMOPLASTIC	SQ FT	1692
PAVEMENT MESSAGE (LEFT ARROW) - PREFORMED THERMOPLASTIC	SQ FT	105
PAVEMENT MESSAGE (RIGHT ARROW) - PREFORMED THERMOPLASTIC	SQ FT	105
4" SOLID LINE YELLOW - EPOXY PAINT	LIN FT	8704

**SYMBOLS & MATERIALS LEGEND**

- CROSSWALK BLOCK WHITE PREFORMED THERMOPLASTIC
- ↩ PAVEMENT MESSAGE (LEFT ARROW) PREFORMED THERMOPLASTIC

**STRIPING KEY**

- CIRCLE - EPOXY
- SQUARE PREFORMED THERMOPLASTIC
- △ TRIANGLE - PAINT
- ⬠ PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING



NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\16-01-00\CR 60\Bases\TRAFFIC\Perm pvmt mrkg guide notes\_guidelines.dwg

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: DOUGLAS W. FISCHER

SIGNATURE: *[Signature]*

DATE: 4/26/18 LICENSE NO. 20235

DRAWN BY: RLB DATE: 1/26/18

DESIGN BY: RLB DATE: 1/26/18

CHECKED BY: JR DATE: 1/26/18

**ANOKA COUNTY**  
HIGHWAY DEPT.

STATE PROJECT NO. \_\_\_\_\_

STATE AID PROJECT NO. 002-601-051

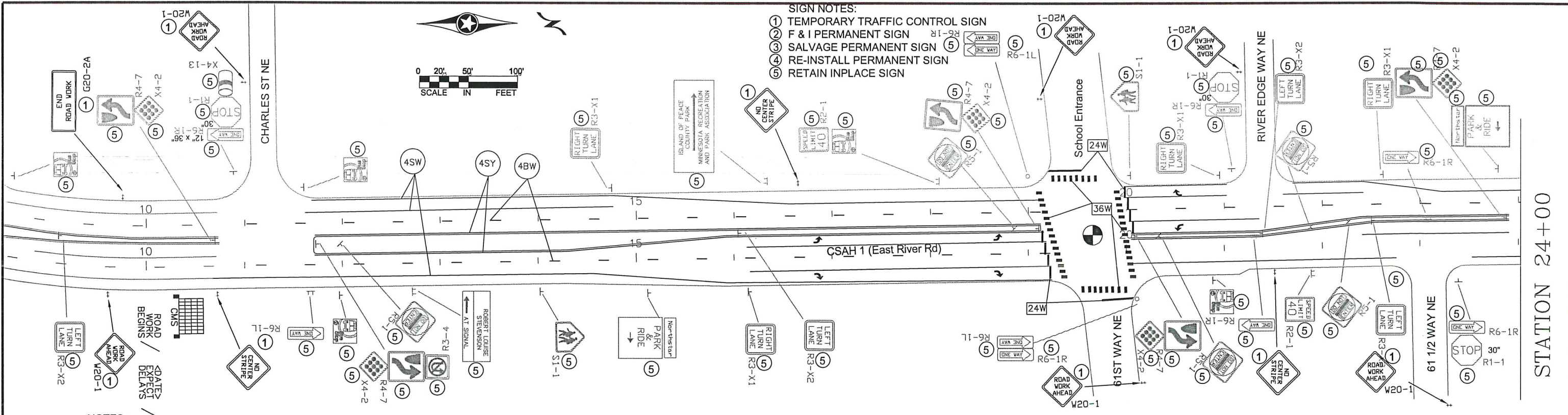
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COUNTY PROJECT NO. 18-13-01

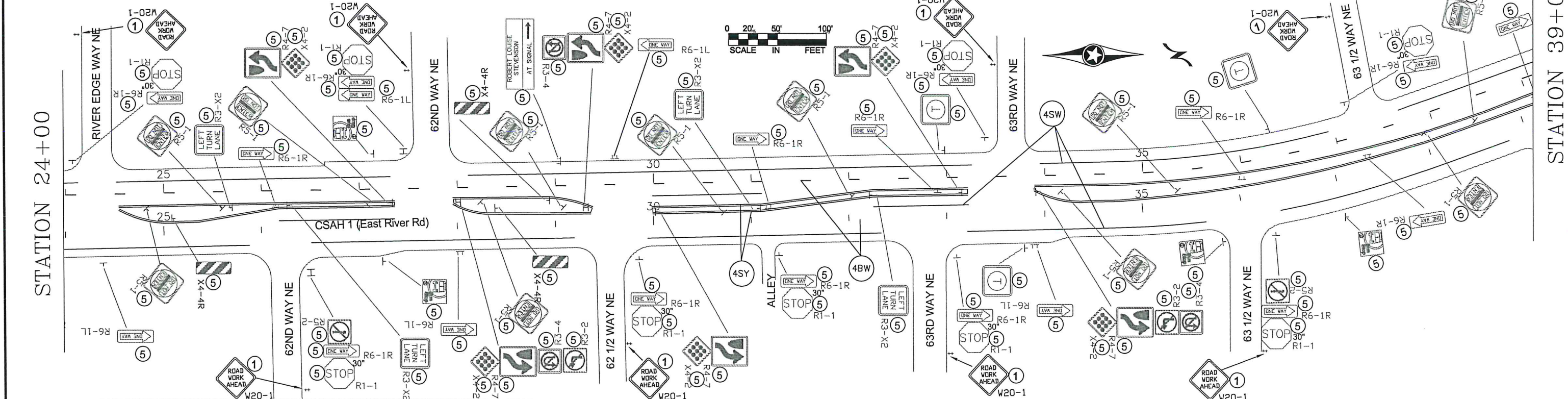
**PERMANENT MARKING TABULATION**

Sheet 23 of 36 Sheets





- ALL TRAFFIC CONTROL DEVICES SHALL CONFORM AND BE PLACED IN ACCORDANCE TO THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD), INCLUDING PART VI, "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS".
- CONTRACTOR SHALL COMPLY WITH THE LONGITUDINAL DROP-OFF GUIDELINES AS PER THE FIELD MANUAL.
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- CONTRACTOR SHALL SUPPLY AND INSTALL THE PORTABLE CHANGEABLE MESSAGE SIGN (CMS) A MINIMUM OF SEVEN DAYS PRIOR TO ACTUAL COMMENCEMENT OF ROAD WORK, TO A LOCATION AS SPECIFIED BY THE ENGINEER. SIGNS TO BE REMOVED WHEN ROAD WORK BEGINS. PAYMENT SHALL BE MADE AS PER ITEM 2563.613 PORTABLE CHANGEABLE MESSAGE SIGN BY THE UNIT/DAY.
- CONTRACTOR SHALL SUPPLY AND ERECT THE TEMPORARY TRAFFIC CONTROL SIGNS AS SHOWN ON THIS DRAWING AND DETAILED IN THE SPECIAL PROVISIONS FROM THE TIME WORK COMMENCES ON THIS ROADWAY UNTIL THIS ROADWAY IS PERMANENTLY STRIPED. ALL NECESSARY TEMPORARY TRAFFIC CONTROL SIGNS SHALL BE PAID FOR AS PART OF TRAFFIC CONTROL LUMP SUM.
- ALL PERMANENT STRIPING AND PAVEMENT MESSAGES SHALL BE PLACED WITHIN 72 HOURS OF MAINLINE PAVING.
- ANY REQUIRED PERMANENT SIGNING SHALL BE INSTALLED THE SAME DAY AS PERMANENT STRIPING
- ALL EXISTING SIGNING SHALL REMAIN IN PLACE DURING CONSTRUCTION. ALL SALVAGED AND REINSTALLED SIGNS SHALL BE INSTALLED ON TEMPORARY SUPPORTS UNTIL THE PERMANENT INSTALLATION CAN BE MADE. THIS WILL BE CONSIDERED AS INCIDENTAL TO INSTALL SIGN TYPE C.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: DOUGLAS W. FISCHER

