

MINNESOTA DEPARTMENT OF TRANSPORTATION

ANOKA COUNTY

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

LOCATED ON CSAH 1 BETWEEN 50' SOUTH OF KIMBALL ST NE AND 300' SOUTH OF 610 EXIT RAMP

	<u>CSAH 1</u>	
GROSS LENGTH	6690.00 FEET	1.267 MILES
EXCEPTIONS-LENGTH	0.00 FEET	0.000 MILES
NET LENGTH	6690.00 FEET	1.267 MILES

END SAP 002-601-049
 CSAH 1, LNB STA: 77+90.00
 CSAH 1, LSB STA: 177+90.00



BEGIN SAP 002-601-049
 CSAH 1, LNB STA: 11+00.00
 CSAH 1, LSB STA: 111+00.00

PROJECT LOCATION



DESIGN DESIGNATION (CSAH 01)			
ESAL 20	1,445,997	FUNCTIONAL CLASSIFICATION	A MINOR ARTERIAL
R VALUE	65	NO. OF TRAFFIC LANES	4
ADT (2014)	13600	NO. OF PARKING LANES	0
PROJ. ADT (2034)	13600	DESIGN SPEED	50 MPH
PROJ. HCADT (2034)	802	STOPPING SIGHT DISTANCE BASED ON:	
SOIL FACTOR	NA	HEIGHT OF EYE	3.5'
		HEIGHT OF OBJECT	2.0'
		DESIGN SPEED NOT ACHIEVED AT:	
		STA. _____ TO STA. _____	MPH _____

CITY OF COON RAPIDS
 ANOKA COUNTY
 MN/DOT TRANSPORTATION DISTRICT - METRO
 SECTIONS 3 & 36
 TOWNSHIP 31 NORTH
 RANGE 24 WEST

GOVERNING SPECIFICATIONS
 THE 2016 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.
 ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

THIS PLAN CONTAINS 34 SHEETS

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20-23	DRIVEWAY AND SIDEWALK DETAILS
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25-27	TEMPORARY SIGNING, PERMANENT SIGNING, AND STRIPING
28	TRAFFIC CONTROL QUANTITY
29-30	SIGNING AND STRIPING DETAILS
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Approved 4/7/17
 CITY OF COON RAPIDS ENGINEER

Approved 4/5/17
 CITY OF FRIDLEY ENGINEER

Approved 3/23/17
 ANOKA COUNTY ENGINEER

DATE 4/10/17
 DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY

DATE 4/10/17
 STATE AID ENGINEER: APPROVED FOR STATE AID FUNDING

NO	DATE	BY	CKD	APPR	REVISION	

NAME: P:\17-01-00\CSAH_01_(FRIDLEY_CL-1200\No90th)\Basa\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: MATTHEW J. JOHN
 SIGNATURE:
 DATE: 3/21/2017 LICENSE NO. 51639

DRAWN BY: SRK DATE: 02/24/2017
 DESIGN BY: SRK DATE: 02/24/2017
 CHECKED BY: MJJ DATE: 03/07/2017

ANOKA COUNTY
HIGHWAY DEPT.

STATE AID PROJECT 002-601-049

TITLE SHEET
 Sheet 1 of 34 Sheets

STATEMENT OF ESTIMATED QUANTITIES

ITEM NUMBER	ITEM DESCRIPTION	NOTES	UNIT	TOTAL PROJECT QUANTITIES ESTIMATED
2021.501	MOBILIZATION		LUMP SUM	1
2104.501	REMOVE CURB & GUTTER	1,2	LIN FT	2690
2104.503	REMOVE CONCRETE WALK	2	SQ FT	4829
2104.503	REMOVE CONCRETE MEDIAN	2	SQ FT	9450
2104.505	REMOVE BITUMINOUS PAVEMENT	1	SQ YD	808
2104.509	REMOVE CASTING	2	EACH	103
2104.509	REMOVE DRAINAGE STRUCTURE	2	EACH	1
2104.511	SAWING CONCRETE PAVEMENT (FULL DEPTH)	2	LIN FT	960
2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	1,2	LIN FT	3998
2104.523	SALVAGE SIGN	4	EACH	22
2211.501	AGGREGATE BASE CLASS 5	5,6	TON	148
2232.501	MILL BITUMINOUS SURFACE (2.0")	7	SQ YD	56169
2232.604	MILL BITUMINOUS PAVEMENT (SPECIAL)	8	SQ YD	2046
2357.502	BITUMINOUS MATERIAL FOR TACK COAT		GALLON	2911
2360.501	TYPE SP 12.5 WEARING COURSE MIXTURE (3,B)	9	TON	259
2360.501	TYPE SP 12.5 WEARING COURSE MIXTURE (4,C)		TON	6459
2360.505	TYPE SP 12.5 BIT MIXTURE FOR PATCHING	10	TON	190
2504.602	ADJUST GATE VALVE	11	EACH	20
2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN H	12	LIN FT	3.6
2506.503	RECONSTRUCT DRAINAGE STRUCTURE	12	LIN FT	4.2
2506.516	CASTING ASSEMBLY	13	EACH	103
2506.602	GROUT CATCH BASIN OR MANHOLE	14	EACH	144
2521.501	4" CONCRETE WALK	15	SQ FT	12135
2521.501	6" CONCRETE WALK		SQ FT	4340
2531.501	CONCRETE CURB AND GUTTER DESIGN B612		LIN FT	1516
2531.501	CONCRETE CURB AND GUTTER DESIGN B618	1	LIN FT	1254
2531.618	TRUNCATED DOMES		SQ FT	488
2540.602	MAIL BOX SUPPORT	29	EACH	35
2545.602	ADJUST HANDHOLE	11	EACH	4
2550.602	LOOP DETECTOR DESIGN NMC	17	EACH	30
2563.601	TRAFFIC CONTROL (STAGE 1)	18,19,26	LUMP SUM	1
2563.601	TRAFFIC CONTROL (STAGE 2)	18,19,27	LUMP SUM	1
2563.601	TRAFFIC CONTROL (STAGE 3)	18,19,28	LUMP SUM	1
2563.610	POLICE OFFICER		HOUR	125
2563.613	PORTABLE CHANGEABLE MESSAGE SIGN	20	UNIT DAY	14
2564.602	INSTALL SIGN	4	EACH	22
2565.602	RELOCATE PUSH BUTTON	11	EACH	16
2573.530	STORM DRAIN INLET PROTECTION	21	EACH	31
2574.525	COMMON TOPSOIL BORROW (LV)		CU YD	250
2575.523	EROSION CONTROL BLANKETS CATEGORY 0	22	SQ YD	480
2581.501	REMOVABLE PREFORMED PAVEMENT MARKING TAPE	23	LIN FT	1070
2582.501	PAVEMENT MESSAGE PREFORM THERMOPLASTIC	24, 25	SQ FT	2370
2582.502	4" SOLID LINE EPOXY	24	LIN FT	33745
2582.502	4" BROKEN LINE EPOXY	24	LIN FT	2960

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)

CONSTRUCTION NOTES

1	ITEM INCLUDES CURB REPLACEMENT QUANTITY OF 300 LIN FT 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	NOT USED
4	ITEM USED FOR SIGNS IN MEDIAN REPLACEMENT AREAS.
5	EXCAVATION AND DISPOSAL OF EXISTING GRADING MATERIAL IS INCIDENTAL TO AGGREGATE BASE CLASS 5.
6	ITEM USED FOR NEW CONCRETE WALK.
7	DETAIL MILLING AROUND MANHOLES, CATCH BASINS, GATE VALVES, AND ALONG CURB LINE IS INCIDENTAL TO THIS ITEM.
8	ITEM USED FOR MILLING STREET APPROACHES AND/OR DETAIL MILLING AREAS AS IDENTIFIED IN THE PLAN. DETAIL MILLING AROUND MANHOLES, CATCH BASINS, GATE VALVES, AND ALONG CURB LINE IS INCIDENTAL TO THIS ITEM.
9	STREET APPROACHES SHALL BE PAVED AFTER MAINLINE PAVING BUT BEFORE FINAL STRIPING.
10	ITEM INCLUDES BITUMINOUS PATCHING AROUND NEW CURB, STORM STRUCTURE REPAIRS, AND ANY POTHOLES.
11	ITEM SHALL TO BE ADJUSTED ONLY AS NECESSARY AS DETERMINED BY THE ENGINEER.
12	PAY HEIGHT IS MEASURED FROM INVERT OF OUTLET PIPE TO TOP OF PRECAST CONCRETE STRUCTURE PLUS AN ALLOWANCE OF 0.70 FEET FOR THE DEPTH OF THE CONCRETE BASE, REGARDLESS OF ITS ACTUAL THICKNESS. CONCRETE ADJUSTMENT RINGS ARE INCIDENTAL. CONNECTIONS TO EXISTING STORM SEWER ARE INCIDENTAL.
13	ITEM INCLUDES FULL REPLACEMENT OF CASTING ADJUSTMENT RINGS. SEE STORM TABULATIONS FOR RING HEIGHTS.
14	ITEM INCLUDES GROUTING OF INVERTS, DOGHOUSES, RINGS, AND CASTINGS AS REQUIRED (SEE DRAINAGE TAB, PAGE 3-5).
15	ITEM INCLUDES CONCRETE MEDIAN.
16	CONTRACTOR IS RESPONSIBLE FOR CONTACTING PROPERTY OWNER 48 HOURS BEFORE STARTING OPERATION.
17	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.)
18	CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN TEMPORARY SIGNAGE WHENEVER EXISTING SIGNAGE IS REMOVED. TEMPORARY SIGNAGE SHALL BE INCIDENTAL TO TRAFFIC CONTROL.
19	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 PRESENT.
20	2 MESSAGE BOARDS, ONE ON THE EACH END OF PROJECT, WILL BE INSTALLED 7 DAYS PRIOR TO ANY CONSTRUCTION; REFERENCE STRIPING PLAN FOR DETAILS.
21	ALL DRAINAGE STRUCTURES AFFECTED BY THIS PROJECT MUST HAVE INLET PROTECTION.
22	TYPE 1 FERTILIZER AND TYPE 25-121 SEED ARE INCIDENTAL TO THIS ITEM.
23	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 STRIPING.
24	FINAL STRIPING SHALL BE INSTALLED WITHIN 72 HOURS OF COMPLETION OF MAINLINE WEAR COURSE PAVING.
25	INCLUDES ALL THERMOPLASTIC STOP BARS, GORE AREA HATCHING, CROSSWALKS, LANE DESIGNATION ARROWS, AND PAVEMENT MESSAGES.
26	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.
27	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.
28	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.
29	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.

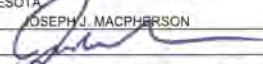
BASIS OF PLANNED QUANTITIES

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
2581	REMOVABLE PREFORM PAVEMENT MARKING TAPE	2' AT 50' INTERVALS

NO	DATE	BY	CHKD	APPR	REVISION
	03/30/2017				

NAME: P:\17-01-00\CSAH_01 (FRIDLEY_CL-1200\90th)\Base\PROPOSED\PROPOSED.dgn 2:01:05 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: 3-30-17 LICENSE NO. 46732

DRAWN BY: SRK DATE: 02/24/2017
 DESIGN BY: SRK DATE: 02/24/2017
 CHECKED BY: MJJ DATE: 03/07/2017



ANOKA COUNTY
HIGHWAY DEPT.

STATE AID PROJECT 002-601-049

STATEMENT OF ESTIMATED QUANTITIES

Sheet 2 of 34 Sheets

m.john

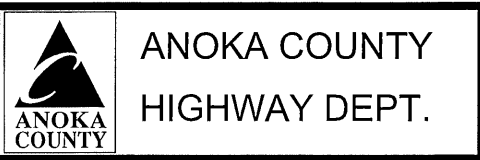
STORM DRAINAGE TAB

NUMBER	TYPE	ACTION	NEW CASTING	FURNISH AND INSTALL CASTING ASSEMBLY	RING HEIGHT	REMOVE DRAINAGE STRUCTURE	GROUT CATCH BASIN OR MANHOLE	DRAINAGE STRUCTURE H	RECONSTRUCT DRAINAGE STRUCTURE	SAWING CONCRETE PAVEMENT (FULL DEPTH)	REMOVE CURB & GUTTER	CONCRETE CURB & GUTTER DESIGN B612	CONCRETE CURB & GUTTER DESIGN B618	SAWING PAVEMENT (FULL DEPTH)	REMOVE BITUMINOUS PAVEMENT	TYPE SP 12.5 BIT MIXTURE FOR PATCHING	NOTES
					LIN FT	EACH	EACH	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	SQ YD	
100	CB	RE-RING	B	1	0.6		1			5	10		10	14	3	1	
101	CB	RE-RING	A	1	1.0		1			4	10	10		14	3	1	
102	CB	GROUT STRUCTURE					1							14	3	1	
103	CB	GROUT STRUCTURE					1							14	3	1	
104	CB	STRUCTURE OK															
105	CB	GROUT STRUCTURE					1										
106	CB	GROUT STRUCTURE					1										
107	CB	RE-RING	A	1	0.4		1			4	10	10		14	3	1	
108	CB	RE-RING	A	1	0.4		1			4	10	10		14	3	1	
109	CB	RE-RING	B	1	0.6		1			5	10		10	14	3	1	
110	CB	RE-RING	B	1	0.6		1			5	10		10	14	3	1	
111	CB	RE-RING	A	1	0.6		1			4	10	10		14	3	1	
112	CB	RE-RING	A	1	0.8		1			4	10	10		14	3	1	
113	CB	GROUT STRUCTURE					1										
114	CB	RE-RING	B	1	0.4		1			5	10		10	14	3	1	
115	CB	RE-RING	A	1	0.6		1			4	10	10		14	3	1	
116	CB	RE-RING	A	1	0.8		1			4	10	10		14	3	1	
118	CB	GROUT STRUCTURE					1										
119	CB	GROUT STRUCTURE					1										
120	CB	GROUT STRUCTURE					1										
121	CB	RECONSTRUCT STRUCTURE	A	1		1		3.6		4	10	10		14	3	1	
122	CB	RE-RING	B	1	0.8		1			5	10		10	14	3	1	
123	CB	RE-RING	A	1	0.6		1			4	10	10		14	3	1	
124	CB	RE-RING	B	1	0.2		1			5	10		10	14	3	1	
125	CB	GROUT STRUCTURE					1										
126	CB	RE-RING	A	1	0.4		1			4	10	10		14	3	1	
127	CB	RE-RING	A	1	0.2		1			4	10	10		14	3	1	
128	CB	GROUT STRUCTURE					1										
129	CB	RE-RING	A	1	0.2		1			4	10	10		14	3	1	
130	CB	GROUT STRUCTURE					1										
131	CB	RE-RING	B	1	0.8		1			5	10		10	14	3	1	
132	CB	RE-RING	A	1	0.8		1			4	10	10		14	3	1	
133	CB	RE-RING	A	1	0.4		1			4	10	10		14	3	1	
134	CB	RE-RING	B	1	0.8		1			5	10		10	14	3	1	
136	CB	RE-RING	B	1	0.6		1			5	10		10	14	3	1	
137	CB	GROUT STRUCTURE					1										
138	CB	GROUT STRUCTURE					1										
139	CB	GROUT STRUCTURE					1										
140	CB	GROUT STRUCTURE					1										
141	CB	GROUT STRUCTURE					1										
142	CB	RE-RING	A	1	0.4		1			4	10	10		14	3	1	
143	CB	RE-RING	A	1	0.4		1			4	10	10		14	3	1	
144	CB	RE-RING	B	1	0.6		1			5	10		10	14	3	1	
145	CB	RE-RING	A	1	0.2		1			4	10	10		14	3	1	
146	CB	GROUT STRUCTURE					1										
147	CB	GROUT STRUCTURE					1										
148	CB	RE-RING	B	1	0.6		1			5	10		10	14	3	1	
149	CB	RE-RING	B	1	0.6		1			5	10		10	14	3	1	
150	CB	RE-RING	A	1	0.2		1			4	10	10		14	3	1	
151	CB	GROUT STRUCTURE					1										
152	CB	GROUT STRUCTURE					1										
153	CB	RE-RING	A	1	0.4		1			4	10	10		14	3	1	

NO	DATE	BY	CKD	APPR	REVISION	03/07/2017	3:21:27 PM
NAME: P:\17-01-00\CSAH_01_(FRIDLEY_CL-1200No90th)\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: MATTHEW J. JOHN
 SIGNATURE: *[Signature]*
 DATE: 3/8/2017 LICENSE NO. 51639

DRAWN BY: SRK DATE: 02/24/2017
 DESIGN BY: SRK DATE: 02/24/2017
 CHECKED BY: MJJ DATE: 03/07/2017



STATE AID PROJECT 002-601-049

TABULATIONS
 Sheet 3 of 34 Sheets

mjohn

STORM DRAINAGE TAB

NUMBER	TYPE	ACTION	NEW CASTING	FURNISH AND INSTALL CASTING ASSEMBLY	RING HEIGHT	REMOVE DRAINAGE STRUCTURE	GROUT CATCH BASIN OR MANHOLE	DRAINAGE STRUCTURE H	RECONSTRUCT DRAINAGE STRUCTURE	SAWING CONCRETE PAVEMENT (FULL DEPTH)	REMOVE CURB & GUTTER	CONCRETE CURB & GUTTER DESIGN B612	CONCRETE CURB & GUTTER DESIGN B618	SAWING PAVEMENT (FULL DEPTH)	REMOVE BITUMINOUS PAVEMENT	TYPE SP 12.5 BIT MIXTURE FOR PATCHING	NOTES
					LIN FT	EACH	EACH	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	SQ YD	TON	
154	CB	RE-RING	A	1	0.4		1			4	10	10		14	3	1	
155	CB	RE-RING	B	1	0.8		1			5	10		10	14	3	1	
156	CB	RE-RING	B	1	0.8		1			5	10		10	14	3	1	
157	CB	RE-RING	A	1	0.8		1			4	10	10		14	3	1	
158	CB	GROUT STRUCTURE					1										
159	CB	RE-RING	B	1	0.6		1			5	10		10	14	3	1	
160	CB	RE-RING	B	1	0.6		1			5	10		10	14	3	1	
161	CB	RE-RING	A	1	0.8		1			4	10	10		14	3	1	
162	CB	RE-RING	A	1	0.4		1			4	10	10		14	3	1	
163	CB	RE-RING	B	1	0.6		1			5	10		10	14	3	1	
164	CB	RE-RING	B	1	0.0		1			5	10		10	14	3	1	
165	CB	RE-RING	A	1	0.2		1			4	10	10		14	3	1	
166	CB	RE-RING	A	1	0.6		1			4	10	10		14	3	1	
167	CB	GROUT STRUCTURE					1										
168	CB	RE-RING	B	1	0.8		1			5	10		10	14	3	1	
169	CB	RE-RING	A	1	0.6		1			4	10	10		14	3	1	
170	CB	RE-RING	A	1	0.8		1			4	10	10		14	3	1	
171	CB	GROUT STRUCTURE					1										
172	CB	GROUT STRUCTURE					1										
173	CB	RE-RING	A	1	0.6		1			4	10	10		14	3	1	
174	CB	RE-RING	A	1	0.8		1			4	10	10		14	3	1	
175	CB	RE-RING	B	1	0.6		1			5	10		10	14	3	1	
176	CB	RE-RING	B	1	0.6		1			5	10		10	14	3	1	
177	CB	GROUT STRUCTURE					1										
178	CB	RE-RING	A	1	0.6		1			4	10	10		14	3	1	
179	CB	GROUT STRUCTURE					1										
180	CB	RE-RING	B	1	0.6		1			5	10		10	14	3	1	
181	CB	RE-RING	A	1	0.6		1			4	10	10		14	3	1	
182	CB	RE-RING	A	1	0.6		1			4	10	10		14	3	1	
183	CB	RE-RING	B	1	0.6		1			5	10		10	14	3	1	
184	CB	GROUT STRUCTURE					1										
185	CB	RE-RING	A	1	0.6		1			4	10	10		14	3	1	
186	CB	GROUT STRUCTURE					1										
187	CB	GROUT STRUCTURE					1										
188	CB	RE-RING	A	1	0.8		1			4	10	10		14	3	1	
189	CB	RE-RING	A	1	0.6		1			4	10	10		14	3	1	
190	CB	RE-RING	B	1	0.8		1			5	10		10	14	3	1	
191	CB	RE-RING	B	1	0.2		1			5	10		10	14	3	1	
192	CB	RE-RING	A	1	0.4		1			4	10	10		14	3	1	
193	CB	RE-RING	A	1	0.2		1			4	10	10		14	3	1	
194	CB	GROUT STRUCTURE					1										
195	CB	GROUT STRUCTURE					1										
196	CB	GROUT STRUCTURE					1										
197	CB	RE-RING	A	1	0.6		1			4	10	10		14	3	1	
198	CB	RE-RING	B	1	0.4		1			5	10		10	14	3	1	
199	CB	GROUT STRUCTURE					1										
200	CB	RE-RING	A	1	0.4		1			4	10	10		14	3	1	
201	CB	RE-RING	A	1	0.4		1			4	10	10		14	3	1	
202	CB	GROUT STRUCTURE					1										
203	CB	GROUT STRUCTURE					1										
204	CB	RE-RING	A	1	0.6		1			4	10	10		14	3	1	

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 SIGNATURE: *[Signature]*
 DATE: 3/8/2017 LICENSE NO. 51639

DRAWN BY: SRK DATE: 02/24/2017
 DESIGN BY: SRK DATE: 02/24/2017
 CHECKED BY: M.JJ DATE: 03/07/2017



**ANOKA COUNTY
HIGHWAY DEPT.**

STATE AID PROJECT 002-601-049

TABULATIONS
 Sheet 4 of 34 Sheets

mjohn

STORM DRAINAGE TAB

NUMBER	TYPE	ACTION	NEW CASTING	FURNISH AND INSTALL CASTING ASSEMBLY	RING HEIGHT	REMOVE DRAINAGE STRUCTURE	GROUT CATCH BASIN OR MANHOLE	DRAINAGE STRUCTURE H	RECONSTRUCT DRAINAGE STRUCTURE	SAWING CONCRETE PAVEMENT (FULL DEPTH)	REMOVE CURB & GUTTER	CONCRETE CURB & GUTTER DESIGN B612	CONCRETE CURB & GUTTER DESIGN B618	SAWING PAVEMENT (FULL DEPTH)	REMOVE BITUMINOUS PAVEMENT	TYPE SP 12.5 BIT MIXTURE FOR PATCHING	NOTES
					LIN FT	EACH	EACH	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	SQ YD	TON		
205	CB	RE-RING	A	1	0.4		1			4	10	10		14	3	1	
206	CB	RE-RING	B	1	0.4		1			5	10		10	14	3	1	
207	CB	RE-RING	B	1	0.2		1			5	10		10	14	3	1	
208	CB	GROUT STRUCTURE					1										
212	CB	RE-RING	B	1	0.6		1			5	10		10	14	3	1	
213	CB	GROUT STRUCTURE					1										
301	STRM MH	RE-RING	A-7D	1	0.6		1							32	7	2	
303	STRM MH	RE-RING	A-7D	1	0.6		1							32	7	2	
305	STRM MH	STRUCTURE OK															
306	STRM MH	RE-RING	A-7D	1	0.4		1							32	7	2	
307	STRM MH	RE-RING	A-7D	1	1.2		1							32	7	2	
308	STRM MH	GROUT STRUCTURE					1										
400	SAN MH	RE-RING	A-7D	1	0.4		1							32	7	2	
401	SAN MH	RE-RING	A-7D	1	1.0		1							32	7	2	
402	SAN MH	RE-RING	A-7D	1	0.4		1							32	7	2	
403	SAN MH	RE-RING	A-7D	1	0.8		1							32	7	2	
404	SAN MH	RE-RING	A-7D	1	0.6		1							32	7	2	
405	SAN MH	RE-RING	A-7D	1	0.4		1							32	7	2	
406	SAN MH	GROUT STRUCTURE					1										
407	SAN MH	RE-RING	A-7D	1	0.4		1							32	7	2	
408	SAN MH	GROUT STRUCTURE					1										
409	SAN MH	RE-RING	A-7D	1	0.8		1							32	7	2	
410	SAN MH	GROUT STRUCTURE					1										
411	SAN MH	RE-RING	A-7D	1	0.4		1							32	7	2	
412	SAN MH	RE-RING	A-7D	1	0.6		1							32	7	2	
413	SAN MH	RE-RING	A-7D	1	1.4		1							32	7	2	
414	SAN MH	RE-RING	A-7D	1	1.0		1							32	7	2	
415	SAN MH	STRUCTURE OK															
416	SAN MH	RE-RING	A-7D	1	1.0		1							32	7	2	
417	SAN MH	STRUCTURE OK															
418	SAN MH	RE-RING	A-7D	1	0.8		1							32	7	2	
419	SAN MH	RE-RING	A-7D	1	0.4		1							32	7	2	
420	SAN MH	RE-RING	A-7D	1	0.2		1							32	7	2	
421	SAN MH	RE-RING	A-7D	1	0.8		1							32	7	2	
422	SAN MH	RE-RING	A-7D	1	0.4		1							32	7	2	
423	SAN MH	STRUCTURE OK															
424	SAN MH	STRUCTURE OK															
425	SAN MH	RE-RING	A-7D	1	1.2		1							32	7	2	
426	SAN MH	RE-RING	A-7D	1	0.4		1							32	7	2	
429	SAN MH	RE-RING	A-7D	1	1.0		1							32	7	2	
430	SAN MH	GROUT STRUCTURE					1										
431	SAN MH	STRUCTURE OK															
432	SAN MH	RE-RING	A-7D	1	0.4		1							32	7	2	
433	SAN MH	RECONSTRUCT STRUCTURE	A-7D	1				4.2						32	7	2	REPLACE CONE SECTION
434	SAN MH	RE-RING	A-7D	1	1.0		1							32	7	2	
435	SAN MH	GROUT STRUCTURE					1										
436	SAN MH	RE-RING	A-7D	1	0.6		1							32	7	2	
437	SAN MH	RE-RING	A-7D	1	0.4		1							32	7	2	
438	SAN MH	RE-RING	A-7D	1	0.8		1							32	7	2	
439	SAN MH	RE-RING	A-7D	1	0.6		1							32	7	2	
TOTALS				103		1	144	3.6	4.2	313	710	420	290	2046	443	137	

CASTING ASSEMBLIES SUMMARY

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"	4
A-7D	700-7	716	-	STD. PLATE: 4101D, 4110F	CASTING COVER STAMPED "SANITARY SEWER"	28
A				SEE DETAILS - SHEET 8		42
B				SEE DETAILS - SHEET 8		29
ALL CASTING HEIGHTS ARE TO BE FIELD VERIFIED.						
ALL MANHOLE COVERS SHALL BE STAMPED AS STORM SEWER OR SANITARY SEWER.						

NO	DATE	BY	CKD	APPR	REVISION	03/08/2017	1:21:01 PM
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DRAWN BY SRK DATE 02/24/2017
 DESIGN BY SRK DATE 02/24/2017
 CHECKED BY MJJ DATE 03/07/2017



**ANOKA COUNTY
HIGHWAY DEPT.**

STATE AID PROJECT 002-601-049

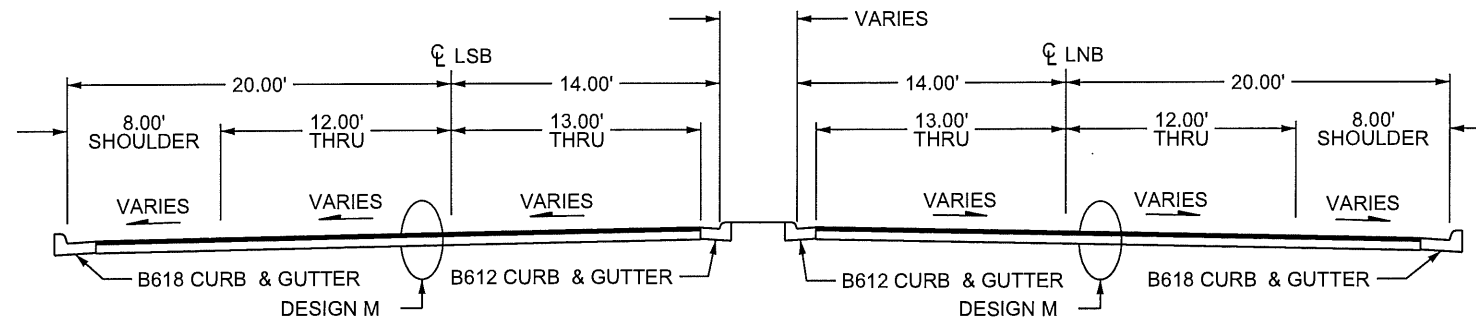
TABLATIONS
 Sheet 5 of 34 Sheets

mjohn

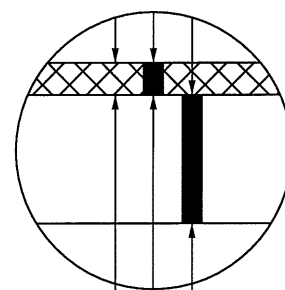
EAST RIVER ROAD(CSAH 1)

TYPICAL MAINLINE

11+00 - 77+90 (TURN LANES EXEMPT)



DESIGN M MILL SECTION



2.0" MILL BITUMINOUS
 2.0" BITUMINOUS WEAR(SPWEB440C)
 REMAINING BITUMINOUS

EAST RIVER ROAD (CSAH 1)

TYPICAL LSB TURN LANES

RIGHT TURN LANE

111+00 - 119+75
 126+75 - 152+90
 157+80 - 161+25
 163+85 - 172+70

LEFT TURN LANE

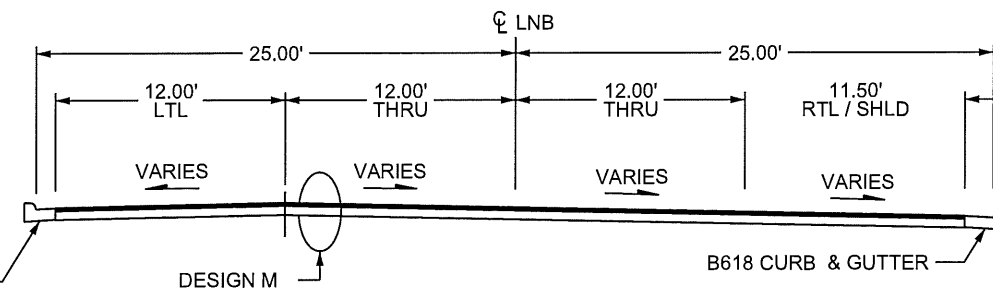
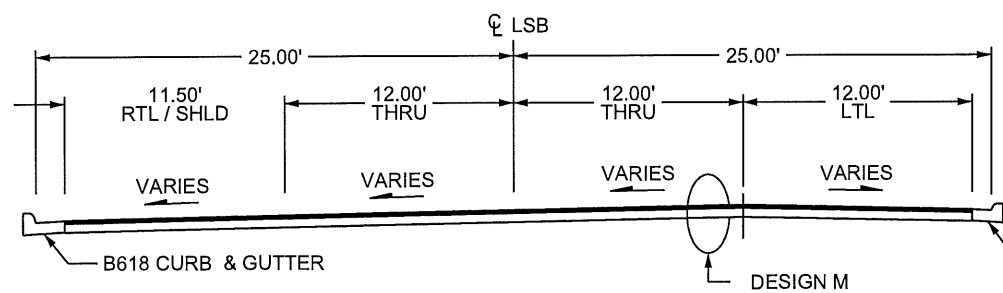
112+00 - 114+60
 126+55 - 129+40
 131+75 - 136+05
 140+45 - 144+75
 157+60 - 162+10
 166+55 - 171+15

LEFT TURN LANE

13+10 - 15+40
 21+50 - 25+80
 27+80 - 30+65
 35+50 - 39+40
 44+05 - 48+35
 52+45 - 56+60
 61+30 - 65+60

RIGHT TURN LANE

22+25 - 30+00
 32+70 - 39+45
 54+25 - 56+60
 62+15 - 65+60



EAST RIVER ROAD (CSAH 1)

TYPICAL LNB TURN LANES

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 CHECKED BY: MJJ DATE: 03/07/2017

ANOKA COUNTY
HIGHWAY DEPT.

