MINNESOTA DEPARTMENT OF TRANSPORTATION
ANOKA COUNTY

CONSTRUCTION PLAN FOR SIGNAL SYSTEM, SIGNAL REVISIONS, RIGHT TURN LANE CONSTRUCTION, ADA IMPROVEMENTS, AND SIDEWALK

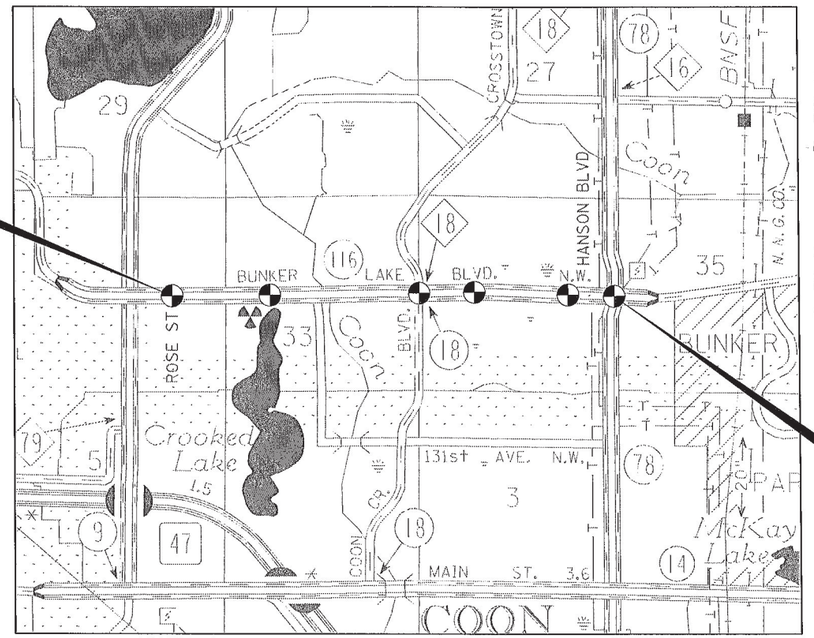
LOCATED ON CSAH 116 (BUNKER LAKE BLVD) FROM ROSE ST TO CSAH 78 (HANSON BLVD)

STATE AID PROJ. NO. 002-716-024/SAP 198-020-040

GROSS LENGTH 12573.93 FEET 2.38 MILES
BRIDGES-LENGTH FEET MILES
EXCEPTIONS-LENGTH FEET MILES
NET LENGTH 12573.93 FEET 2.38 MILES

NOTE: LENGTH AND DESCRIPTION BASED ON EB ALIGNMENT.

BEGIN SAP 002-716-024/
SAP 198-020-040
CSAH 116 (BUNKER LAKE BLVD EB)
STA 27+89.04



END SAP 002-716-024/
SAP 198-020-040.
CSAH 116 (BUNKER LAKE BLVD EB)
STA 153+62.97

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-22 ENTITLED "STANDARD GUIDELINES FOR INVESTIGATING AND DOCUMENTING EXISTING UTILITIES".

DESIGN DESIGNATION: CSAH 116 (BUNKER LAKE BLVD)

R-VALUE		N/A
ADT (2024)	=	14,900
ADT (2044)	=	16,500
PAVEMENT DESIGN		N/A
FUNCTION CLASSIFICATION		URBAN MINOR ARTERIAL
NO. OF TRAFFIC LANES		4 (12' WIDE)
NO. OF PARKING LANES		0
SHOULDER WIDTH		8'
ESALS		N/A
DESIGN SPEED		45 MPH/50 MPH
BASED ON SIGHT DISTANCE		STOPPING
HEIGHT OF EYE/ HEIGHT OF OBJECT		3.5/2.0
DESIGN SPEED NOT ACHIEVED AT:		N/A

TRAIL

DESIGN SPEED 20 MPH
BASED ON STOPPING SIGHT DISTANCE
HEIGHT OF EYE 4.5' HEIGHT OF OBJECT 0.0'

I HEREBY CERTIFY THAT THE FINAL FIELD REVISIONS, IF ANY, WERE 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: _____ LICENSE # _____

DATE: _____ SIGNATURE: _____

PLAN REVISIONS		
DATE	SHEET NO.	APPROVED

SCALES

PLAN	40'
INDEX MAP	5280'
GENERAL LAYOUT	1000'
INTERSECTION DETAILS	30'

PROJECT LOCATION
COUNTY : ANOKA
DISTRICT : METRO

FED. PROJ. NO. _____

GOVERNING SPECIFICATIONS

THE 2020 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION 'STANDARD SPECIFICATIONS FOR CONSTRUCTION' SHALL GOVERN.

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST MMUTCD, INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

THIS PLAN CONTAINS 174 SHEETS

ALLIANT

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: NICK VANGUNST LICENSE # 44683

SIGNATURE: Nick VanGunst

DESIGN SQUAD B. FLUG, E. JULKOWSKI, T. OLSON, T. GYTRI, J. DINGMAN, K. SHARBONO

APPROVED Joseph MacPherson — Digitally signed by Joseph MacPherson Date: 2024.12.16 11:08:12 -06'00' DATE _____
ANOKA COUNTY ENGINEER

APPROVED _____ DATE 1/6/25
CITY OF ANDOVER ENGINEER

Lucas Lortie — Digitally signed by Lucas Lortie DN: CN=Lucas Lortie Date: 2025.01.07 14:56:06-06'00' DATE _____
DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY

Lucas Lortie — Digitally signed by Lucas Lortie DN: CN=Lucas Lortie Date: 2025.01.07 14:56:22-06'00' DATE _____
STATE AID ENGINEER: APPROVED FOR STATE AID FUNDING