SIGNATURE: *[Signature]*

DATE: 4/30/18 REG. NO. 20235

DRAWN BY: RLB DATE: 1/23/18

DESIGN BY: RLB DATE: 1/23/18

CHECKED BY: JR DATE: 1/23/18

**ANOKA COUNTY**  
HIGHWAY DEPT.

STATE PROJECT NO. \_\_\_\_\_

STATE AID PROJECT NO. 002-601-051

STATE AID PROJECT NO. \_\_\_\_\_

COUNTY PROJECT NO. 18-13-01

TEMPORARY SIGNING,  
PERMANENT SIGNING  
AND STRIPING

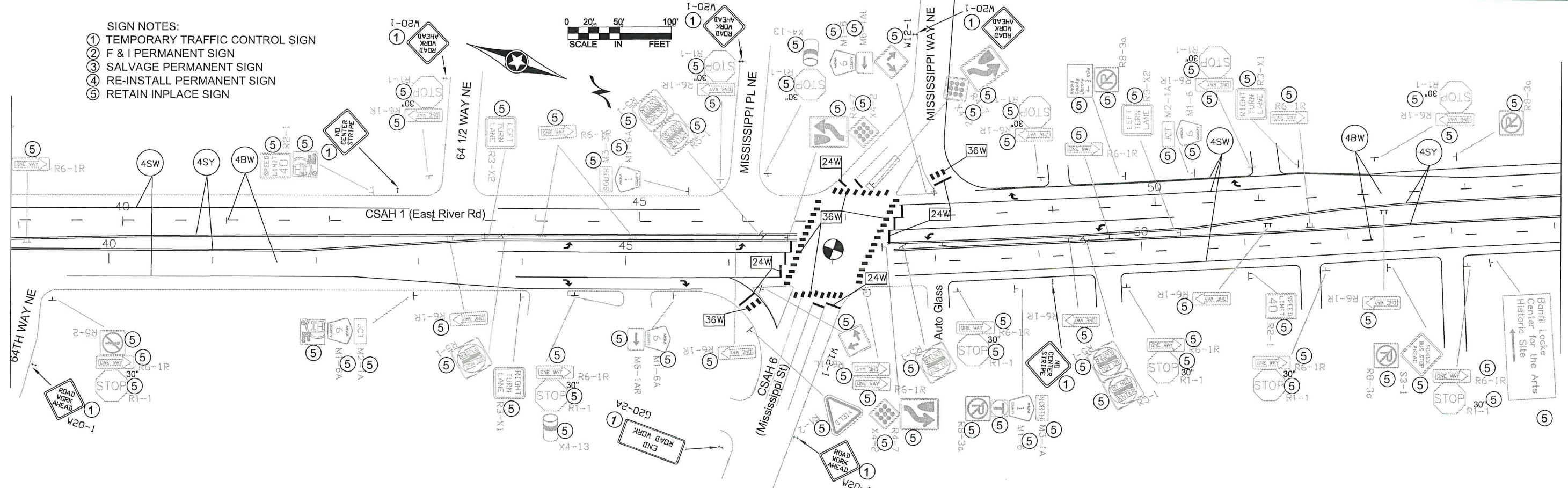
Sheet 24 of 36 Sheets



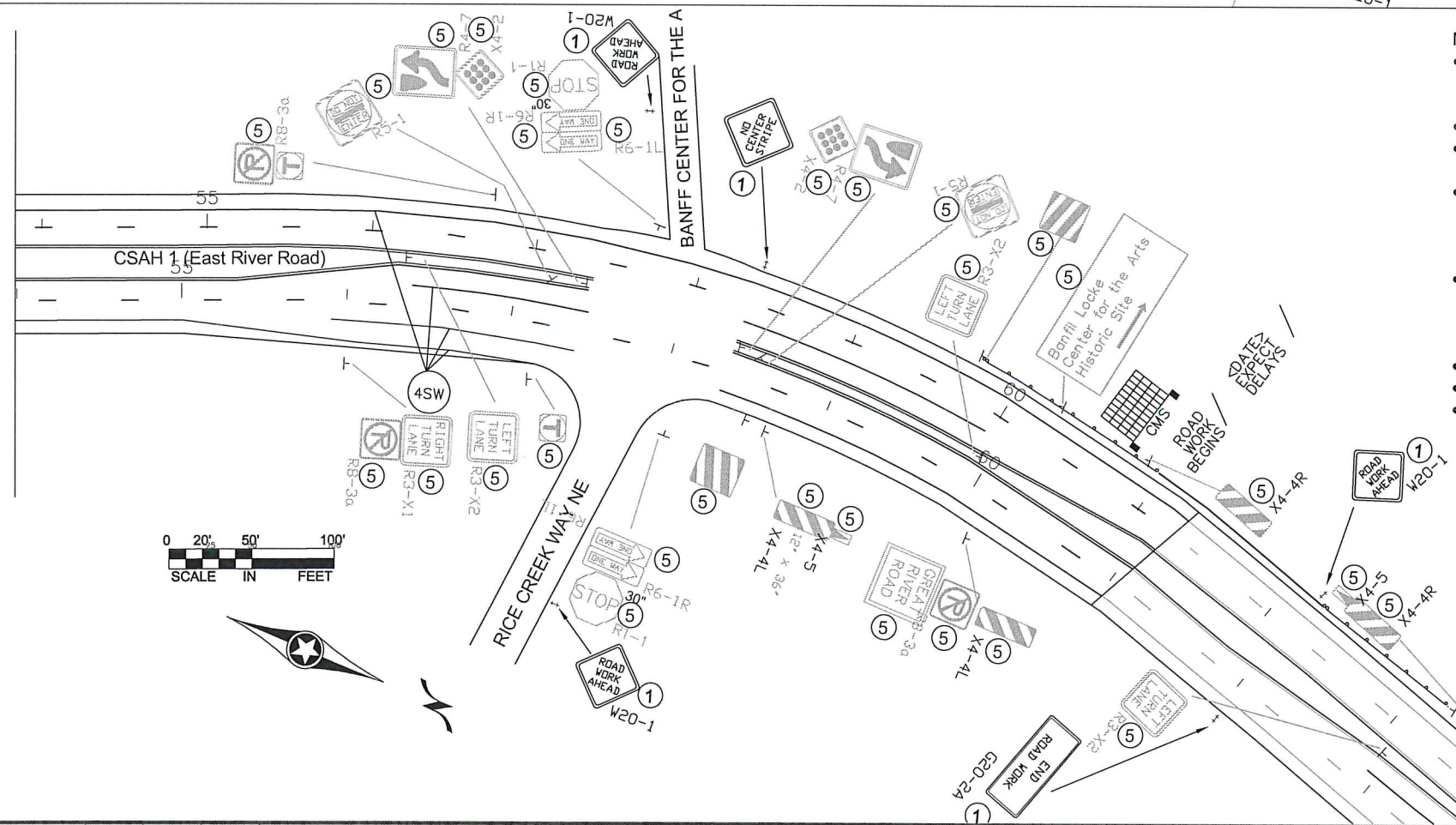
STATION 39+00

STATION 54+00

- SIGN NOTES:
- ① TEMPORARY TRAFFIC CONTROL SIGN
  - ② F & I PERMANENT SIGN
  - ③ SALVAGE PERMANENT SIGN
  - ④ RE-INSTALL PERMANENT SIGN
  - ⑤ RETAIN INPLACE SIGN



STATION 54+00



- NOTES:
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NO	DATE	BY	CKD	APPR	REVISION

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PRINT NAME: DOUGLAS W. FISCHER

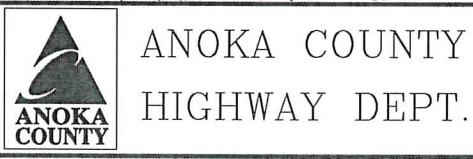
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DATE: 4/27/18 REG. NO. 20235

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COUNTY PROJECT NO. 18-13-01

TEMPORARY SIGNING,  
PERMANENT SIGNING  
AND STRIPING

Sheet 25 of 36 Sheets



TEMPORARY TRAFFIC CONTROL SIGNS

M.U.T.C.D. CODE	SIZE	PANEL AREA	INSERT	QUANTITY		MOUNTING HEIGHT TO PAVEMENT EDGE FT.
		FT. <sup>2</sup>			No. POST	
W8-12	48" x 48"	16.00		6	2	7.0'
R4-1	24" x 30"	5.00		0	1	7.0'
R4-2	24" x 30"	5.00		0	1	7.0'
G20-2A	48" x 24"	8.00		3	2	7.0'
W8-1A	48" x 48"	16.00		AS NEEDED		
W8-1A	48" x 48"	16.00		AS NEEDED		
W8-8	48" x 48"	16.00		AS NEEDED		
W8-9	48" x 48"	16.00		AS NEEDED		
	48" x 48"	16.00		AS NEEDED		
W8-11	48" x 48"	16.00		AS NEEDED		
W20-1	48" x 48"	16.00		AS NEEDED (ESTIMATED 22)		
CMS sign to be installed a minimum of ten days prior to actual commencement of road work. Signs to be removed when road work begins.				2		

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- LOCATIONS OF PAVEMENT MARKINGS ARE APPROXIMATE. EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- CONTRACTOR SHALL SUPPLY AND INSTALL THE PORTABLE CHANGEABLE MESSAGE SIGN (CMS) A MINIMUM OF SEVEN DAYS PRIOR TO ACTUAL COMMENCEMENT OF ROAD WORK, TO A LOCATION AS SPECIFIED BY THE ENGINEER. SIGNS TO BE REMOVED WHEN ROAD WORK BEGINS. PAYMENT SHALL BE MADE AS PER ITEM 2563.613 PORTABLE CHANGEABLE MESSAGE SIGN BY THE UNIT/DAY.
- CONTRACTOR SHALL SUPPLY AND ERECT THE TEMPORARY TRAFFIC CONTROL SIGNS AS SHOWN ON THIS DRAWING AND DETAILED IN THE SPECIAL PROVISIONS FROM THE TIME WORK COMMENCES ON THIS ROADWAY UNTIL THIS ROADWAY IS PERMANENTLY STRIPED. ALL NECESSARY TEMPORARY TRAFFIC CONTROL SIGNS SHALL BE PAID FOR AS PART OF TRAFFIC CONTROL LUMP SUM.
- ALL PERMANENT STRIPING AND PAVEMENT MESSAGES SHALL BE PLACED WITHIN 72 HOURS OF MAINLINE PAVING.
- ANY REQUIRED PERMANENT SIGNING SHALL BE INSTALLED THE SAME DAY AS PERMANENT STRIPING
- ALL EXISTING SIGNING SHALL REMAIN IN PLACE DURING CONSTRUCTION. ALL SALVAGED AND REINSTALLED SIGNS SHALL BE INSTALLED ON TEMPORARY SUPPORTS UNTIL THE PERMANENT INSTALLATION CAN BE MADE. THIS WILL BE CONSIDERED AS INCIDENTAL TO INSTALL SIGN TYPE C.

CHANGEABLE MESSAGE BOARD - MESSAGE SEQUENCE LAYOUT

		R	O	A	D		
		W	O	R	K		
		B	E	G	I	N	S

	<	D	A	T	E	>	
		E	X	P	E	C	T
		D	E	L	A	Y	S

CMS sign to be installed a minimum of ten days prior to actual commencement of road work. Signs to be removed when road work begins.

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\16-01-00\CR 60\base\Traffic\Signing\_Striping.dwg

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: DOUGLAS W. FISCHER  
 SIGNATURE:   
 DATE: 4/30/18 REG. NO. 20235

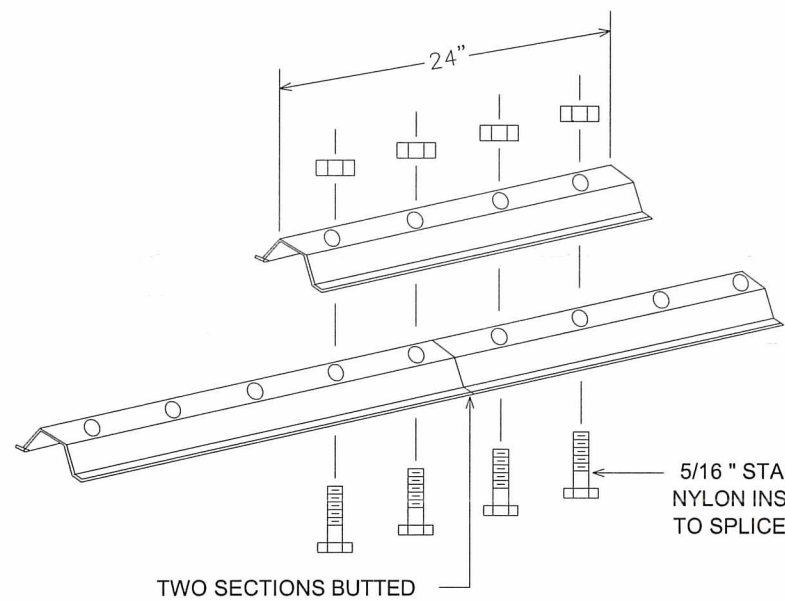
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 DESIGN BY: RLB DATE: 1/23/18  
 CHECKED BY: JR DATE: 1/23/18

ANOKA COUNTY HIGHWAY DEPT.

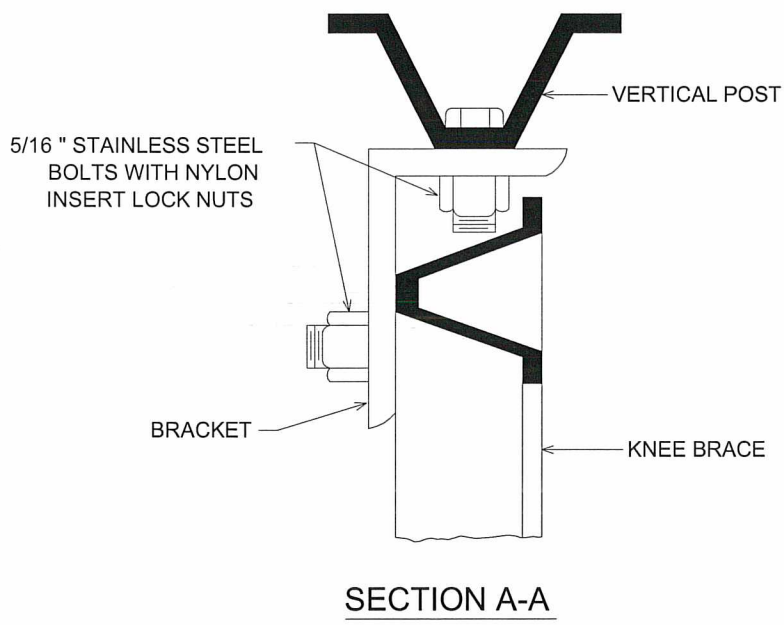
STATE PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. 002-601-051  
 STATE AID PROJECT NO. \_\_\_\_\_  
 COUNTY PROJECT NO. 18-13-01