STATE AID PROJECT 002-601-049

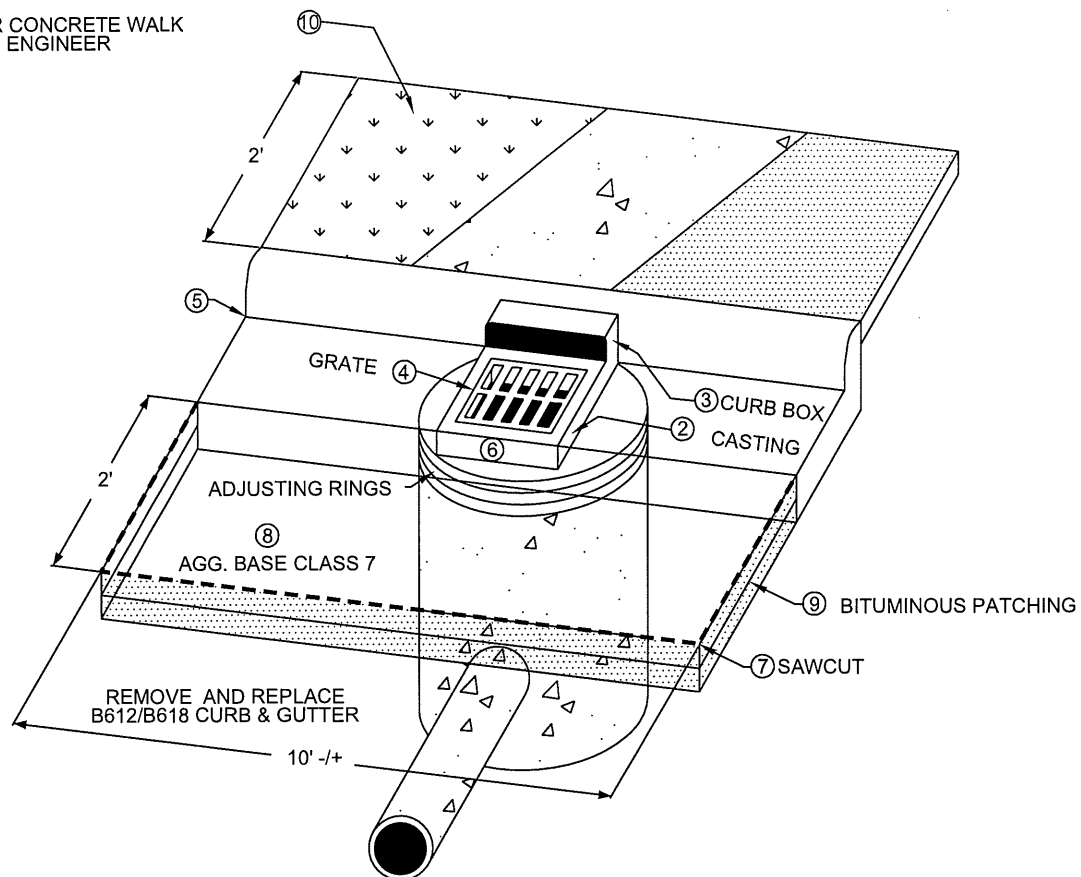
mjohn

CATCH BASIN DETAIL

SEE STRUCTURE TAB FOR LOCATION

(PAGE 3)

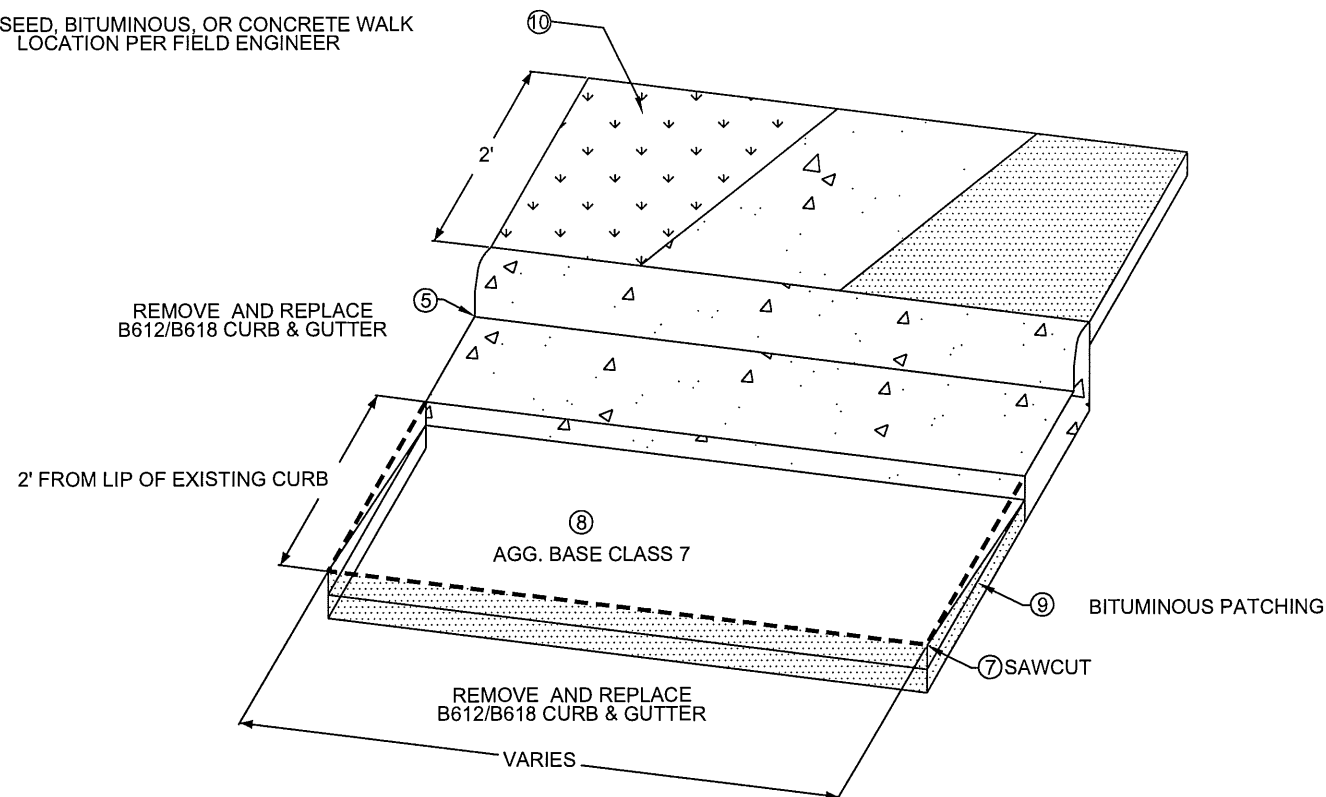
SOD, SEED, BITUMINOUS, OR CONCRETE WALK
LOCATION PER FIELD ENGINEER



NEW CURB DETAIL

SEE PLAN FOR LOCATION

SOD, SEED, BITUMINOUS, OR CONCRETE WALK
LOCATION PER FIELD ENGINEER



NOTES

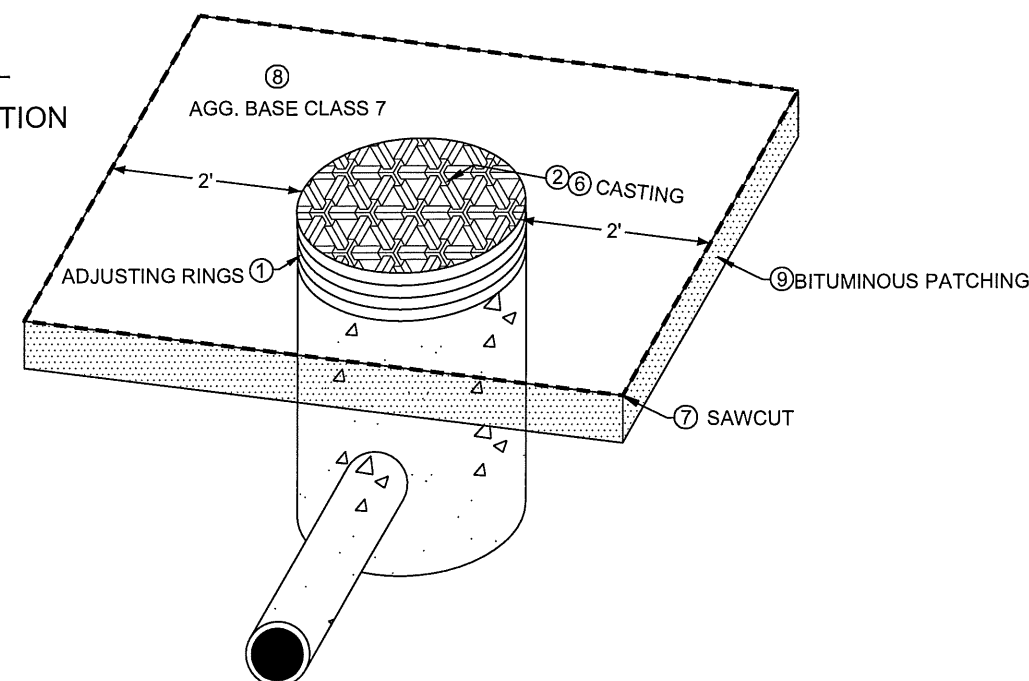
FOR TRAFFIC CONTROL AT CATCH BASIN AND MANHOLE REPAIRS REFER TO THE MINNESOTA
MANUAL ON TEMPORARY TRAFFIC CONTROL LAYOUTS FIELD MANUAL.

- 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 7100H
- 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" 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

MANHOLE DETAIL

SEE STRUCTURE TAB FOR LOCATION

(PAGE 3)



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THE STATE OF MINNESOTA.

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SIGNATURE: *[Signature]*
DATE: 3/8/2017 LICENSE NO. 51639

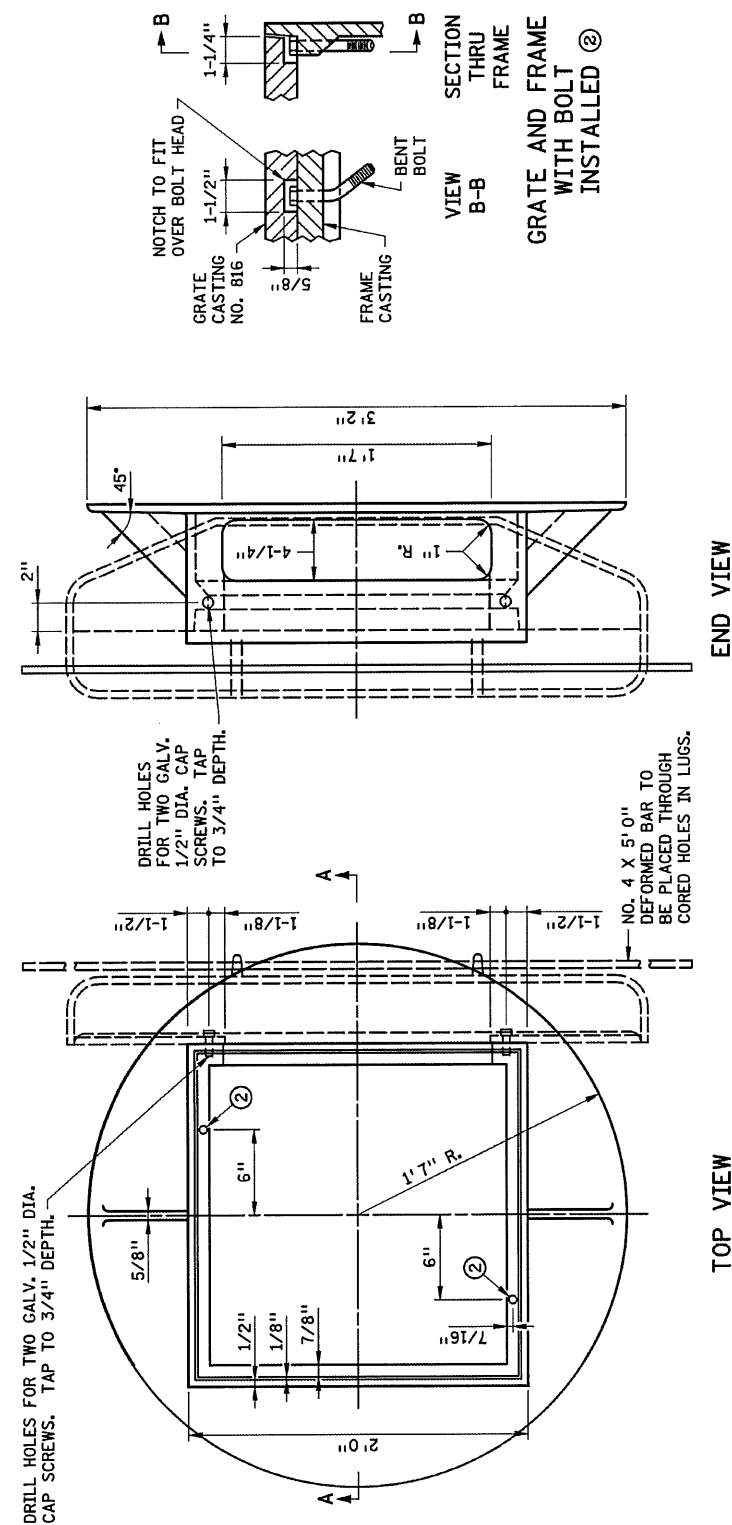
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ANOKA COUNTY
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STATE AID PROJECT 002-601-049

DETAILS
Sheet 7 of 34 Sheets

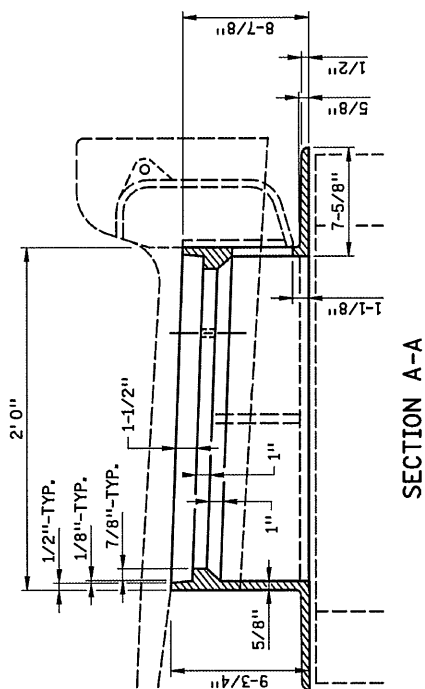
FRAME RING AND CASTING TYPE A



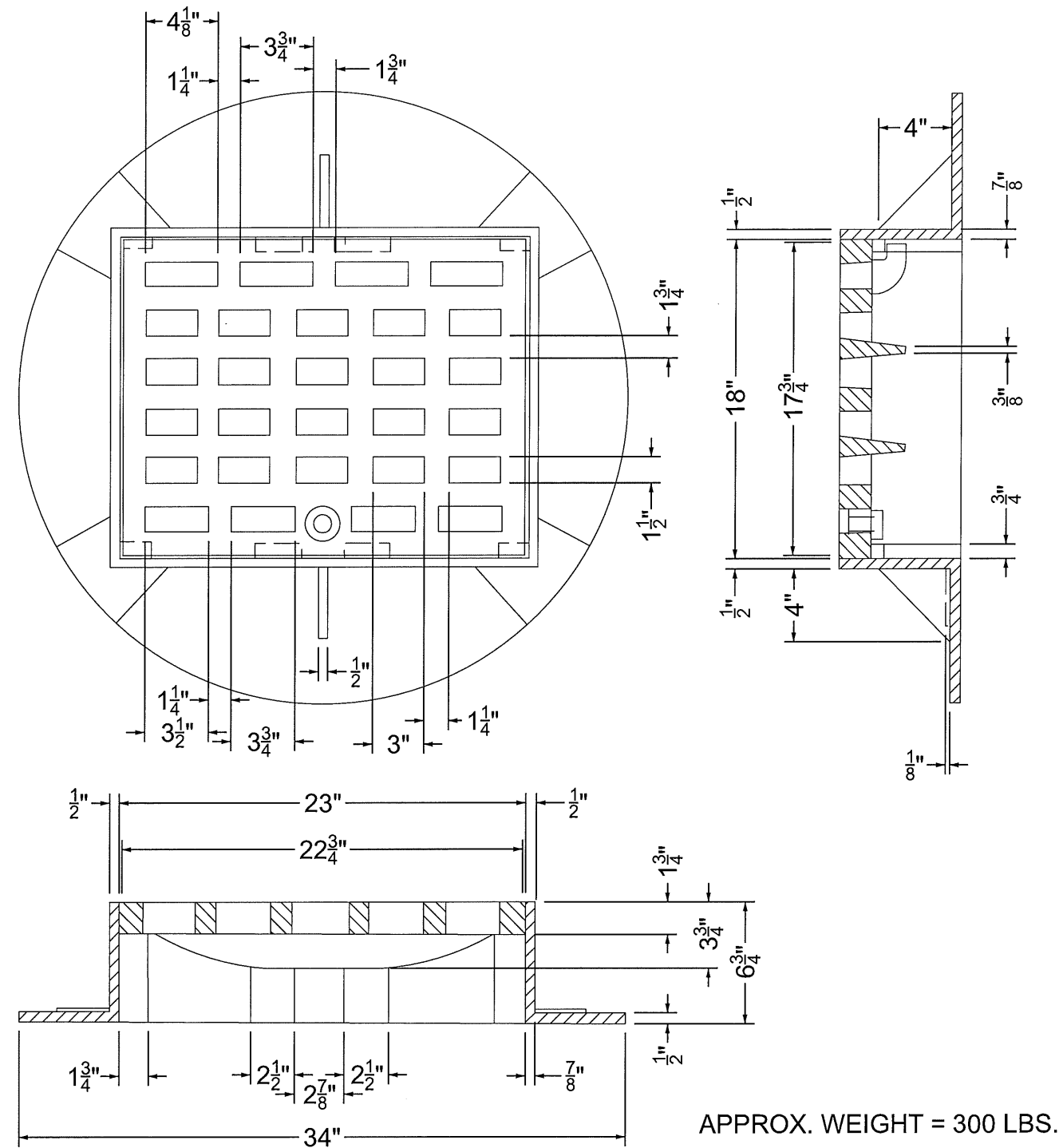
CASTINGS USED FOR ASSEMBLY
 GRATE NO. 816 (MNDOT STD PLATE 4154B)
 CURB BOX ① NO. 823A (MNDOT STD PLATE 4160) OR

NOTES:

- USE 1/4" FILLETS IN ALL CORNERS. SEE MNDOT STANDARD PLATE 7111 FOR INSTALLATION REQUIREMENTS.
- ① APPLIES TO DESIGN B OR V CURB AND GUTTER.
- ② AT LOCATIONS INDICATED IN TOP VIEW, PROVIDE 9/16" DIA. HOLES WHEN GRATE NO 816 (MNDOT STD PLATE 4154) IS USED WITH THIS FRAME. FIELD PLACE 1/2" DIA X 4" LONG GALV BOLT IN UP STREAM SIDE AND BENT UNDERSIDE TO PREVENT REMOVAL. THIS WILL PREVENT GRATE NO. 816 (MNDOT STD PLATE 4154) FROM BEING PLACED IN WRONG AND NOT BEING BICYCLE SAFE



FRAME RING AND CASTING TYPE B



NOTE: THE CONTRATOR SHALL TAPER THE LIP OF CONCRETE CURB AND GUTTER FROM THE LIP OF THE ADJACENT CURB LINE TO THE LIP OF THE CASTING OVER A DISTANCE OF 3' (ON EACH SIDE OF THE CASTING). THIS WORK SHALL BE INCIDENTAL TO THE CONCRETE CURB & GUTTER PAY ITEMS.

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DRAWN BY: KPR DATE: 03/03/2017
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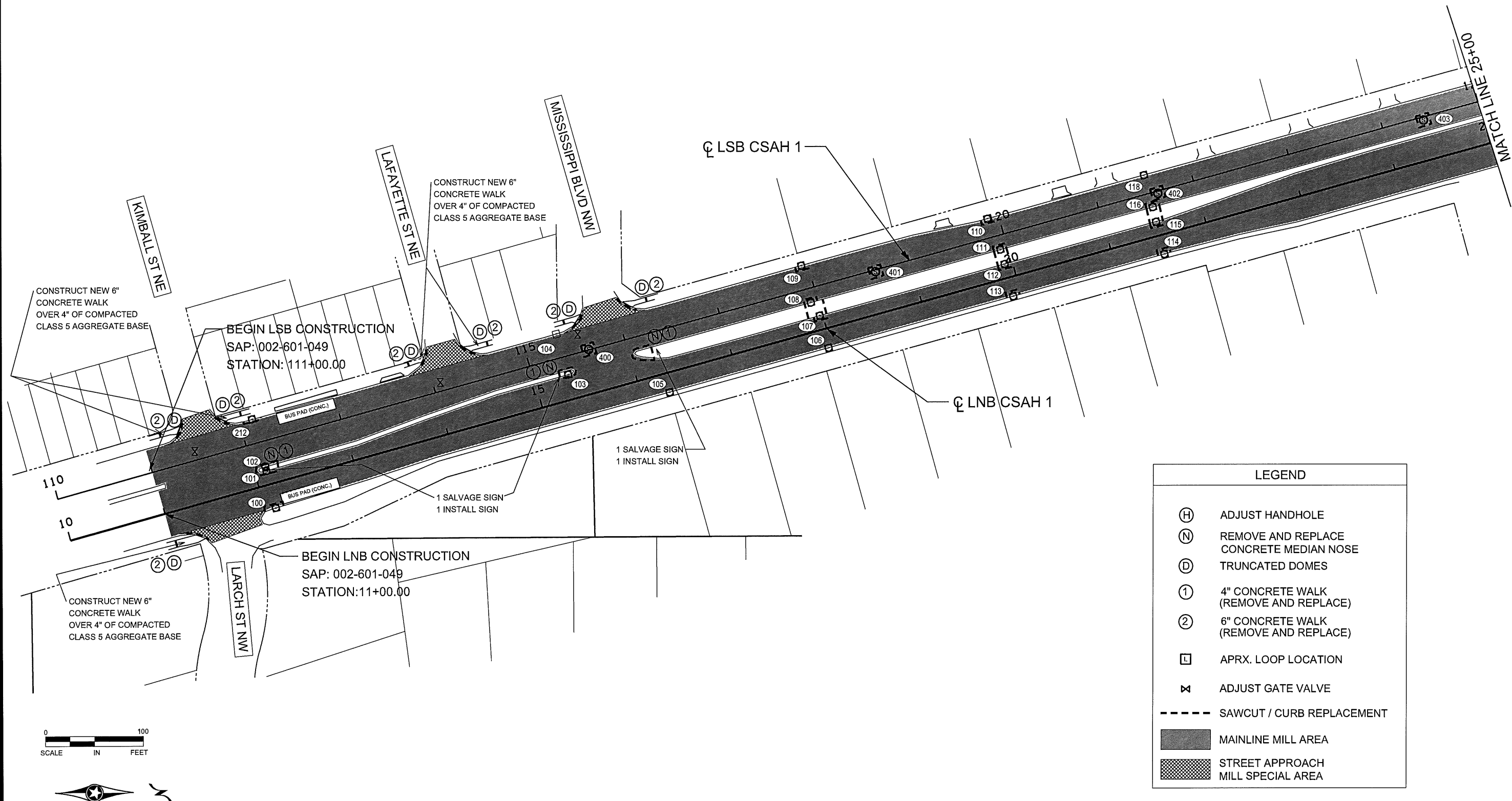


ANOKA COUNTY
 HIGHWAY DEPT.

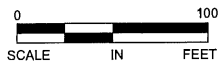
STATE AID PROJECT 002-601-049

DETAILS
 Sheet 8 of 34 Sheets

mjohn



LEGEND	
(H)	ADJUST HANDHOLE
(N)	REMOVE AND REPLACE CONCRETE MEDIAN NOSE
(D)	TRUNCATED DOMES
(1)	4" CONCRETE WALK (REMOVE AND REPLACE)
(2)	6" CONCRETE WALK (REMOVE AND REPLACE)
[L]	APRX. LOOP LOCATION
⊗	ADJUST GATE VALVE
---	SAWCUT / CURB REPLACEMENT
[Solid Grey]	MAINLINE MILL AREA
[Hatched]	STREET APPROACH MILL SPECIAL AREA



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SIGNATURE: *Matthew J. John*

DATE: 3/8/2017 LICENSE NO. 51639

DRAWN BY: SRK DATE: 02/24/2017

DESIGN BY: SRK DATE: 02/24/2017

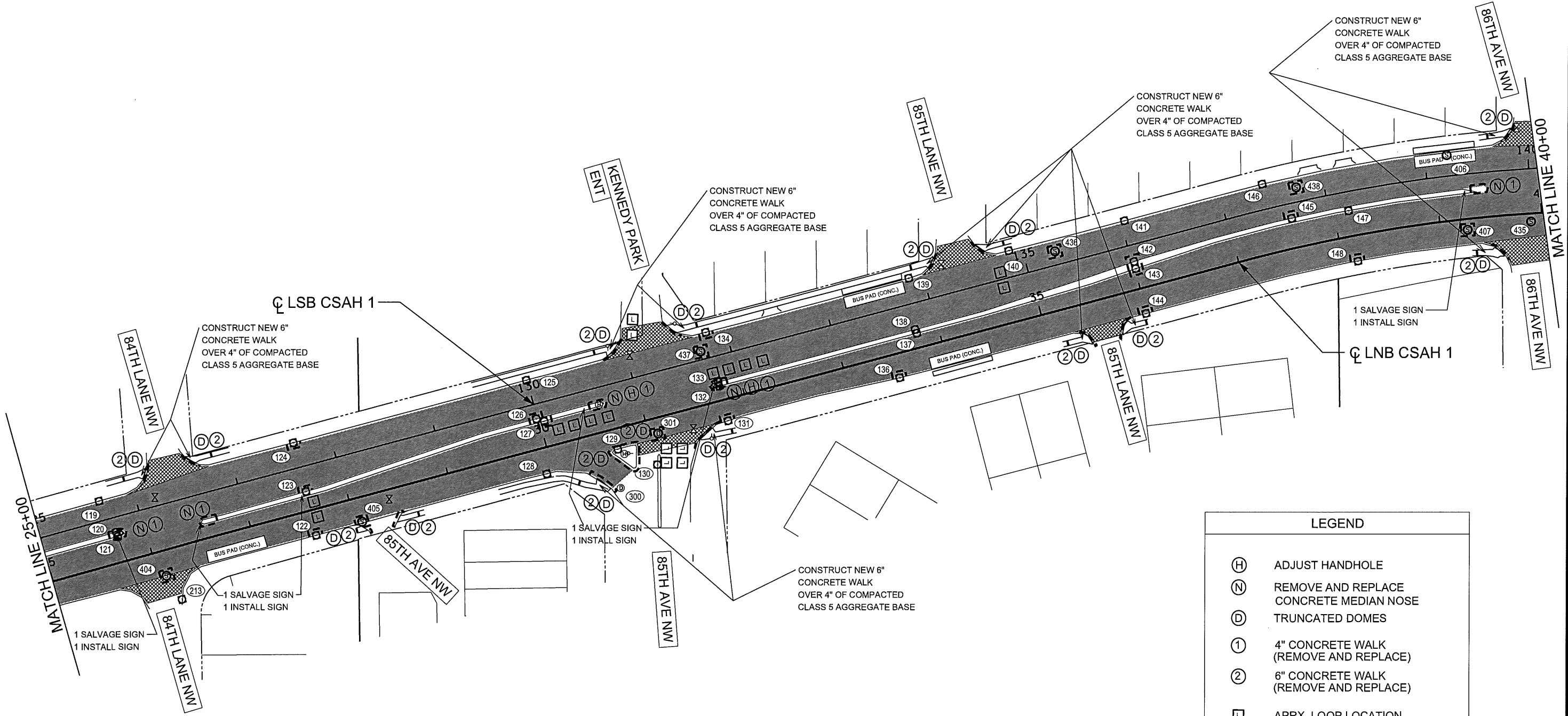
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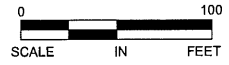
ANOKA COUNTY
HIGHWAY DEPT.