SAP 002-716-024 ANOKA COUNTY
SAP 198-020-040 CITY OF ANDOVER

2:33:28 PM
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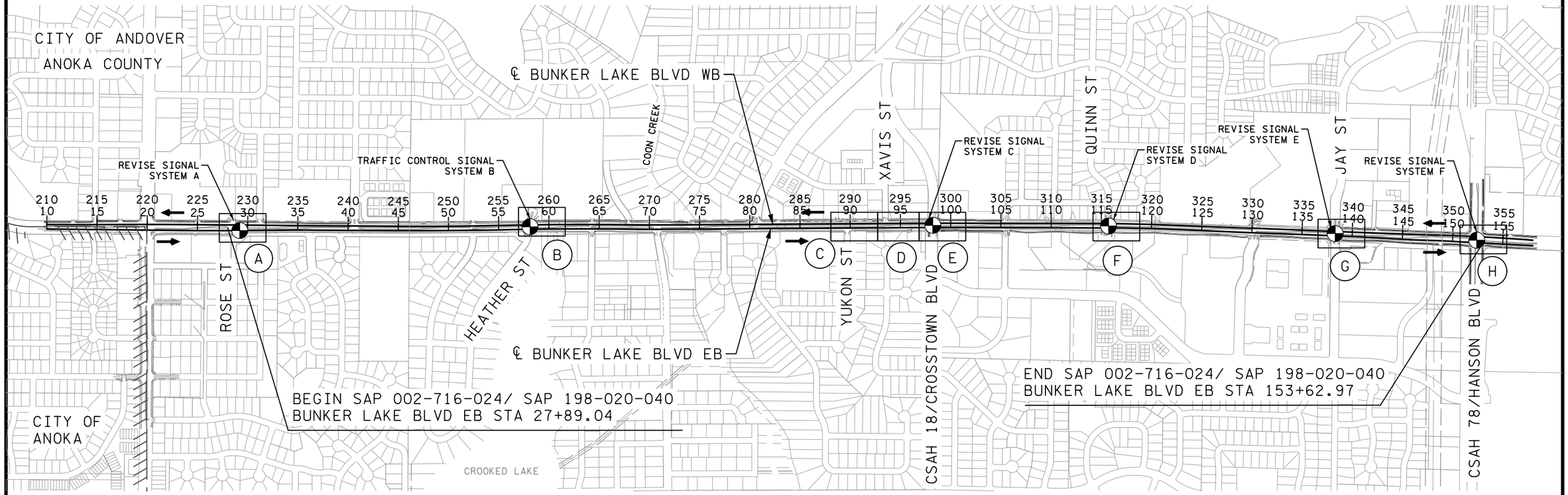
..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_tsh.dgn

SHEET TITLE		SHEET VIEW							
		A	B	C	D	E	F	G	H
INPLACE TOPO & UTILITY PLANS	PLAN SHEET NO.	12	13	14	15	16	17	18	19
REMOVAL PLANS	PLAN SHEET NO.	48	49	50	51	52	53	54	55
CONSTRUCTION PLANS	PLAN SHEET NO.	56	57	58	59	60	61	62	63

N

1000

SCALE IN FEET



LEGEND

- TRAFFIC DIRECTION
- INPLACE SIGNAL SYSTEM
- MUNICIPAL BOUNDARY

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_gl01.dgn 11/26/2024 2:33:43 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: TANYA H GYTRI

SIGNATURE: Tanya H Gytri

DATE: 11/26/24 LICENSE NO. 43919

DRAWN BY BBF DATE 11/26/24

DESIGN BY EVJ DATE 11/26/24

CHECKED BY THG DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

GENERAL LAYOUT

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 2 of 174 Sheets

STATEMENT OF ESTIMATED QUANTITIES

TAB	SHEET NO	ITEM NO	DESCRIPTION	UNITS	TOTAL ESTIMATED QUANTITY	STATE AID PARTICIPATING	
						SAP 002-716-024 ANOKA COUNTY QUANTITY	SAP 198-020-040 CITY OF ANDOVER QUANTITY
		2021.501	MOBILIZATION	LUMP SUM	1	0.72	0.28
PM	11	2102.518	PAVEMENT MARKING REMOVAL	SQ FT	5636	5636	
H	7	2104.502	REMOVE CASTING	EACH	1	1	
		2104.502	REMOVE GATE VALVE & BOX	EACH	1		1
		2104.502	REMOVE HYDRANT	EACH	1		1
E	10	2104.502	REMOVE DRAINAGE STRUCTURE	EACH	1		1
SS	75	2104.502	REMOVE SIGNAL SYSTEM B	EACH	1	0.5	0.5
SS	75	2104.502	REMOVE SIGNAL SYSTEM C	EACH	1	1	
ST	11	2104.502	SALVAGE SIGN	EACH	16	16	
ST	11	2104.502	SALVAGE SIGN TYPE SPECIAL	EACH	1	1	
C	7	2104.503	SAWING BIT PAVEMENT (FULL DEPTH)	LIN FT	2279	2040	239
E	10	2104.503	REMOVE SEWER PIPE (STORM)	LIN FT	16		16
C	7	2104.503	REMOVE CURB & GUTTER	LIN FT	1896	1707	189
C	7	2104.504	REMOVE CONCRETE WALK	SQ YD	1040	892	148
C	7	2104.504	REMOVE CONCRETE PAVEMENT	SQ YD	232	232	
C	7	2104.504	REMOVE BITUMINOUS PAVEMENT	SQ YD	636	530	106
C	7	2104.518	REMOVE BITUMINOUS WALK	SQ FT	4160	4160	
A	6	2106.507	EXCAVATION - COMMON	CU YD	413	114	299
A	6	2106.507	SELECT GRANULAR EMBANKMENT (CV)	CU YD	52	52	
A	6	2106.507	COMMON EMBANKMENT (CV)	CU YD	54	4	50
B, D, F	6, 8, 9	2211.507	AGGREGATE BASE (CV) CLASS 5	CU YD	576	395	181
B	6	2360.509	TYPE SP 12.5 WEARING COURSE MIX (4;C)	TON	384	347	37
E	10	2503.503	12" RC PIPE SEWER DES 3006	LIN FT	16		16
H	7	2504.602	ADJUST VALVE BOX-WATER	EACH	6	5	1
E, H	7, 10	2506.502	CASTING ASSEMBLY	EACH	2	1	1
H	7	2506.502	ADJUST FRAME & RING CASTING	EACH	15	14	1
E	10	2506.503	CONST DRAINAGE STRUCTURE DESIGN H	LIN FT	3		3
E	10	2506.602	CONNECT INTO EXISTING DRAINAGE STRUCTURE	EACH	1		1
D	8	2521.518	4" CONCRETE WALK	SQ FT	5637	577	5060
D	8	2521.518	2.5" BITUMINOUS WALK	SQ FT	1441	1441	
D	8	2521.602	DRILL & GROUT REINF BAR (EPOXY COATED)	EACH	647	618	29
D	8	2521.618	CONCRETE CURB RAMP WALK	SQ FT	11126	10909	217
F	9	2531.503	CONCRETE CURB & GUTTER DESIGN B412	LIN FT	24	24	
F	9	2531.503	CONCRETE CURB & GUTTER DESIGN B418	LIN FT	940	448	492
F	9	2531.503	CONCRETE CURB & GUTTER DESIGN B418 (MOD)	LIN FT	39	20	19
F	9	2531.503	CONCRETE CURB & GUTTER DESIGN B424	LIN FT	301	151	150
F	9	2531.503	CONCRETE CURB & GUTTER DESIGN B612	LIN FT	65	36	29
F	9	2531.503	CONCRETE CURB & GUTTER DESIGN B618	LIN FT	323	167	156
F	9	2531.503	CONCRETE CURB & GUTTER DESIGN B618 (MOD)	LIN FT	135	7	128
F	9	2531.503	CONCRETE CURB DESIGN V9	LIN FT	166		166
D	8	2531.618	TRUNCATED DOMES	SQ FT	906	849	57