TRAFFIC CONTROL QUANTITY  
 Sheet 26 of 36 Sheets

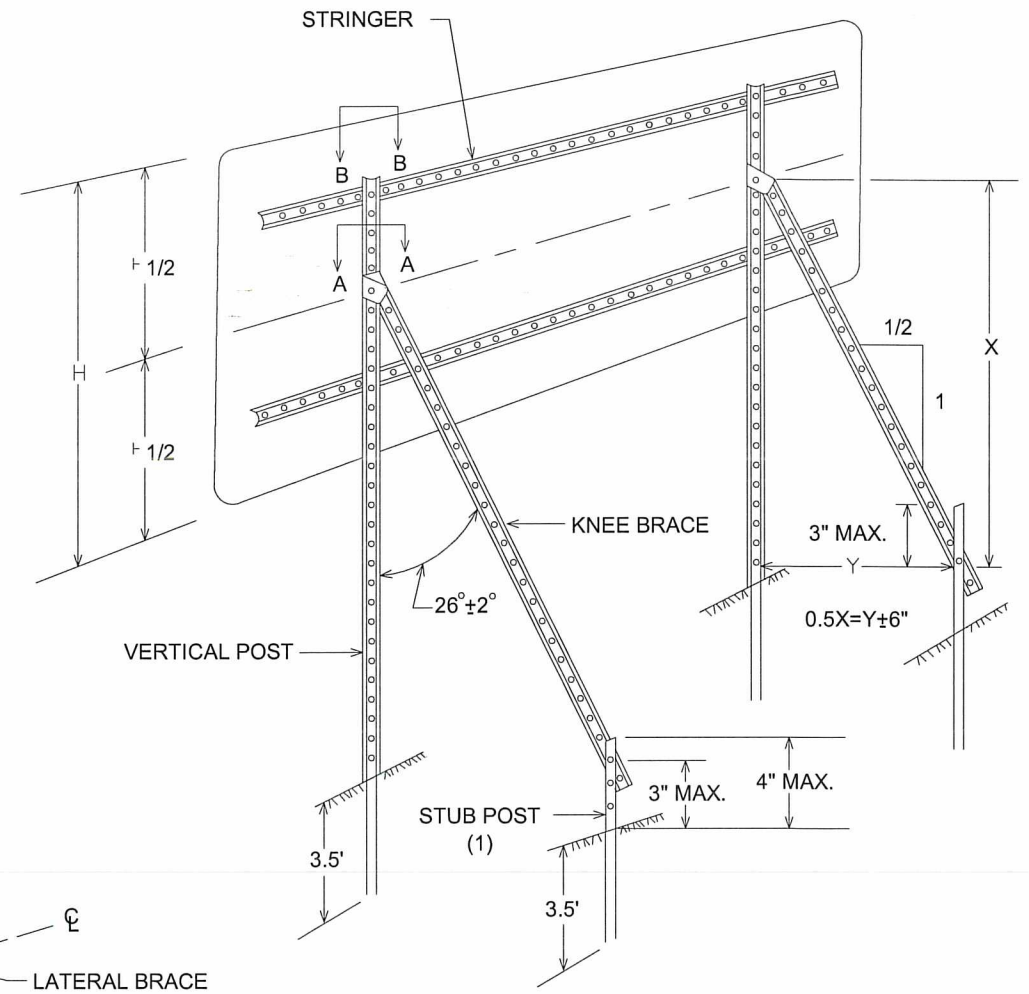




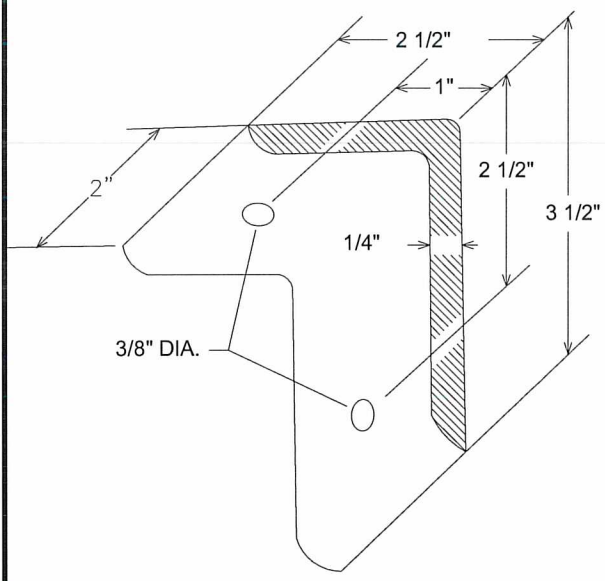
**LATERAL BRACE OR STRINGER  
SPLICE DETAIL (EXPLODED VIEW)**



**SECTION A-A**

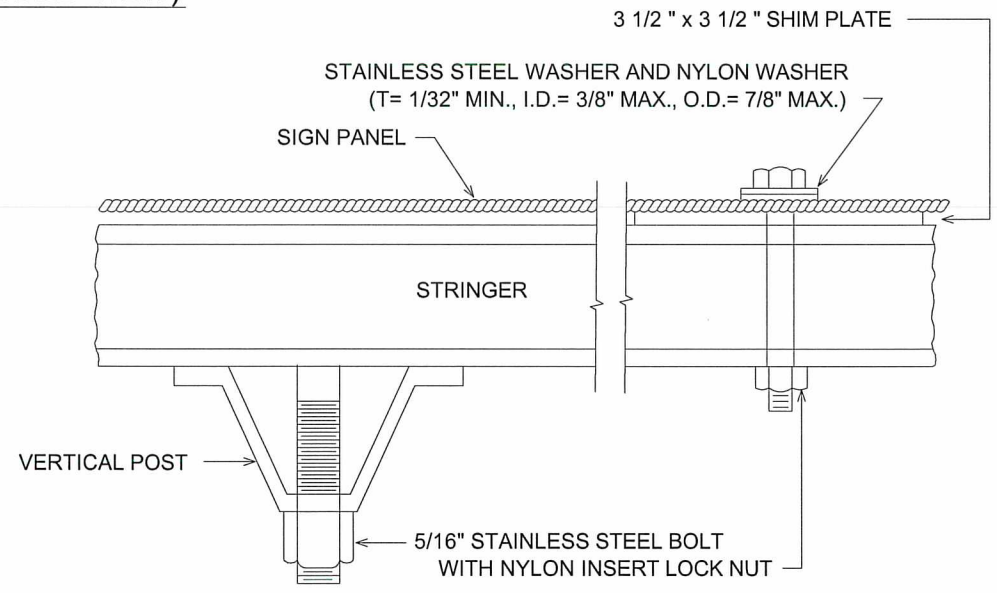


**TYPICAL "A-FRAME" INSTALLATION  
TYPE "D" SIGNS**

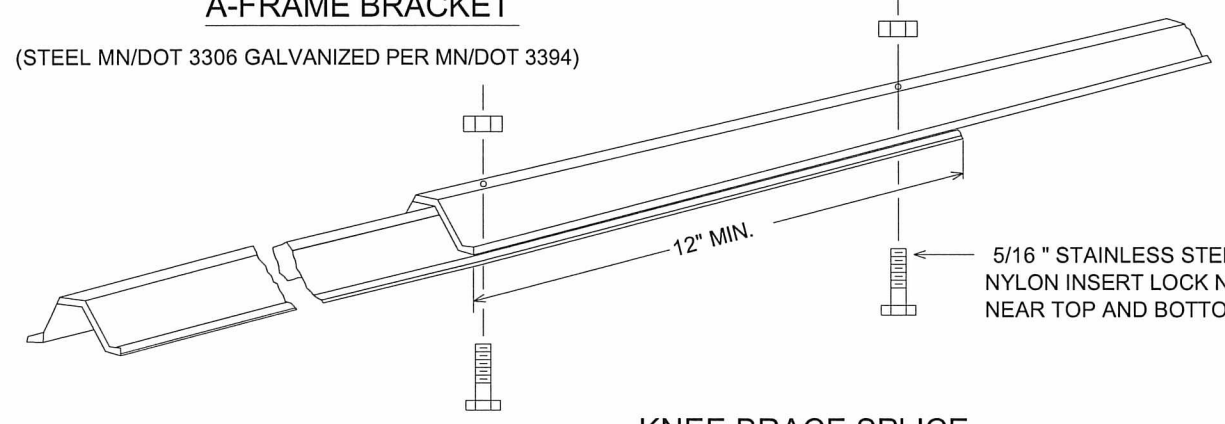


**A-FRAME BRACKET**

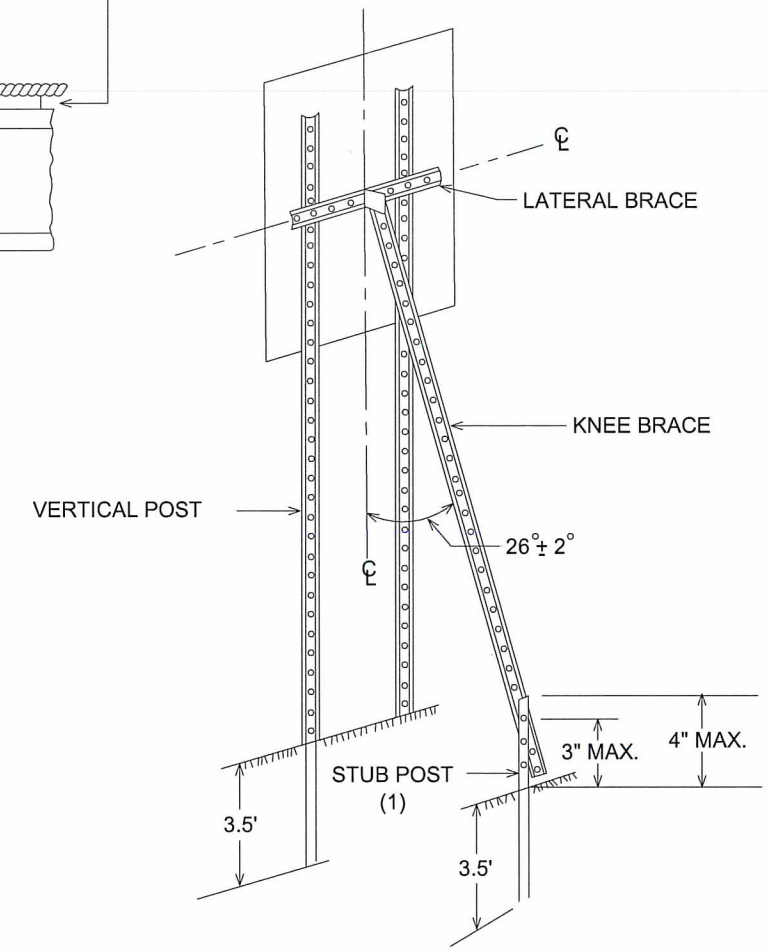
(STEEL MN/DOT 3306 GALVANIZED PER MN/DOT 3394)



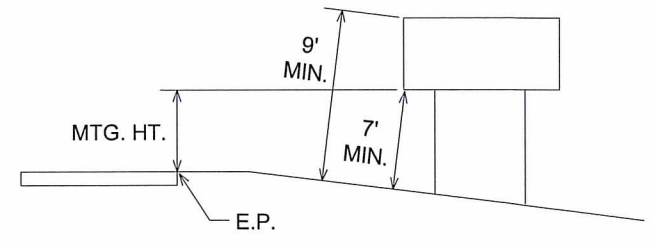
**SECTION B-B**



**KNEE BRACE SPLICE**



**TYPICAL "A-FRAME" INSTALLATION  
TYPE "C" SIGNS**



**TYPICAL MOUNTING**

(1) OFFSET STUB POST 1' TOWARD ROADWAY  
RELATIVE TO VERTICAL POST.

**TYPE C & D SIGN  
STRUCTURAL DETAILS**

NO	DATE	BY	CKD	APPR	REVISION

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 PRINT NAME: DOUGLAS W. FISCHER  
 SIGNATURE: *[Signature]*  
 DATE: 1/20/18 REG. NO. 20235

DRAWN BY: RLB DATE: 2/2/18  
 DESIGN BY: RLB DATE: 2/2/18  
 CHECKED BY: JR DATE: 2/2/18

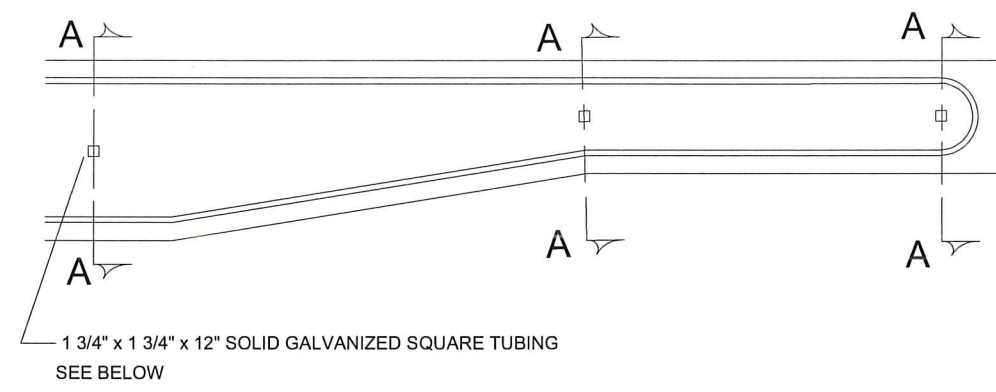


**ANOKA COUNTY  
HIGHWAY DEPT.**

STATE PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. 002-601-051  
 STATE AID PROJECT NO. \_\_\_\_\_  
 COUNTY PROJECT NO. 18-13-01