STATE AID PROJECT 002-601-049

CONSTRUCTION PLAN
STA 11+00 TO 25+00
Sheet 9 of 34 Sheets



LEGEND	
(H)	ADJUST HANDHOLE
(N)	REMOVE AND REPLACE CONCRETE MEDIAN NOSE
(D)	TRUNCATED DOMES
(1)	4" CONCRETE WALK (REMOVE AND REPLACE)
(2)	6" CONCRETE WALK (REMOVE AND REPLACE)
[L]	APRX. LOOP LOCATION
⌘	ADJUST GATE VALVE
---	SAWCUT / CURB REPLACEMENT
[Solid Grey]	MAINLINE MILL AREA
[Hatched]	STREET APPROACH MILL SPECIAL AREA



NO	DATE	BY	CKD	APPR	REVISION	03/21/2017	9:17:51 AM
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 SIGNATURE: *Matthew J. John*
 DATE: 3/21/2017 LICENSE NO. 51639

DRAWN BY SRK DATE 02/24/2017
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 CHECKED BY M.J.J. DATE 03/07/2017

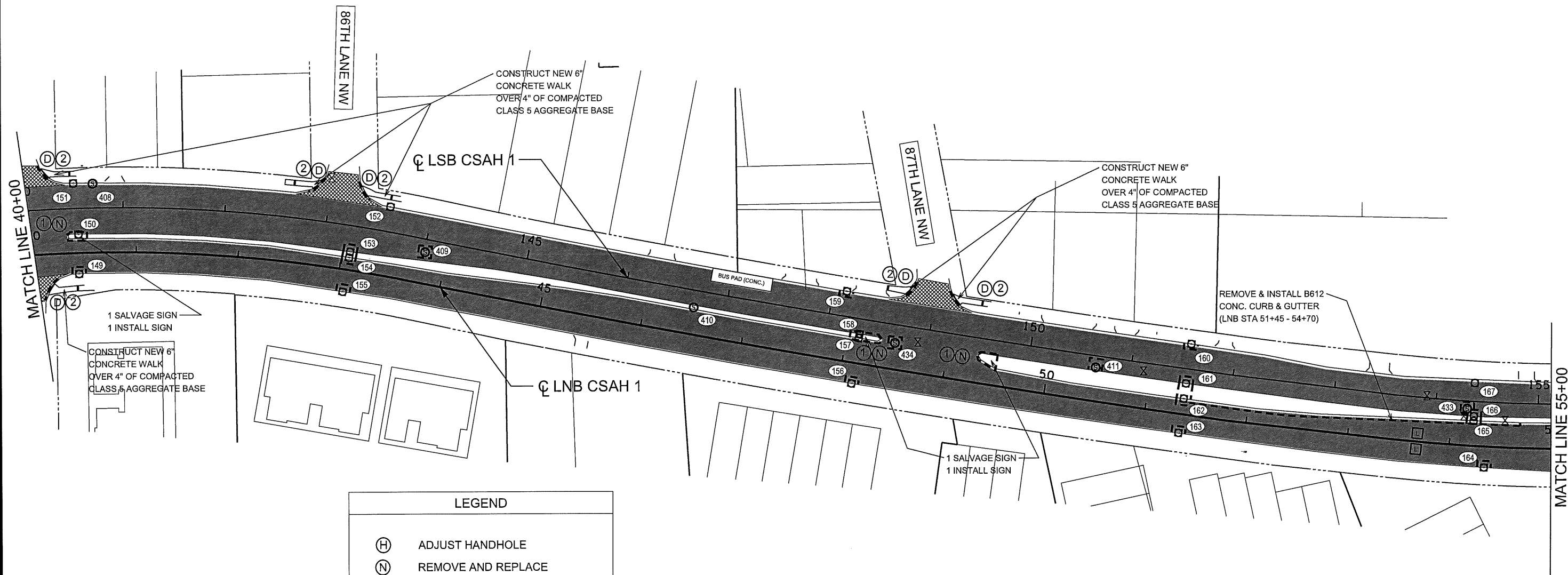


ANOKA COUNTY
HIGHWAY DEPT.

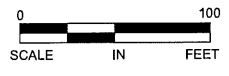
STATE AID PROJECT 002-601-049

CONSTRUCTION PLAN
 STA 25+00 TO 40+00
 Sheet 10 of 34 Sheets

mjohn



LEGEND	
(H)	ADJUST HANDHOLE
(N)	REMOVE AND REPLACE CONCRETE MEDIAN NOSE
(D)	TRUNCATED DOMES
(1)	4" CONCRETE WALK (REMOVE AND REPLACE)
(2)	6" CONCRETE WALK (REMOVE AND REPLACE)
[L]	APRX. LOOP LOCATION
[X]	ADJUST GATE VALVE
---	SAWCUT / CURB REPLACEMENT
[Solid Grey]	MAINLINE MILL AREA
[Hatched]	STREET APPROACH MILL SPECIAL AREA



NO	DATE	BY	CKD	APPR	REVISION	
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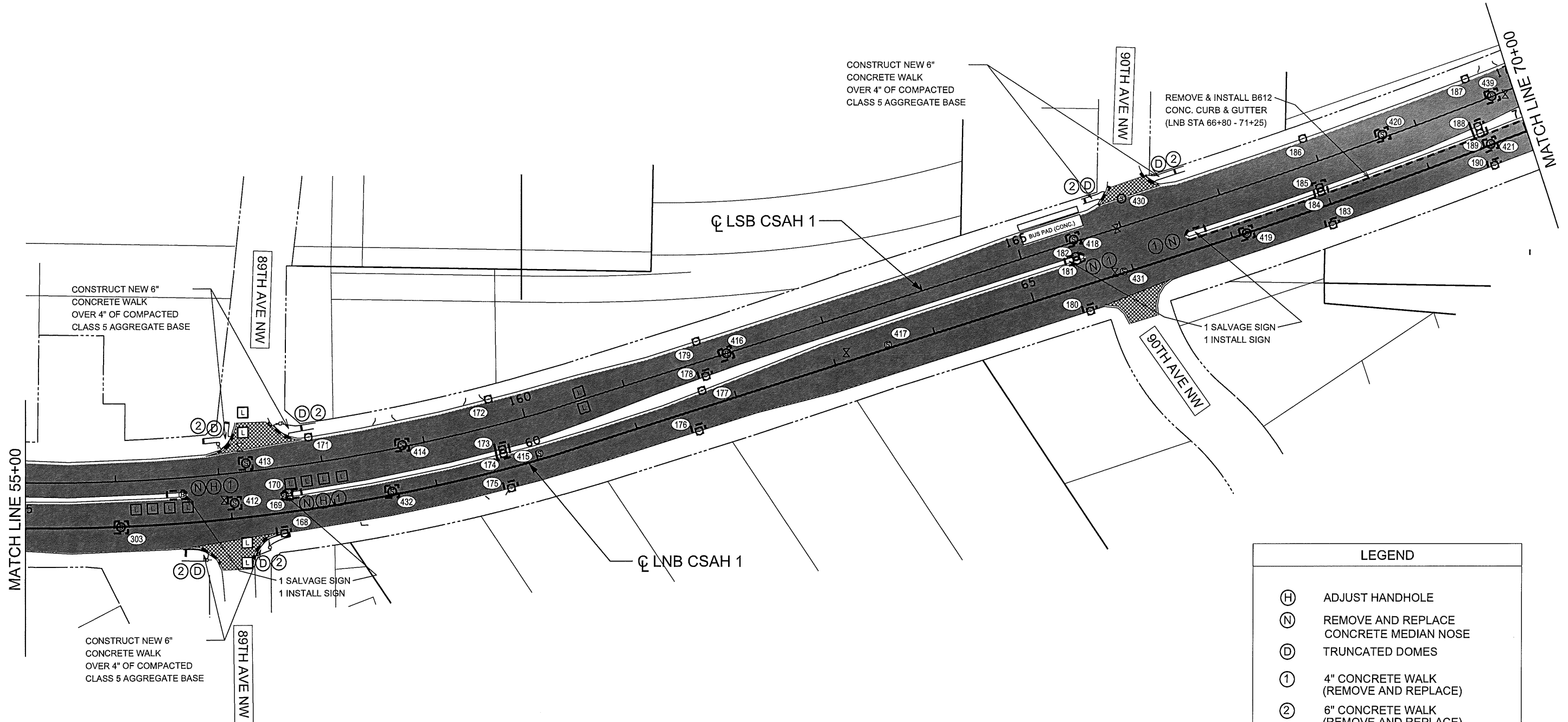
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ANOKA COUNTY
HIGHWAY DEPT.

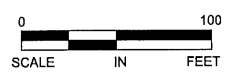
STATE AID PROJECT 002-601-049

CONSTRUCTION PLAN
 STA 40+00 TO 55+00
 Sheet 11 of 34 Sheets

mjohn



LEGEND	
(H)	ADJUST HANDHOLE
(N)	REMOVE AND REPLACE CONCRETE MEDIAN NOSE
(D)	TRUNCATED DOMES
(1)	4" CONCRETE WALK (REMOVE AND REPLACE)
(2)	6" CONCRETE WALK (REMOVE AND REPLACE)
[L]	APRX. LOOP LOCATION
[X]	ADJUST GATE VALVE
- - -	SAWCUT / CURB REPLACEMENT
[Solid Grey]	MAINLINE MILL AREA
[Hatched]	STREET APPROACH MILL SPECIAL AREA



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PRINT NAME: MATTHEW J. JOHN

SIGNATURE: *[Signature]*


DATE: 3/8/2017 LICENSE NO. 51639

DRAWN BY: SRK DATE: 02/24/2017

DESIGN BY: SRK DATE: 02/24/2017

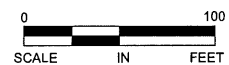
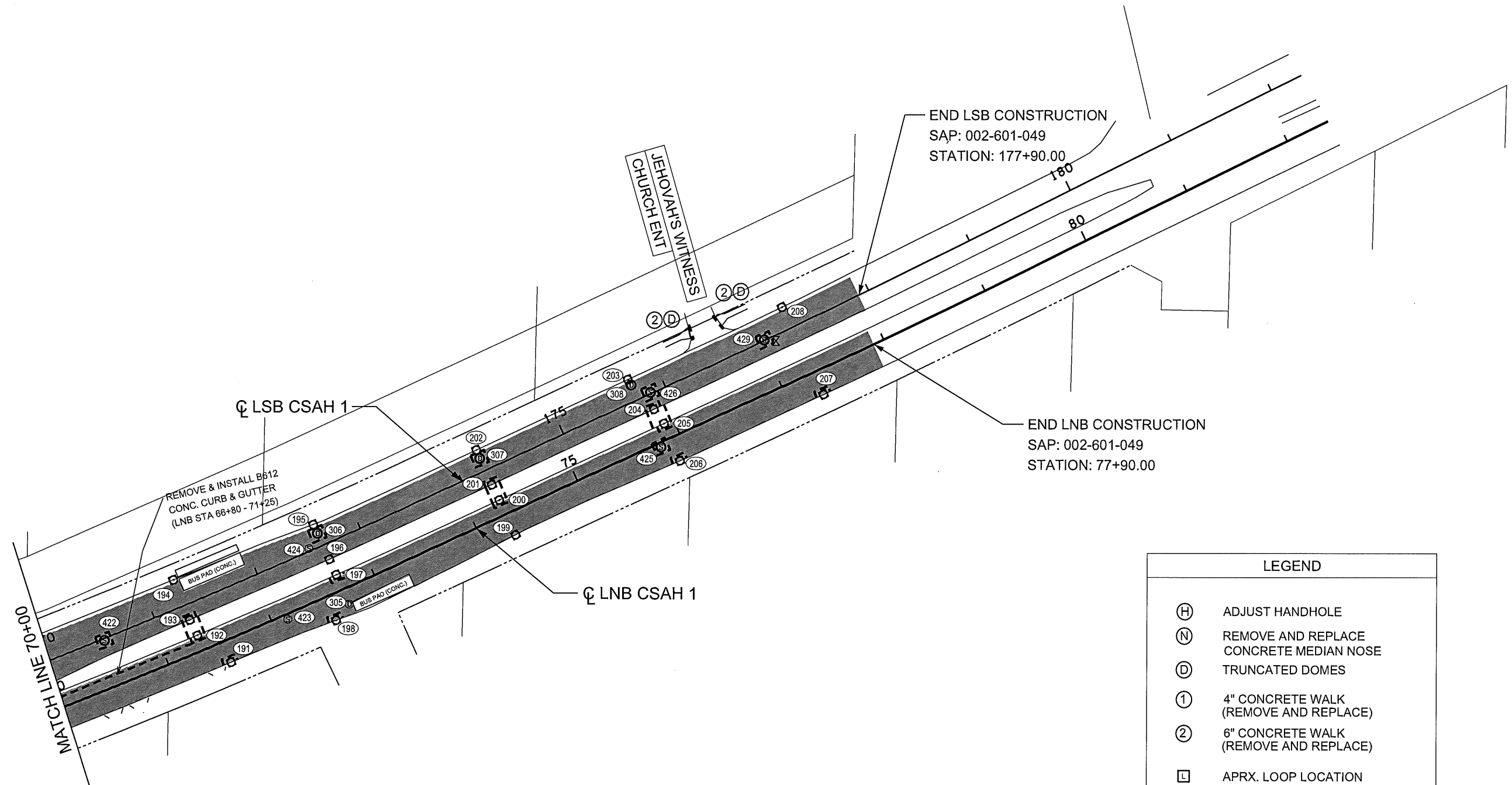
CHECKED BY: MJJ DATE: 03/07/2017

ANOKA COUNTY
HIGHWAY DEPT.



STATE AID PROJECT 002-601-049

CONSTRUCTION PLAN
 STA 55+00 TO 70+00
 Sheet 12 of 34 Sheets



LEGEND	
(H)	ADJUST HANDHOLE
(N)	REMOVE AND REPLACE CONCRETE MEDIAN NOSE
(D)	TRUNCATED DOMES
(1)	4" CONCRETE WALK (REMOVE AND REPLACE)
(2)	6" CONCRETE WALK (REMOVE AND REPLACE)
[]	APRX. LOOP LOCATION
⊗	ADJUST GATE VALVE
---	SAWCUT / CURB REPLACEMENT
[Solid Grey]	MAINLINE MILL AREA
[Cross-hatched]	STREET APPROACH MILL SPECIAL AREA

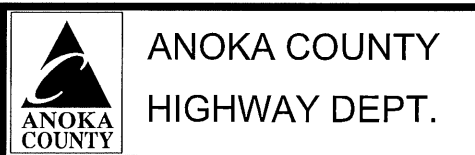
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	03/21/2017					9:18:04 AM

NAME: P:\17-01-00\CSAH_01_FRIDLEY_CL-1200\190th)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: MATTHEW J. JOHN
 SIGNATURE: *Matthew J. John*
 DATE: 3/21/2017 LICENSE NO. 51639

DRAWN BY SRK DATE 02/24/2017
 DESIGN BY SRK DATE 02/24/2017
 CHECKED BY MJJ DATE 03/07/2017

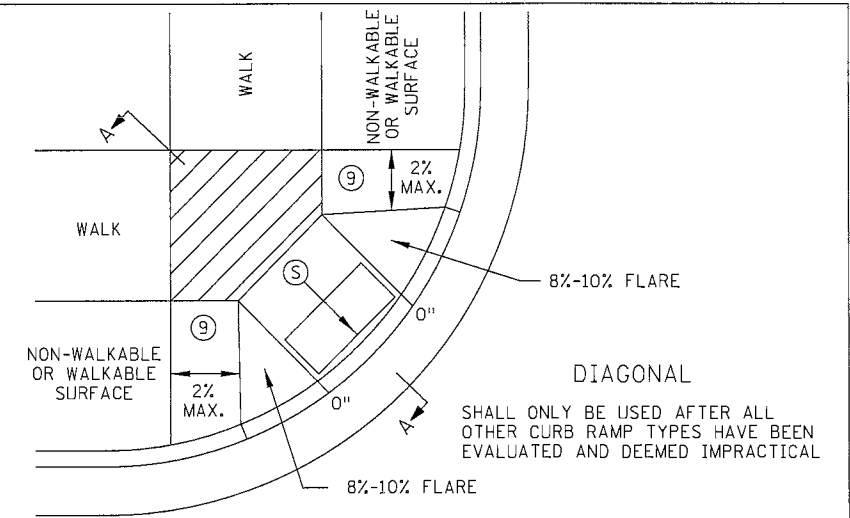
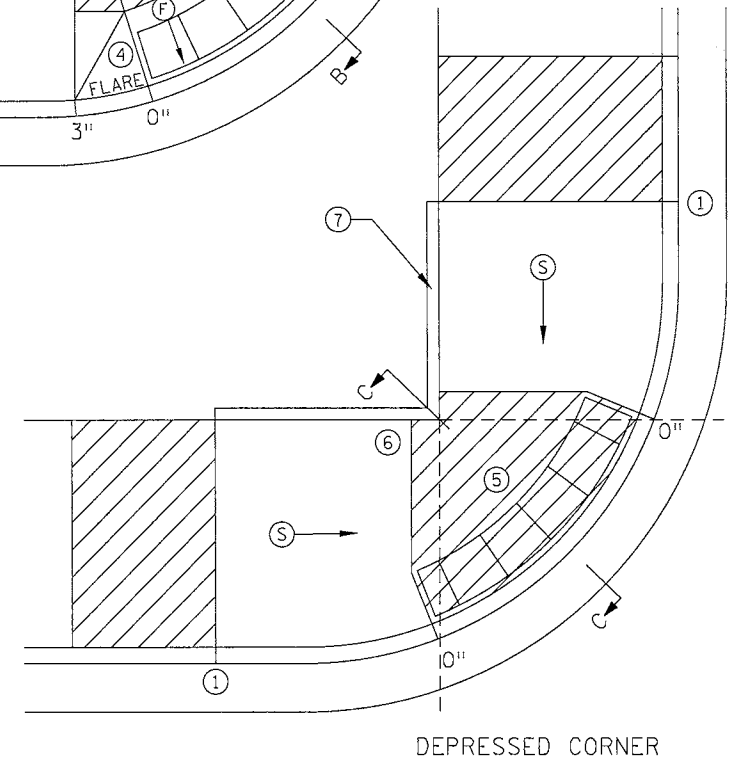
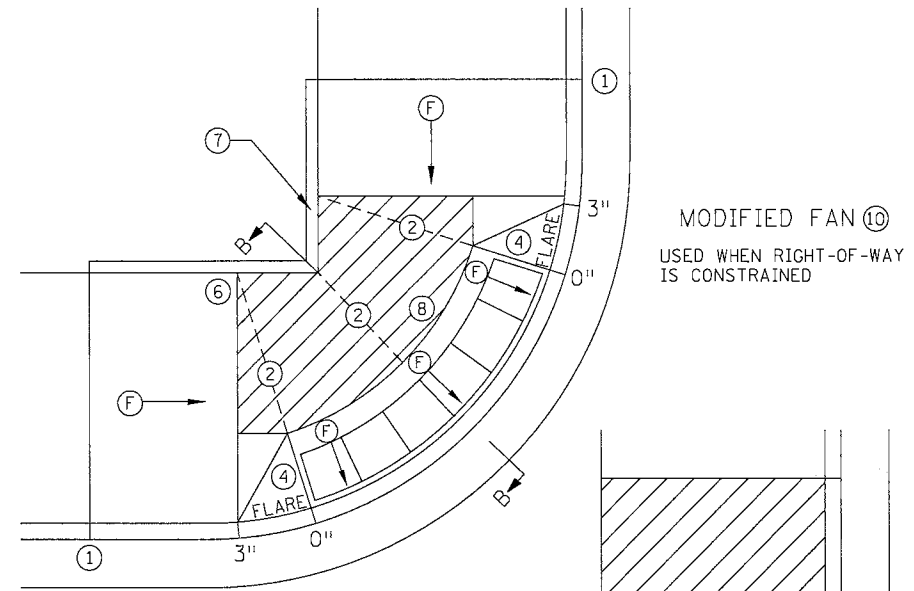
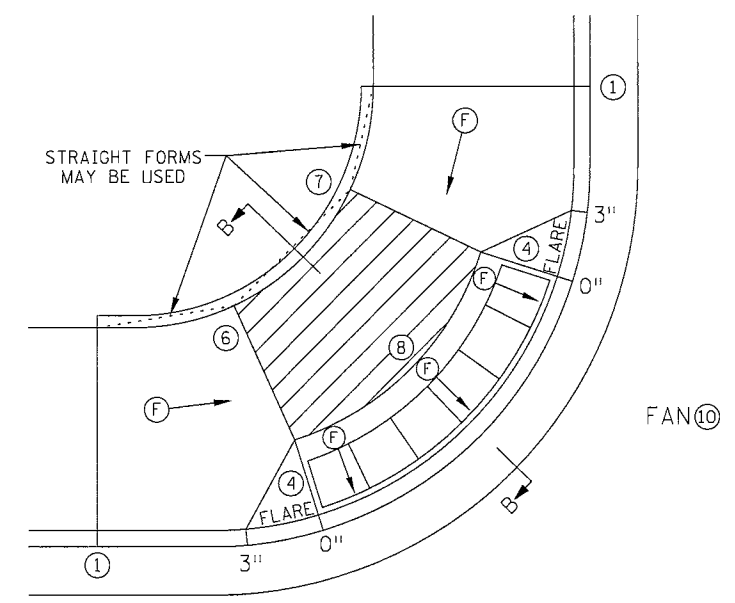
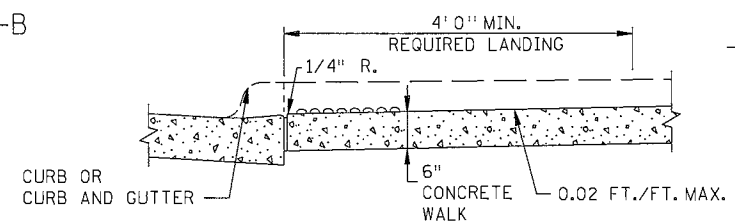
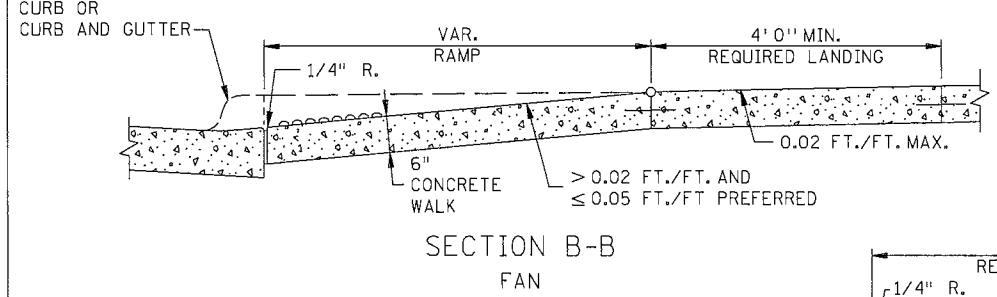
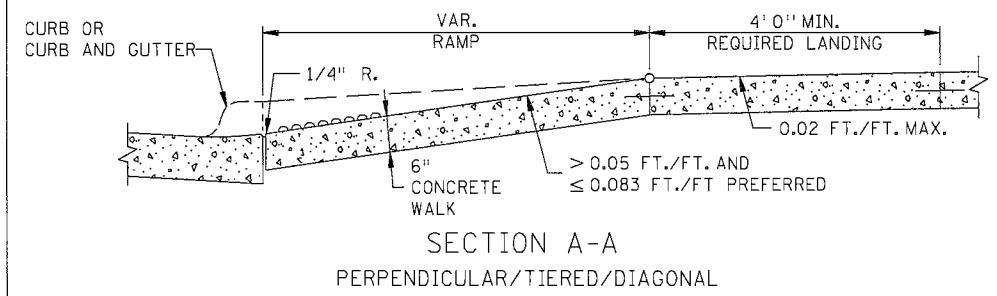
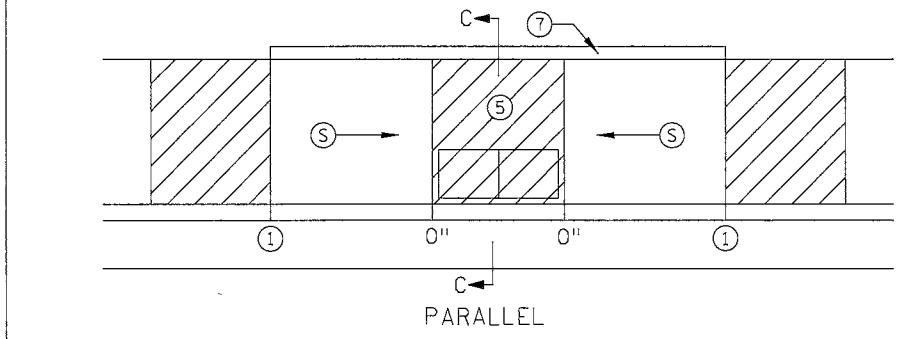
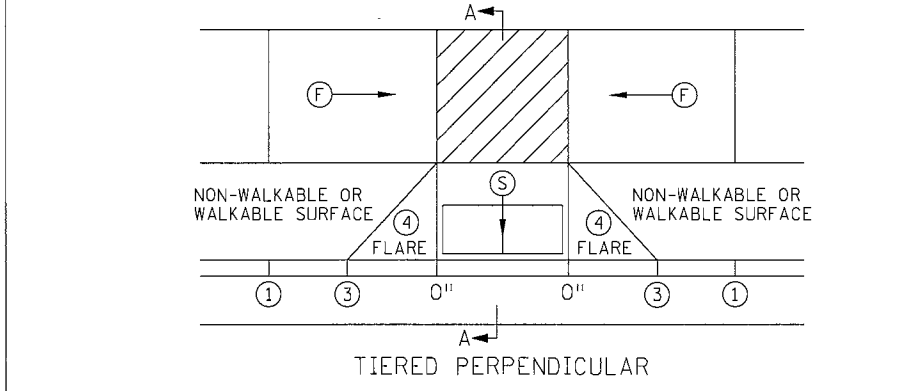
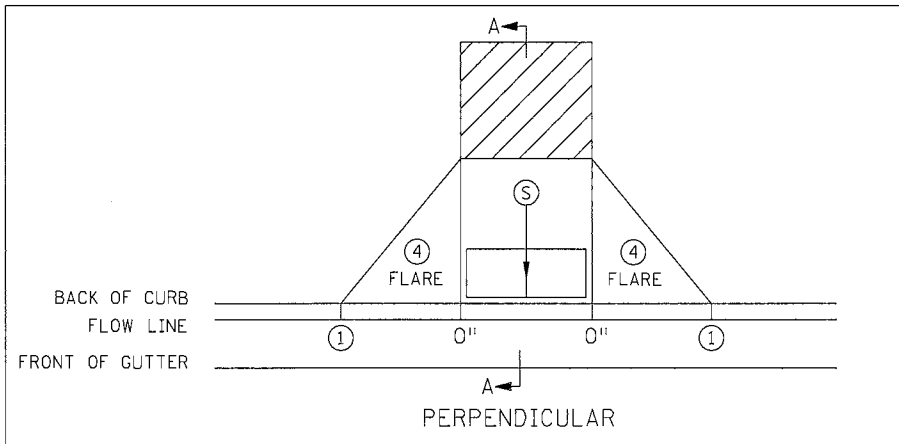


STATE AID PROJECT 002-601-049

CONSTRUCTION PLAN
 STA 70+00 TO 77+90
 Sheet 13 of 34 Sheets

PLOTTED/REVISED:
03/30/2017

DISTRICT #: USER NAME: diffrey PATH & FILENAME: P:\17-01-00\CSAH_01_FRIDLEY_CL-1200\17-01-00\Plan\c250_L_sprndgn



- 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.
- MATCH FULL HEIGHT CURB.
 - 4' MINIMUM DEPTH LANDING REQUIRED ACROSS TOP OF RAMP.
 - 3" HIGH CURB WHEN USING A 3' LONG RAMP, 4" HIGH CURB WHEN USING A 4' LONG RAMP.
 - SEE SHEET 4 OF 6, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS, WHEN INITIAL LANDING IS AT FULL CURB HEIGHT.
 - 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.
 - 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)
 - 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.
 - A 7' MIN TOP RADIUS GRADE BREAK REQUIRED TO BE CONSTRUCTIBLE.
 - PAVE FULL WALK WIDTH.
 - "S" SLOPES ON FANS SHALL ONLY BE USED WHEN ALL OTHER FEASIBLE OPTIONS HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.