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_est01.dgn 11/26/2024 2:33:59 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: TANYA H GYTRI

SIGNATURE: Tanya H Gytri

DATE: 11/26/24 LICENSE NO. 43919

DRAWN BY BBF DATE 11/26/24

DESIGN BY EVJ DATE 11/26/24

CHECKED BY THG DATE 11/26/24

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

STATEMENT OF ESTIMATED QUANTITIES
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

STATEMENT OF ESTIMATED QUANTITIES

TAB	SHEET NO	ITEM NO	DESCRIPTION	UNITS	TOTAL ESTIMATED QUANTITY	STATE AID PARTICIPATING	
						SAP 002-716-024 ANOKA COUNTY QUANTITY	SAP 198-020-040 CITY OF ANDOVER QUANTITY
		2563.601	TRAFFIC CONTROL	LUMP SUM	1	0.72	0.28
		2563.601	ALTERNATE PEDESTRIAN ROUTE	LUMP SUM	1	1	
ST	11	2564.602	INSTALL SIGN	EACH	16	16	
ST	11	2564.602	INSTALL SIGN TYPE SPECIAL	EACH	1	1	
ST	11	2564.618	SIGN	SQ FT	120	120	
SS	75	2565.501	EMERGENCY VEHICLE PREEMPTION SYSTEM B	LUMP SUM	1		1
SS	75	2565.501	EMERGENCY VEHICLE PREEMPTION SYSTEM C	LUMP SUM	1		1
SS	75	2565.501	TRAFFIC CONTROL INTERCONNECT	LUMP SUM	1	1	
SS	75	2565.516	TRAFFIC CONTROL SIGNAL SYSTEM B	SYSTEM	1	0.5	0.5
SS	75	2565.516	TRAFFIC CONTROL SIGNAL SYSTEM C	SYSTEM	1	1	
SS	75	2565.602	ADJUST HANDHOLE	EACH	9	9	
SS	75	2565.616	REVISE SIGNAL SYSTEM A	SYSTEM	1	0.5	0.5
SS	75	2565.616	REVISE SIGNAL SYSTEM D	SYSTEM	1	0.5	0.5
SS	75	2565.616	REVISE SIGNAL SYSTEM E	SYSTEM	1	0.5	0.5
SS	75	2565.616	REVISE SIGNAL SYSTEM F	SYSTEM	1	1	
SS	75	2565.616	TEMPORARY SIGNAL SYSTEM	SYSTEM	1	0.5	0.5
		2573.501	EROSION CONTROL SUPERVISOR	LUMP SUM	1	1	
G	10	2573.502	STORM DRAIN INLET PROTECTION	EACH	33	31	2
G	10	2573.503	SILT FENCE; TYPE MS	LIN FT	34	34	
G	10	2573.503	SEDIMENT CONTROL LOG TYPE COMPOST	LIN FT	492	193	299
G	10	2574.508	FERTILIZER TYPE 3	POUND	72	56	16
G	10	2575.504	ROLLED EROSION PREVENTION CATEGORY 25	SQ YD	106		106
G	10	2575.505	SEEDING	ACRE	0.4	0.3	0.1
G	10	2575.508	HYDRAULIC BONDED FIBER MATRIX	POUND	1187	980	207
G	10	2575.608	SEED SOUTHERN BOULEVARD	POUND	58	45	13
PM	11	2582.503	6" SOLID LINE PAINT	LIN FT	4311	4311	

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_est02.dgn 11/26/2024 2:34:12 PM

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

STATEMENT OF ESTIMATED QUANTITIES
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

CONSTRUCTION NOTES:

A. PROVIDE A FULL DEPTH SAWCUT WHERE PLACING NEW PAVEMENT NEXT TO INPLACE PAVEMENT TO ENSURE A UNIFORM JOINT.

B. PROVIDE A UNIFORM TACK COAT BETWEEN ALL BITUMINOUS LAYERS AND PRIOR TO PLACING ANY BITUMINOUS MIXTURES ON EXISTING PAVEMENT IN ACCORDANCE WITH SPECIFICATION 2357. INCIDENTAL.

C. THIS IS A REMINDER THAT UNDER STATE LAW IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT ALL UTILITIES THAT MAY HAVE FACILITIES IN THE AREA. CONTACT MUST BE MADE THROUGH GOPHER STATE ONE CALL.

D. ALL DISTURBED ROADWAY MATERIALS SUCH AS CONCRETE, BITUMINOUS, AND AGGREGATES MAY BE UTILIZED ACCORDING TO MNDOT SPECIFICATIONS AND PROJECT SPECIAL PROVISIONS. MATERIALS NOT UTILIZED ON THIS PROJECT WILL BECOME THE PROPERTY OF THE CONTRACTOR AND DISPOSED OFF THE RIGHT-OF-WAY IN ACCORDANCE WITH MNDOT SPECIFICATION 2104 AND AS AGREED UPON BY THE ENGINEER.

EXISTING TOPSOIL/ TOPSOIL FILL:

E. STRIP TOPSOIL FROM AREAS TO BE DISTURBED BY CONSTRUCTION, STOCKPILE AND PULVERIZE PRIOR TO REUSE AS TOPSOIL. TOPSOIL STRIPPING SHALL BE PAID FOR EXCAVATION - COMMON AND REUSING AT TOPSOIL WILL BE PAID AS COMMON EMBANKMENT (CV). NO TOPSOIL SHALL BE REMOVED FROM THE PROJECT WITHOUT WRITTEN AUTHORIZATION FROM THE ENGINEER.