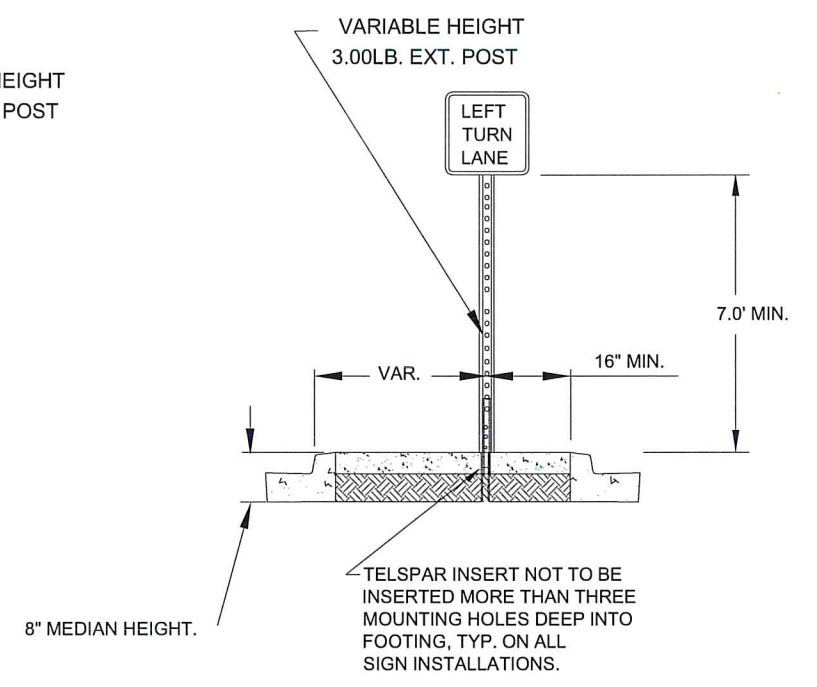
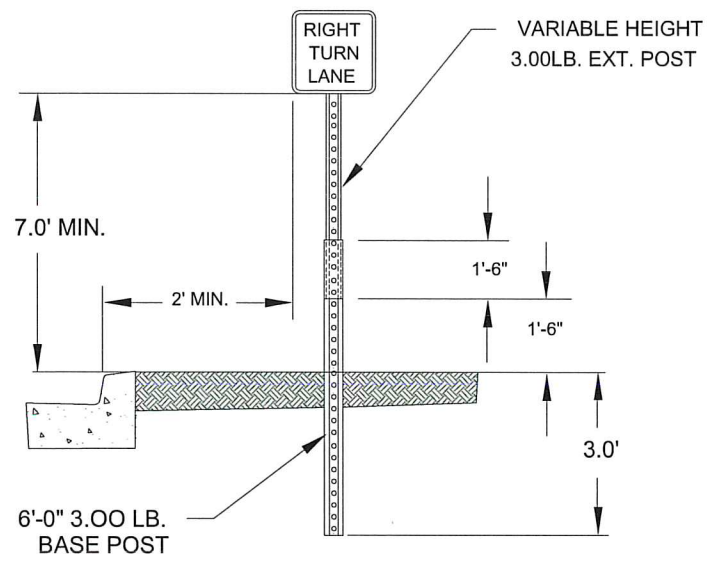
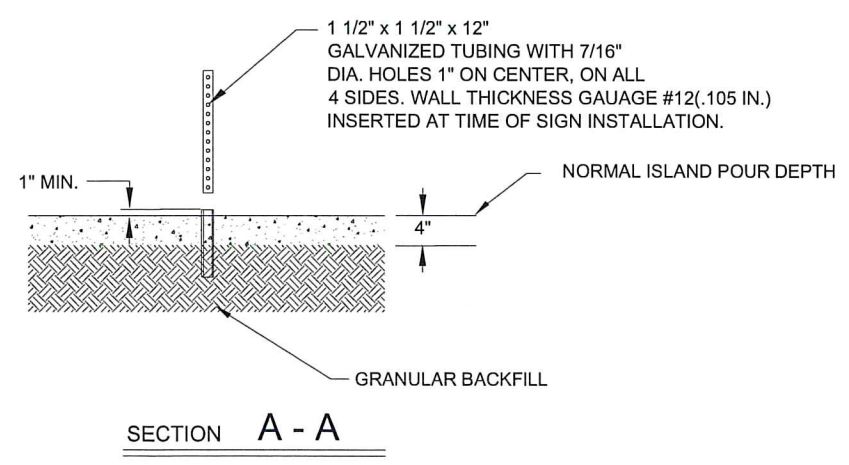
**SIGNING & STRIPING  
DETAILS**  
 Sheet 27 of 36 Sheets





GROUND POST MOUNT SIGN  
INSTALLATION TYPICAL

ISLAND MOUNT BREAK-AWAY SIGN  
INSTALLATION TYPICAL



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 PRINT NAME: DOUGLAS W. FISCHER  
 SIGNATURE: *[Signature]*  
 DATE: 4/20/18 REG. NO. 20235

DRAWN BY: RLB DATE: 2/2/18  
 DESIGN BY: RLB DATE: 2/2/18  
 CHECKED BY: JR DATE: 2/2/18



ANOKA COUNTY  
HIGHWAY DEPT.

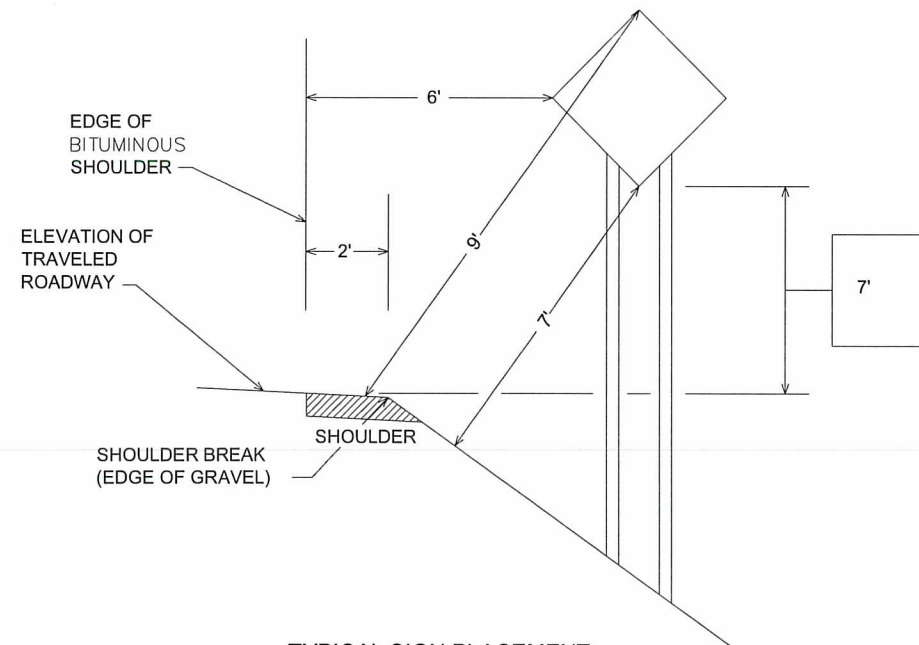
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 STATE AID PROJECT NO. 002-601-051  
 STATE AID PROJECT NO. \_\_\_\_\_  
 COUNTY PROJECT NO. 18-13-01

SIGNING & STRIPING  
DETAILS  
 Sheet 28 of 36 Sheets

NO	DATE	BY	CKD	APPR	REVISION



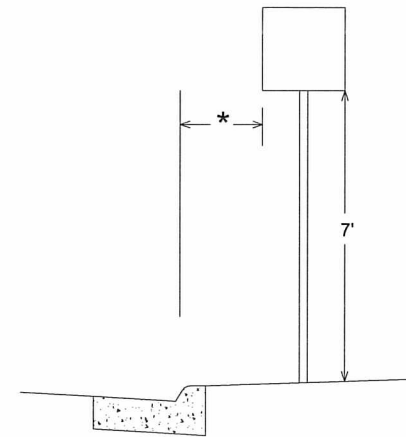
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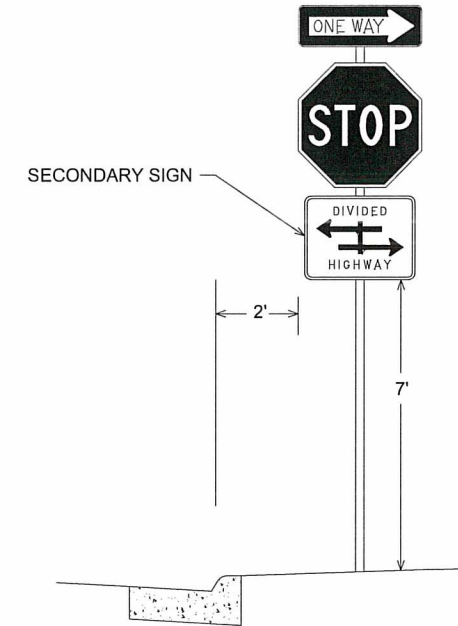
TYPICAL SIGN PLACEMENT

URBAN

\* 2' - NARROW BOULEVARD (< 8' WIDE)  
6' - WIDE BOULEVARD



TYPICAL SIGN PLACEMENT



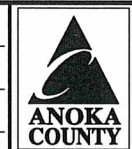
NOTE:

- ALL DIMENSIONS ARE MINIMUMS
- MAINTAIN 2' CLEAR FROM SIGNS TO BITUMINOUS TRAIL

NO	DATE	BY	CKD	APPR	REVISION

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 PRINT NAME: DOUGLAS W. FISCHER  
 SIGNATURE: *[Signature]*  
 DATE: 4/25/18 REG. NO. 20235

DRAWN BY: RLB DATE: 2/2/18  
 DESIGN BY: RLB DATE: 2/2/18  
 CHECKED BY: JR DATE: 2/2/18



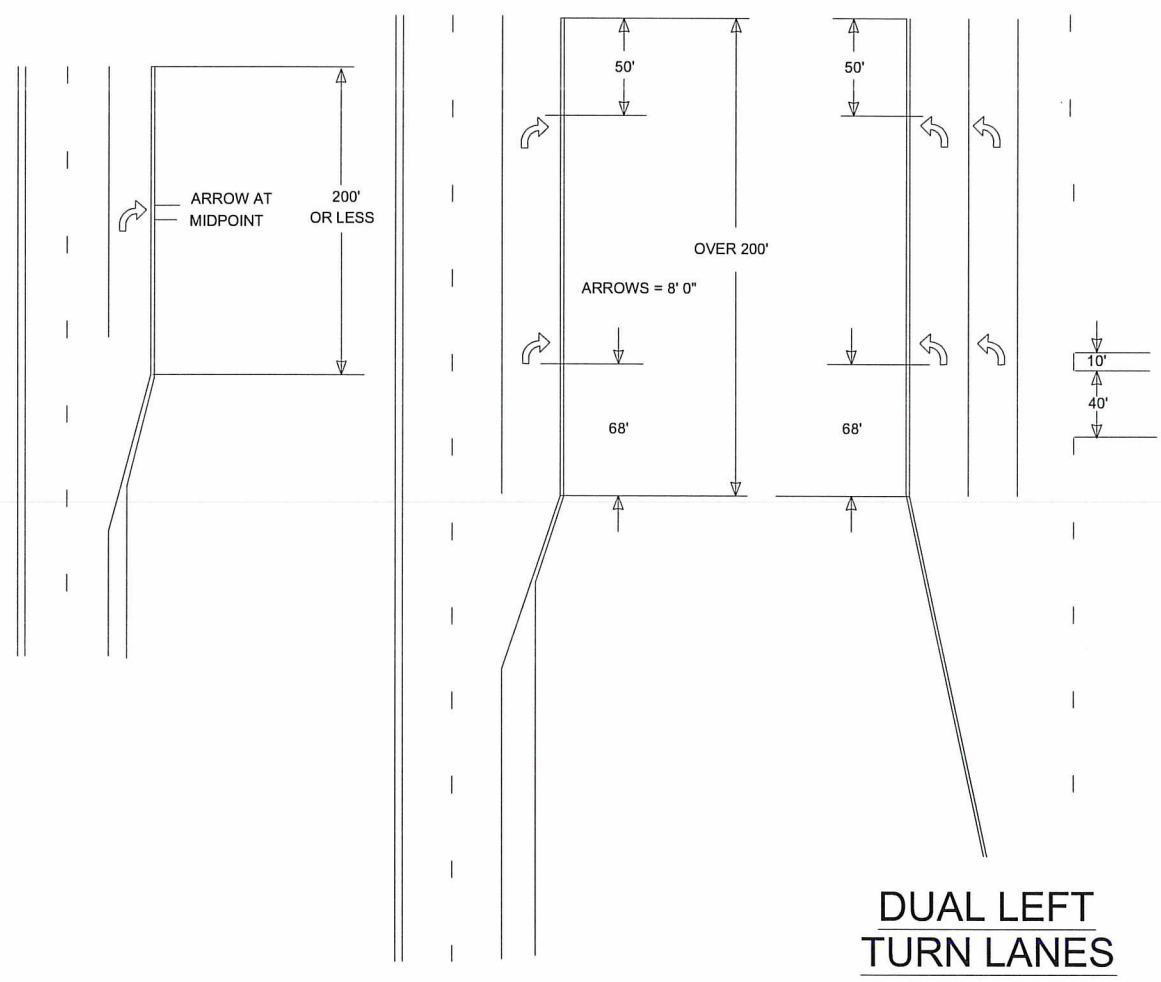
ANOKA COUNTY  
 HIGHWAY DEPT.