LEGEND	
(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

REVISION:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER

SAP 002-601-049

MINNESOTA DEPARTMENT OF TRANSPORTATION
STATE DESIGN ENGINEER
Tom Jha

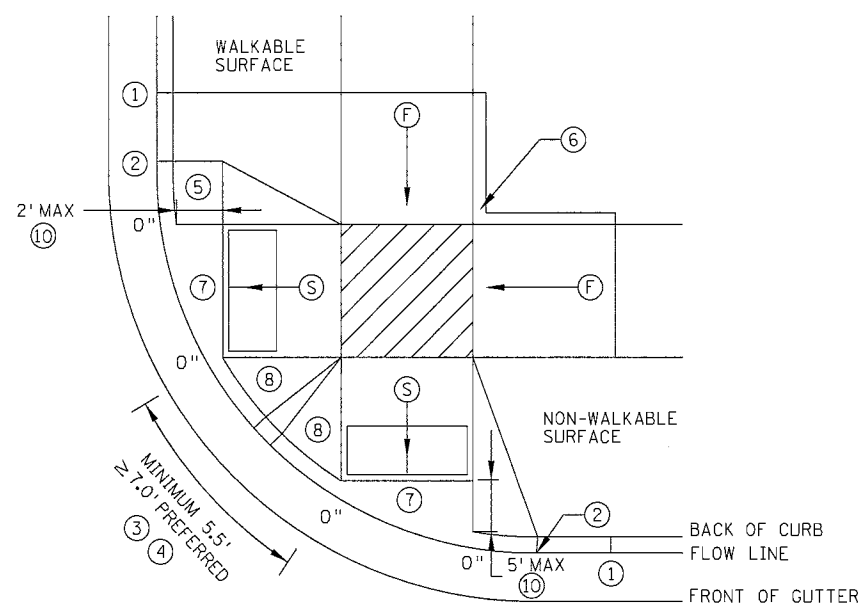
REVISED:
APPROVED:
1-23-2017

PEDESTRIAN CURB RAMP DETAILS (1 OF 6)
STANDARD PLAN 5-297.250
14 OF 34

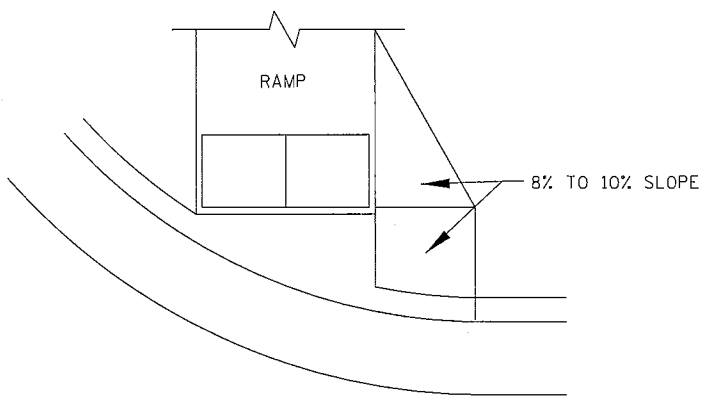
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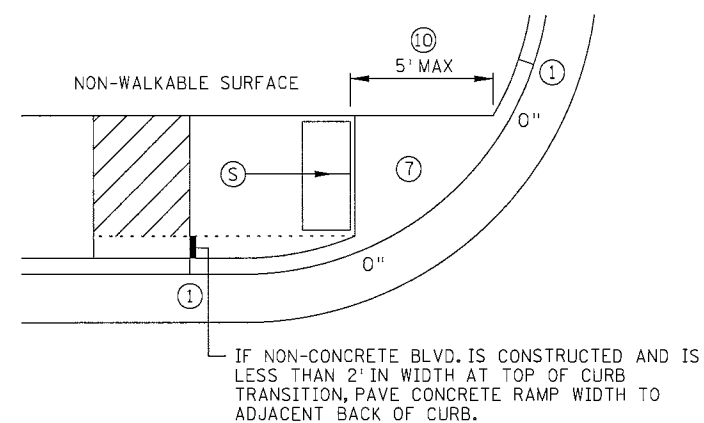
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COMBINED DIRECTIONAL ⑨

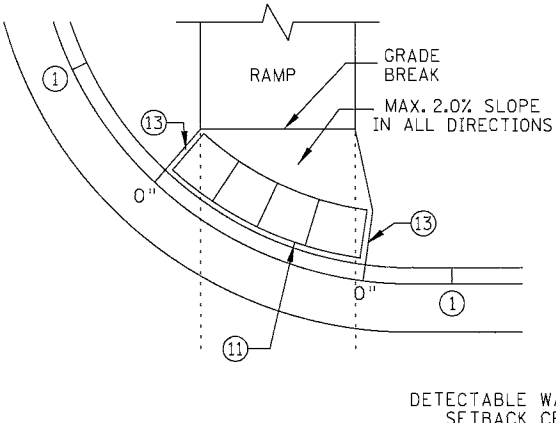


DIRECTIONAL RAMP WALKABLE FLARE



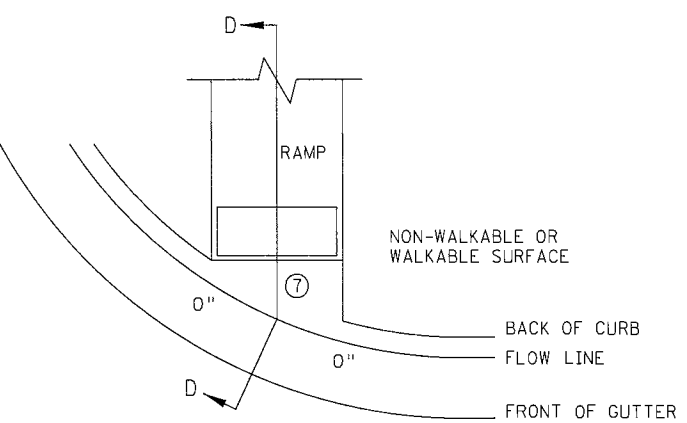
IF NON-CONCRETE BLVD. IS CONSTRUCTED AND IS LESS THAN 2' IN WIDTH AT TOP OF CURB TRANSITION, PAVE CONCRETE RAMP WIDTH TO ADJACENT BACK OF CURB.

STANDARD ONE-WAY DIRECTIONAL ⑨

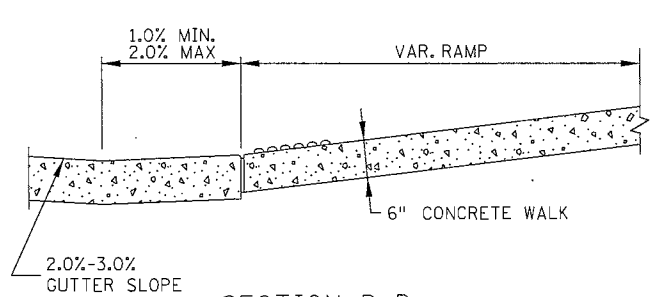


DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED ⑫

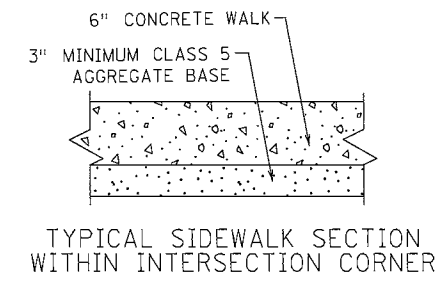
ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB



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.	
Ⓢ	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
Ⓣ	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.
▨	LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PAR.
x"	CURB HEIGHT

REVISION:
APPROVED: JANUARY 23, 2017
<i>[Signature]</i> OPERATIONS ENGINEER

SAP 002-601-049



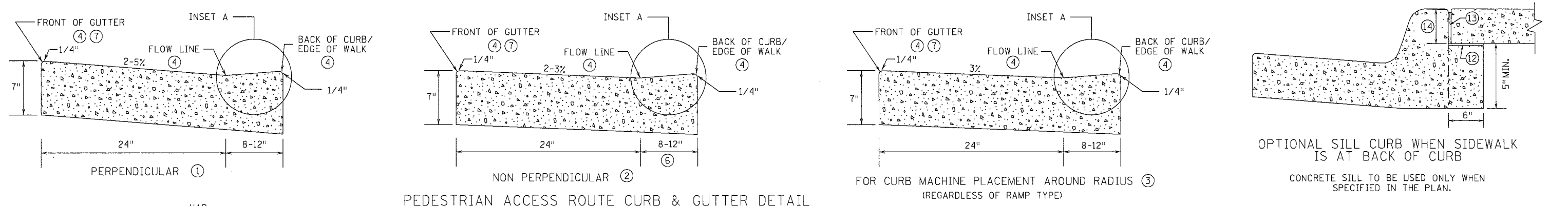
REVISD:
APPROVED:
1-23-2017
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS (2 OF 6)	
STANDARD PLAN 5-297.250	15 OF 34

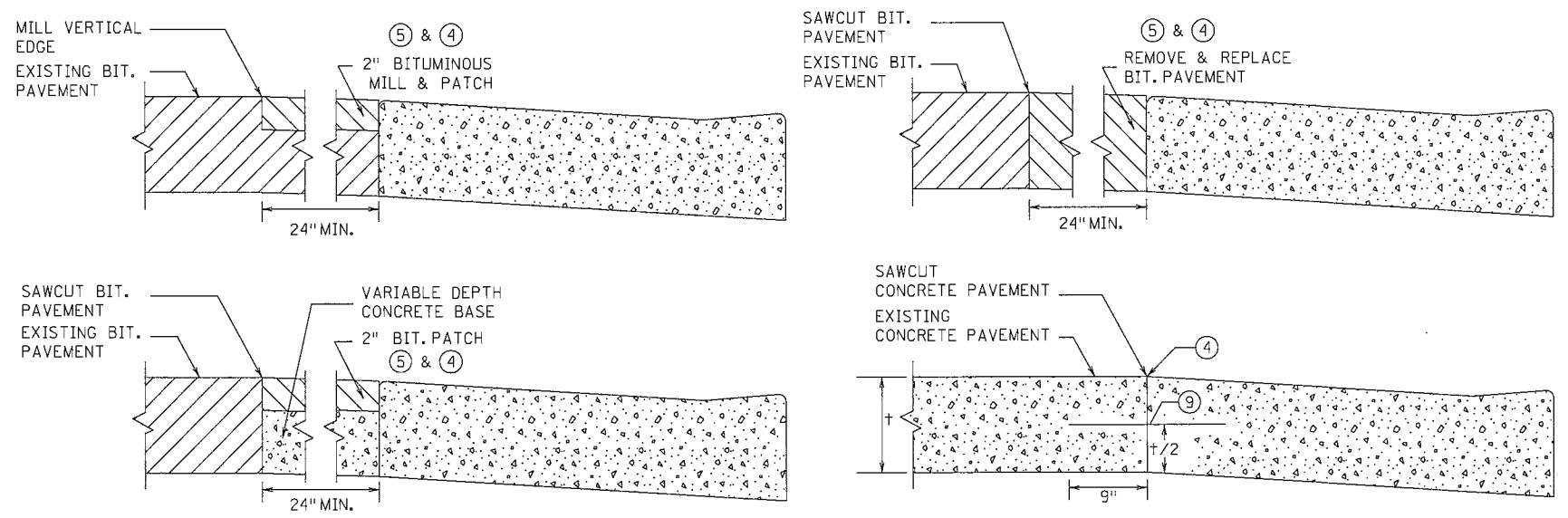
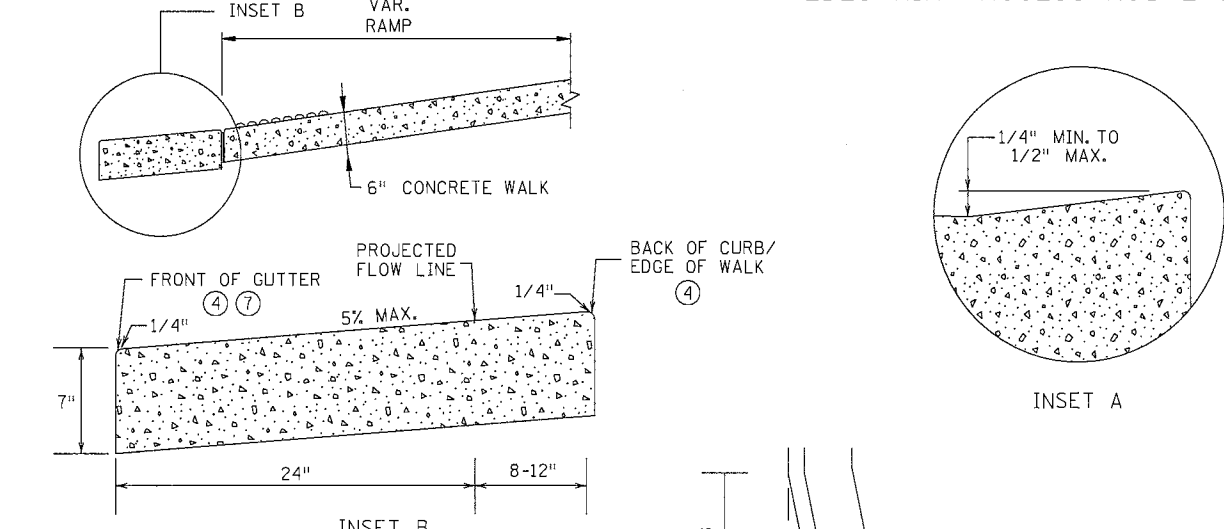
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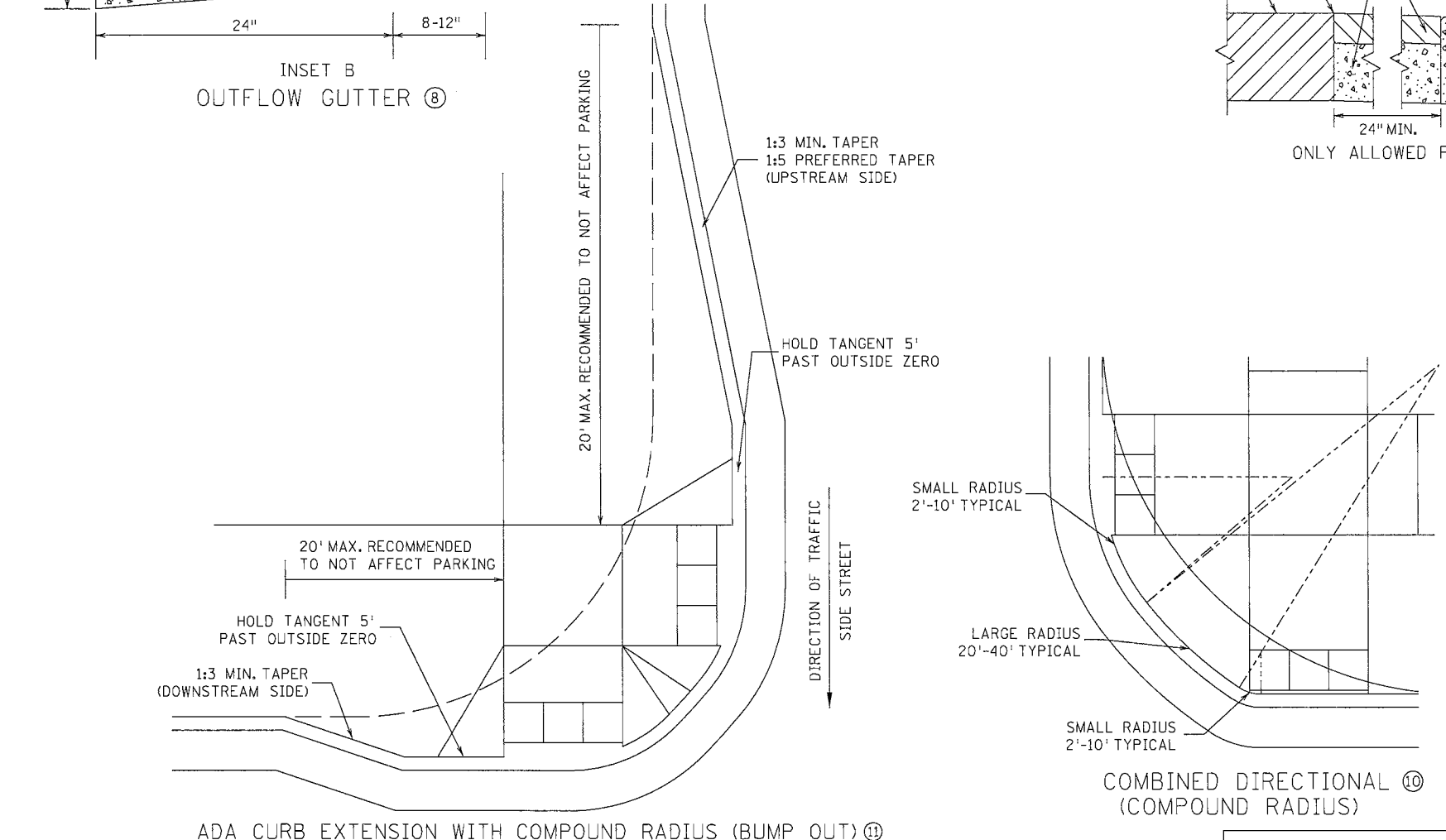
OPTIONAL SILL CURB WHEN SIDEWALK IS AT BACK OF CURB
CONCRETE SILL TO BE USED ONLY WHEN SPECIFIED IN THE PLAN.



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.
 - ① 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 RAMPS.
 - ② 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.
 - ③ BEGIN GUTTER SLOPE TRANSITION 10' OUTSIDE OF ALL CURB RAMPS.
 - ④ THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4\".
 - ⑤ 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.
 - ⑥ VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS. SEE SHEET 2 FOR DIRECTIONAL CURB SLOPE REQUIREMENTS.
 - ⑦ 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.
 - ⑧ SHOULD BE USED AT VERTICALLY CONSTRAINED AREAS WHEN AT A DRAINAGE HIGH POINT OR SUPER ELEVATED ROADWAY SEGMENTS.
 - ⑨ 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.
 - ⑩ 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.
 - ⑪ 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.
 - ⑫ PLACE BOND BREAKER BETWEEN WALK AND TOP OF SILL.
 - ⑬ 1/2\" PREFORMED JOINT FILLER PER MNDOT SPEC. 3702.
 - ⑭ DIMENSION TO BE SAME AS SIDEWALK THICKNESS, 4\" MIN.



REVISION:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER

SAP 002-601-049



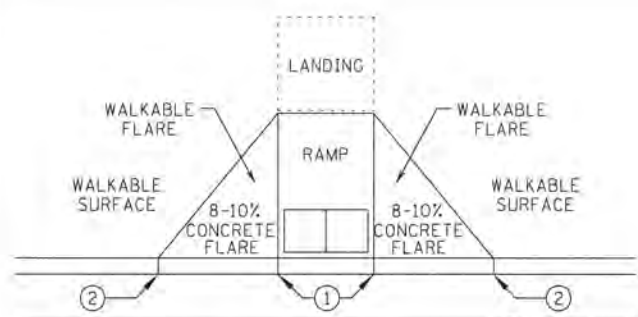
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APPROVED: 1-23-2017
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS (3 OF 6)
STANDARD PLAN 5-297.250 16 OF 34

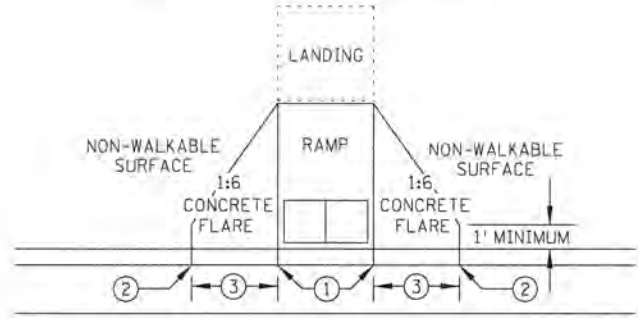
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03/30/2017

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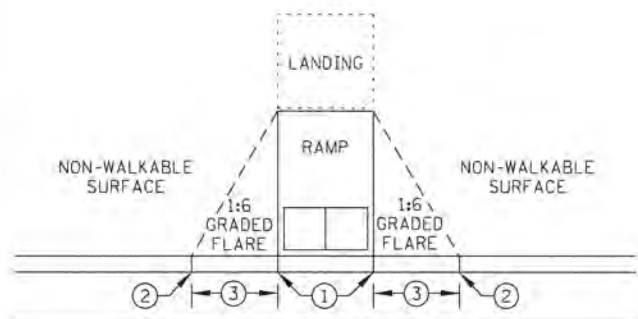
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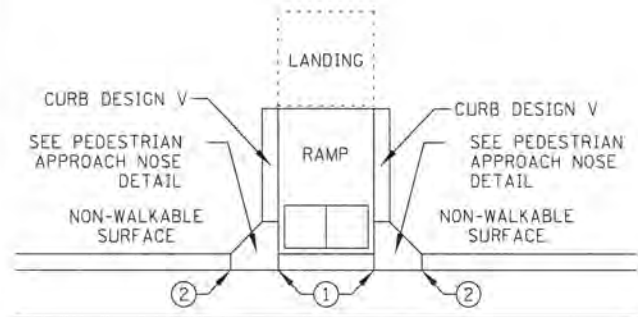
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

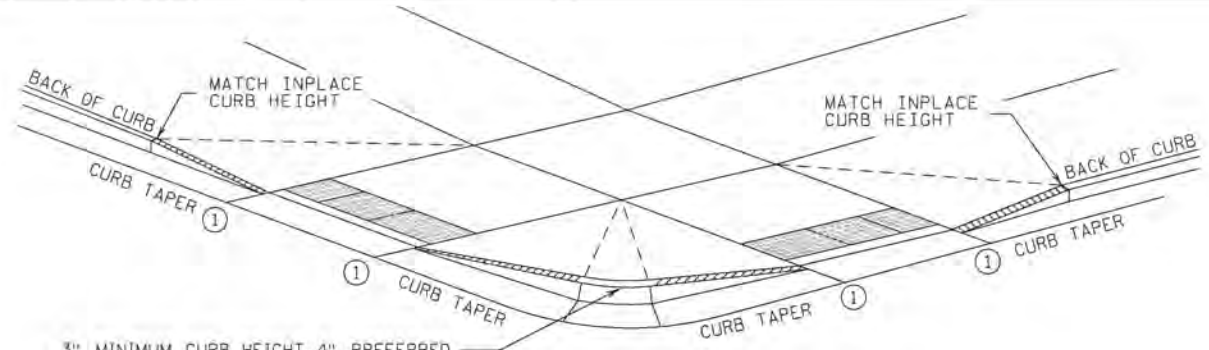


GRADED FLARES



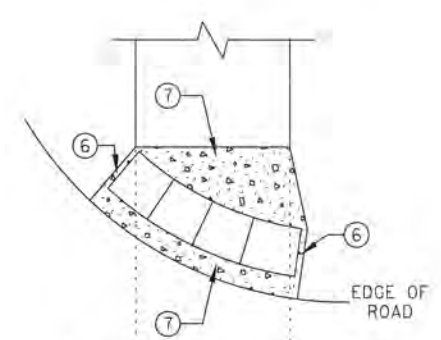
RETURNED CURB ⑤

TYPICAL SIDE TREATMENT OPTIONS ④ ⑩

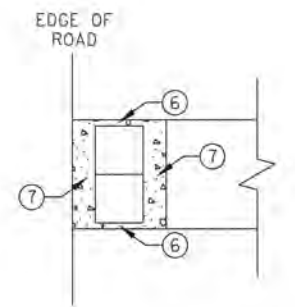


3" MINIMUM CURB HEIGHT, 4" PREFERRED
(MEASURED AT FRONT FACE OF CURB)
FOR A MIN. 6" LENGTH (MEASURED ALONG FLOW LINE)

DETECTABLE EDGE WITH ⑧
CURB AND GUTTER

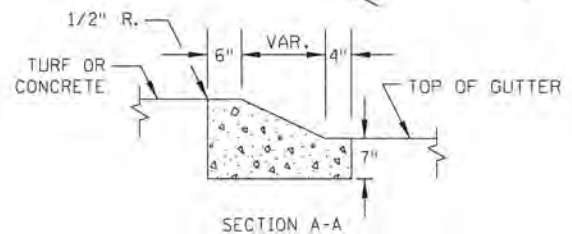
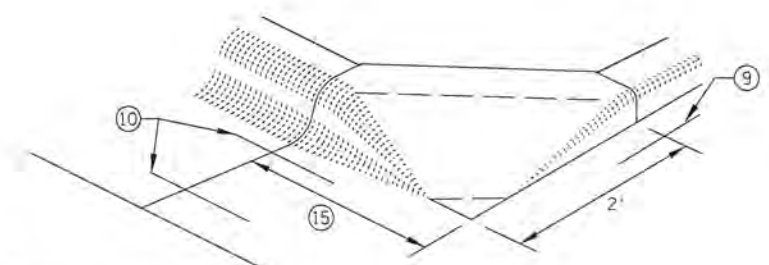


RADIAL DETECTABLE WARNING

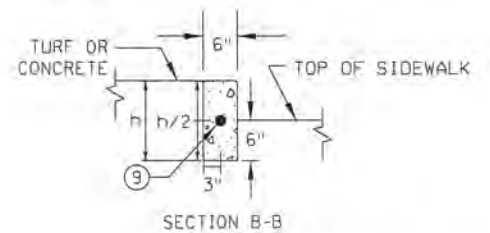


RECTANGULAR DETECTABLE WARNING

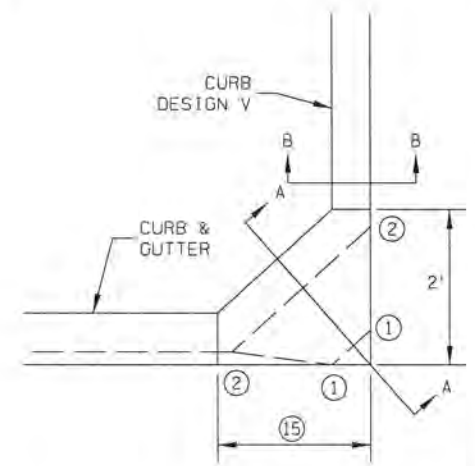
DETECTABLE EDGE WITHOUT CURB AND GUTTER



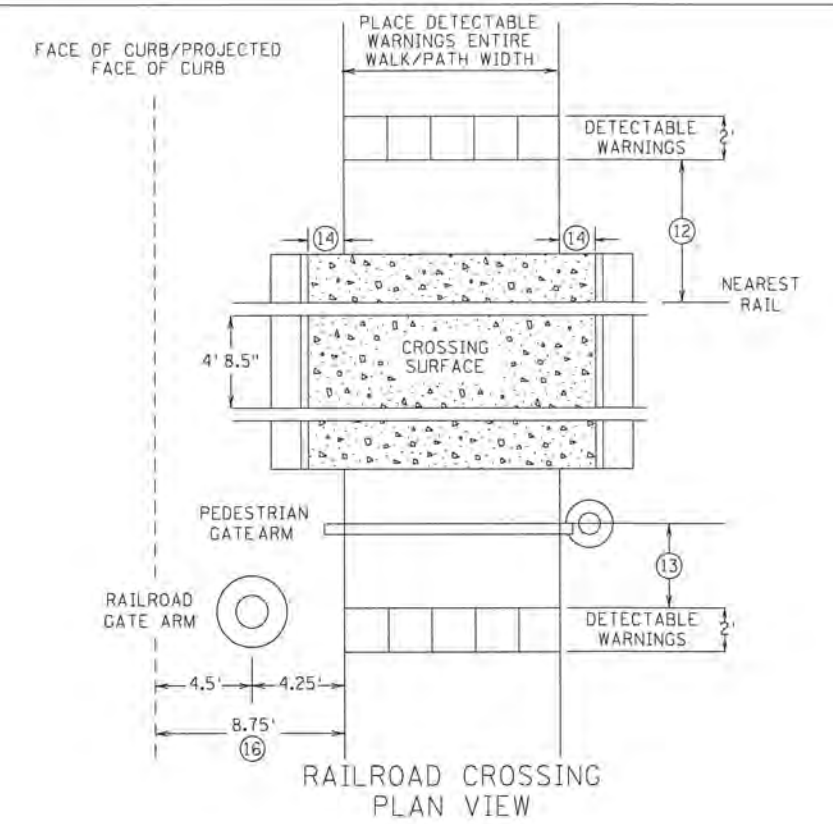
SECTION A-A



SECTION B-B



PEDESTRIAN APPROACH
NOSE DETAIL
(FOR RETURNED CURB
SIDE TREATMENT)



RAILROAD CROSSING
PLAN VIEW

NOTES:

- SEE STANDARD PLATE 7038 AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.
- A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.
- CONCRETE FLARE LENGTHS ADJACENT TO NON-WALKABLE SURFACES SHOULD BE LESS THAN 8' LONG MEASURED ALONG THE RAMPS FROM THE BACK OF CURB.
- ① 0" CURB HEIGHT.
- ② FULL CURB HEIGHT.
- ③ 2' FOR 4" HIGH CURB AND 3' FOR 6" HIGH CURB.
- ④ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.
- ⑤ TYPICALLY USED FOR MEDIANS AND ISLANDS.
- ⑥ WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY. MAINTAIN 3" MAX. BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
- ⑦ IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 1' FROM THE EDGE OF BITUMINOUS ROADWAY AND/OR BITUMINOUS SHARED-USE PATH TO PROVIDE VISUAL CONTRAST.
- ⑧ ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS 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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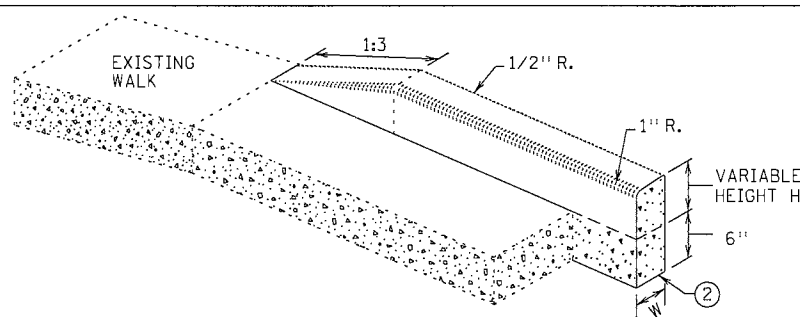
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1-23-2017

PEDESTRIAN CURB RAMP DETAILS (4 OF 6)	
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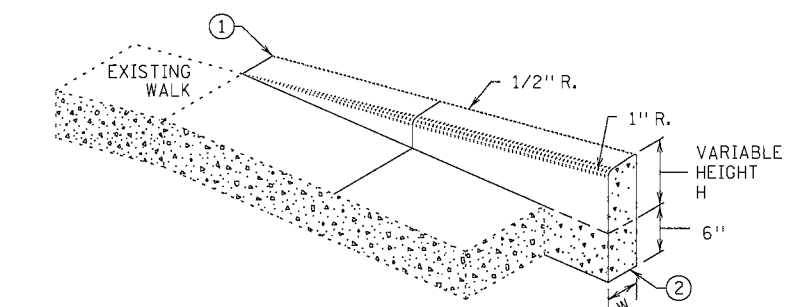
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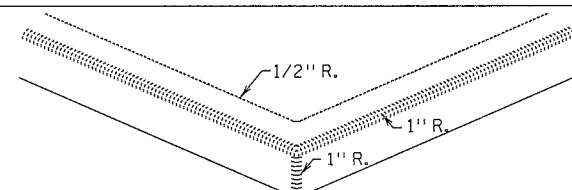
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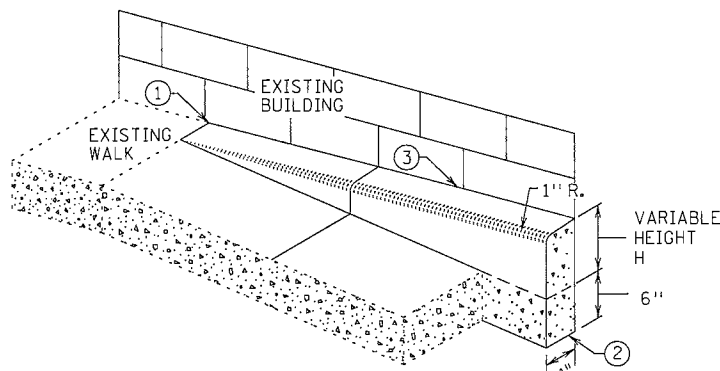
V CURB ADJACENT TO LANDSCAPE
CURB WITHIN SIDEWALK LIMITS