GRADING

F. EXCAVATION LIMIT LINES AS SHOWN ON THE TYPICAL SECTIONS, CROSS SECTIONS AND DETAILS IN THIS PLAN ARE FOR COMPUTATION OF PAY QUANTITIES. TEMPORARY AND INTERMEDIATE EXCAVATION LIMITS AND SLOPES ARE TO BE DETERMINED BY THE CONTRACTOR DURING CONSTRUCTION DEPENDING ON THE SOIL PROPERTIES AND SAFETY FACTORS. ADDITIONAL EXCAVATION AND BACKFILL BEYOND THE LIMITS SHOWN IN THE PLAN MUST BE CONSIDERED THE CONTRACTOR'S RESPONSIBILITY WITH NO DIRECT PAYMENT MADE.

G. UNLESS SPECIFIED ALL MATERIAL NOT UTILIZED ON THIS PROJECT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF OUTSIDE THE RIGHT OF WAY IN ACCORDANCE WITH SPEC. 2104.

H. DITCH BOTTOMS, TOE OF FILL, CUT RUNOUTS, AND THE TOP EDGE OF BACKSLOPES MUST BE ROUNDED.

I. NO EXTRA PAYMENT WILL BE MADE FOR TEMPORARY STOCKPILING OF EXCAVATION AND EMBANKMENT MATERIAL.

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

STANDARD PLATES

PLATE NO.	DESCRIPTION
3000M	REINFORCED CONCRETE PIPE (6 SHEETS)
3006H	GASKET JOINT FOR R.C. PIPE (2 SHEETS)
3007F	SHEAR REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES
4006L	MANHOLE OR CATCH BASIN PRECAST - DESIGNS G AND H
4007C	PRECAST MECHANICAL JOINT SEWER MANHOLE
4010I	CONCRETE ADJUSTING RINGS
4011E	PRECAST CONCRETE BASE
4018A	MANHOLE OR CATCH BASIN (REDUCER CONE SECTION PRECAST) - DESIGN D
4020J	MANHOLE OR CATCH BASIN (FOR USE WITH OR WITHOUT TRAFFIC LOADS) (2 SHEETS)
4026B	CONCRETE ENCASED CONCRETE ADJUSTING RINGS
4108F	ADJUSTING RINGS FOR CATCH BASINS AND MANHOLES
4143E	STOOL GRATE & CONCRETE FRAME (MEDIAN DRAINS) - CASTING NO. 731
7020K	CONCRETE CURB (DESIGN B, DESIGN V, DESIGN S, DESIGN DR AND DESIGN BR)(2 SHEETS)
7038A	DETECTABLE WARNING SURFACE TRUNCATED DOMES
7100H	CONCRETE CURB AND GUTTER (DESIGN B AND DESIGN V)
7111J	INSTALLATION OF CATCH BASIN CASTINGS (CONCRETE CURB AND GUTTER)
7113A	CONCRETE APPROACH NOSE DETAIL
8000K	TEMPORARY CHANNELIZERS (3 SHEETS)
8112I	PEDESTAL FOUNDATION (TRAFFIC CONTROL SIGNALS)
8122F	PEDESTAL AND PEDESTAL BASE (FOR TRAFFIC CONTROL SIGNALS SUPPORT) (2 SHEETS)
8129A	SHIM AND WASHER (TRAFFIC CONTROL SIGNALS AND ROADWAY LIGHTING)

NO	DATE	BY	CKD	APPR	REVISION

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SIGNATURE: Tanya H Gytri

DATE: 11/26/24 LICENSE NO. 43919

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CHECKED BY THG DATE 11/26/24

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

STANDARD PLATES
& CONSTRUCTION NOTES
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

EARTHWORK TABULATION (3) — A

STATION	EXCAVATION - COMMON	SELECT GRANULAR EMBANKMENT (CV)	COMMON EMBANKMENT (CV)
	CU YD	CU YD	CU YD
SAP 002-716-024 (ANOKA COUNTY)			
HEATHER			
0+37.000	12	6	
0+50.000	12	6	
0+75.000	23	11	
1+00.000	23	11	
1+25.000	24	10	2
1+47.000	20	8	2
TOTAL SAP 002-716-024	**114**	**52**	**4**
SAP 198-020-040 (CITY OF ANDOVER)			
SIDEWALK (1)			
0+00.100	12		3
0+50.000	12		3
1+00.000	13		1
1+50.000	11		
2+00.000	11		
2+50.000	12		
3+00.000	17		3
3+50.000	20		3
4+00.000	26		3
4+50.000	32		6
5+00.000	28		5
5+50.000	24		4
6+00.000	24		5
6+50.000	25		6
7+00.000	24		6
7+20.000	8		2
TOTAL SAP 198-020-040	**299**		**50**
TOTAL SAP 002-716-024 (ANOKA COUNTY)	**114**	**52**	**4**
TOTAL SAP 198-020-040 (CITY OF ANDOVER)	**299**		**50**
TOTAL PROJECT	**413**	**52**	**54**

NOTES:
(3) ANY EARTHWORK FOR ADA, TRAIL, SIDEWALK,ETC. NOT LISTED IN THIS TAB IS CONSIDERED INCIDENTAL.

BITUMINOUS TABULATION — B

INTERSECTION/LOCATION	QUADRANT/STATION	AGGREGATE BASE (CV) CLASS 5	TYPE SP 12.5 WEARING COURSE MIXTURE (4,C)
		CU YD	TON
ROSE ST	NW	2	5
	SW	3	7
	SE	3	8
	NE	2	5
HEATHER ST	NW	3	7
	SIDEWALK (2)	8	19
	SW	3	8
	SE	2	5
	NE	2	5
	EAST MEDIAN	1	3
YUKON ST	SE	4	9
SIDEWALK (1)	90+33.28 TO 95+51.05		
DRIVEWAY (1)	95+51.05 TO 96+34.47	13	18
SIDEWALK (1)	96+34.47 TO 97+40.08		
CSAH 18/CROSSTOWN BLVD	NW	2	4
	SW	6	14
	SE	5	13
	NE	4	9
	WEST MEDIAN	1	2
QUINN ST	NW	3	6
	SW	4	9
	SE	3	7
	NE	6	15
	SOUTH MEDIAN	2	5
	SOUTH CROSSWALK	13	31
JAY ST	NW	4	8
	SW	3	8
	SE	4	9
	NE	4	10
	NORTH MEDIAN	1	2
	WEST MEDIAN	2	5
	SOUTH MEDIAN	5	12
	EAST MEDIAN	2	5
	NORTH CROSSWALK	12	28
	SOUTH CROSSWALK	11	26
CSAH 78/HANSON BLVD	NW	6	13
	SW	5	12
	SE	7	15
	NE	5	13
	EAST MEDIAN	2	4
TOTAL SAP 002-716-024 (ANOKA COUNTY)		**147**	**347**
TOTAL SAP 198-020-040 (CITY OF ANDOVER)		**21**	**37**
TOTAL PROJECT		**168**	**384**

NOTES:
(1) CITY IS RESPONSIBLE FOR COST OF NEW SIDEWALK FROM YUKON STREET TO CROSSTOWN BOULEVARD.
(2) CITY IS RESPONSIBLE FOR COST OF SIDEWALK AT HEATHER ST.