STATE PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. 002-601-051  
 STATE AID PROJECT NO. \_\_\_\_\_  
 COUNTY PROJECT NO. 18-13-01

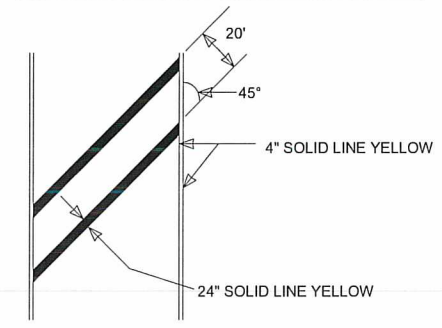
SIGNING & STRIPING  
 DETAILS  
 Sheet 29 of 36 Sheets



**TYPICAL MESSAGE PLACEMENT  
FOR TURN LANES**



**TYPICAL MARKINGS FOR  
LEFT TURN ISLANDS**



NO	DATE	BY	CKD	APPR	REVISION

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: **DOUGLAS W. FISCHER**

SIGNATURE: *[Signature]*

DATE: **4/30/18** REG. NO. 20235

DRAWN BY: RLB DATE: 2/2/18

DESIGN BY: RLB DATE: 2/2/18

CHECKED BY: JR DATE: 2/2/18



**ANOKA COUNTY  
HIGHWAY DEPT.**

STATE PROJECT NO. \_\_\_\_\_

STATE AID PROJECT NO. 002-601-051

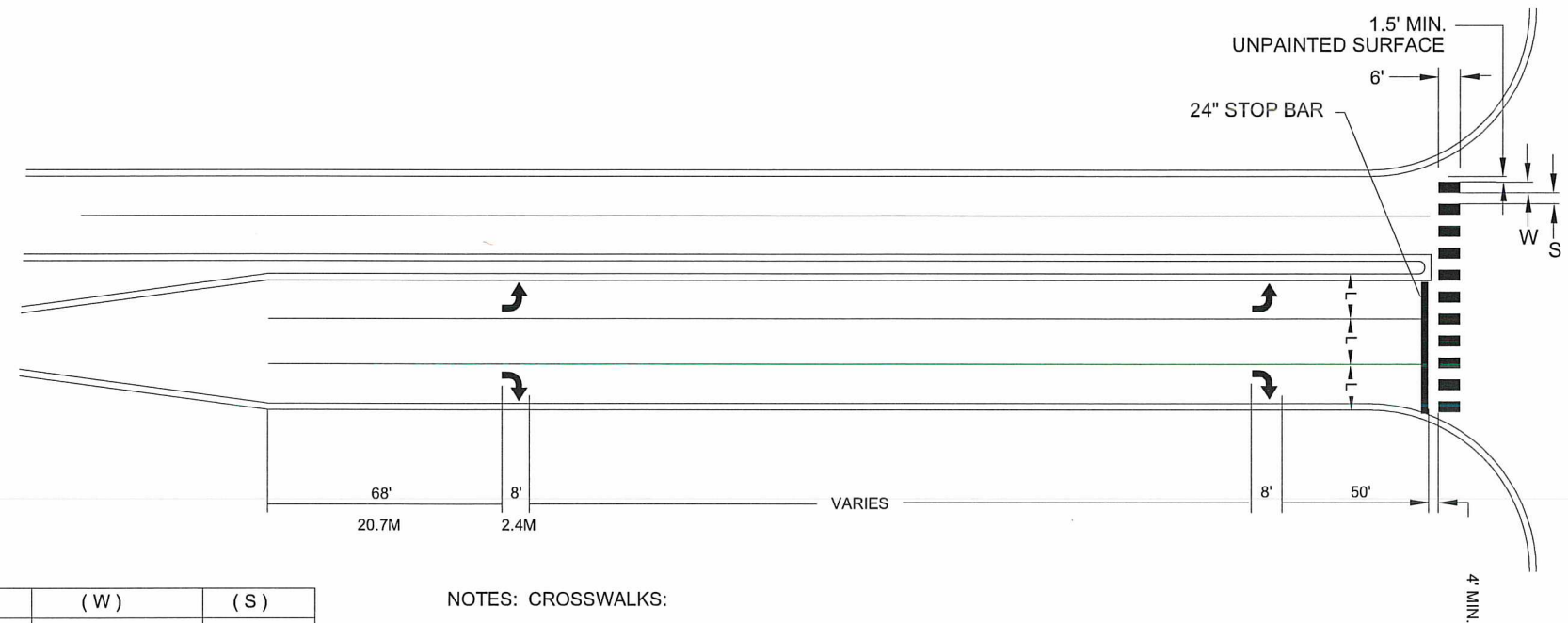
STATE AID PROJECT NO. \_\_\_\_\_

COUNTY PROJECT NO. 18-13-01

**SIGNING & STRIPING  
DETAILS**

Sheet 30 of 36 Sheets

# MARKINGS FOR PEDESTRIAN CROSSWALKS



(L)	(W)	(S)
WIDTH OF INSIDE LANE	WIDTH OF PAINTED AREAS	WIDTH OF SPACE
9'	2.0'	2.5'
10'	2.5'	2.5'
11'	2.5'	3.0'
12'	3.0'	3.0'
13'	3.0'	3.5'

**NOTES: CROSSWALKS:**

- 1.) PAINTED AREAS ARE TO BE CENTERED ON CENTER AND LANE LINES, EVEN IF INTERSECTION IS NOT ALIGNED.
- 2.) LOCATION OF ZEBRA CROSSWALKS AND STOP BARS, SIGNAL LOOPS AND PED RAMPS ARE APPROXIMATE. FINAL LOCATIONS ARE TO BE DETERMINED AND FIELD VERIFIED DURING CONSTRUCTION BY THE FIELD ENGR.
- 3.) ZEBRA CROSSWALKS ARE TO BE PARALLEL TO THE DRIVING LANE OR LANES. EVEN IF THE STREET IS ON AN ANGLE TO THE INTERSECTION.
- 4.) A MIN. OF 1.5' (450mm) CLEAR DISTANCE MUST BE LEFT ADJACENT TO THE CURB. IF LAST PAINTED AREA FALLS INTO THIS AREA, IT MUST BE OMITTED.
- 5.) ON TWO LANE STREETS, USE SPACING SHOWN FOR AN 11' (3.3mm) INSIDE LANE.

NO	DATE	BY	CKD	APPR	REVISION

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: **DOUGLAS W. FISCHER**  
 SIGNATURE: *[Signature]*  
 DATE: **2/2/18** REG. NO. **20235**

DRAWN BY: **RLB** DATE: **2/2/18**  
 DESIGN BY: **RLB** DATE: **2/2/18**  
 CHECKED BY: **JR** DATE: **2/2/18**



**ANOKA COUNTY  
HIGHWAY DEPT.**

STATE PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. **002-601-051**  
 STATE AID PROJECT NO. \_\_\_\_\_  
 COUNTY PROJECT NO. **18-13-01**

**SIGNING & STRIPING  
DETAILS**

Sheet **31** of **36** Sheets



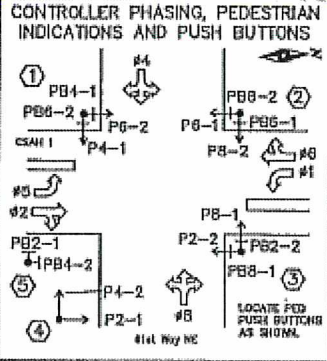
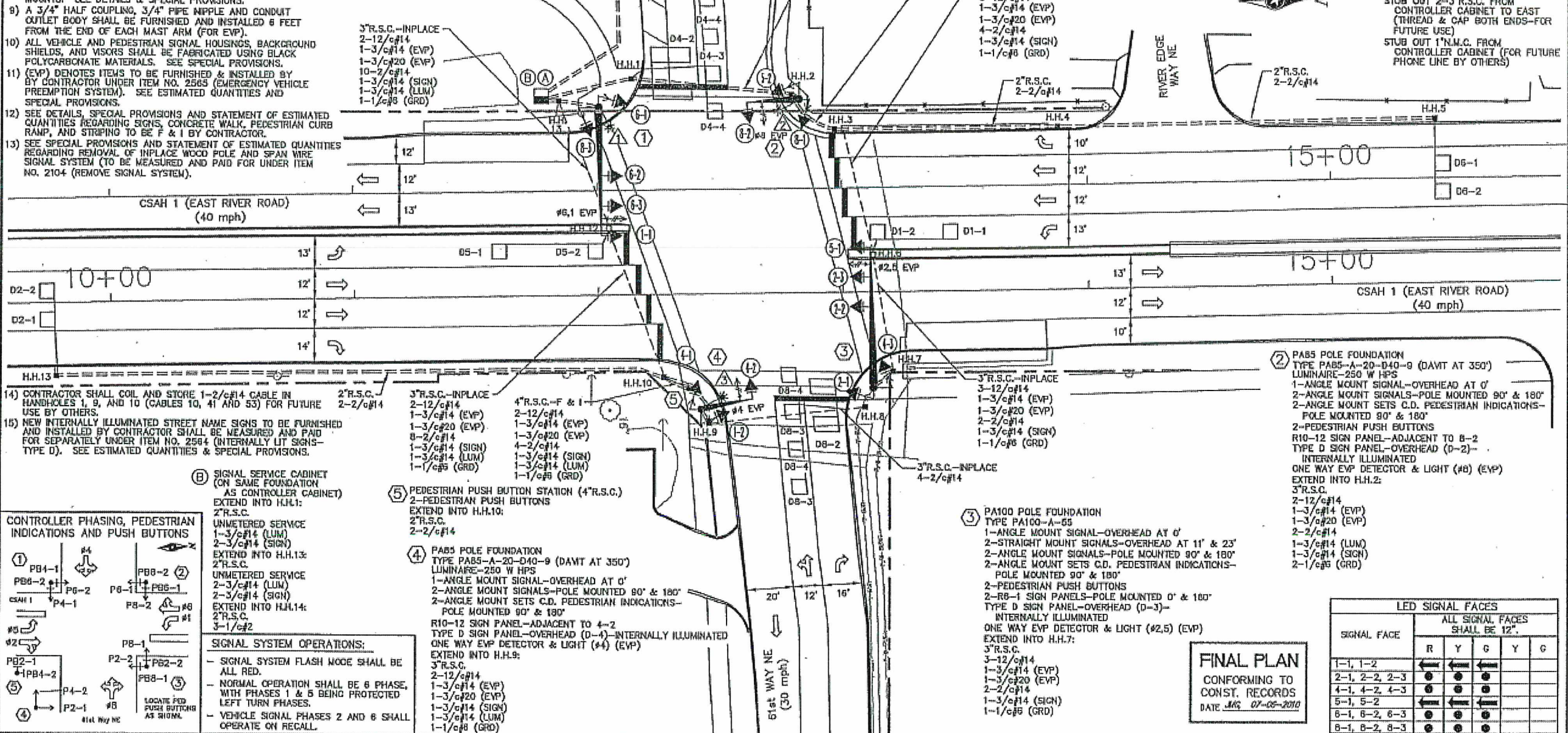
FOR REFERENCE PURPOSES ONLY