V CURB ADJACENT TO LANDSCAPE
CURB OUTSIDE SIDEWALK LIMITS

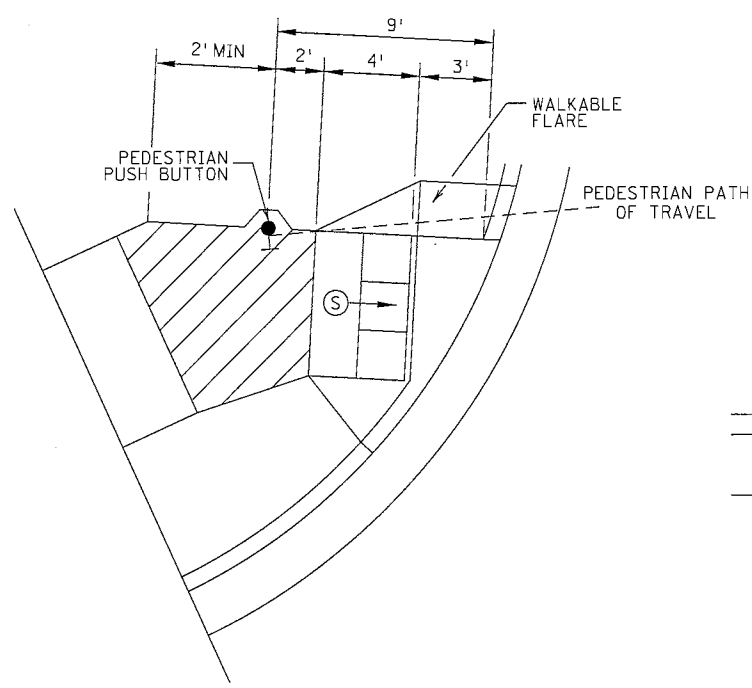


V CURB INTERSECTION

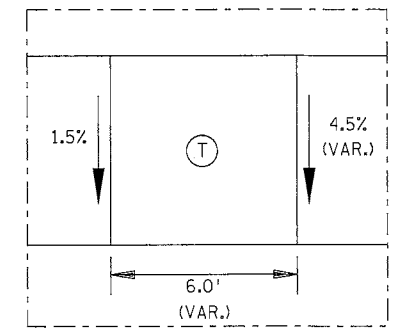
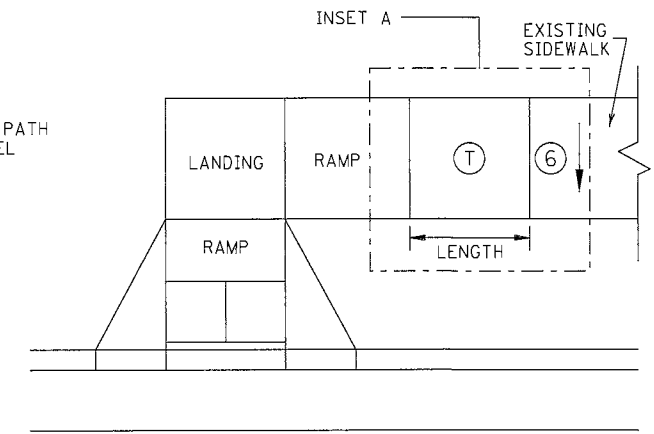


V CURB ADJACENT TO BUILDING
OR BARRIER

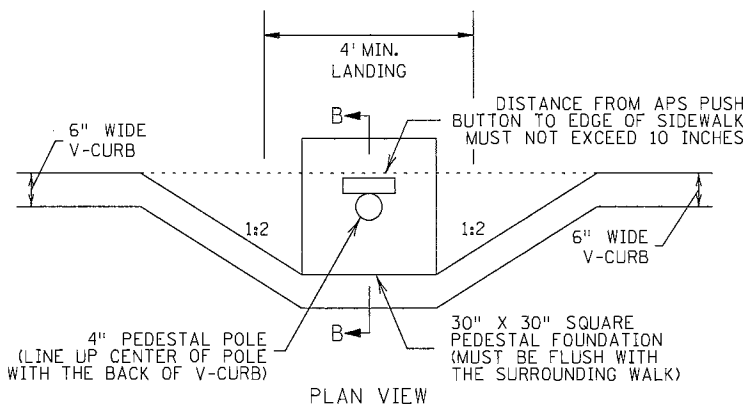
CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
< 6"	4"
≥ 6"	6"



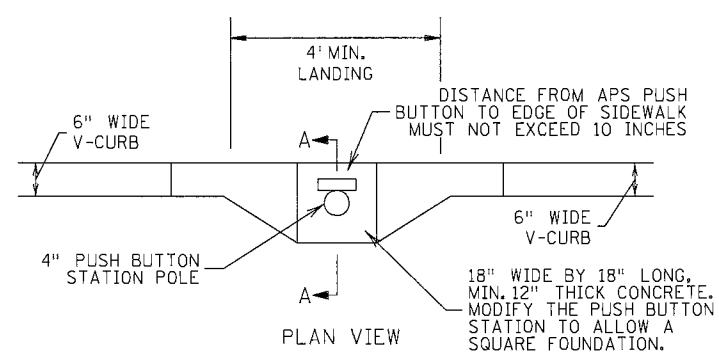
SEMI-DIRECTIONAL RAMP (3,4,9)
3' DOME SETBACK, 4' LONG RAMP AND
PUSH BUTTON 9' FROM THE BACK OF CURB
PRIMARYLY USED FOR APS APPLICATIONS
WHERE THE PAR DOES NOT CONTINUE PAST
THE PUSH BUTTON (DEAD-END SIDEWALK)



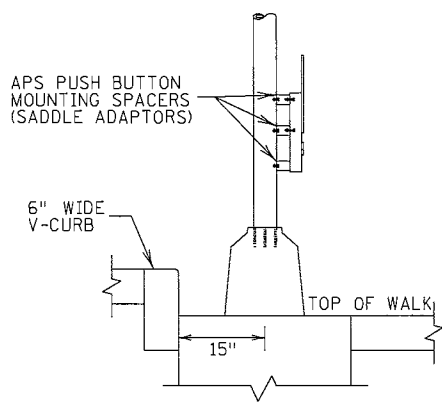
INSET A
TRANSITION PANEL ④⑤



PLAN VIEW

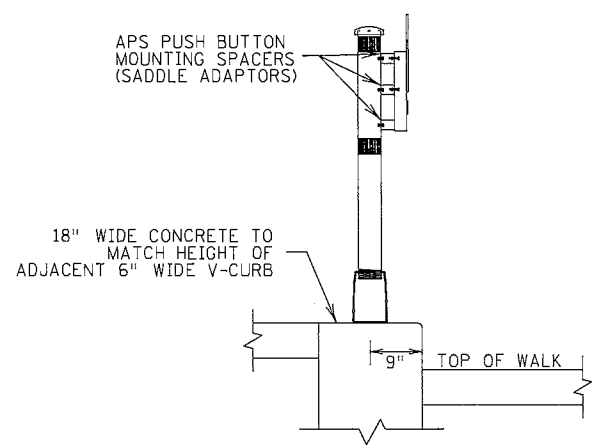


PLAN VIEW



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 PANEL(S) 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%.

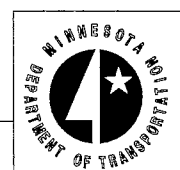
LEGEND

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 PARS.
- ① TRANSITION PANEL(S) - TO BE USED FOR TRANSITIONING THE CROSS-SLOPE OF A RAMP TO THE EXISTING WALK CROSS-SLOPE. RATE OF TRANSITION SHOULD BE 0.5% PER 1 LINEAR FOOT OF WALK. SEE THIS SHEET FOR ADDITIONAL INFORMATION.

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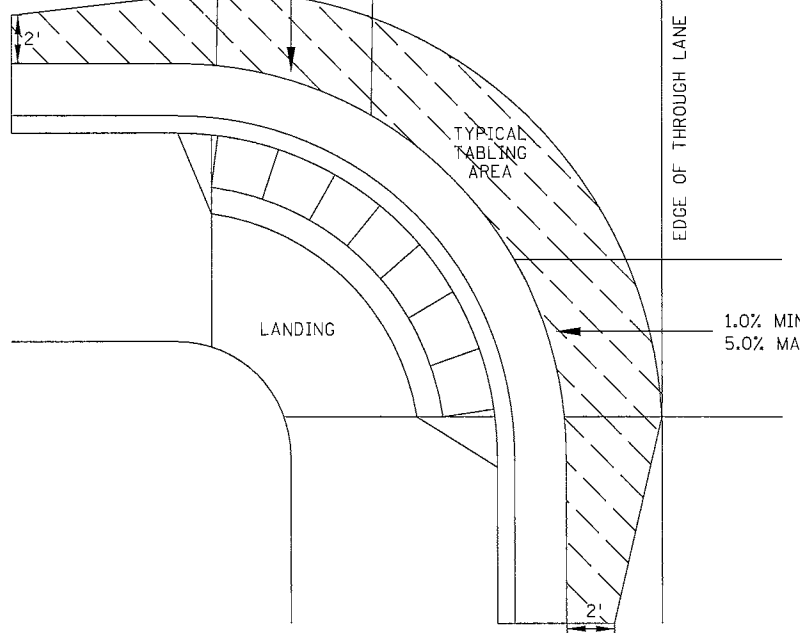
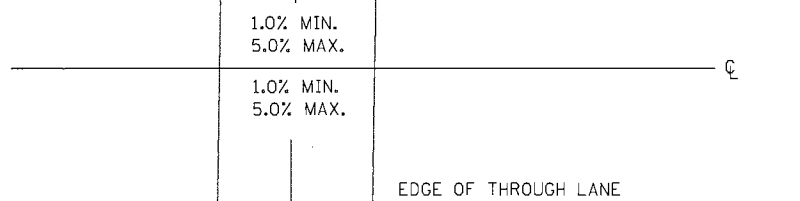
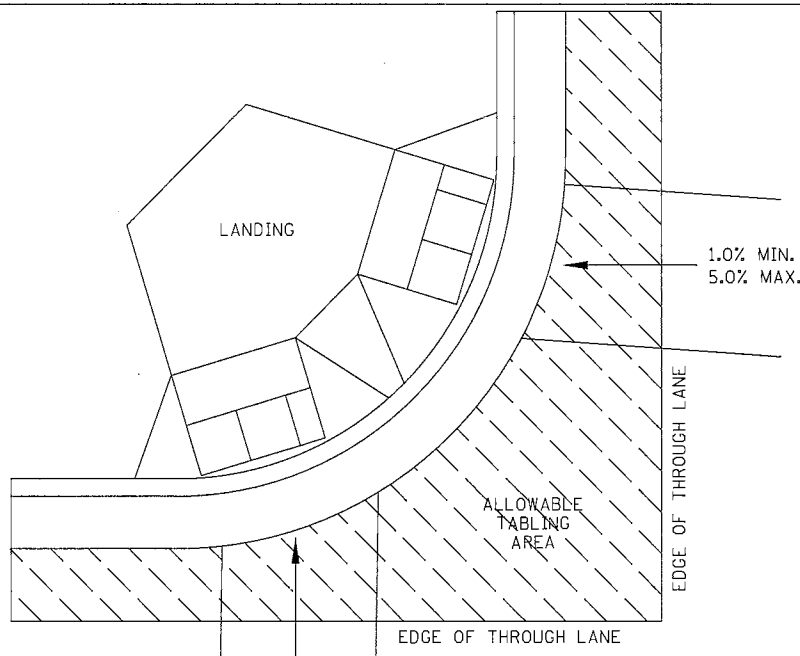
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PEDESTRIAN CURB RAMP DETAILS (5 OF 6)
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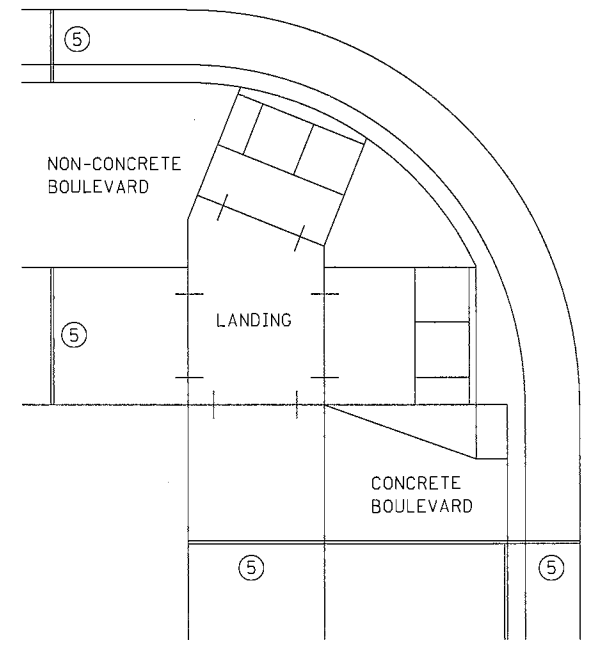
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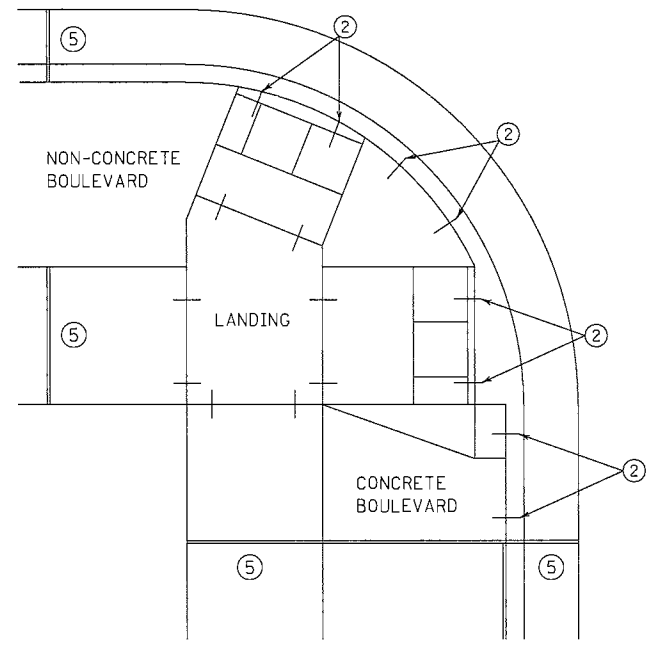
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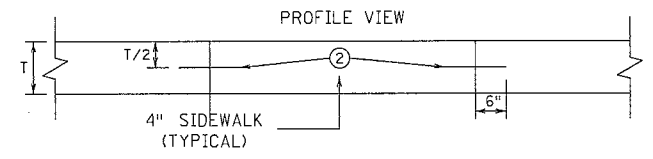
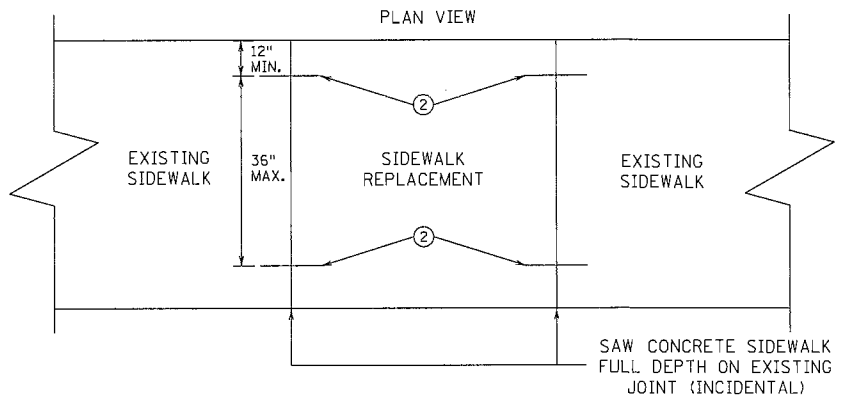
CURB LINE AND ROAD CROSSING ADJUSTMENTS



EXPANSION MATERIAL PLACEMENT FOR CONCRETE AND BITUMINOUS ROADWAYS

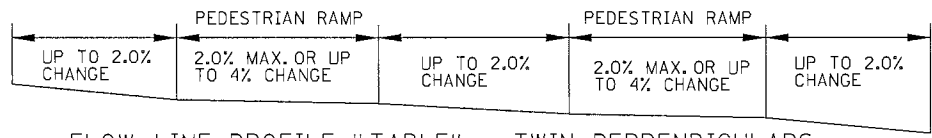


OPTIONAL CURB LINE REINFORCEMENT PLACEMENT ON BITUMINOUS ROADWAYS

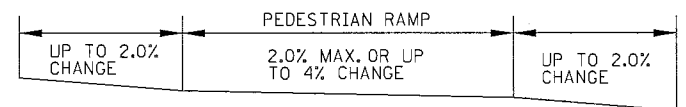


OPTIONAL SIDEWALK REINFORCEMENT

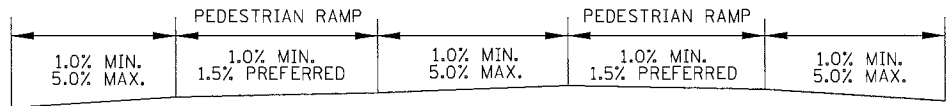
SIDEWALK REINFORCEMENT TO BE USED ONLY WHEN SPECIFIED IN THE PLAN.



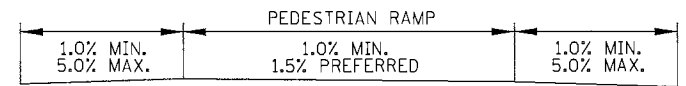
FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



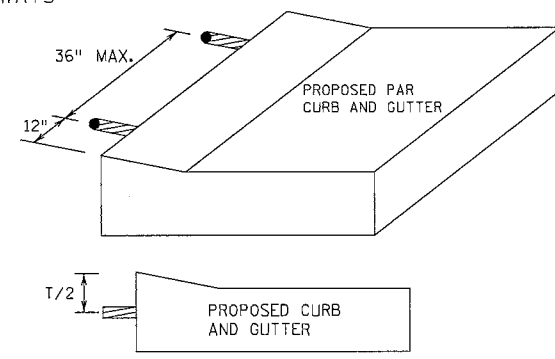
FLOW LINE PROFILE "TABLE" - FAN



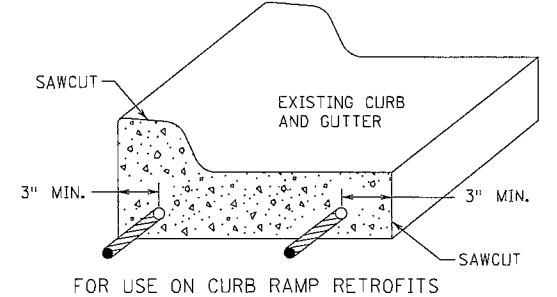
FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS



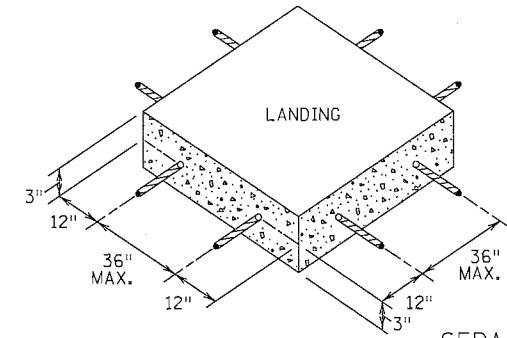
FLOW LINE PROFILE RAISE - FAN



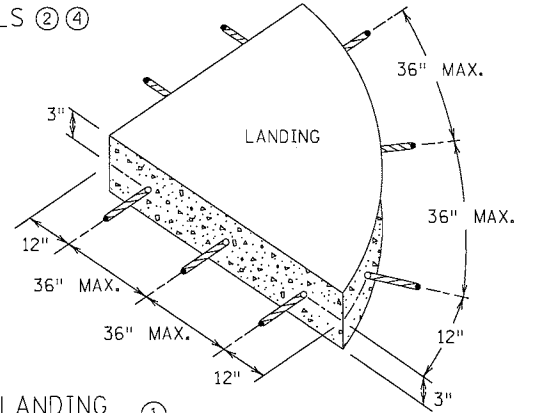
OPTIONAL CURB LINE REINFORCEMENT DETAILS



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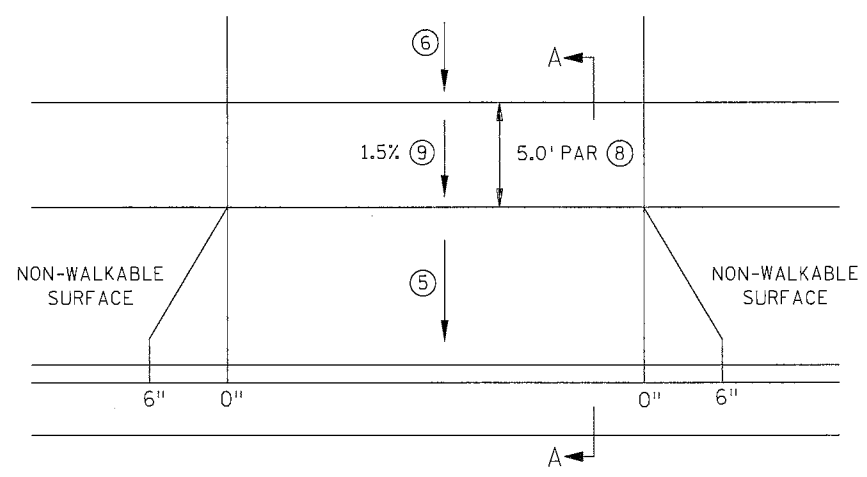
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PEDESTRIAN CURB RAMP DETAILS (6 OF 6)
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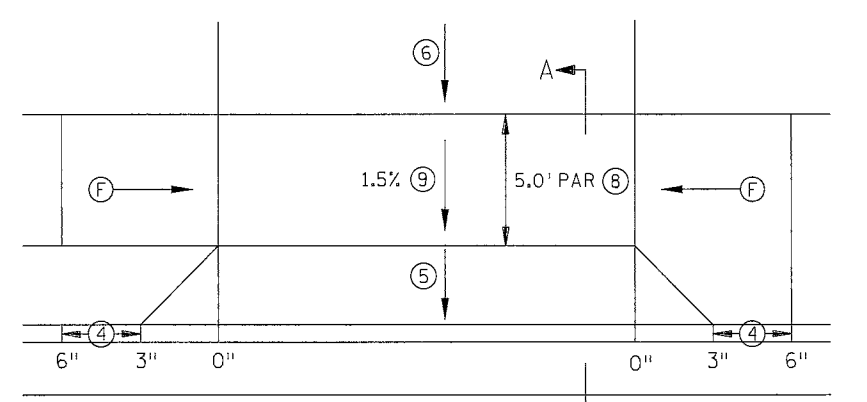
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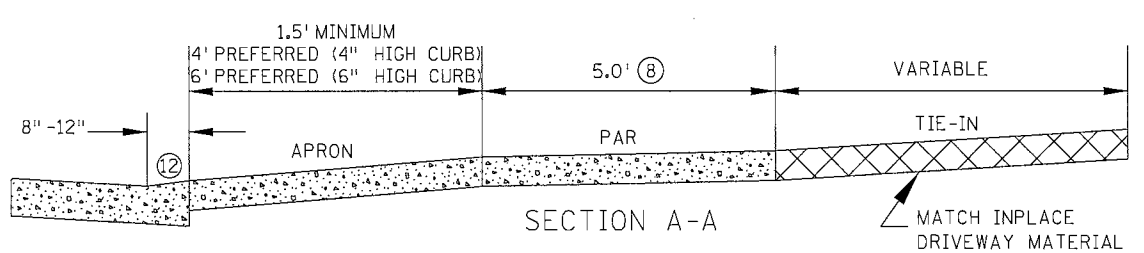
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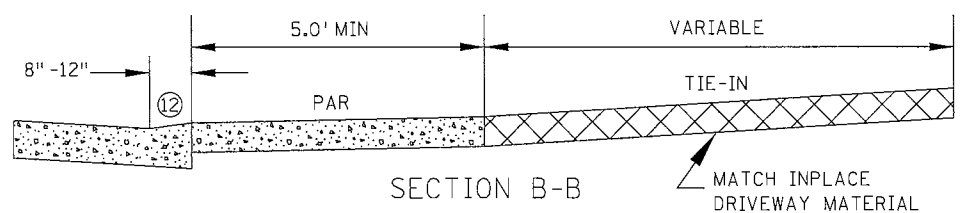
PERPENDICULAR DRIVEWAY ①



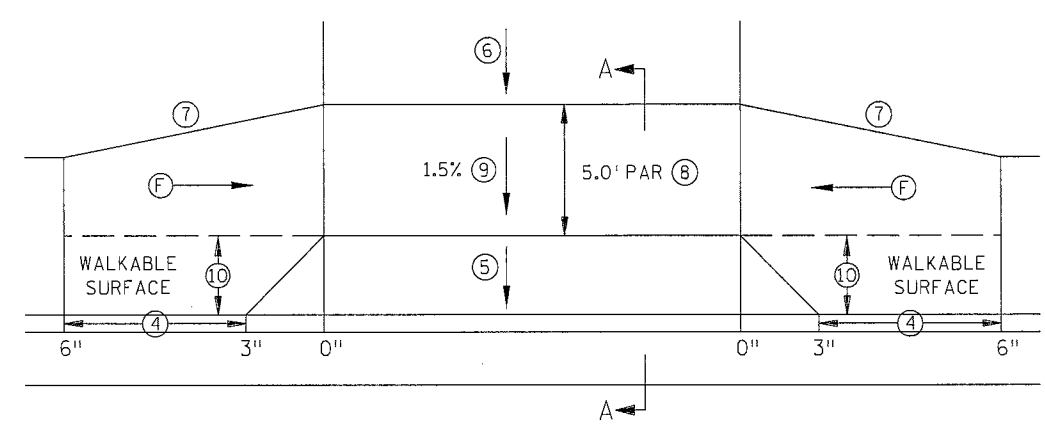
TIERED PERPENDICULAR DRIVEWAY ②



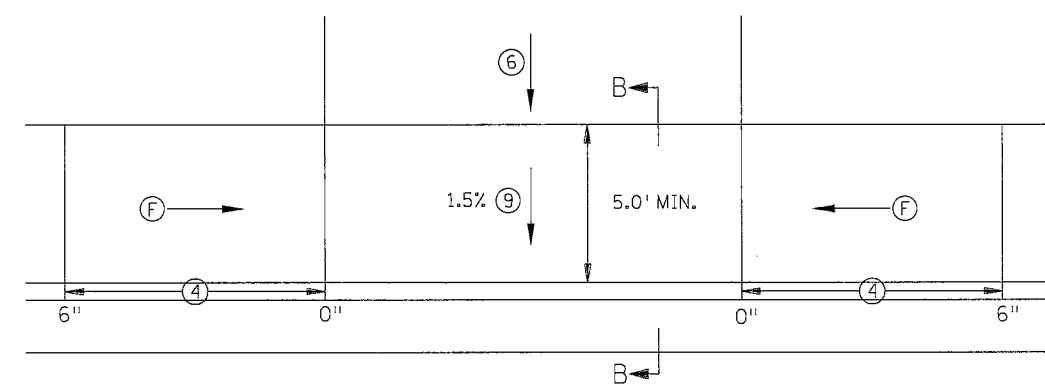
SECTION A-A



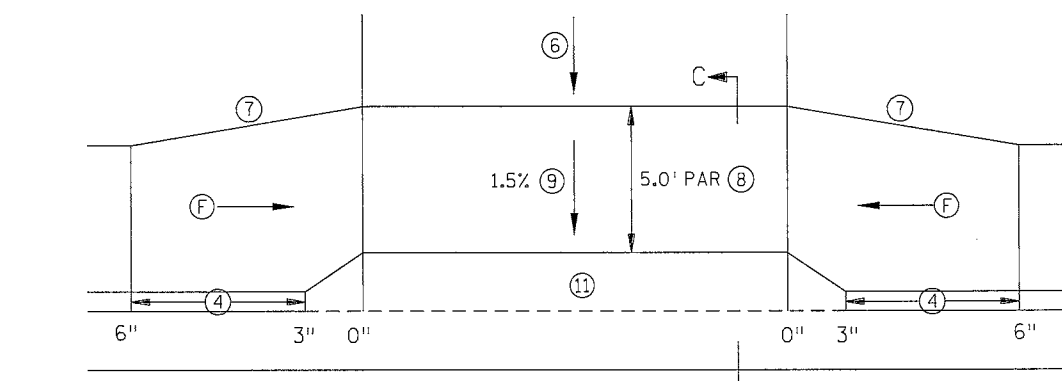
SECTION B-B



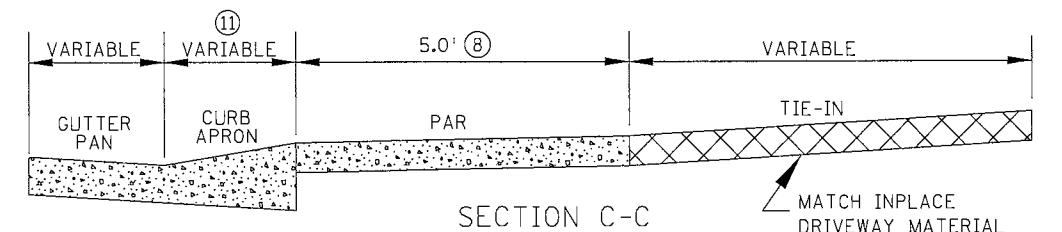
TIERED PERPENDICULAR OFFSET DRIVEWAY



PARALLEL DRIVEWAY ③



VALLEY GUTTER DRIVEWAY



SECTION C-C

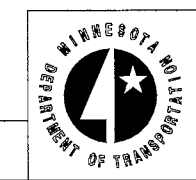
NOTES:

- 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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APPROVED: JANUARY 23, 2017
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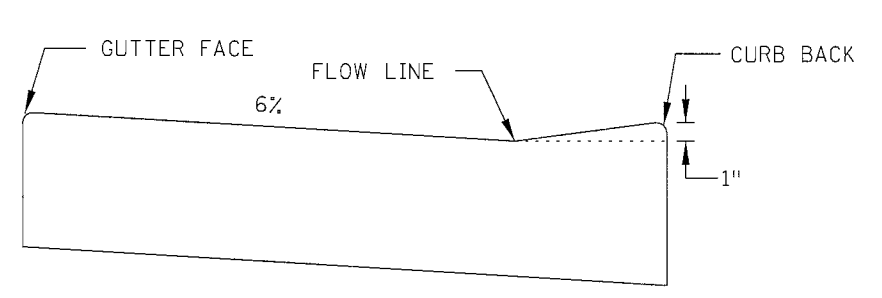
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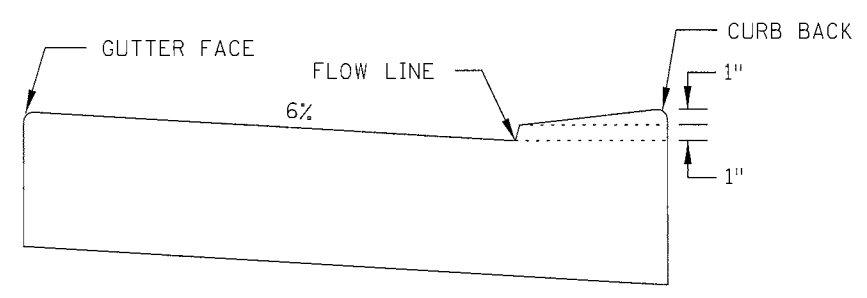
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APPROVED: 1-23-2017
STATE DESIGN ENGINEER

DRIVEWAY AND SIDEWALK DETAILS (1 OF 4)
STANDARD PLAN 5-297.254 20 OF 34

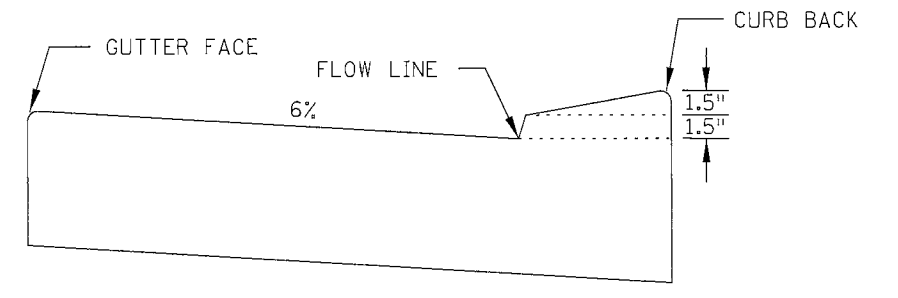
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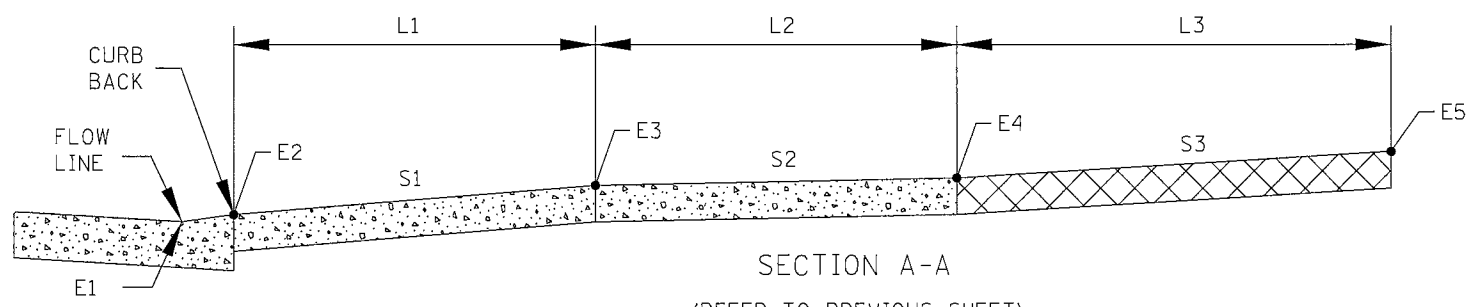
DW CURB STANDARD
STANDARD CURB AT DRIVEWAY



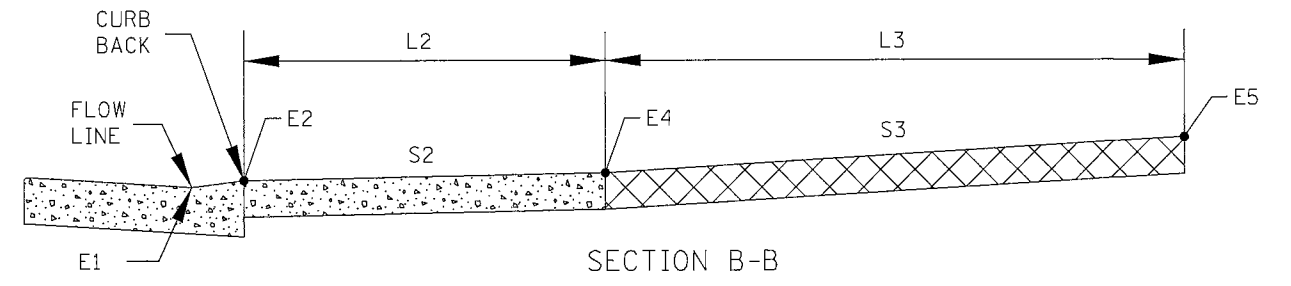
DW CURB TYPE 2
VERTICALLY CONSTRAINED



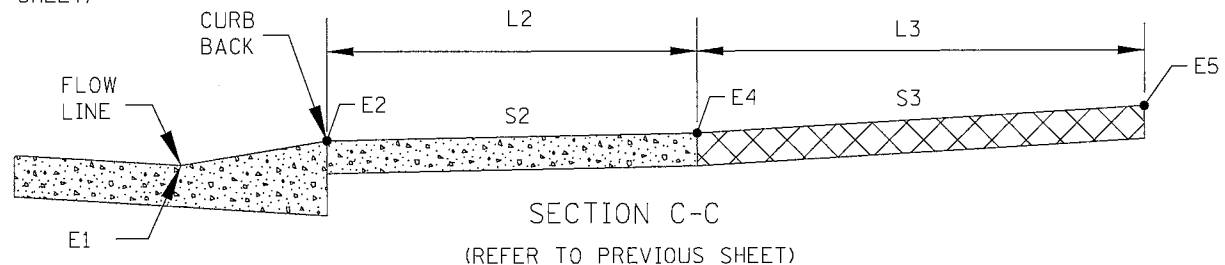
DW CURB TYPE 3
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SECTION A-A
(REFER TO PREVIOUS SHEET)



SECTION B-B
(REFER TO PREVIOUS SHEET)



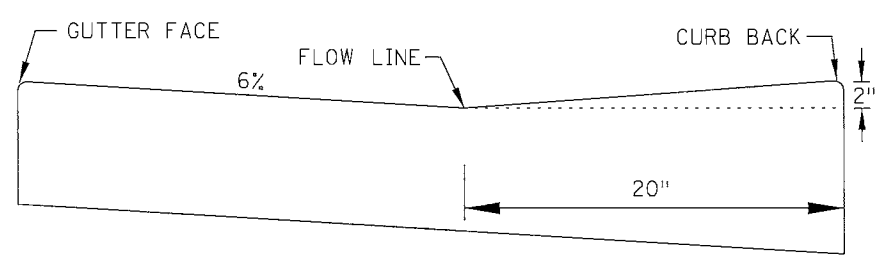
SECTION C-C
(REFER TO PREVIOUS SHEET)

DRIVEWAY TABULATION ①

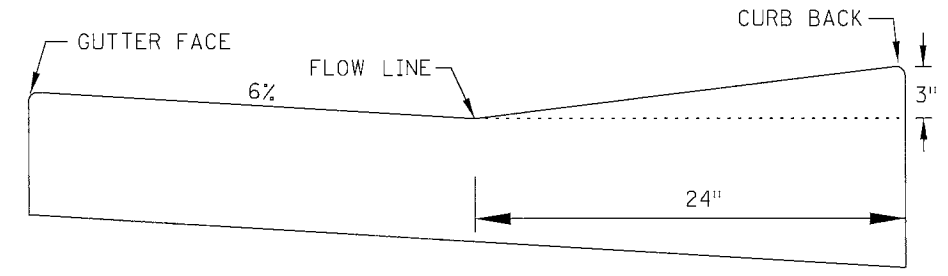
STATION	SIDE	DRIVEWAY TYPE	CURB TYPE ③	E1	E2	L1 FT	S1 %	E3	L2 FT	S2 ② %	E4	L3 FT	S3 %	EXISTING %	E5	COMMENTS

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



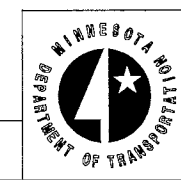
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VALLEY GUTTER CURB
OTHER CURB HEIGHTS & CURB APRON LENGTHS CAN BE USED

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REVISION:
APPROVED: JANUARY 23, 2017
[Signature]
OPERATIONS ENGINEER

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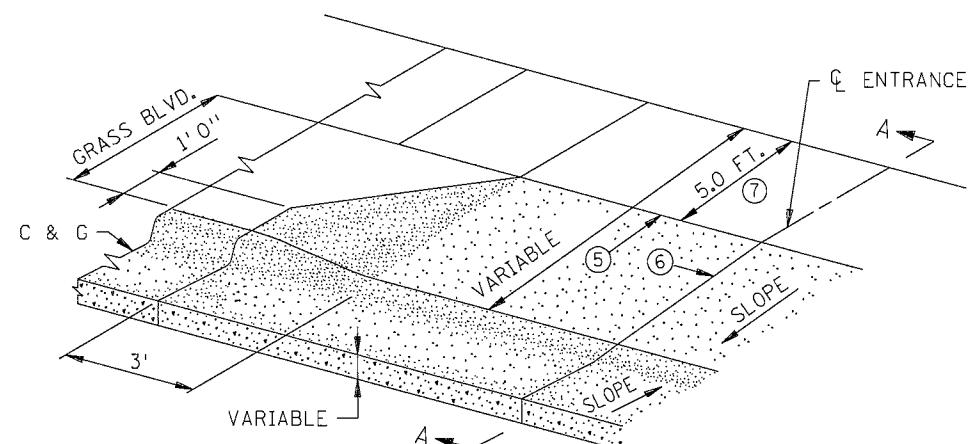
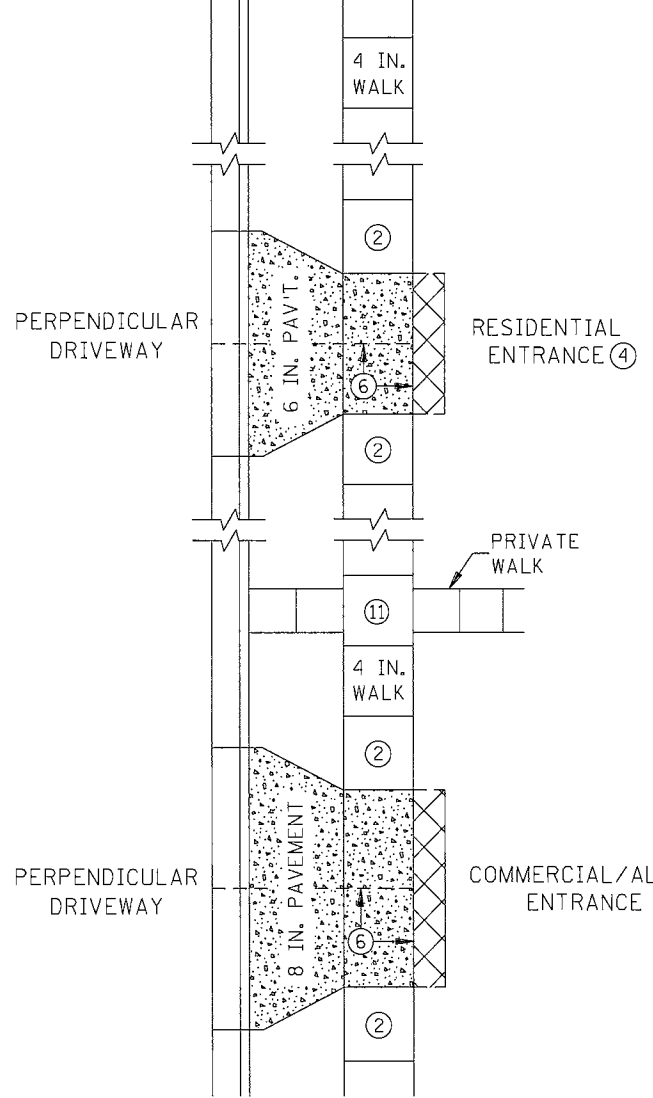
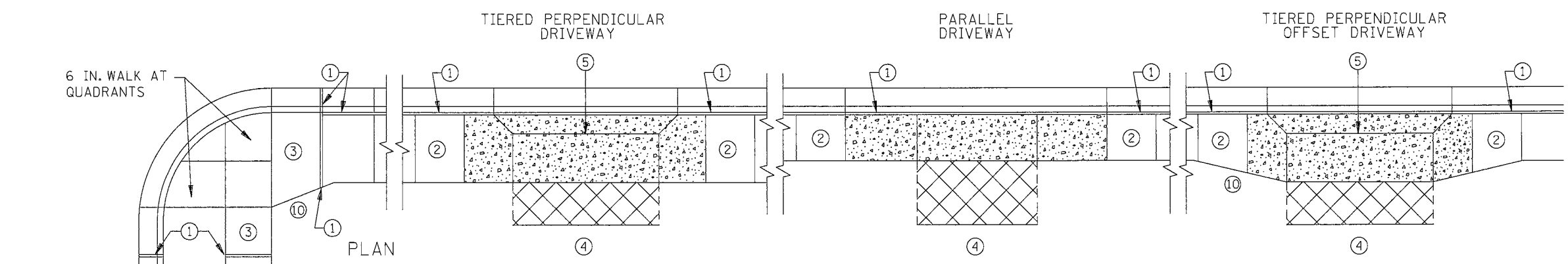
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APPROVED:
1-23-2017

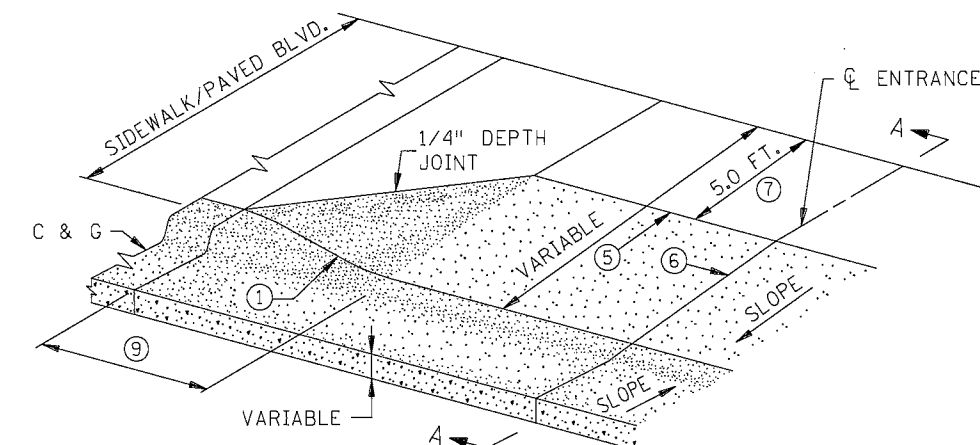
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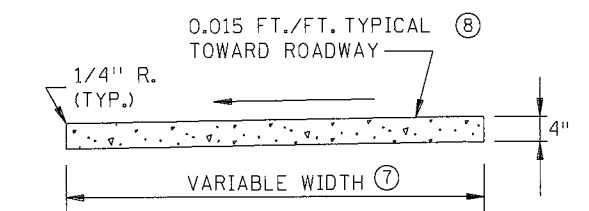
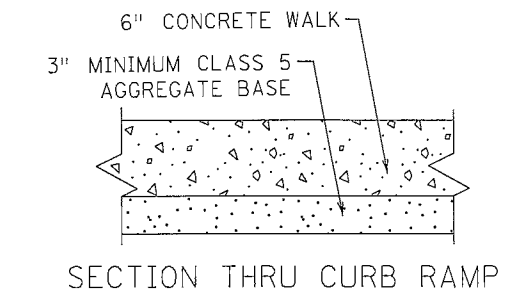
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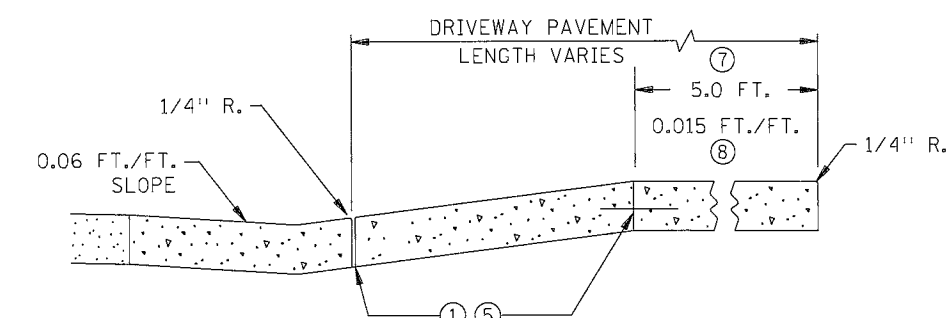
HALF PLAN PERSPECTIVE
PERPENDICULAR DRIVEWAYS WITH GRASS BOULEVARDS



HALF PLAN PERSPECTIVE
PERPENDICULAR DRIVEWAYS WITH CONCRETE
BOULEVARDS AND ALL TIERED DRIVEWAYS



SECTION THRU WALK



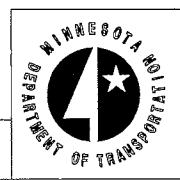
SECTION A-A
SECTION THRU DRIVEWAY

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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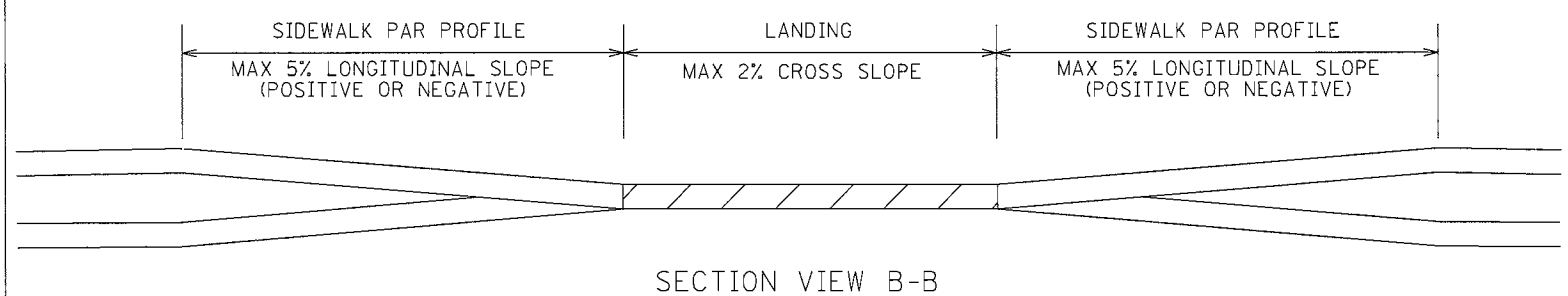
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1-23-2017
STATE DESIGN ENGINEER

DRIVEWAY AND SIDEWALK DETAILS (3 OF 4)
STANDARD PLAN 5-297.254
22 OF 34

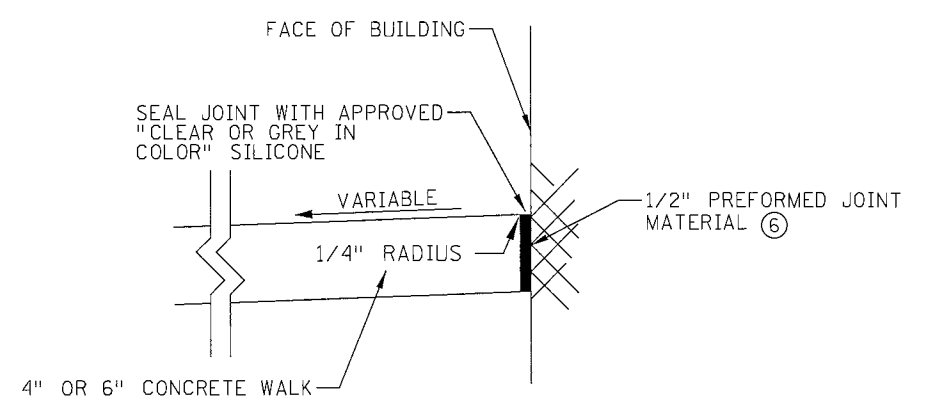
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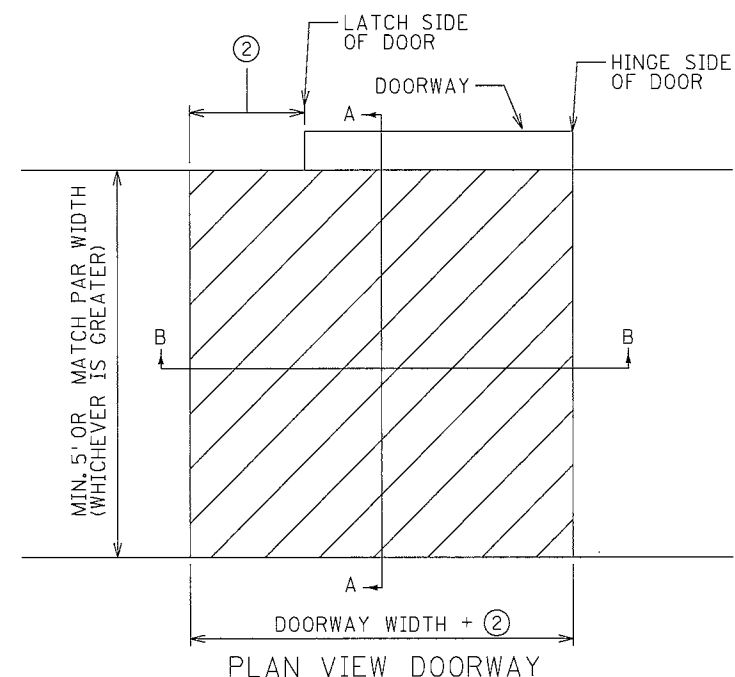
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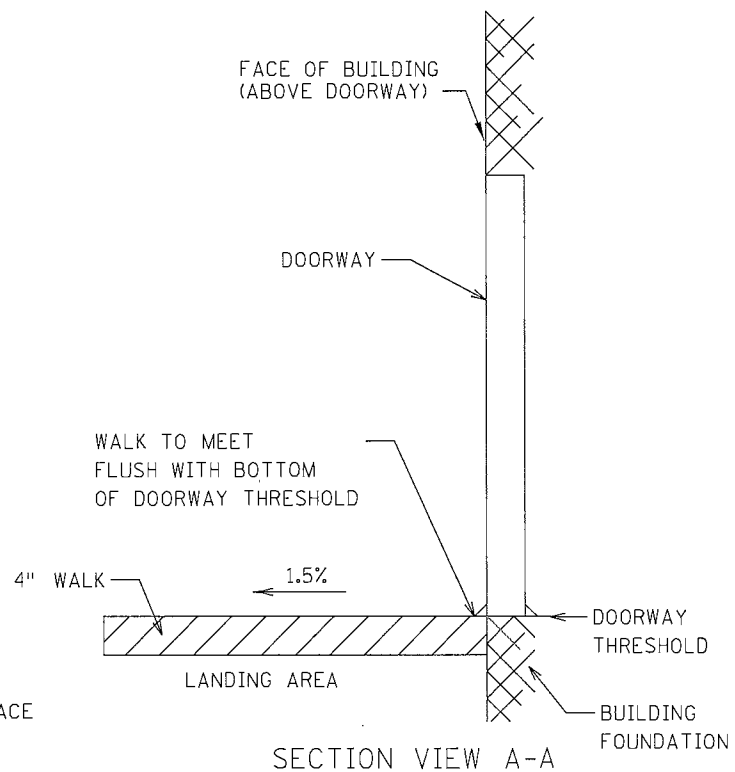
SECTION VIEW B-B



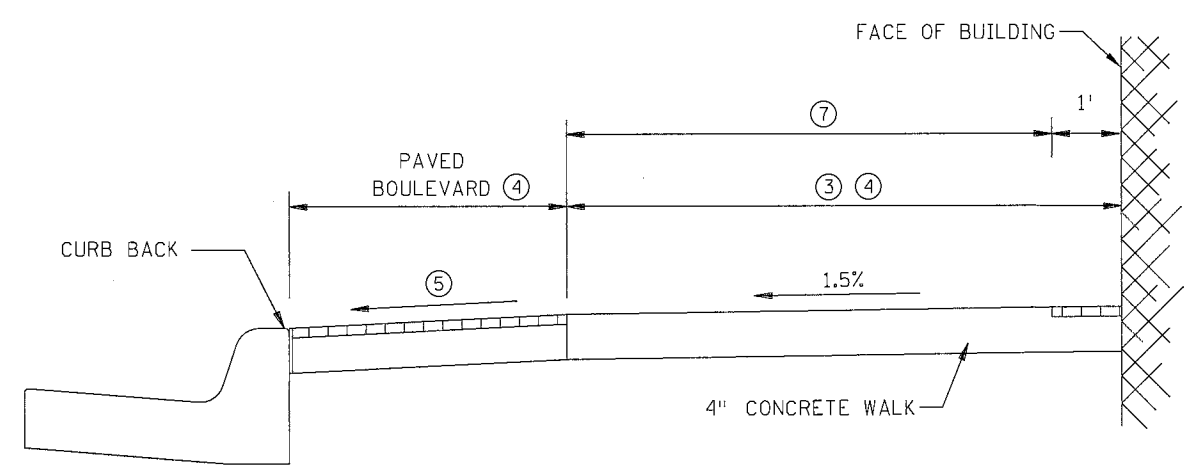
BUILDING JOINT SEAL (INCIDENTAL)



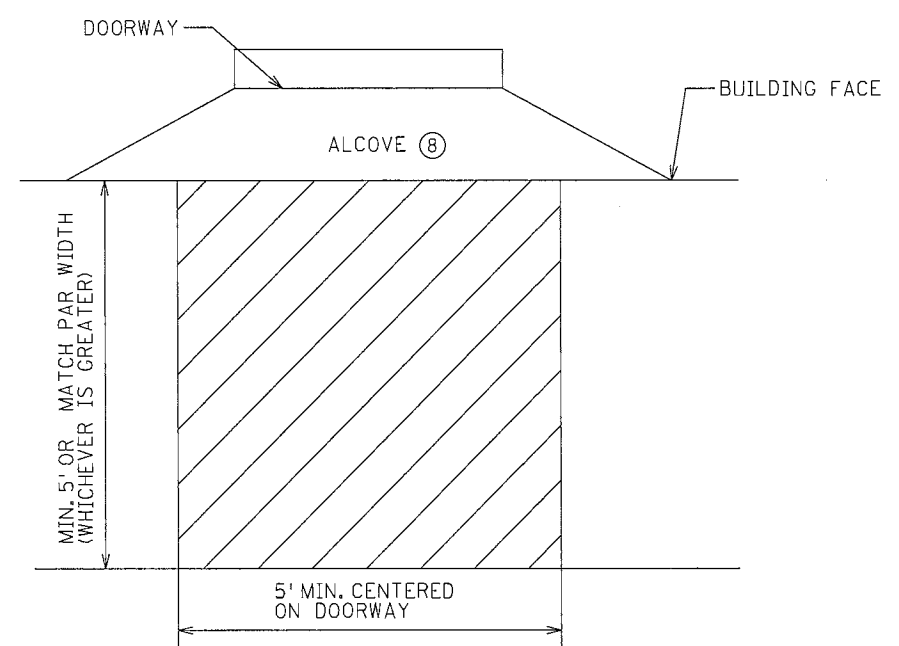
PLAN VIEW DOORWAY



SECTION VIEW A-A



DOWNTOWN SIDEWALK TYPICAL SECTION



PLAN VIEW DOORWAY WITH ALCOVE

SIDEWALK LANDING REQUIREMENTS ①

NOTES:

- FIELD ADJUST SIDEWALK PROFILES TO MEET ALL DOORWAY THRESHOLDS.
- SIDEWALK MUST MAINTAIN POSITIVE DRAINAGE AWAY FROM THE BUILDING TO THE ROADWAY. SEE SPECIAL PROVISIONS FOR SILICONE SPECIFICATIONS.
- 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

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1-23-2017

DRIVEWAY AND SIDEWALK DETAILS (4 OF 4)	
STANDARD PLAN 5-297.254	23 OF 34

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	20205
4" BROKEN LINE WHITE - EPOXY PAINT	LIN FT	2960
4" SOLID LINE YELLOW - EPOXY PAINT	LIN FT	13540
24" SOLID LINE WHITE - PREFORMED TERMOPLASTIC	SQ FT	537
PAVEMENT MESSAGE (LEFT ARROW) - PREFORMED THERMOPLASTIC	SQ FT	105
PAVEMENT MESSAGE (RIGHT ARROW) - PREFORMED THERMOPLASTIC	SQ FT	90
3' X 6' ZEBRA CROSSWALK - PREFORMED THERMOPLASTIC	SQ FT	1638

SYMBOLS & MATERIALS LEGEND

■ CROSSWALK BLOCK WHITE PREFORMED THERMOPLASTIC

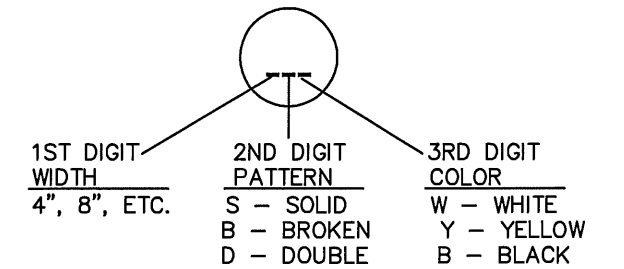
← PAVEMENT MESSAGE (LEFT ARROW) PREFORMED THERMOPLASTIC

STRIPING KEY

○ CIRCLE - EPOXY □ SQUARE PREFORMED THERMOPLASTIC

△ TRIANGLE - PAINT

⬠ PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING



EXAMPLE: (4SW) = 4" SOLID LINE WHITE - EPOXY

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 LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 PRINT NAME: MATTHEW J. JOHN
 SIGNATURE: *[Signature]*
 DATE: 8/8/2017 LICENSE NO. 51639

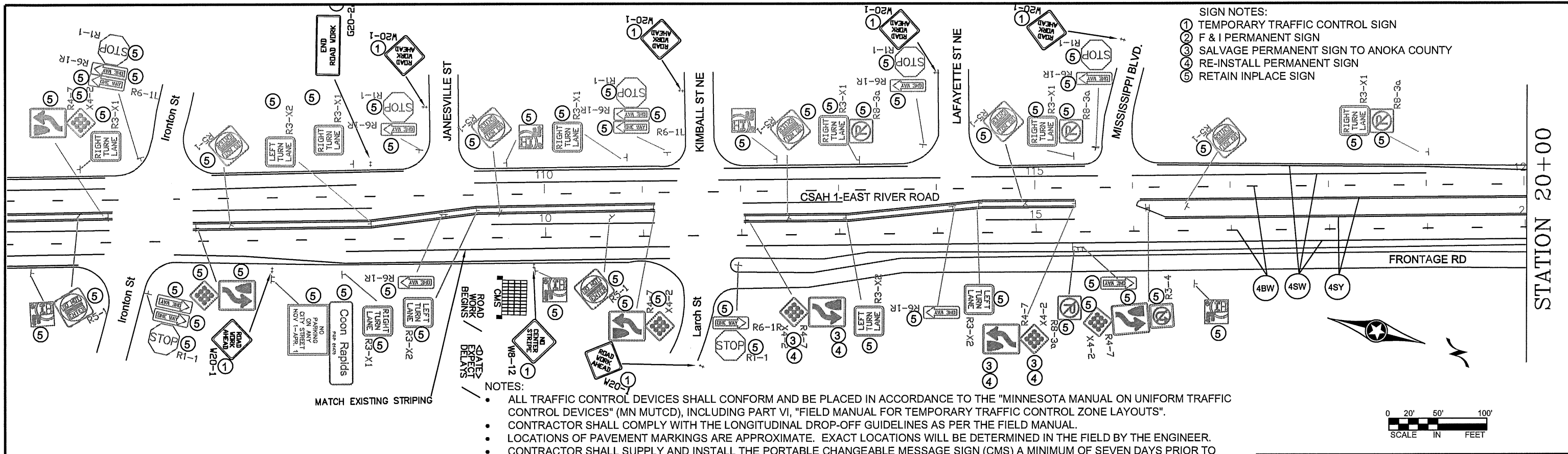
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ANOKA COUNTY
HIGHWAY DEPT.