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_tb01.dgn 11/26/2024 2:34:43 PM

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ANOKA COUNTY
HIGHWAY DEPT.

TABULATIONS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

STORM/SANITARY/WATER TABULATION — H

INTERSECTION/LOCATION	QUADRANT/STATION	REMOVE CASTING	CASTING ASSEMBLY (5)	ADJUST FRAME & RING CAST	ADJUST VALVE BOX - WATER
		EACH	EACH	EACH	EACH
ROSE ST	NW				1
	SE			1	
	SW			1	1
	NE			1	
HEATHER ST	NW			1	
	NE	1	1		
YUKON ST	SE			1	
DRIVEWAY (1)	95+51.05 TO 96+34.47			1	
SIDEWALK (1)	96+34.47 TO 97+40.08				1
CSAH 18/CROSSTOWN BLVD	SE			1	
	SW			2	
QUINN ST	SE			1	
	NE			2	
JAY ST	NW			1	
	SE			1	
	NE			1	
CSAH 78/HANSON BLVD	NW				1
	SE			1	
	NE			1	2
TOTAL SAP 002-716-024 (ANOKA COUNTY)		**1**	**1**	**13**	**5**
TOTAL SAP 198-020-040 (CITY OF ANDOVER)				**1**	**1**
TOTAL PROJECT		**1**	**1**	**14**	**6**

(5) PROVIDE ADA COMPLIANT CASTING. EJ FOUNDRY 1120M2 OR SIMILAR CASTING.

ADA REMOVALS TABULATION — C

INTERSECTION/LOCATION	QUADRANT/STATION	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	REMOVE CURB AND GUTTER	REMOVE CONCRETE WALK	REMOVE CONCRETE PAVEMENT	REMOVE BITUMINOUS PAVEMENT (3)	REMOVE BITUMINOUS WALK
		LIN FT	LIN FT	SQ YD	SQ YD	SQ YD	SQ FT
ROSE ST	NW	51	41	21		14	173
	SW	65	83	29		19	
	SE	77	63	27		26	
	NE	49	62	38		15	120
HEATHER ST	NW	62	49	13		27	392
	SIDEWALK (4)	124	122	80		27	
	SW	62	47	18		22	
	SE	52	42	19		13	
	NE	47	38	10		14	338
	EAST MEDIAN	32	14	3		6	
YUKON ST	SE	79	67			23	
SIDEWALK (1)	90+33.28 TO 95+51.05			68			
DRIVEWAY (1) (2)	95+51.05 TO 96+34.47	115	67			79	
CSAH 18/CROSSTOWN BLVD	NW	42	33	35		11	175
	SW	108	94	24		35	106
	SE	100	87	40		31	
	NE	77	64	32		27	190
	WEST MEDIAN	29	10	1		5	
QUINN ST	NW	58	47	15		16	
	SW	61	57	70		22	242
	SE	50	53	66		14	83
	NE	72	61	27		36	
	SOUTH MEDIAN	42	8	9		8	
	SOUTH CROSSWALK				86		
JAY ST	NW	60	62	50		17	173
	SW	57	55	63		17	269
	SE	64	62	79		19	245
	NE	75	72	52		24	180
	NORTH MEDIAN	32	11	2		5	
	WEST MEDIAN	39	21	3		7	
	SOUTH MEDIAN	40	40	17		11	
	EAST MEDIAN	39	23	3		7	
	NORTH CROSSWALK				73		
	SOUTH CROSSWALK				73		
CSAH 78/HANSON BLVD	NW	95	80	29			339
	SW	90	76	33			299
	SE	97	81	34			428
	NE	101	87	28		33	408
	EAST MEDIAN	36	17	2		6	
TOTAL SAP 002-716-024 (ANOKA COUNTY)		**2040**	**1707**	**892**	**232**	**530**	**4160**
TOTAL SAP 198-020-040 (CITY OF ANDOVER)		**239**	**189**	**148**		**106**	
TOTAL PROJECT		**2279**	**1896**	**1040**	**232**	**636**	**4160**

NOTES:
(1) CITY IS RESPONSIBLE FOR COST OF NEW SIDEWALK FROM YUKON STREET TO CROSSTOWN BOULEVARD.
(2) THE CITY IS RESPONSIBLE FOR THE CURB REMOVAL FOR THE SIDEWALK BETWEEN YUKON ST AND CROSSTOWN BLVD.
(3) EXPECTED INPLACE BITUMINOUS THICKNESS IS APPROXIMATELY 7".
(4) CITY IS RESPONSIBLE FOR COST OF SIDEWALK AT HEATHER ST.

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PRINT NAME: TANYA H GYTRI
SIGNATURE: Tanya H Gytri
DATE: 11/26/24 LICENSE NO. 43919

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DESIGN BY EVJ DATE 11/26/24
CHECKED BY THG DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