- NOTES:**
- 1) LOCATION OF FOUNDATIONS, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
  - 2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
  - 3) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" N.M.C. SEE SPECIAL PROVISIONS.
  - 4) NEW HANDHOLES 1, 2, 4, 5, 11, 14 AND 15 SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS. INPLACE CONCRETE HANDHOLES 8 AND 12 SHALL BE REUSED INPLACE, BUT SHALL HAVE CONCRETE COVERS REMOVED AND REPLACED WITH NEW METAL FRAMES AND COVERS, WITH THESE HANDHOLES BEING ADJUSTED TO BE FLUSH WITH SURROUNDING GRADE. INPLACE CONCRETE HANDHOLES 3, 7, 8, 9, 10, AND 13 SHALL BE REMOVED AND REPLACED WITH NEW PVC HANDHOLES WITH METAL FRAMES AND COVERS IN THEIR PRESENT LOCATION (ADJUST HEIGHT AS REQUIRED). SEE SPECIAL PROVISIONS.
  - 5) EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELD.
  - 6) EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION "FILLED" COUNTERDOWN TIMER "HAND/WALKING PERSON" INDICATION.
  - 7) ALL VEHICLE SIGNAL INDICATIONS AND ALL PEDESTRIAN SIGNAL INDICATIONS SHALL BE LED.
  - 8) ALL MAST ARM POLE MOUNTED VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL BE MOUNTED USING ONE-WAY SIGNAL HEAD MOUNTS. SEE DETAILS & SPECIAL PROVISIONS.
  - 9) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED 6 FEET FROM THE END OF EACH MAST ARM (FOR EVP).
  - 10) ALL VEHICLE AND PEDESTRIAN SIGNAL HOUSINGS, BACKGROUND SHIELDS, AND VISORS SHALL BE FABRICATED USING BLACK POLYCARBONATE MATERIALS. SEE SPECIAL PROVISIONS.
  - 11) (EVP) DENOTES ITEMS TO BE FURNISHED & INSTALLED BY CONTRACTOR UNDER ITEM NO. 2565 (EMERGENCY VEHICLE PREEMPTION SYSTEM). SEE ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
  - 12) SEE DETAILS, SPECIAL PROVISIONS AND STATEMENT OF ESTIMATED QUANTITIES REGARDING SIGNS, CONCRETE WALK, PEDESTRIAN CURB RAMP, AND STRIPING TO BE F & I BY CONTRACTOR.
  - 13) SEE SPECIAL PROVISIONS AND STATEMENT OF ESTIMATED QUANTITIES REGARDING REMOVAL OF INPLACE WOOD POLE AND SPAN WIRE SIGNAL SYSTEM (TO BE MEASURED AND PAID FOR UNDER ITEM NO. 2104 (REMOVE SIGNAL SYSTEM)).

N.M.C. LOOP DETECTORS			
NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	6x6	35'	1
D1-2	6x6	5'	1
D2-1	6x6	250'	1
D2-2	6x6	250'	1
D4-2	2-6x16	0' & 10'	7
D4-3	2-6x6	0' & 30'	7
D4-4	2-6x6	-5' & 15'	7
D5-1	6x6	50'	1
D5-2	6x6	10'	1
D6-1	6x6	10'	1
D6-2	6x6	250'	1
D8-2	2-6x10	0' & 10'	7
D8-3	2-6x6	0' & 30'	7
D8-4	2-6x6	-5' & 15'	7

- LOOP DETECTORS FUNCTIONS:**
- 1) CALL AND EXTEND
  - 3) EXTEND ONLY
  - 7) DELAYED CALL, IMMEDIATE EXTEND
  - 5) CARRY OVER (STRETCH)

NOTE: LOCATION=DISTANCE FROM STOP BAR TO FRONT OF LOOP DETECTOR.



**SIGNAL SYSTEM OPERATIONS:**

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 6 PHASE, WITH PHASES 1 & 5 BEING PROTECTED LEFT TURN PHASES.
- VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.

**FINAL PLAN**  
CONFORMING TO  
CONST. RECORDS  
DATE JUN 07-08-2018

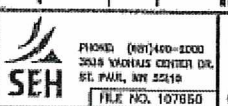
SIGNAL FACE	ALL SIGNAL FACES SHALL BE 12"				
	R	Y	G	Y	G
1-1, 1-2	●	●	●		
2-1, 2-2, 2-3	●	●	●		
4-1, 4-2, 4-3	●	●	●		
5-1, 5-2	●	●	●		
6-1, 6-2, 6-3	●	●	●		
8-1, 8-2, 8-3	●	●	●		

DESIGN TEAM	NO.	BY	DATE
DRAWN BY: <u>JMG</u>			
DESIGNER: <u>JMG</u>			
CHECKED BY: <u>JMG</u>			

REVISIONS

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Certified by: JMG Lic. No. 22457  
Printed Name: JOHN H. GRAY Date: 04/20/2018



ANOKA COUNTY, MN.  
C.S.A.H. 1 (EAST RIVER ROAD)  
S.P. 02-501-44 & 127-020-025

**TRAFFIC SIGNAL SYSTEM INTERSECTION LAYOUT**  
CSAH 1 AT 61ST WAY NE

SHEET 21 OF 25

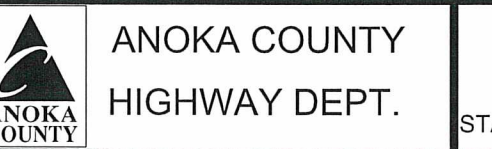
NO	DATE	BY	CKD	APPR	REVISION	04/20/2018	9:37:13 AM

NAME: P:\18-01-00\CSAH\_01\_(CharlesSt-RickardRd)\Base\PROPOSED\PROPOSED.dgn

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: JOSEPH J. MACPHERSON  
SIGNATURE: [Signature]  
DATE: 4-30-18 LICENSE NO. 46732

DRAWN BY: SRK DATE: 04/20/2018  
DESIGN BY: SRK DATE: 04/20/2018  
CHECKED BY: XXX DATE: 04/20/2018



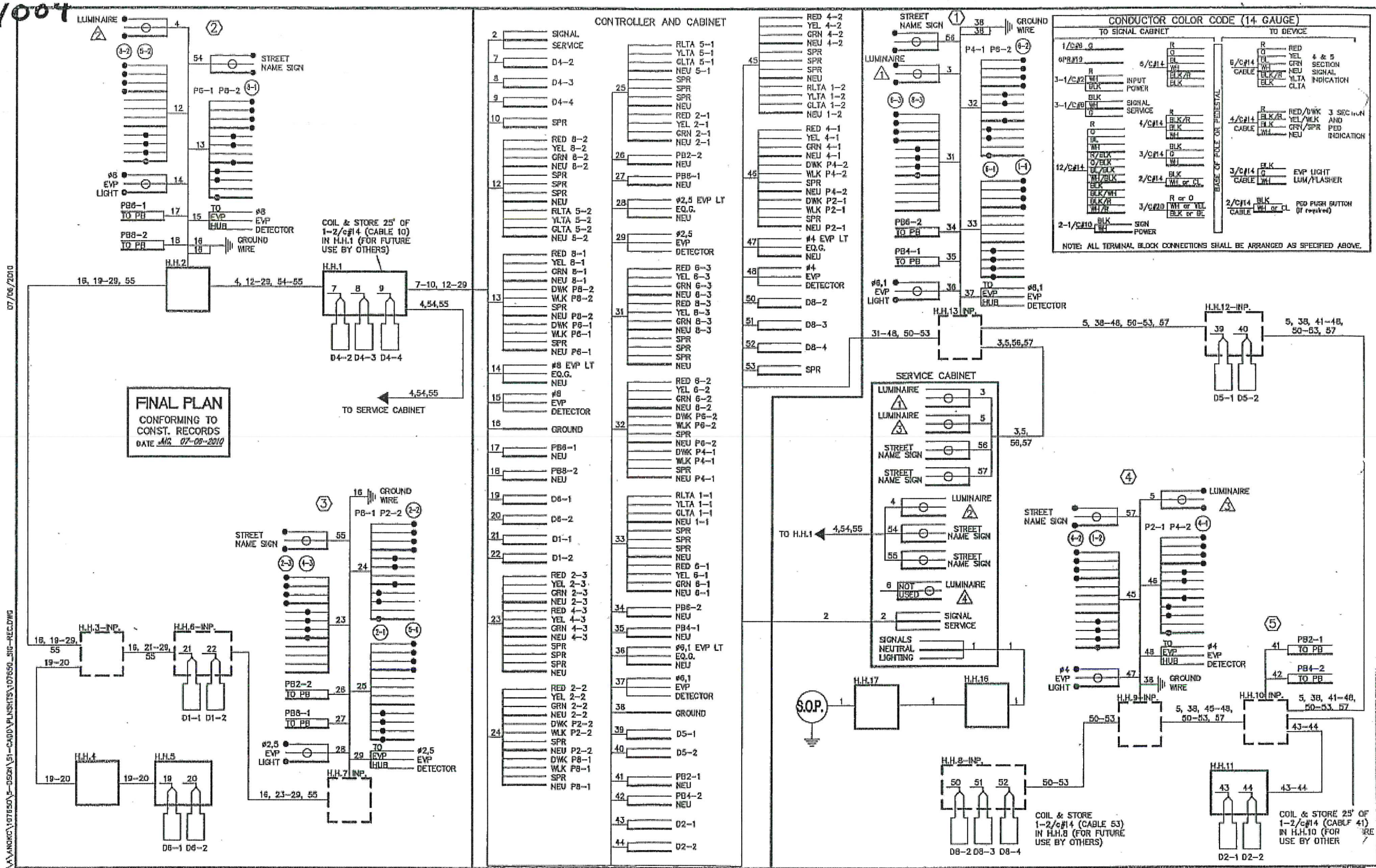
STATE AID PROJECT 002-601-051

ORIGINAL SIGNAL PLANS  
Sheet 32 of 36 Sheets



FOR REFERENCE PURPOSES ONLY

1004



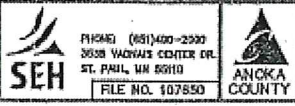
07/06/2010

S:\E\A\ANDR\107650\5-350k\91-CAD\PLNS\TS\107650\_SIG-REC.DWG

DESIGN TEAM	NO.	BY	DATE	REVISIONS
JMG	1	JMG	07/06/10	RECORD DRAWING

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Certified By: *Joseph J. MacPherson* Lic. No. 22457  
 Printed Name: JOSEPH J. MACPHERSON Date: 8/24/2009



ANOKA COUNTY, MN.  
 C.S.A.H. 1 (EAST RIVER ROAD)  
 S.P. 02-001-44 & 127-020-025

TRAFFIC SIGNAL SYSTEM  
 FIELD WIRING DIAGRAM  
 CSAH 1 AT 61ST WAY NE

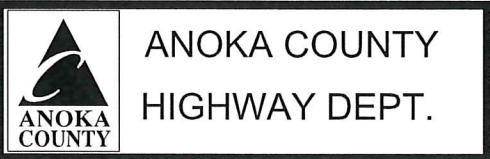
SHEET 22 OF 25

NO	DATE	BY	CKD	APPR	REVISION	04/20/2018	9:37:18 AM
NAME:	P:\118-01-00\CSAH_01_CharlesSt-RickardRd\Base\PROPOSED\PROPOSED.dgn						

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: JOSEPH J. MACPHERSON  
 SIGNATURE: *Joseph J. MacPherson*  
 DATE: 4-20-18 LICENSE NO. 46732