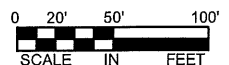
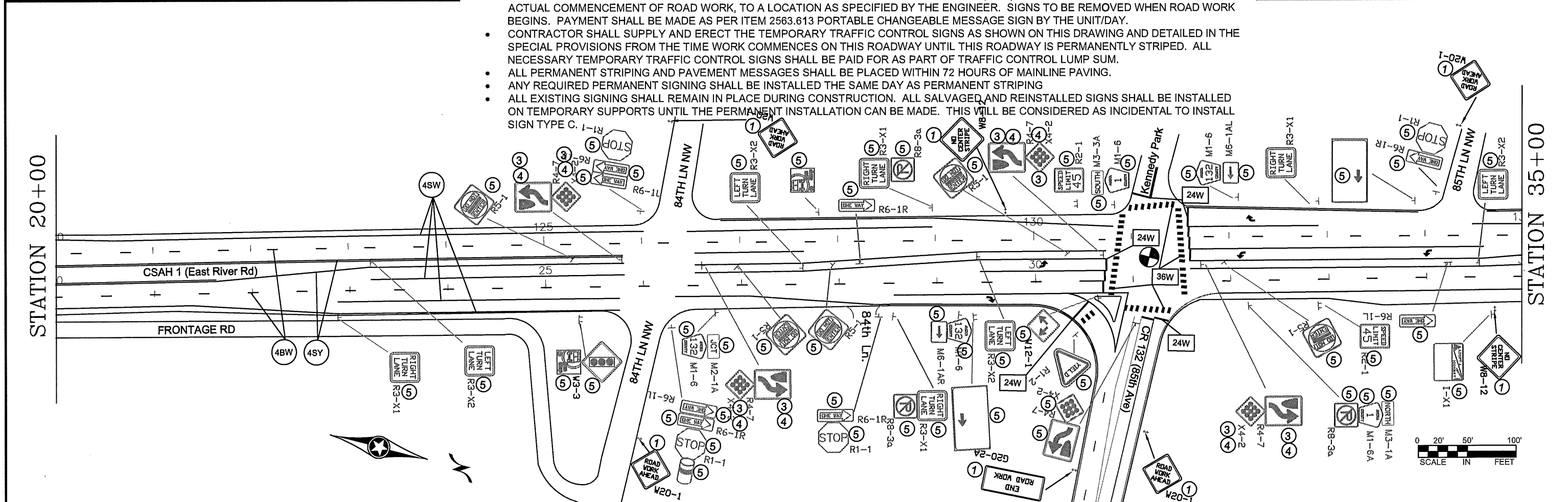
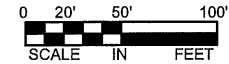
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 STATE AID PROJECT NO. 002-601-049
 STATE AID PROJECT NO. _____
 COUNTY PROJECT NO. _____

PERMANENT MARKING
TABULATION
 Sheet 24 of 34 Sheets



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

- NOTES:**
- 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.
 - 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.



NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\16-01-00\CSAH 35\Bases\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: MATTHEW J. JOHN

SIGNATURE: *Matthew J. John*

DATE: 3/8/2017 REG. NO. 51639

DRAWN BY: RLB DATE: 1/11/17

DESIGN BY: RLB DATE: 1/11/17

CHECKED BY: JR DATE: 1/11/17

ANOKA COUNTY
HIGHWAY DEPT.

STATE PROJECT NO. _____

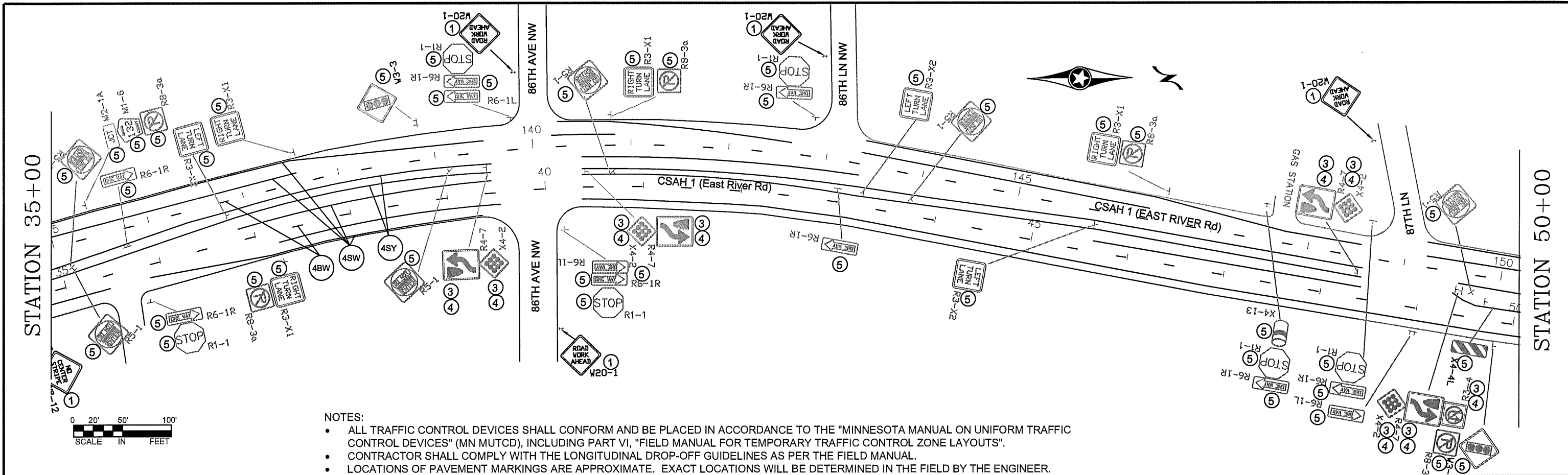
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COUNTY PROJECT NO. _____

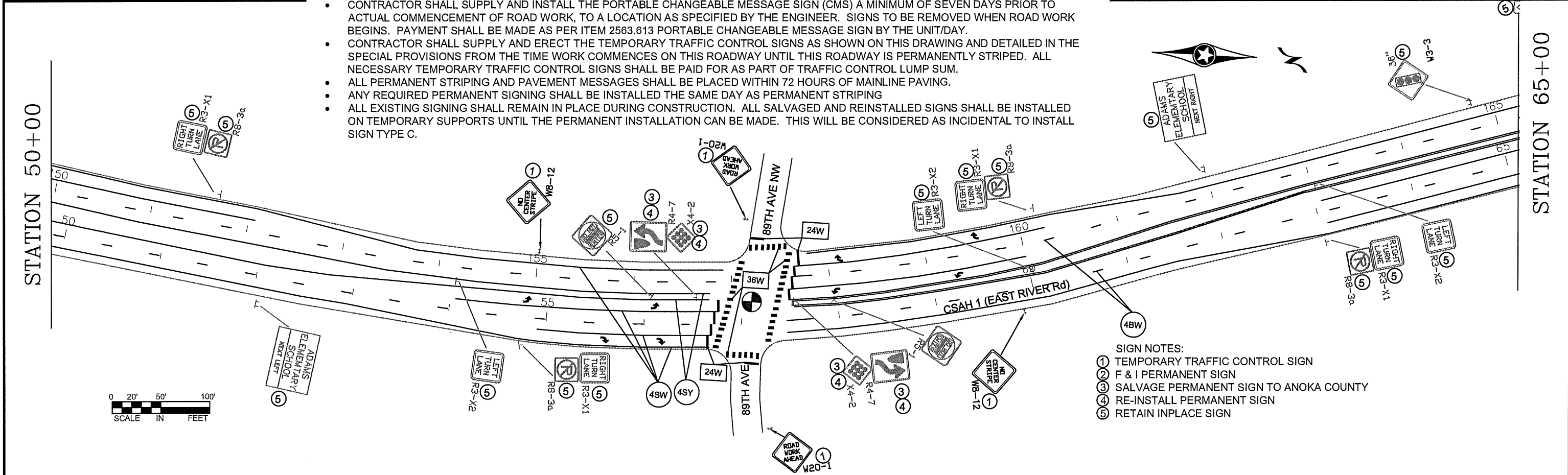
TEMPORARY SIGNING,
PERMANENT SIGNING
AND STRIPING

Sheet 25 of 34 Sheets



NOTES:

- 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.
- 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.



SIGN NOTES:

- ① TEMPORARY TRAFFIC CONTROL SIGN
- ② F & I PERMANENT SIGN
- ③ SALVAGE PERMANENT SIGN TO ANOKA COUNTY
- ④ RE-INSTALL PERMANENT SIGN
- ⑤ RETAIN INPLACE SIGN

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\16-01-00\CSAH 35\Base\Traffic\Signing_Striping.dwg

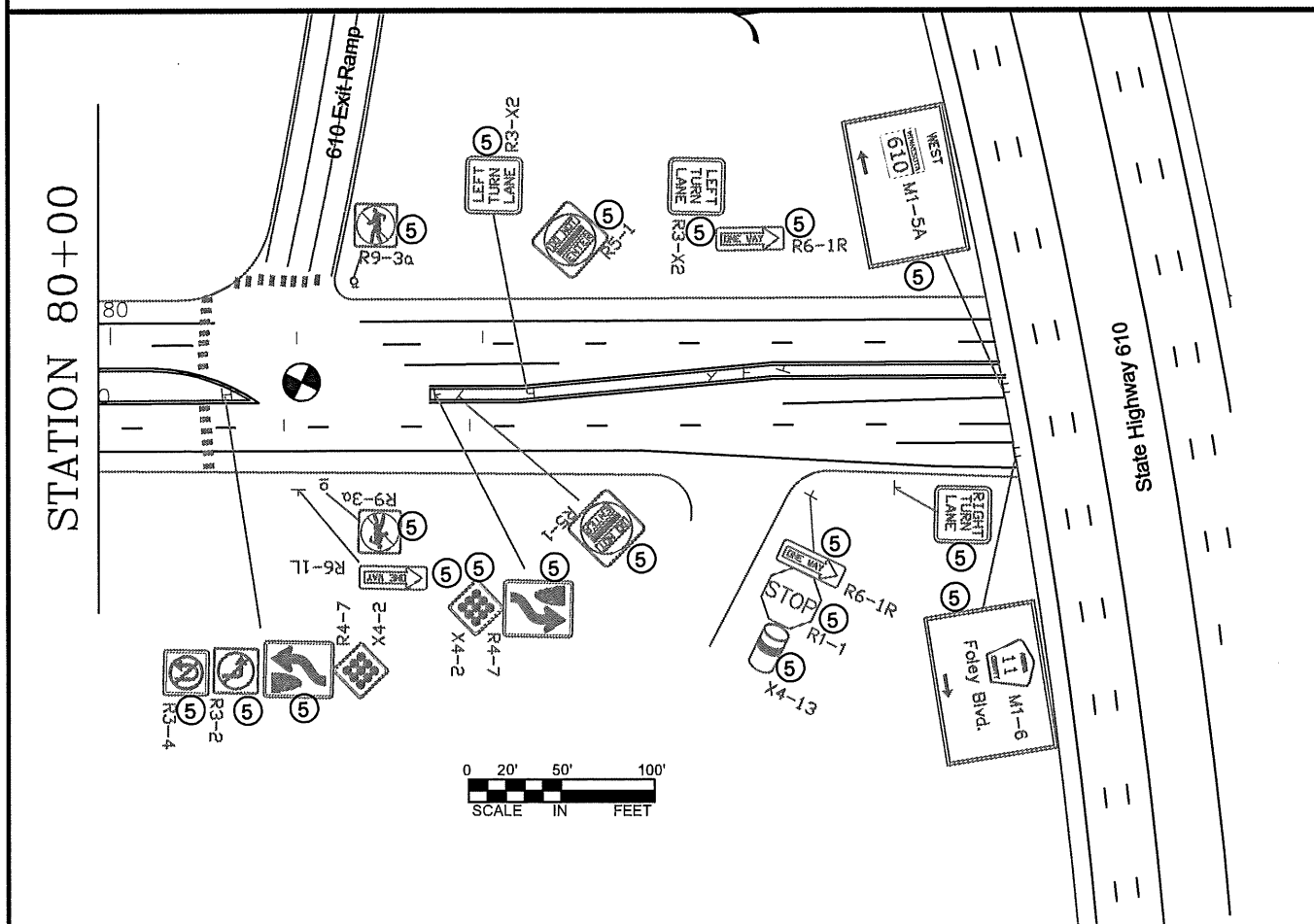
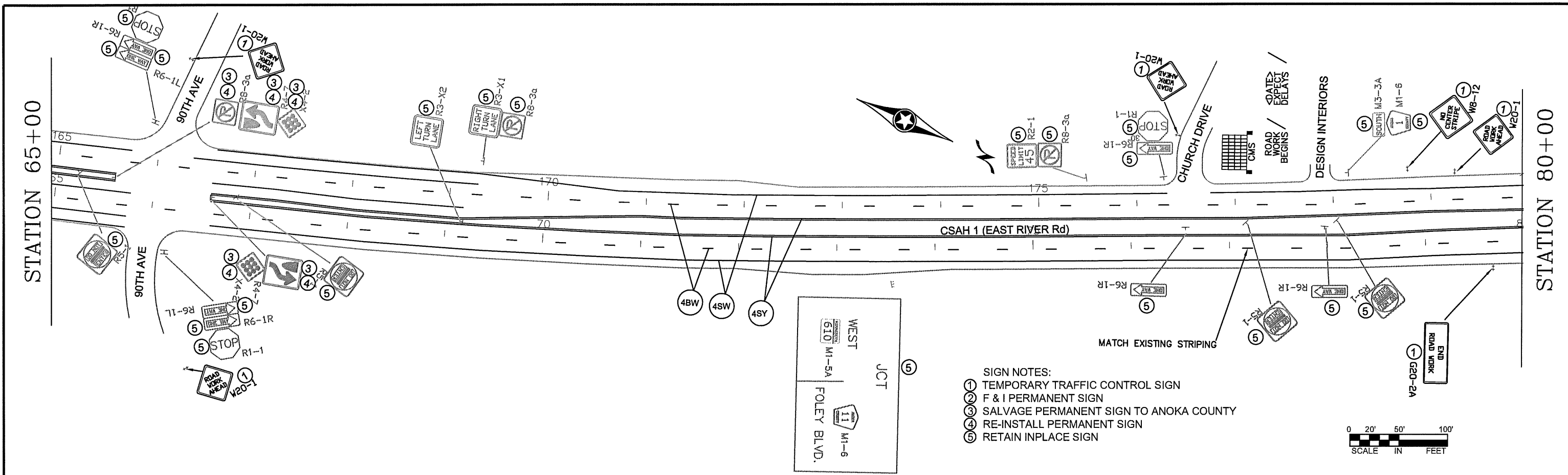
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: MATTHEW J. JOHN
 SIGNATURE: *[Signature]*
 DATE: 3/8/2017 REG. NO. 51639

DRAWN BY: RLB DATE: 1/11/17
 DESIGN BY: RLB DATE: 1/11/17
 CHECKED BY: JR DATE: 1/11/17

ANOKA COUNTY
HIGHWAY DEPT.

STATE PROJECT NO. _____
 STATE AID PROJECT NO. 002-601-049
 STATE AID PROJECT NO. _____
 COUNTY PROJECT NO. _____



NOTES:

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- 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.
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NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\16-01-00\CSAH 35\Base\Traffic\Signing_Striping.dwg

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PRINT NAME: MATTHEW J. JOHN

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DRAWN BY: RLB DATE: 1/11/17

DESIGN BY: RLB DATE: 1/11/17

CHECKED BY: JR DATE: 1/11/17

ANOKA COUNTY
HIGHWAY DEPT.



STATE PROJECT NO. _____

STATE AID PROJECT NO. 002-601-049




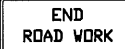








STATE AID PROJECT NO. _____

COUNTY PROJECT NO. _____

TEMPORARY SIGNING,
PERMANENT SIGNING
AND STRIPING

Sheet 27 of 34 Sheets

TEMPORARY TRAFFIC CONTROL SIGNS

M.U.T.C.D. CODE	SIZE	PANEL AREA FT. ²	INSERT	QUANTITY		MOUNTING HEIGHT To Pavement Edges FT.
					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 20)		
CMS sign to be installed a minimum of seven days prior to actual commencement of road work. Signs to be removed when road work begins.				2		

NOTES:

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


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

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\16-01-00\CSAH 35\Bases\Traffic\Signing_Striplng.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: MATTHEW J. JOHN
 SIGNATURE: 
 DATE: 3/20/2017 REG. NO. 51639

DRAWN BY: RLB DATE: 1/11/17
 DESIGN BY: RLB DATE: 1/11/17
 CHECKED BY: JR DATE: 1/11/17

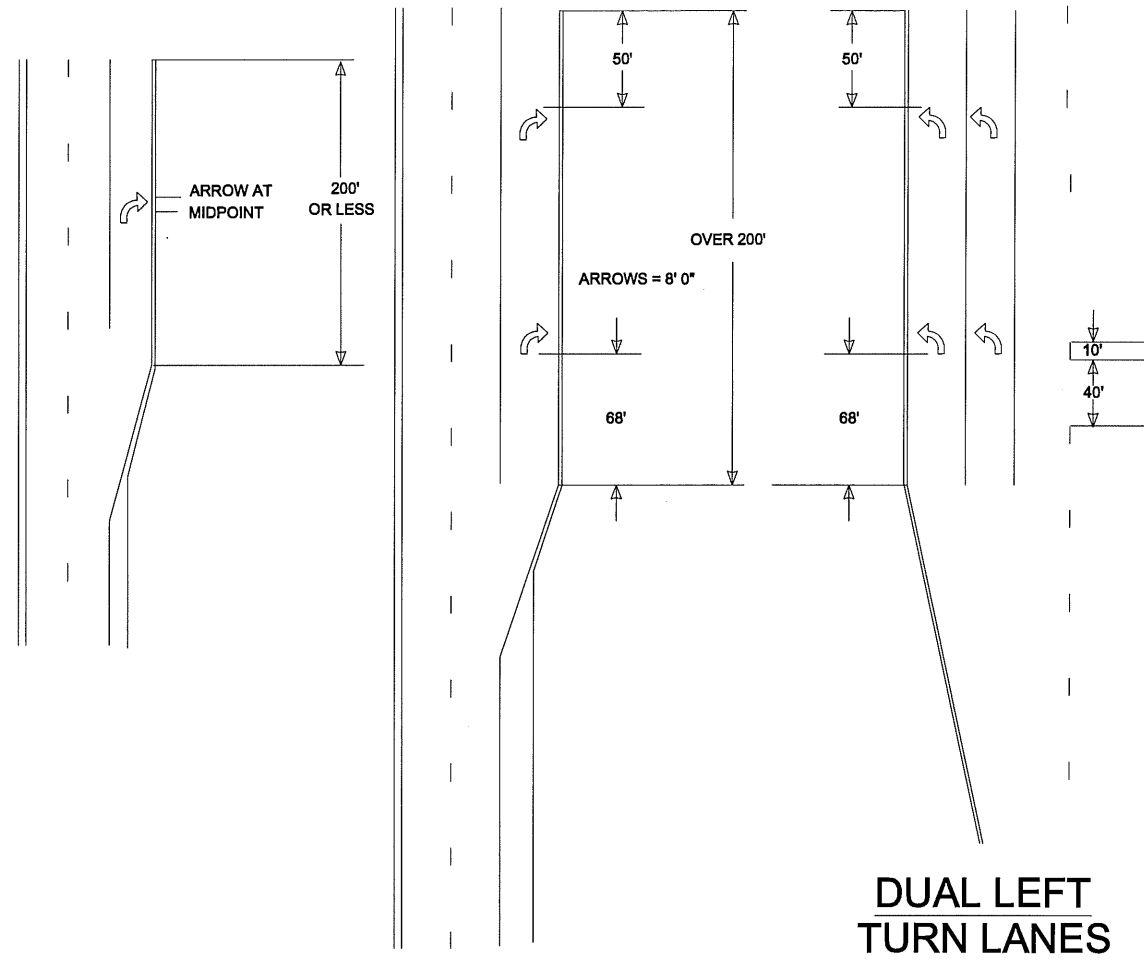


ANOKA COUNTY
 HIGHWAY DEPT.

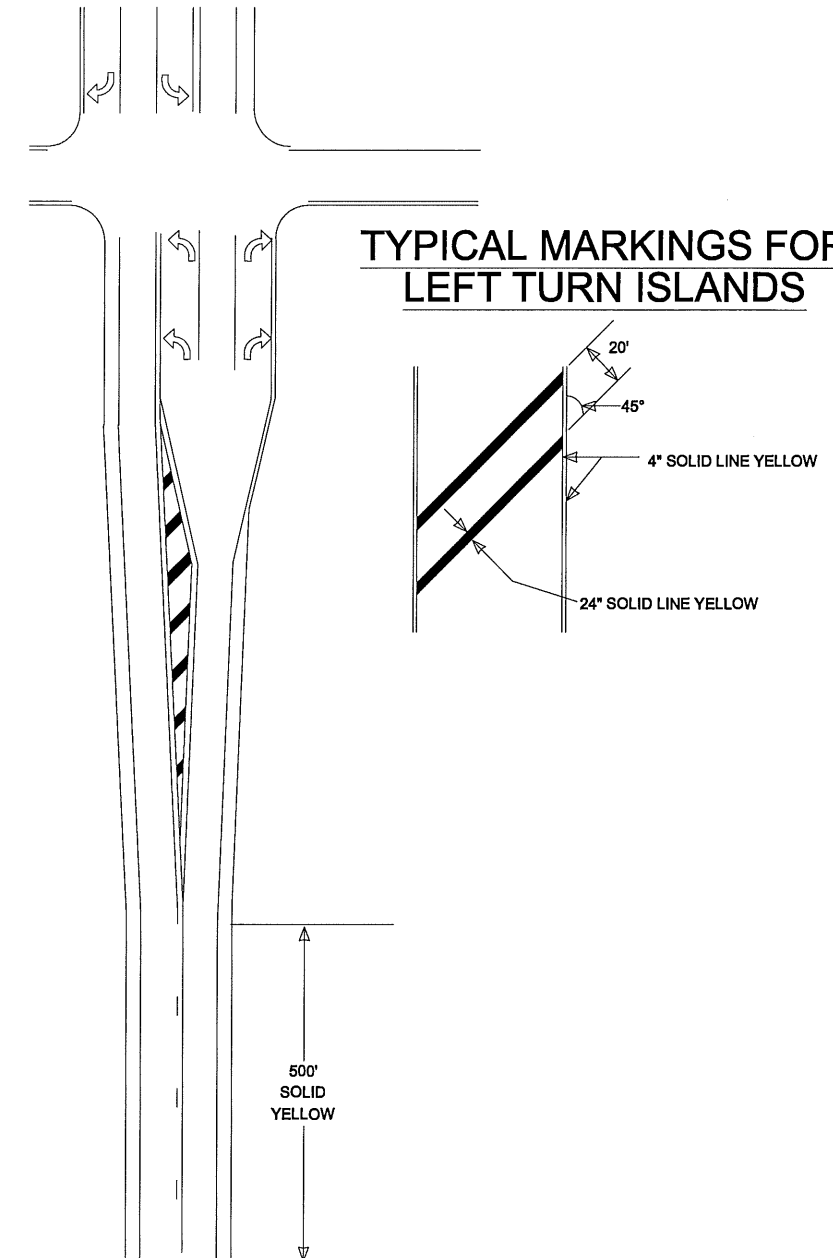
STATE PROJECT NO. _____
 STATE AID PROJECT NO. 002-601-049
 STATE AID PROJECT NO. _____
 COUNTY PROJECT NO. _____

TRAFFIC CONTROL
 QUANTITY

**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: MATTHEW J. JOHN

SIGNATURE: *Matthew J. John*

DATE: 3/8/2017 REG. NO. 51639

DRAWN BY: RLB DATE: 1/31/17

DESIGN BY: RLB DATE: 1/31/17

CHECKED BY: JR DATE: 1/31/17



**ANOKA COUNTY
HIGHWAY DEPT.**

STATE PROJECT NO. _____

STATE AID PROJECT NO. 002-601-049

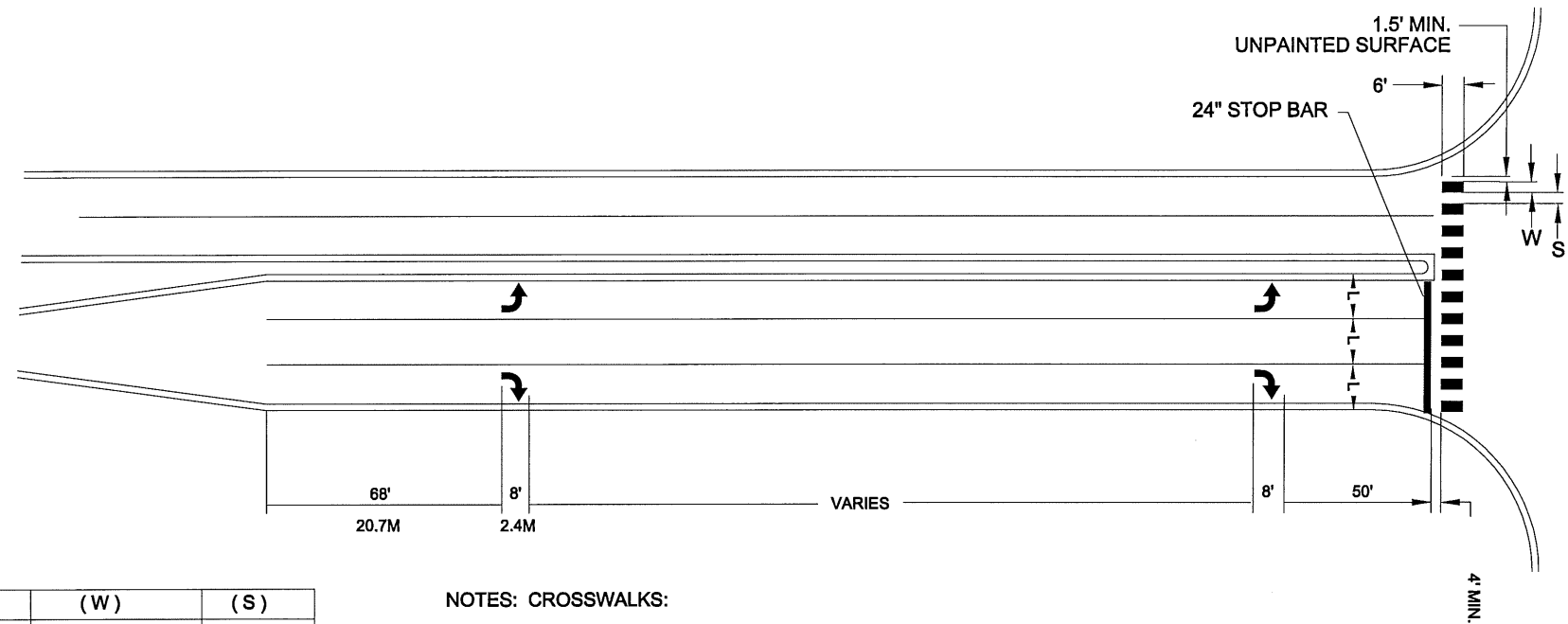
STATE AID PROJECT NO. _____

COUNTY PROJECT NO. _____

**SIGNING & STRIPING
DETAILS**

Sheet 29 of 34 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

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 PRINT NAME: MATTHEW J. JOHN
 SIGNATURE: *[Signature]*
 DATE: 3/20/2017 REG. NO. 51639