TABULATIONS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

ADA CONSTRUCTION TABULATION

D

INTERSECTION/ LOCATION	QUADRANT/STATION	AGGREGATE BASE (CV) CLASS 5	DRILL & GROUT REINF BAR (EPOXY COATED)				2.5" BITUMINOUS WALK	CONCRETE CURB RAMP WALK	4" CONCRETE WALK	TRUNCATED DOMES	
			SIDEWALK	QUADRANT							
			LONGITUDINAL	BACK OF CURB	LANDING	END OF CURB TIE IN				RECTANGLE	RADIAL
		CU YD	EACH	EACH	EACH	EACH	SQ FT	SQ FT	SQ FT	SQ FT	SQ FT
ROSE ST	NW	5		9	10	4		412			34
	SW	4	2	9	11	4		317			38
	SE	4	2	10	9	4		341			42
	NE	5		9	13	4		397			37
HEATHER ST	NW	9		9	15	4		699			37
	SIDEWALK (2)	10	3						838		
	SW	3	2	8	8	4		270			29
	SE	5	2	10	17	4		371		23	
	NE	7	2	9	14	4	150	345			38
	EAST MEDIAN								12		
YUKON ST	SE	4		3	3	4		98	202		15
SIDEWALK (1)	90+33.28 TO 95+51.05	45							3626		
DRIVEWAY (1)	95+51.05 TO 96+34.47	4		12	6	8		217	81		57
SIDEWALK (1)	96+34.47 TO 97+40.08	6							515		
CSAH 18/ CROSSTOWN BLVD	NW	7		9	11	4		557			34
	SW	7		8	17	4		433	169		30
	SE	8		9	7	4	255	258			38
	NE	7		10	16	4		565			42
	WEST MEDIAN								11		
QUINN ST	NW	4		9	7	4		340			38
	SW	10	2	8	14	4	225	465			30
	SE	5	2	9	13	4		405	20		38
	NE	4	2	9	8	4		337			30
	SOUTH MEDIAN	1							49		
JAY ST	NW	7		9	10	4	219	247		32	
	SW	9	2	9	13	4		723			36
	SE	9	2	10	14	4		690		30	
	NE	7	2	8	5	4	161	294		26	
	NORTH MEDIAN								23		
	WEST MEDIAN								12		
	SOUTH MEDIAN	1							55		
	EAST MEDIAN								12		
CSAH 78/ HANSON BLVD	NW	8		9	13	4		656			38
	SW	8		9	10	4	114	489			38
	SE	11		10	13	4	154	654			38
	NE	10		7	7	4	163	546			38
	EAST MEDIAN								12		
TOTAL SAP 002-716-024 (ANOKA COUNTY)		**169**	**22**	**218**	**278**	**100**	**1441**	**10909**	**577**	**111**	**738**
TOTAL SAP 198-020-040 (CITY OF ANDOVER)		**65**	**3**	**12**	**6**	**8**		**217**	**5060**		**57**
TOTAL PROJECT		**234**	**25**	**230**	**284**	**108**	**1441**	**11126**	**5637**	**111**	**795**

NOTES:
(1) CITY IS RESPONSIBLE FOR COST OF NEW SIDEWALK FROM YUKON STREET TO CROSSTOWN BOULEVARD.
(2) CITY IS RESPONSIBLE FOR COST OF SIDEWALK AT HEATHER ST

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ANOKA COUNTY
HIGHWAY DEPT.

TABULATIONS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

CONCRETE CURB AND GUTTER

F

INTERSECTION/LOCATION	QUADRANT/STATION	AGGREGATE BASE (CV) CLASS 5 (2)	CONCRETE CURB & GUTTER DESIGN B412 (2)	CONCRETE CURB & GUTTER DESIGN B418 (2)	CONCRETE CURB & GUTTER DESIGN B418 (MOD) (2)	CONCRETE CURB & GUTTER DESIGN B424 (2)	CONCRETE CURB & GUTTER DESIGN B612 (2)	CONCRETE CURB & GUTTER DESIGN B618 (2)	CONCRETE CURB & GUTTER DESIGN B618 (MOD) (2)	CONCRETE CURB DESIGN V9
		CU YD	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT
ROSE ST	NW	5					4	37		
	SW	6					13	39		
	SE	6		44				20	6	
	NE	4					4	33		
HEATHER ST	NW	5		45				52	7	
	SIDEWALK (3)	14							122	
	SW	4		48						
	SE	4		41				41		
	NE	5						38		
	EAST MEDIAN		7							
YUKON ST	SE	6		35	39					
SIDEWALK (1)	90+33.28 TO 95+51.05	2								166
DRIVEWAY (1)	95+51.05 TO 96+34.47	6		54			13			
SIDEWALK (1)	96+34.47 TO 97+40.08									
CSAH 18/CROSSTOWN BLVD	NW	3		34						
	SW	9		76						
	SE	8		86						
	NE	6		65						
	WEST MEDIAN		7							
QUINN ST	NW	4		46						
	SW	5		47			11			
	SE	5		53						
	NE	5		60						
	SOUTH MEDIAN	1					10			
JAY ST	NW	6		47				14		
	SW	5		45				10		
	SE	6		61						
	NE	7		43				29		
	NORTH MEDIAN	1						10		
	WEST MEDIAN	1	3	3						
	SOUTH MEDIAN	1					10			
	EAST MEDIAN		7							
CSAH 78/HANSON BLVD	NW	8				80				
	SW	7				75				
	SE	8				81				
	NE	10				65				
	EAST MEDIAN	1		7						
TOTAL SAP 002-716-024 (ANOKA COUNTY)		**79**	**24**	**448**	**20**	**151**	**36**	**167**	**7**	
TOTAL SAP 198-020-040 (CITY OF ANDOVER)		**95**		**492**	**19**	**150**	**29**	**156**	**128**	**166**
TOTAL PROJECT		**174**	**24**	**940**	**39**	**301**	**65**	**323**	**135**	**166**

NOTES:
(1) CITY IS RESPONSIBLE FOR COST OF NEW SIDEWALK FROM YUKON STREET TO CROSSTOWN BOULEVARD.
(2) PER COUNTY COST PARTICIPATION POLICY, THE CITY IS RESPONSIBLE FOR 50% OF CURB REPLACEMENT AT INTERSECTIONS. MEDIAN CURB IS 100% COUNTY COST.
(3) CITY IS RESPONSIBLE FOR COST OF SIDEWALK AT HEATHER ST

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ANOKA COUNTY
HIGHWAY DEPT.

TABULATIONS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

STORM SEWER TABULATION

E

STATION	LOCATION	OFFSET	REMOVE DRAINAGE STRUCTURE (6)	REMOVE SEWER PIPE (STORM)	TOP OF CAST. ELEV.	OUTLET ELEV.	PAY HEIGHT	12" RC PIPE SEWER DESIGN 3006	DRAINS TO			CONNECT INTO EXISTING DRAINAGE STRUCTURE	CASTING ASSEMBLY	CASTING ASSEMBLY TYPE	NOTES
							CONST DRAINAGE STRUCT DES H		STRUCT	SLOPE OF PIPE %	INLET ELEV.				
			EACH	LIN FT			LIN FT	LIN FT				EACH	EACH		
SAP 198-020-040															
90+23.2 EB	RT	34.5 FT	1	16	881.5	878.5	3	16	EX	UNKNOWN	UNKNOWN	1	1	M-11	INVERTS ARE BASED ON DESIGN PLAN FROM 1999. EXISITNG INVERTS TO BE VERIFIED BY CONTRACTOR PRIOR TO MANUFACTURING STRUCTURE. GROUT INVERT INCIDENTAL.
TOTAL SAP 198-020-040			**1**	**16**			**3**	**16**				**1**	**1**		

NOTES:
(6) EXISTING STRUCTURE DEPTH IS ANTICIPATED TO BE BETWEEN 3'-4' IN DEPTH.