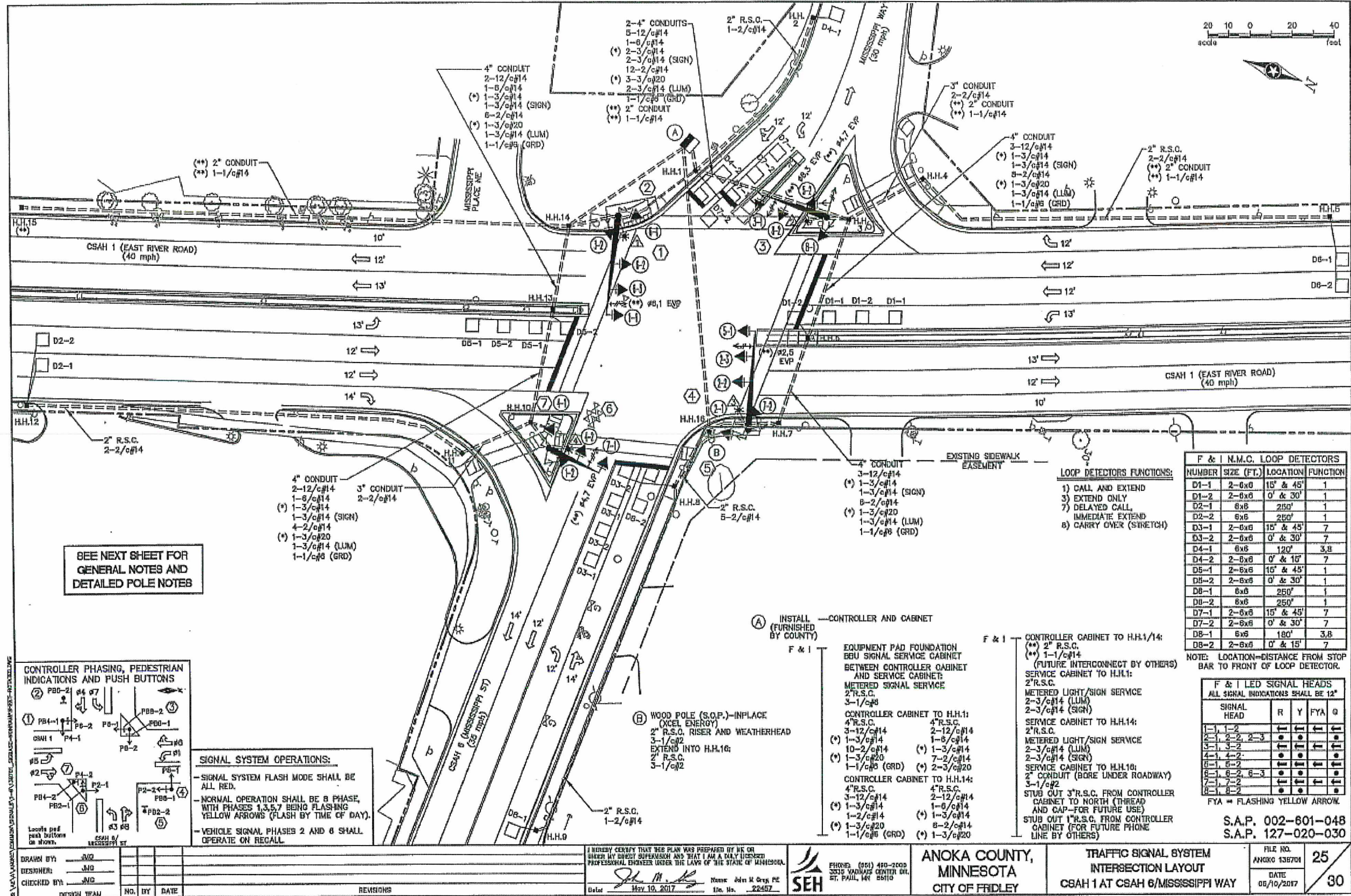
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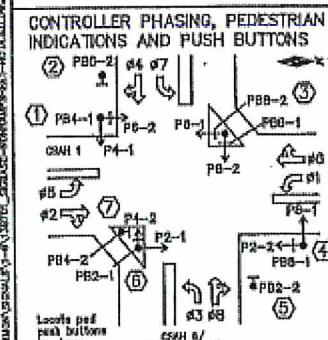
STATE AID PROJECT 002-601-051

ORIGINAL SIGNAL PLANS  
 Sheet 33 of 36 Sheets





SEE NEXT SHEET FOR  
GENERAL NOTES AND  
DETAILED POLE NOTES



**SIGNAL SYSTEM OPERATIONS:**  
- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.  
- NORMAL OPERATION SHALL BE 8 PHASE, WITH PHASES 1,3,5,7 BEING FLASHING YELLOW ARROWS (FLASH BY TIME OF DAY).  
- VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.

**LOOP DETECTORS FUNCTIONS:**  
1) CALL AND EXTEND  
3) EXTEND ONLY  
7) DELAYED CALL, IMMEDIATE EXTEND  
8) CARRY OVER (SKETCH)

F & I N.M.C. LOOP DETECTORS	NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	2-6x6	15' & 45'	1	
D1-2	2-6x6	0' & 30'	1	
D2-1	6x6	250'	1	
D2-2	6x6	250'	1	
D3-1	2-6x6	15' & 45'	7	
D3-2	2-6x6	0' & 30'	7	
D4-1	6x6	120'	3,8	
D4-2	2-6x6	0' & 15'	7	
D5-1	2-6x6	15' & 45'	1	
D5-2	2-6x6	0' & 30'	1	
D6-1	6x6	250'	1	
D6-2	6x6	250'	1	
D7-1	2-6x6	15' & 45'	7	
D7-2	2-6x6	0' & 30'	7	
D8-1	6x6	180'	3,8	
D8-2	2-6x6	0' & 15'	7	

NOTE: LOCATION=DISTANCE FROM STOP BAR TO FRONT OF LOOP DETECTOR.

F & I LED SIGNAL HEADS				
ALL SIGNAL INDICATIONS SHALL BE 12"				
SIGNAL HEAD	R	Y	FYA	Q
1-1, 1-2	●	●	●	●
2-1, 2-2, 2-3	●	●	●	●
3-1, 3-2	●	●	●	●
4-1, 4-2	●	●	●	●
5-1, 5-2	●	●	●	●
6-1, 6-2, 6-3	●	●	●	●
7-1, 7-2	●	●	●	●
8-1, 8-2	●	●	●	●

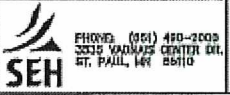
FYA = FLASHING YELLOW ARROW

S.A.P. 002-601-048  
S.A.P. 127-020-030

DRAWN BY: JMD  
DESIGNER: JMD  
CHECKED BY: JMD

REVISIONS	NO.	BY	DATE

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
Date: May 10, 2017  
Name: John M. Gray, PE  
Lic. No.: 22452



ANOKA COUNTY, MINNESOTA  
CITY OF FRIDLEY

TRAFFIC SIGNAL SYSTEM INTERSECTION LAYOUT  
CSAH 1 AT CSAH 6/MISSISSIPPI WAY

FILE NO. ANOKO 135701  
DATE 05/10/2017  
25  
30

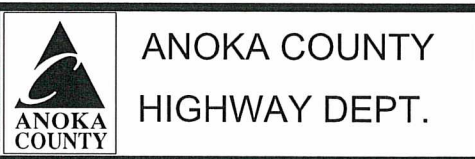
FOR REFERENCE PURPOSES ONLY

NO	DATE	BY	CKD	APPR	REVISION	04/20/2018	9:37:23 AM

NAME: P:\18-01-00\CSAH\_01\_(CharlesSt-RickardRd)\Base\PROPOSED\PROPOSED.dgn

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
PRINT NAME: JOSEPH J. MACPHERSON  
SIGNATURE: [Signature]  
DATE: 4-20-18 LICENSE NO. 46732

DRAWN BY: SRK DATE: 04/20/2018  
DESIGN BY: SRK DATE: 04/20/2018  
CHECKED BY: XXX DATE: 04/20/2018



STATE AID PROJECT 002-601-051

ORIGINAL SIGNAL PLANS  
Sheet 34 of 36 Sheets



NOTES:

- 1) LOCATION OF FOUNDATIONS, LOOP DETECTORS, AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
- 3) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS. SEE SPECIAL PROVISIONS.
- 4) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE & CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED 6 FEET FROM END OF EACH MAST ARM (FOR EVP).
- 5) THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE POWER COMPANY TO ARRANGE FOR THE POWER CONNECTION (XCEL ENERGY). SEE SPECIAL PROVISIONS.
- 6) EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION LED FILLED COUNTDOWN TIMER "HAND/WALKING PERSON" INDICATION.
- 7) EACH SIGNAL FACE SHALL HAVE A BACKGROUND SHIELD.
- 8) SEE DETAILS, SPECIAL PROVISIONS & STATEMENT OF ESTIMATED QUANTITIES REGARDING BATTERY BACK-UP SIGNAL SERVICE CABINET TO BE FURNISHED AND INSTALLED BY CONTRACTOR (SEPARATE FROM ITEM NO. 2585 FOR THIS SIGNAL SYSTEM).
- 9) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" N.M.C. SEE SPECIAL PROVISIONS.
- 10) (\*) DENOTES ITEMS TO BE INCLUDED AS PART OF THE PAY ITEM FOR ITEM NO. 2585 (EMERGENCY VEHICLE PREEMPTION SYSTEM). SEE STATEMENT OF ESTIMATED AND SPECIAL PROVISIONS.
- 11) ALL ITEMS OF THE COMPLETE SIGNAL AND EVP SYSTEM SHALL BE CONTRACTOR FURNISHED AND INSTALLED UNLESS SPECIFICALLY DENOTED OTHERWISE.
- 12) (\*\*) DENOTES ITEMS TO BE INCLUDED AS PART OF SEPARATE PAY ITEMS FOR CONDUIT AND HANDHOLES TO BE FURNISHED AND INSTALLED BY CONTRACTOR (FOR FUTURE INTERCONNECT SYSTEM). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
- 13) SEE SPECIAL PROVISIONS AND STATEMENT OF ESTIMATED QUANTITIES REGARDING REMOVAL AND SALVAGING OF INPLACE SIGNAL SYSTEM (TO BE MEASURED AND PAID FOR SEPARATELY FROM "TRAFFIC CONTRL SIGNAL SYSTEM" PAY ITEM).
- 14) CONTRACTOR SHALL MAINTAIN OPERATION OF A TRAFFIC SIGNAL SYSTEM AT THIS INTERSECTION AT ALL TIMES, UNLESS OTHERWISE APPROVED BY COUNTY FOR SIGNAL SYSTEM TO BE TURNED OFF FOR CHANGEOVERS BETWEEN SIGNAL SYSTEMS. SEE SPECIAL PROVISIONS, TEMPORARY SIGNAL PLANS, AND STATEMENT OF ESTIMATED QUANTITIES REGARDING TEMPORARY SIGNAL OPERATION.
- 15) SEPARATE BID ITEMS ARE LISTED FOR MAST ARM MOUNTED STREET NAME SIGNS TO BE PROVIDED AND INSTALLED BY CONTRACTOR. "BASE BID" INCLUDES PAY ITEM FOR PROVIDING AND INSTALLING TYPE D SIGN PANELS AND ALL REQUIRED MOUNTING HARDWARE UNDER ITEM NO. 2584 (SIGN PANELS TYPE D SIGNALS). "ADD ALTERNATE BID" INCLUDES PAY ITEM FOR PROVIDING AND INSTALLING INTERNALLY ILLUMINATED SIGNS (INCLUDING SIGNS, HOUSINGS, BRACKETING, CABLES AND CONDUCTORS, AND ALL OTHER COMPONENTS NECESSARY FOR OPERATION OF THESE SIGNS) UNDER ITEM NO. 2584 (INTERNALLY ILLUMINATED SIGN). SHOULD "ADD ALTERNATE BID" BE ACCEPTED BY COUNTY AND CITY, THE BID ITEM FOR SIGN PANELS TYPE D SIGNALS WILL BE DELETED FROM THE CONTRACT. SEE SPECIAL PROVISIONS AND STATEMENT OF ESTIMATED QUANTITIES.
- 16) (SIGN) DENOTES MATERIALS AND ELECTRICAL EQUIPMENT INCLUDED AS PART OF INTERNALLY ILLUMINATED SIGN PANEL INSTALLATIONS.