DRAWN BY: RLB DATE: 1/31/17
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**ANOKA COUNTY
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STATE PROJECT NO. _____
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SIGNING & STRIPING
DETAILS

mjohn

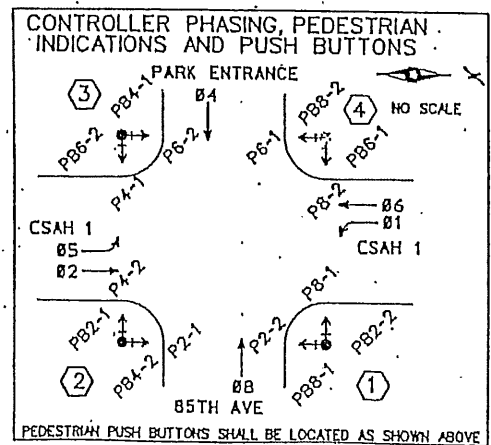
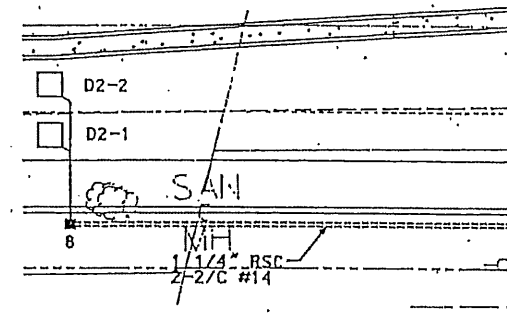
7009

- LED RETROFIT-SYSTEM "A" NOTES:**
- 1) ALL ITEMS OF SIGNAL SYSTEM ARE IN PLACE AND SHALL BE REUSED AND MAINTAINED IN PLACE, UNLESS OTHERWISE NOTED ON PLANS.
 - 2) CONTRACTOR SHALL REMOVE THE INPLACE 12" x 12" 2-SECTION PEDESTRIAN SIGNAL INDICATIONS AND HOUSINGS, AND SHALL FURNISH AND INSTALL NEW ONE SECTION COUNTDOWN TIMER LED "HAND/WALKING PERSON" PEDESTRIAN SIGNALS (HOUSING, VISOR, LENS) IN THEIR PLACE.
 - 3) CONTRACTOR SHALL REMOVE THE INPLACE TYPE 10B BRACKETING ON POLES 1, 2, 3, AND 4 (90° & 180°); SHALL FURNISH & INSTALL NEW TYPE 10B BRACKETING (90° & 180°) IN THEIR PLACE; SHALL SALVAGE, INSTALL, AND MAKE OPERATIONAL SIGNAL HEADS 1-2, 2-1, 4-1, 4-3, 5-2, 6-1, 8-1, AND 8-3; & SHALL INCORPORATE NEW ONE SECTION PEDESTRIAN SIGNALS WITHIN NEW BRACKETINGS. ALL WORK LISTED ABOVE SHALL BE CONSIDERED INCIDENTAL TO THE PEDESTRIAN INDICATION PAY ITEM.
 - 4) CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MODIFICATIONS TO INPLACE POLE MOUNTED BRACKETING ON EACH TRAFFIC SIGNAL POLE TO ACCOMMODATE INSTALLATION OF NEW ONE SECTION PEDESTRIAN SIGNAL INDICATIONS (INCLUDING THE REPLACEMENT OF THE POLE MOUNTED BRACKETING IF NEEDED TO ACCOMMODATE EACH PEDESTRIAN SIGNAL INDICATION INSTALLATION) (INCIDENTAL).
 - 5) ANY DAMAGE TO INPLACE TRAFFIC SIGNAL POLES OR VEHICLE SIGNAL HEADS DUE TO WORK ON THIS PROJECT SHALL BE REPAIRED BY CONTRACTOR TO THE SATISFACTION OF THE ENGINEER, AT NO EXPENSE TO THE CITY.
 - 6) NEW PEDESTRIAN HOUSINGS AND VISORS SHALL BE FABRICATED USING NEW POLYCARBONATE MATERIALS.
 - 7) ALL VEHICULAR SIGNAL INDICATIONS ARE LED AND ARE IN PLACE (MAINTAIN AND REUSE IN PLACE AS SHOWN).
 - 8) CONTRACTOR SHALL REMOVE ALL INPLACE PEDESTRIAN PUSH BUTTONS (8 TOTAL), R10-4b STICKER SIGNS, AND "MEANING OF WALK" STICKER SIGNS, & SHALL FURNISH & INSTALL NEW SOLID STATE PED PUSH BUTTONS AND R10-3e SIGNS IN THEIR PLACE.
 - 9) CONTRACTOR SHALL MAINTAIN OPERATION OF THE SIGNAL SYSTEM AT ALL TIMES, EXCEPT AS OTHERWISE APPROVED BY THE ENGINEER.
 - 10) SEE STATEMENT OF ESTIMATED QUANTITIES FOR BID ITEMS FOR WORK AT THIS SIGNAL SYSTEM.

LOOP DETECTORS			
NUMBER	SIZE	FUNCTION	LOCATION
D1-1	2-6' X 6'	1	20' & 50'
D1-2	2-6' X 6'	1	5' & 35'
D2-1	6' X 6'	1	300'
D2-2	6' X 6'	1	300'
D4-1	2-6' X 6'	1/7	5'
D5-1	2-6' X 6'	1	20' & 50'
D5-2	2-6' X 6'	1	5' & 35'
D6-1	6' X 6'	1	300'
D6-2	6' X 6'	1	300'
D8-1	6' X 6'	3/8	300'
D8-2	2-6' X 6'	7	5'
D8-3	2-6' X 6'	1	5'

LOCATION-DISTANCE FROM STOP LINE TO DETECTOR

FUNCTIONS:
 1 - CALL AND EXTEND
 2 - CALL ONLY
 3 - EXTEND ONLY
 4 - DLY CALL (IMMEDIATE EXTEND)
 5 - CARRY OVER



③ TYPE PA100-A55-D40-9 (DAVIT AT 350°)
 PA100 POLE FOUNDATION
 3-ONEWAY SIGNALS OVERHEAD (0', 12' AND 24' FROM END OF MAST ARM)
 ONEWAY EVP DETECTOR AND LIGHT (6' FROM END OF MASTARM)
 TYPE 10B - AT 90°
 TYPE 10B - AT 180°
 LUMINAIRE 250 WATT HPS
 2-PEDESTRIAN PUSH BUTTONS
 EXTEND INTO HH 11
 3" RSC
 2-12/C #12
 4-3/C #12
 1-3/C #12 (LUM)
 1-3/C #20

② TYPE PA90-A15-D40-9 (DAVIT AT 135°)
 PA90 POLE FOUNDATION
 3-ONEWAY SIGNALS OVERHEAD (0', 12' AND 24' FROM END OF MAST ARM)
 ONEWAY EVP DETECTOR AND LIGHT (6' FROM END OF MASTARM)
 TYPE 10B - AT 90°
 TYPE 10B - AT 180°
 LUMINAIRE 250 WATT HPS
 2-PEDESTRIAN PUSH BUTTONS
 EXTEND INTO HH 6
 3" RSC
 2-12/C #12
 2-3/C #12
 2-3/C #14
 5-2/C #14
 1-3/C #20
 2-3/C #20

① TYPE PA100-A50-PA100 POLE FOUNDATION
 3-ONEWAY SIGNALS OVERHEAD (0', 12' AND 24' FROM END OF MAST ARM)
 ONEWAY EVP DETECTOR AND LIGHT (6' FROM END OF MASTARM)
 TYPE 10B - AT 90°
 TYPE 10B - AT 180°
 2-PEDESTRIAN PUSH BUTTONS
 EXTEND INTO HH 1
 3" RSC
 2-12/C #12
 4-3/C #12
 1-3/C #12 (LUM)
 1-3/C #20

④ TYPE PA90-A20-PA90 POLE FOUNDATION
 ONEWAY SIGNAL OVERHEAD
 ONEWAY EVP DETECTOR AND LIGHT (6' FROM END OF MASTARM)
 TYPE 10B - AT 90°
 TYPE 10B - AT 180°
 2-PEDESTRIAN PUSH BUTTONS
 EXTEND INTO HH 12
 3" RSC
 2-12/C #12
 2-3/C #12
 1-3/C #20

⑤ SERVICE CABINET FOUNDATION
 SERVICE CABINET TO HH 17
 2" RSC
 3-1/C #6
 SERVICE CABINET TO HH 16 (SERVICE)
 1 1/4" RSC
 3-1/C #6
 SERVICE CABINET TO HH 1 (LIGHTING)
 1 1/4" RSC
 3-3/C #12 (LUM)

LED SIGNAL FACES			
SIGNAL FACE	ALL 12"		
	R	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	○	○	○

○ ← = INPLACE LED INDICATION, REUSE INPLACE.

DRAWN BY: JMG	1	JMG	6/10	RECORD DRAWING FOR PROJECT
DESIGNER: JMG				
CHECKED BY: JMG				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

① CONTROLLER AND CABINET
 CONTROLLER CABINET TO HH 1
 4" RSC
 4-12/C #12
 6-3/C #12
 4-2/C #14
 2-3/C #20
 CONTROLLER CABINET TO HH 2
 4" RSC
 4-12/C #12
 6-3/C #12
 8-2/C #14
 2-3/C #20
 CONTROLLER CABINET TO HH 16
 1 1/4" RSC
 3-1/C #6
 STUB OUT 3" RSC FOR FUTURE INTERCONNECT

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: *John M. Gray*
 Name: John M. Gray, PE
 License No.: 92457
 Date: May 18, 2009

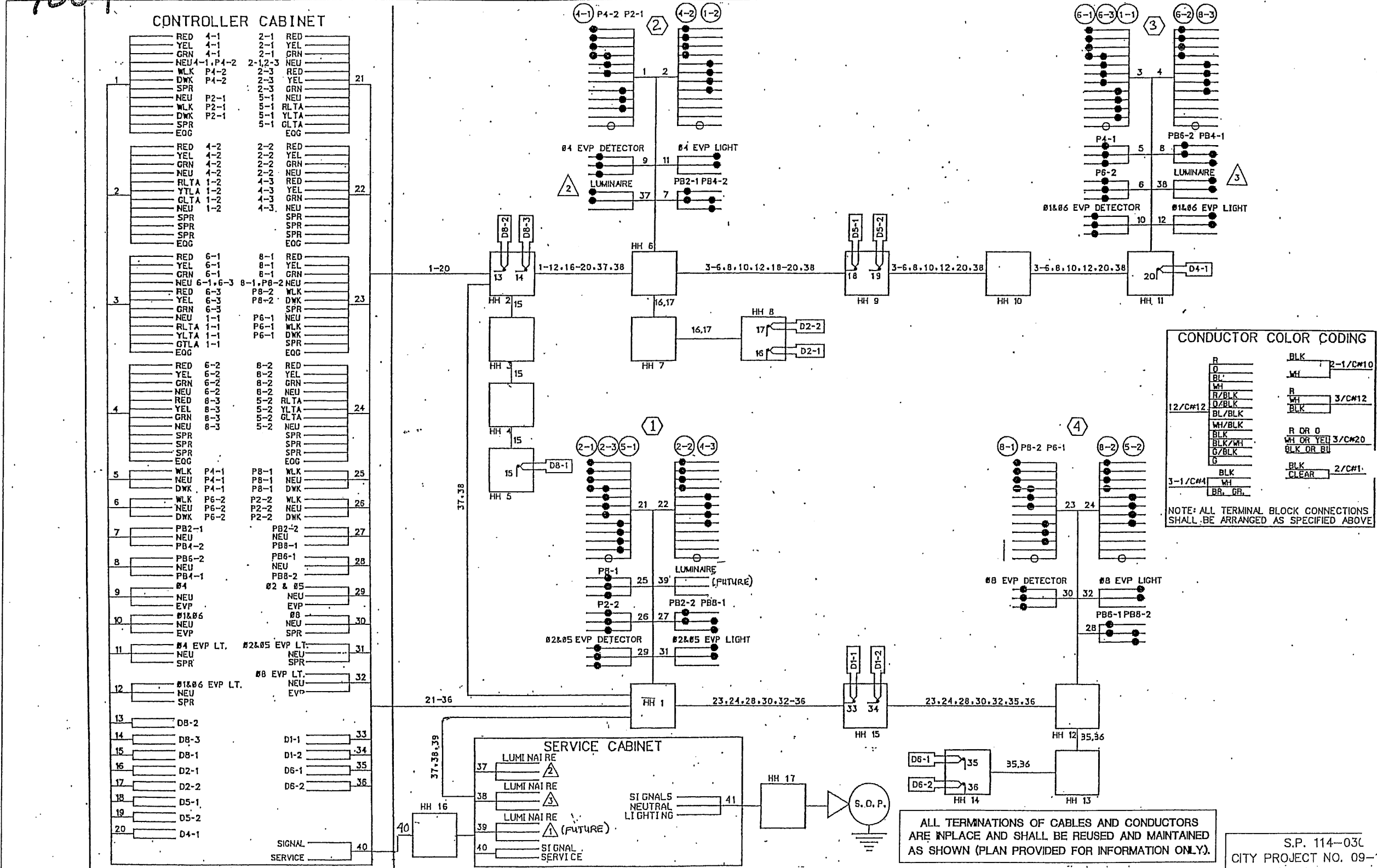
COON RAPIDS, MINNESOTA
 LED RETROFIT-SYSTEM "A"
 INTERSECTION LAYOUT

FILE NO. 107418
 DATE 3/10/11

S.P. 114-030-10
 CITY PROJECT NO. 09-18

FOR REFERENCE PURPOSES ONLY

7009



FOR REFERENCE PURPOSES ONLY

DRAWN BY: JMG
 DESIGNER: JMG
 CHECKED BY: JMG

DESIGN TEAM

RECORD DRAWING FOR PROJECT

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: *John M. Gray*
 Name: John M. Gray, PE
 Date: May 18, 2009
 Lic. No.: 22457

SEH
 PHONE: (651) 490-2000
 3535 VANDANIS CENTER DR.
 ST. PAUL, MN 55110

COON RAPIDS, MINNESOTA

LED RETROFIT-SYSTEM "A"
 FIELD WIRING DIAGRAM
 CSAH 1 AT 85TH AVENUE (CR 132)

S.P. 114-03L
 CITY PROJECT NO. 09-18

FILE NO. 107418
 DATE 05/18/2009

4
 131

NO	DATE	BY	CKD	APPR	REVISION
	03/07/2017				3:14:07 PM

NAME: P:\17-01-00\CSAH_01 (FRIDLEY_CL-1200Nof90th)\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: MATTHEW J. JOHN
 SIGNATURE: *Matthew J. John*
 DATE: 3/8/2017
 LICENSE NO.: 51639

DRAWN BY: SRK DATE: 02/24/2017
 DESIGN BY: SRK DATE: 02/24/2017
 CHECKED BY: MJJ DATE: 03/07/2017

ANOKA COUNTY HIGHWAY DEPT.

STATE AID PROJECT 002-601-049

ORIGINAL SIGNAL PLANS
 Sheet 32 of 34 Sheets

- LED RETROFIT-SYSTEM "B" NOTES:**
- 1) ALL ITEMS OF SIGNAL SYSTEM ARE IN PLACE AND SHALL BE REUSED AND MAINTAINED IN PLACE, UNLESS OTHERWISE NOTED ON PLANS.
 - 2) CONTRACTOR SHALL REMOVE THE INPLACE 12" x 12" 2-SECTION PEDESTRIAN SIGNAL INDICATIONS AND HOUSINGS, AND SHALL FURNISH AND INSTALL NEW ONE SECTION COUNTDOWN TIMER LED "HAND/WALKING PERSON" PEDESTRIAN SIGNALS (HOUSING, VISOR, LENS) IN THEIR PLACE.
 - 3) CONTRACTOR SHALL REMOVE THE INPLACE TYPE 10B BRACKETING ON POLES 1 AND 3 (90° & 180°); SHALL FURNISH & INSTALL NEW TYPE 10B BRACKETING (90° & 180°) IN THEIR PLACE; SHALL SALVAGE, INSTALL, AND MAKE OPERATIONAL SIGNAL HEADS 2-1, 4-3, 6-1, AND 8-3; AND SHALL INCORPORATE NEW ONE SECTION PEDESTRIAN SIGNALS WITHIN NEW BRACKETINGS. ALL WORK LISTED ABOVE SHALL BE CONSIDERED INCIDENTAL TO THE PEDESTRIAN INDICATION PAY ITEM.
 - 4) CONTRACTOR SHALL REMOVE THE INPLACE TYPE 20B BRACKETING (0°) AND TYPE 10B BRACKETING (180°) ON POLE 2; SHALL FURNISH AND INSTALL NEW TYPE 20B BRACKETING (90°) AND TYPE 10B BRACKETING (180°) IN THEIR PLACE; SHALL SALVAGE, INSTALL, AND MAKE OPERATIONAL SIGNAL HEADS 1-2, 4-1, AND 8-4; AND SHALL INCORPORATE NEW ONE SECTION PEDESTRIAN SIGNALS WITHIN NEW BRACKETINGS. CAP UNUSED HUB AT 0°. ALL WORK LISTED ABOVE SHALL BE CONSIDERED INCIDENTAL TO THE PEDESTRIAN INDICATION PAY ITEM.
 - 5) CONTRACTOR SHALL REMOVE THE INPLACE TYPE 10B BRACKETING ON POLE 4 (0° & 180°); SHALL FURNISH AND INSTALL NEW TYPE 10B BRACKETING (90° & 180°) IN THEIR PLACE; SHALL SALVAGE, INSTALL, AND MAKE OPERATIONAL SIGNAL HEADS 5-2 AND 8-1; AND SHALL INCORPORATE NEW ONE SECTION PEDESTRIAN SIGNALS WITHIN NEW BRACKETINGS. CAP UNUSED HUB AT 0°. ALL WORK LISTED ABOVE SHALL BE CONSIDERED INCIDENTAL TO THE PEDESTRIAN INDICATION PAY ITEM.
 - 6) CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MODIFICATIONS TO INPLACE POLE MOUNTED BRACKETING ON EACH TRAFFIC SIGNAL POLE TO ACCOMMODATE INSTALLATION OF NEW ONE SECTION PEDESTRIAN SIGNAL INDICATIONS (INCLUDING THE REPLACEMENT OF THE POLE MOUNTED BRACKETING IF NEEDED TO ACCOMMODATE EACH PEDESTRIAN SIGNAL INDICATION INSTALLATION) (INCIDENTAL).
 - 7) ANY DAMAGE TO INPLACE TRAFFIC SIGNAL POLES OR VEHICLE SIGNAL HEADS DUE TO WORK ON THIS PROJECT SHALL BE REPAIRED BY CONTRACTOR TO THE SATISFACTION OF THE ENGINEER, AT NO EXPENSE TO THE CITY.
 - 8) NEW PEDESTRIAN HOUSINGS AND VISORS SHALL BE FABRICATED USING NEW POLYCARBONATE MATERIALS.

- 9) ALL VEHICULAR SIGNAL INDICATIONS ARE LED AND ARE IN PLACE (MAINTAIN AND REUSE IN PLACE AS SHOWN).
- 10) CONTRACTOR SHALL REMOVE ALL INPLACE PEDESTRIAN PUSH BUTTONS (8 TOTAL), R10-4b STICKER SIGNS, AND "MEANING OF WALK" STICKER SIGNS, & SHALL FURNISH & INSTALL NEW SOLID STATE PED PUSH BUTTONS AND R10-3b SIGNS IN THEIR PLACE.
- 11) CONTRACTOR SHALL MAINTAIN OPERATION OF THE SIGNAL SYSTEM AT ALL TIMES, EXCEPT AS OTHERWISE APPROVED BY THE ENGINEER.
- 12) SEE STATEMENT OF ESTIMATED QUANTITIES FOR BID ITEMS FOR WORK AT THIS SIGNAL SYSTEM.

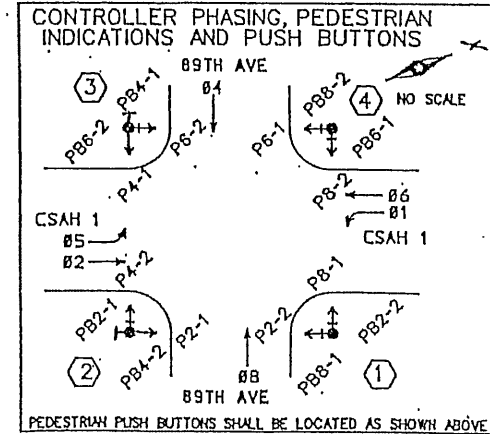
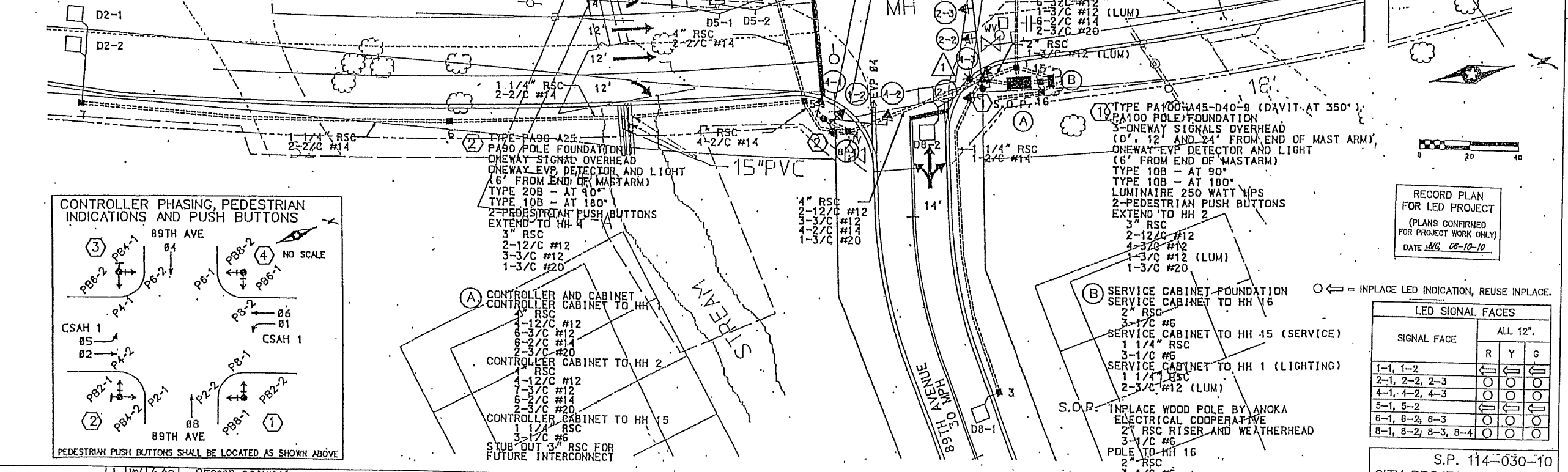
7010

LOCATION-DISTANCE FROM STOP LINE TO DETECTOR

FUNCTIONS:

- 1 - CALL AND EXTEND
- 2 - CALL ONLY
- 3 - EXTEND ONLY
- 7 - BLY, CALL, IMMEDIATE EXTEND
- 8 - CARRY-OVER

LOOP DETECTORS			
NUMBER	SIZE	FUNCTION	LOCATION
D1-1	2-6' X 6'	1	20' & 50'
D1-2	2-6' X 6'	1	5' & 35'
D2-1	6' X 6'	1	300'
D2-2	6' X 6'	1	300'
D4-1	6' X 6'	3/8	120'
D4-2	2-6' X 6'	7	5'
D5-1	2-6' X 6'	1	20' & 50'
D5-2	2-6' X 6'	1	5' & 35'
D6-1	6' X 6'	1	300'
D6-2	6' X 6'	1	300'
D8-1	6' X 6'	3/8	120'
D8-2	2-6' X 6'	7	5'



RECORD PLAN FOR LED PROJECT (PLANS CONFIRMED FOR PROJECT WORK ONLY) DATE: 08-10-10

LED SIGNAL FACES

SIGNAL FACE	ALL 12"		
	R	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, 8-4	○	○	○

DRAWN BY: JMG
 DESIGNER: JMG
 CHECKED BY: JMG

NO.	BY	DATE
1	JMG	6/10

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: *John M. Gray*
 Name: John M. Gray, PE
 License No.: 92457

PHONES: (651) 490-2000
 3535 WADSWORTH CENTER DR.
 ST. PAUL, MN 55110

COON RAPIDS, MINNESOTA

LED RETROFIT-SYSTEM "B" INTERSECTION LAYOUT

FILE NO. 107418
 DATE: 5

NO.	DATE	BY	CKD	APPR	REVISION	3:14:46 PM
	03/07/2017					

NAME: P:17-01-00ICSAH_01 (FRIDLEY_CL-1200N(90th))BasePROPOSED/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: MATTHEW J. JOHN
 SIGNATURE: *Matthew J. John*
 DATE: 3/8/2017 LICENSE NO.: 51639

DRAWN BY: SRK DATE: 02/24/2017
 DESIGN BY: SRK DATE: 02/24/2017
 CHECKED BY: MJJ DATE: 03/07/2017



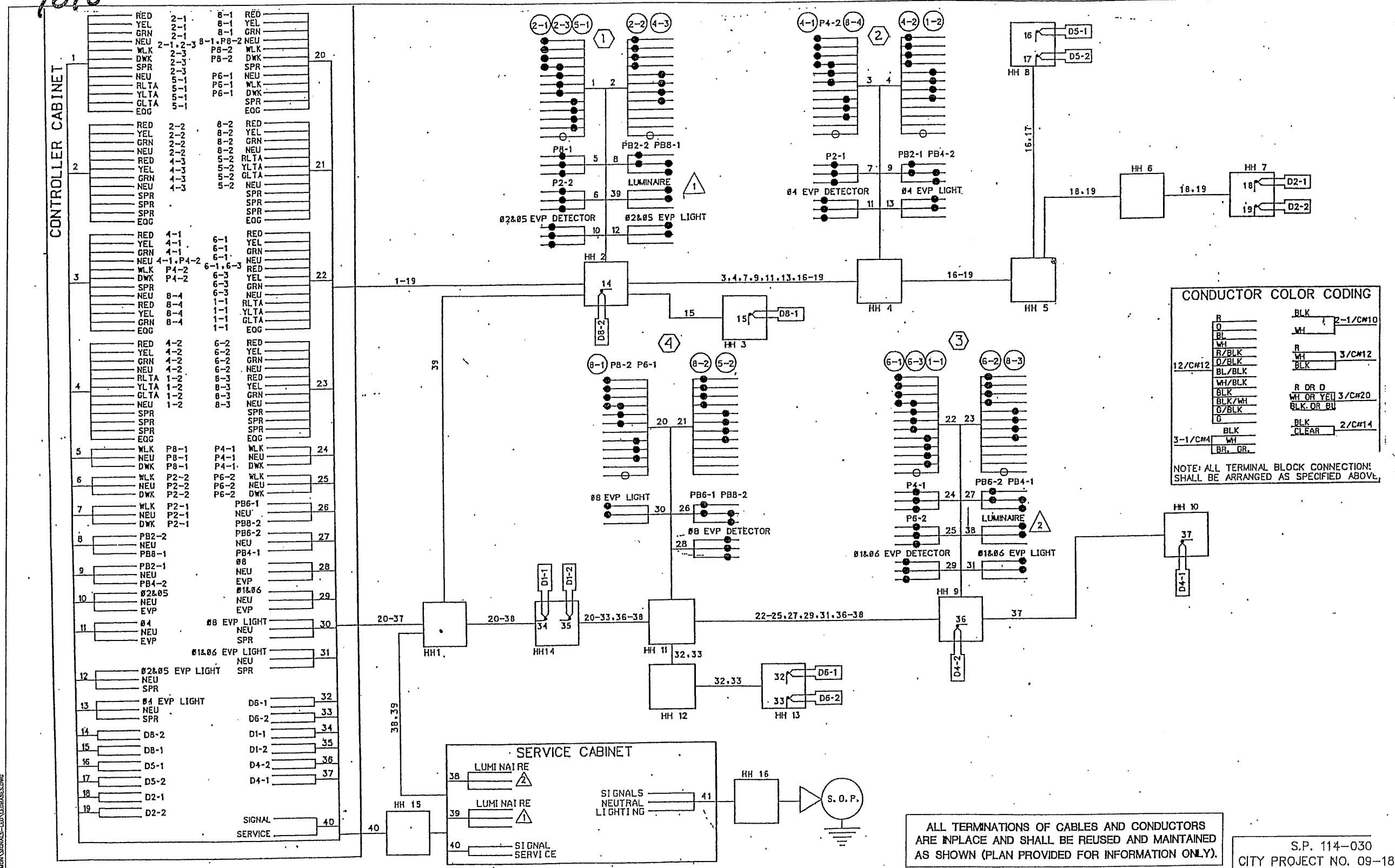
ANOKA COUNTY HIGHWAY DEPT.

STATE AID PROJECT 002-601-049

ORIGINAL SIGNAL PLANS
 Sheet 33 of 34 Sheets

FOR REFERENCE PURPOSES ONLY

7010



FOR REFERENCE PURPOSES ONLY

DRAWN BY: JMG
 DESIGNER: JMG
 CHECKED BY: JMG

DESIGN TEAM	NO.	BY	DATE

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.

JMG
 Date: May 18, 2009 Name: John M. Gray, PE Lic. No. 22457

SEH
 PHONE: (651) 490-2000
 3535 VADNAIS CENTER DR.
 ST. PAUL, MN 55110

COON RAPIDS, MINNESOTA

LED RETROFIT-SYSTEM "B"
 FIELD WIRING DIAGRAM
 CSAH 1 AT 89TH AVENUE

FILE NO. 107418
 DATE 05/18/2009
 6
 131

ALL TERMINATIONS OF CABLES AND CONDUCTORS ARE IN PLACE AND SHALL BE REUSED AND MAINTAINED AS SHOWN (PLAN PROVIDED FOR INFORMATION ONLY).

NO.	DATE	BY	CKD	APPR	REVISION	

NAME: P:\17-01-00\CSAH_01_(FRIDLEY, CL-1200\90th)\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: MATTHEW J. JOHN
 SIGNATURE: _____
 DATE: _____ LICENSE NO. 51639

DRAWN BY: SRK DATE: 02/24/2017
 DESIGN BY: SRK DATE: 02/24/2017
 CHECKED BY: MJJ DATE: 03/07/2017

ANOKA COUNTY HIGHWAY DEPT.

STATE AID PROJECT 002-601-049

ORIGINAL SIGNAL PLANS
 Sheet 34 of 34 Sheets