EROSION CONTROL & TURF ESTABLISHMENT TABULATION (2)

G

INTERSECTION/ LOCATION	QUADRANT/STATION	FERTILIZER TYPE 3 (4)	SEEDING	SEED SOUTHERN BOULEVARD 25-070 (5)	HYDRAULIC BONDED FIBER MATRIX	ROLLED EROSION PREVENTION CAT 25	SILT FENCE, TYPE MS	SEDIMENT CONTROL LOG TYPE COMPOST	STORM DRAIN INLET PROTECTION (3)
		POUND	ACRE	POUND	POUND	SQ YD	LIN FT	LIN FT	EACH
ROSE ST	NW	2	0.01	1.6	35				1
	SW	2	0.01	1.6	35				2
	SE	2	0.01	1.6	35				1
	NE	2	0.01	1.6	35				
HEATHER ST	NW	2	0.01	1.6	35				1
	SIDEWALK (7)	2	0.01	1.6	35				
	SW	2	0.01	1.6	35				
	SE	2	0.01	1.6	35				1
	NE	2	0.01	1.6	35				
	EAST MEDIAN								3
YUKON ST	SE	2	0.01	1.6	35			109	1
SIDEWALK (1)	90+33.28 TO 95+51.05	8	0.04	6.4	67	106		299	1
DRIVEWAY (1)	95+51.05 TO 96+34.47	2	0.01	1.6	35				
SIDEWALK (1)	96+34.47 TO 97+40.08	4	0.02	3.2	70				1
CSAH 18/ CROSSTOWN BLVD	NW	2	0.01	1.6	35		34	33	1
	SW	2	0.01	1.6	35				1
	SE	2	0.01	1.6	35			51	1
	NE	2	0.01	1.6	35				
	WEST MEDIAN								2
	EAST MEDIAN								7
QUINN ST	NW	2	0.01	1.6	35				1
	SW	2	0.01	1.6	35				
	SE	2	0.01	1.6	35				1
	NE	2	0.01	1.6	35				1
JAY ST	NW	2	0.01	1.6	35				1
	SW	2	0.01	1.6	35				1
	SE	4	0.02	3.2	70				1
	NE	2	0.01	1.6	35				1
CSAH 78/ HANSON BLVD	NW	2	0.01	1.6	35				
	SW	2	0.01	1.6	35				
	SE	4	0.02	3.2	70				1
	NE	4	0.02	3.2	70				
	EAST MEDIAN								1
TOTAL SAP 002-716-024 (ANOKA COUNTY)		**56**	**0.3**	**45**	**980**		**34**	**193**	**31**
TOTAL SAP 198-020-040 (CITY OF ANDOVER)		**16**	**0.1**	**13**	**207**	**106**		**299**	**2**
TOTAL PROJECT		**72**	**0.4**	**58**	**1187**	**106**	**34**	**492**	**33**

NOTES:
(1) CITY IS RESPONSIBLE FOR COST OF NEW SIDEWALK FROM YUKON STREET TO CROSSTOWN BOULEVARD.
(2) PERMANENT SEEDING WILL BE PAID ONCE. CONTRACTOR IS RESPONSIBLE FOR ADDITIONAL SEEDING APPLICATIONS NEEDED TO MEET FINAL STABILIZATION REQUIREMENT.
(3) INCLUDES ALL REQUIRED REPLACEMENT AND REMOVAL FOR THE DURATION OF THE PROJECT.
(4) FERTILIZER ANALYSIS 22-5-10 (SLOW RELEASE), APPLICATION RATE 200 LBS/ACRE.
(5) SEED MIXTURE: SOUTHERN BOULEVARD, APPLICATION RATE 160 LBS/ACRE.
(7) CITY IS RESPONSIBLE FOR COST OF SIDEWALK AT HEATHER ST

CASTING ASSEMBLY SUMMARY

ASSEMBLY	RING OR FRAME CASTING	COVER OR GRATE CASTING	SUBTOTAL
M-11	4143		1
		4143/731	
		TOTAL	**1**

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ANOKA COUNTY
HIGHWAY DEPT.

TABULATIONS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 10 of 174 Sheets

PERMANENT PAVEMENT MARKING TABULATION — PM

ITEM	UNIT	TOTAL SAP 002-716-024 (ANOKA COUNTY)
PAVEMENT MARKING REMOVAL	SQ FT	5636
6" SOLID LINE PAINT	LIN FT	4311

PERMANENT SIGNING SUMMARY — ST

TAB	SHEET NO	ITEM NO	ITEM	UNIT	TOTAL SIGNING QUANTITIES	TOTAL SAP 002-716-024 (ANOKA COUNTY)
ST-A	11	2104	SALVAGE SIGN	EACH	16	16
ST-A	11	2104	SALVAGE SIGN TYPE SPECIAL	EACH	1	1
ST-A	11	2564	INSTALL SIGN	EACH	16	16
ST-A	11	2564	INSTALL SIGN TYPE SPECIAL	EACH	1	1
ST-A	11	2564	SIGN	SQ FT	120	120