① INSTALL (FURNISHED BY COUNTY) TYPE PA100-A-45-D30-8 (DAVIT AT 350 DEG) (\*) ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (#6,1)

F & I PA100 POLE FOUNDATION LUMINAIRE-LED SHOEBOX  
 1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'  
 2-STRAIGHT MOUNT SIGNALS-OVERHEAD AT 11', 23' AND 180 DEG  
 2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90 DEG AND 180 DEG  
 2-ANGLE MOUNT C.D. PED INDICATIONS-POLE MOUNTED 90 DEG AND 180 DEG  
 1-PEDESTRIAN PUSH BUTTON & SIGN (R10-3e)  
 R10-X12 SIGN PANEL-ADJACENT TO 1-1  
 TYPE D SIGN PANEL-OVERHEAD (D-1) (SEE NOTE 15)  
 (\*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)  
 EXTEND INTO H.H.14:  
 3-R.S.C.  
 3-12/c#14  
 (\*) 1-3/c#14  
 1-3/c#14 (SIGN) (SEE NOTE 15)  
 2-2/c#14  
 (\*) 1-3/c#20  
 1-3/c#14 (LUM)  
 1-1/c#8 (GRD)

③ INSTALL (FURNISHED BY COUNTY) TYPE PA90-A-30-D30-0 (DAVIT AT 350 DEG) (\*) ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (#8,3) (\*) ONE WAY EVP DETECTOR (#4,7)

F & I PA90 POLE FOUNDATION LUMINAIRE-LED SHOEBOX  
 1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'  
 1-STRAIGHT MOUNT SIGNAL-OVERHEAD AT 11'  
 2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90 DEG AND 180 DEG  
 2-ANGLE MOUNT C.D. PED INDICATIONS-POLE MOUNTED 90 DEG AND 180 DEG  
 2-PEDESTRIAN PUSH BUTTONS & SIGNS (R10-3e)  
 R10-X12 SIGN PANEL-ADJACENT TO 3-1  
 TYPE D SIGN PANEL-OVERHEAD (D-2) (SEE NOTE 15)  
 (\*) ONE WAY EVP MAST ARM MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)  
 (\*) ONE WAY EVP POLE MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AT 90 DEG)  
 EXTEND INTO H.H.3:  
 3-R.S.C.  
 2-12/c#14  
 1-8/c#14  
 (\*) 1-3/c#14  
 1-3/c#14 (SIGN) (SEE NOTE 15)  
 2-2/c#14  
 (\*) 2-3/c#20  
 1-3/c#14 (LUM)  
 1-1/c#8 (GRD)

④ INSTALL (FURNISHED BY COUNTY) TYPE PA100-A-45-D30-8 (DAVIT AT 350 DEG) (\*) ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (#2,5)

F & I PA100 POLE FOUNDATION LUMINAIRE-LED SHOEBOX  
 1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'  
 2-STRAIGHT MOUNT SIGNALS-OVERHEAD AT 11', 23' AND 180 DEG  
 2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90 DEG AND 180 DEG  
 2-ANGLE MOUNT C.D. PED INDICATIONS-POLE MOUNTED 90 DEG AND 180 DEG  
 1-PEDESTRIAN PUSH BUTTON & SIGN (R10-3e)  
 R10-X12 SIGN PANEL-ADJACENT TO 5-1  
 TYPE D SIGN PANEL-OVERHEAD (D-3) (SEE NOTE 15)  
 (\*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)  
 EXTEND INTO H.H.7:  
 3-R.S.C.  
 3-12/c#14  
 (\*) 1-3/c#14  
 1-3/c#14 (SIGN) (SEE NOTE 15)  
 1-2/c#14  
 (\*) 1-3/c#20  
 1-3/c#14 (LUM)  
 1-1/c#8 (GRD)

⑥ INSTALL (FURNISHED BY COUNTY) TYPE PA90-A-25-D30-8 (DAVIT AT 350 DEG) (\*) ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (#4,7)

F & I PA90 POLE FOUNDATION LUMINAIRE-LED SHOEBOX  
 1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'  
 1-STRAIGHT MOUNT SIGNAL-OVERHEAD AT 11'  
 2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90 DEG AND 180 DEG  
 2-ANGLE MOUNT C.D. PED INDICATIONS-POLE MOUNTED 90 DEG AND 180 DEG  
 1-PEDESTRIAN PUSH BUTTON & SIGN (R10-3e)  
 R10-X12 SIGN PANEL-ADJACENT TO 7-1  
 TYPE D SIGN PANEL-OVERHEAD (D-4) (SEE NOTE 15)  
 (\*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)  
 EXTEND INTO H.H.10:  
 3-R.S.C.  
 2-12/c#14  
 1-8/c#14  
 (\*) 1-3/c#14  
 1-3/c#14 (SIGN) (SEE NOTE 15)  
 2-2/c#14  
 (\*) 1-3/c#20  
 1-3/c#14 (LUM)  
 1-1/c#8 (GRD)

② F & I PEDESTRIAN PUSH BUTTON STATION (SEE DETAILS) 1-PEDESTRIAN PUSH BUTTON & SIGN (R10-3e) EXTEND INTO H.H.1: 1-R.S.C. 1-2/c#14

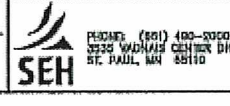
⑤ F & I PEDESTRIAN PUSH BUTTON STATION (SEE DETAILS) 1-PEDESTRIAN PUSH BUTTON & SIGN (R10-3e) EXTEND INTO H.H.8: 1-R.S.C. 1-2/c#14

⑦ F & I PEDESTRIAN PUSH BUTTON STATION (SEE DETAILS) 1-PEDESTRIAN PUSH BUTTON & SIGN (R10-3e) EXTEND INTO H.H.10: 1-R.S.C. 1-2/c#14

S.A.P. 002-601-048  
 S.A.P. 127-020-030

DRAWN BY: JMG	NO.	BY	DATE
DESIGNED BY: JMG			
CHECKED BY: JMG			
DERON BRAH			

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 Date: May 10, 2017 License No. 22457



ANOKA COUNTY, MINNESOTA  
 CITY OF FRIDLEY

TRAFFIC SIGNAL SYSTEM POLE AND GENERAL NOTES  
 CSAH 1 AT CSAH 6/MISSISSIPPI WAY

FILE NO. ANOKA 138701	26
DATE: 08/10/2017	30

FOR REFERENCE PURPOSES ONLY

NO	DATE	BY	CKD	APPR	REVISION	04/20/2018	9:37:29 AM
NAME: P:\18-01-00\CSAH_01_(CharlesSt-RickardRd)\Base\PROPOSED\PROPOSED.dgn							

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 PRINT NAME: JOSEPH J. MACPHERSON  
 SIGNATURE: [Signature]  
 DATE: 4-20-18 LICENSE NO. 46732

DRAWN BY: SRK DATE: 04/20/2018  
 DESIGN BY: SRK DATE: 04/20/2018  
 CHECKED BY: XXX DATE: 04/20/2018

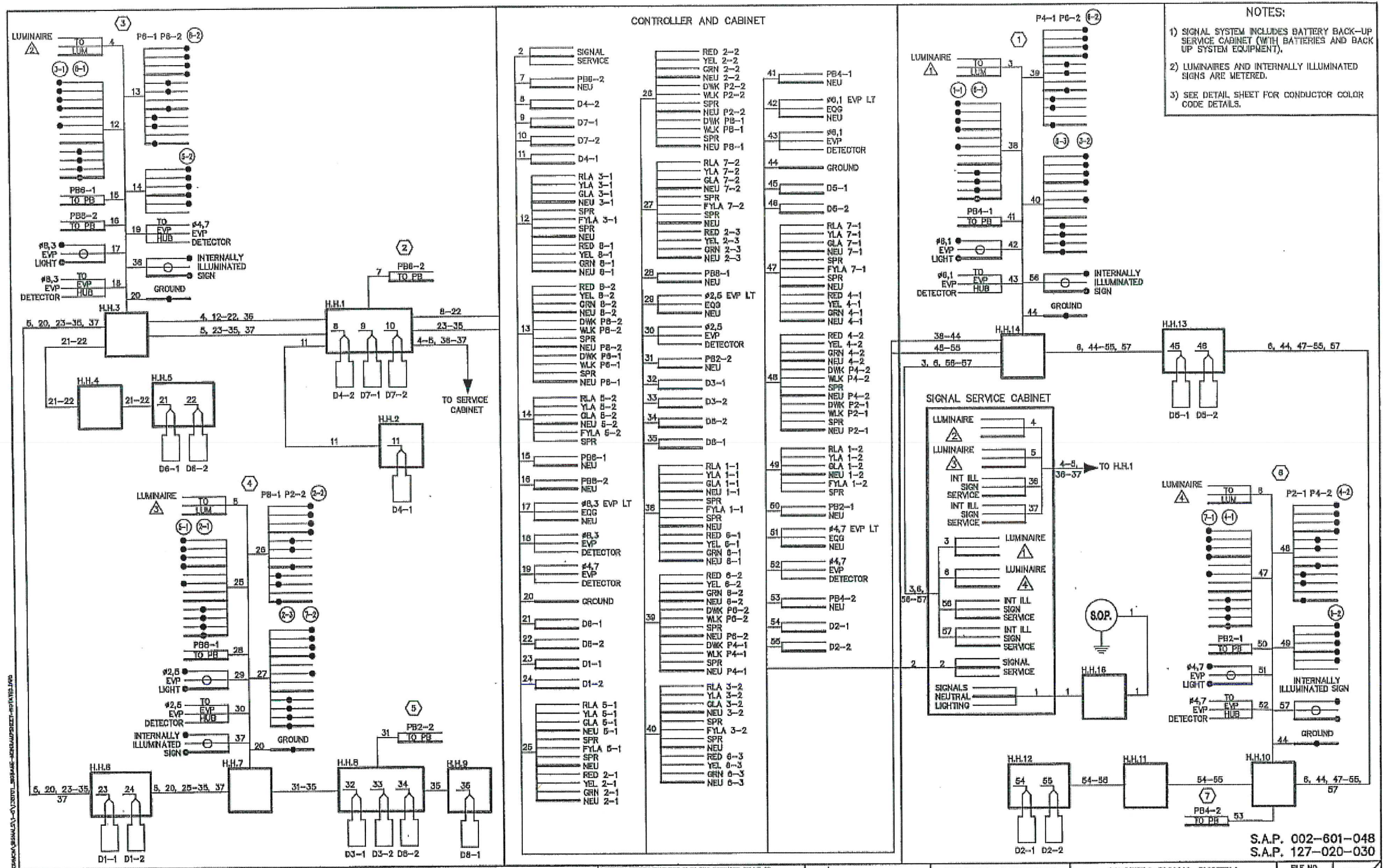
ANOKA COUNTY HIGHWAY DEPT.

STATE AID PROJECT 002-601-051

ORIGINAL SIGNAL PLANS  
 Sheet 35 of 36 Sheets



spoons



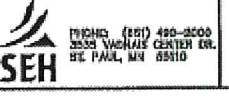
**NOTES:**

- 1) SIGNAL SYSTEM INCLUDES BATTERY BACK-UP SERVICE CABINET (WITH BATTERIES AND BACK UP SYSTEM EQUIPMENT).
- 2) LUMINAIRES AND INTERNALLY ILLUMINATED SIGNS ARE METERED.
- 3) SEE DETAIL SHEET FOR CONDUCTOR COLOR CODE DETAILS.

DRAWN BY	JWD				
DESIGNED BY	JWD				
CHECKED BY	JWD				
DESIGN TEAM	NO.	BY	DATE	REVISIONS	

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Signature: *Joseph J. MacPherson*  
 Name: Joseph J. MacPherson PE  
 Date: May 10, 2017  
 License No.: 22457



**ANOKA COUNTY, MINNESOTA**  
**CITY OF FRIDLEY**

**TRAFFIC SIGNAL SYSTEM**  
**FIELD WIRING DIAGRAM**  
**CSAH 1 AT CSAH 6/MISSISSIPPI WAY**

FILE NO. ANCKC 138701  
 DATE 05/10/2017  
 27  
 30

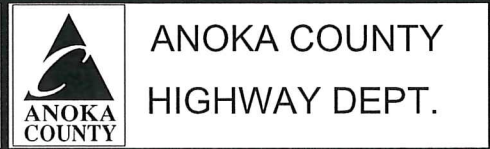
FOR REFERENCE PURPOSES ONLY

NO	DATE	BY	CKD	APPR	REVISION	04/20/2018	9:37:34 AM
NAME: P:\18-01-00\CSAH_01_(CharlesSt-RickardRd)\Base\PROPOSED\PROPOSED.dgn							

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: JOSEPH J. MACPHERSON  
 SIGNATURE: *Joseph J. MacPherson*  
 DATE: 4-20-18  
 LICENSE NO.: 46732

DRAWN BY: SRK DATE: 04/20/2018  
 DESIGN BY: SRK DATE: 04/20/2018  
 CHECKED BY: XXX DATE: 04/20/2018



STATE AID PROJECT 002-601-051

ORIGINAL SIGNAL PLANS  
 Sheet 36 of 36 Sheets