SIGN AND DELINEATOR / MARKER — ST-A

SIGN NUMBER	PANEL					SUPPORT			SIGN	SALVAGE SIGN	INSTALL SIGN	SALVAGE SIGN TYPE SPECIAL	INSTALL SIGN TYPE SPECIAL
	PANEL CODE	LEGEND	SIZE (W x H)	MOUNTING HEIGHT	NUMBER OF SIGNS	TYPE	RISER POST SIZE	NUMBER OF POSTS					
			INCH	FEET	EACH		INCHES		SQ FT	EACH	EACH	EACH	SQ FT
SAP 002-716-024 (ANOKA COUNTY)													
S-1	M2-1	JUNCTION	INPLACE	7		SQ-SOIL	2	1		1	1		
	M1-6M	COUNTY ROAD 18	INPLACE										
S-2	O-R3	RIGHT TURN LANE	INPLACE	7		SQ-SOIL	2	1		1	1		
S-3	M1-61	COUNTY ROAD 18	INPLACE	7		SQ-SOIL	2	1		1	1		
	M6-4	LEFT AND RIGHT COMBINED ARROWS	INPLACE										
S-4	R4-7	BEGIN MEDIAN	INPLACE	7		SQ-SOIL	2	1		1	1		
S-5	R4-7	BEGIN MEDIAN	INPLACE	7		SQ-CONC	2	1		3	3		
	OM1-1	YELLOW HAZARD	INPLACE										
S-6	R10-15R	STOP FOR PEDESTRIANS	INPLACE	7		SQ-SOIL	2	1		1	1		
S-7	R6-1R	ONE WAY	INPLACE	7		SQ-SOIL	2 1/2	1		2	2		
	R1-1	STOP	INPLACE	7		SQ-SOIL							
S-8	-	CENTRAL ANOKA COUNTY REGIONAL TRAIL	INPLACE	4		SQ-SOIL	1 3/4	1				1	1
S-9	M1-6M	COUNTY ROAD 116	INPLACE	7		SQ-SOIL	2 1/2	1		2	2		
	M6-4	LEFT AND RIGHT COMBINED ARROWS	INPLACE	7		SQ-SOIL							
	R10-6R	STOP HERE ON RED	24 x 30	7	2	SQ-SOIL			10				
S-10	R10-6R	STOP HERE ON RED	24 x 30	7	18	SQ-SOIL	2	1	90				
S-11	R10-15R	STOP FOR PEDESTRIANS	INPLACE	7		SQ-SOIL	2 1/2	1		4	4		
	R10-6R	STOP HERE ON RED	24 x 30		4				20				
TOTAL SAP 002-716-024 (ANOKA COUNTY)									**120**	**16**	**16**	**1**	**1**
PROJECT TOTAL									**120**	**16**	**16**	**1**	**1**

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

TABULATIONS

COUNTY PROJECT SAP 002-716-024

CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

GENERAL NOTES:

A. ALL UTILITY WORK SHOWN ON THESE SHEETS SHALL BE DONE BY OTHERS, UNLESS NOTED OTHERWISE.

B. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACES UTILITY DATA".

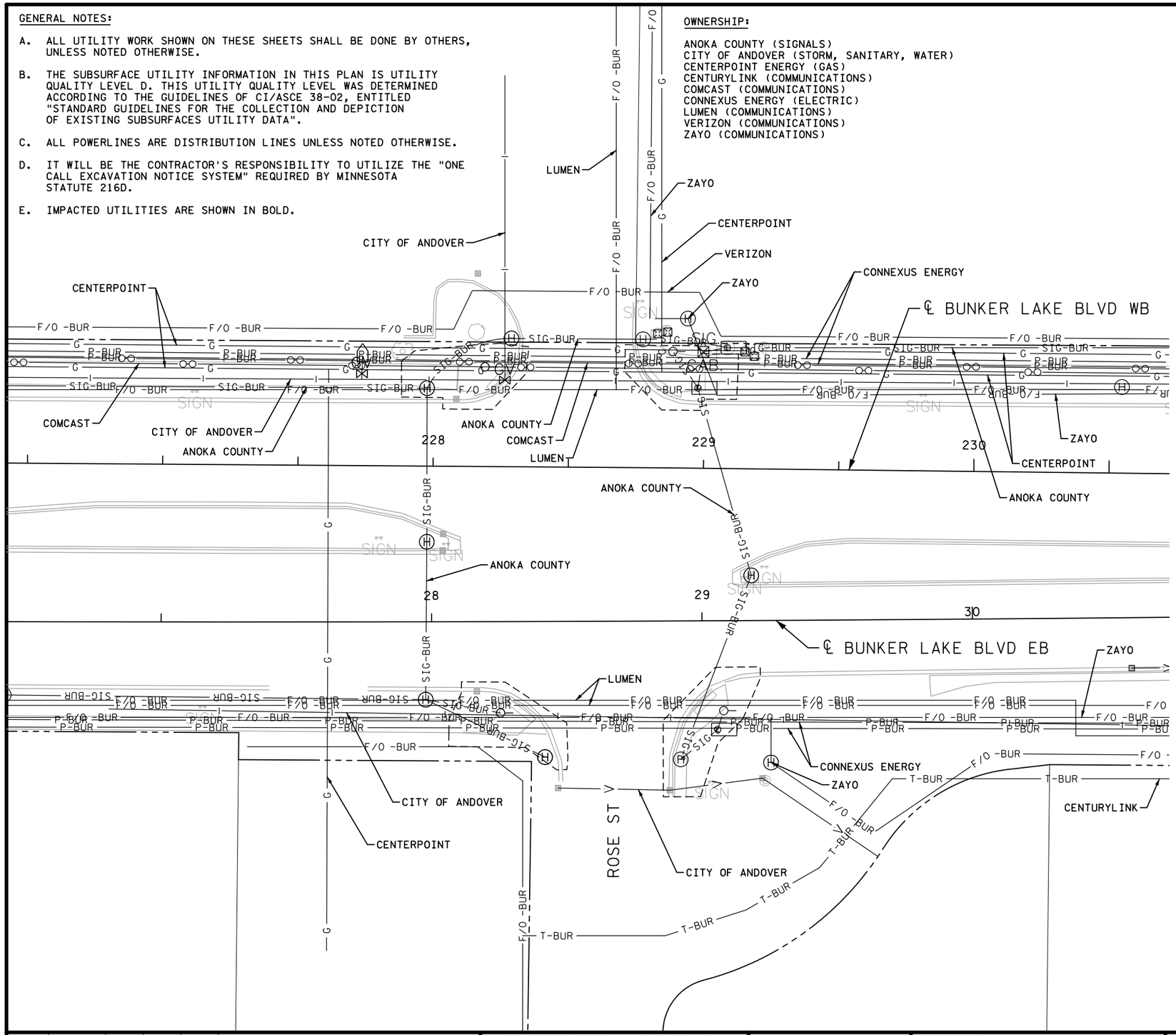
C. ALL POWERLINES ARE DISTRIBUTION LINES UNLESS NOTED OTHERWISE.

D. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" REQUIRED BY MINNESOTA STATUTE 216D.

E. IMPACTED UTILITIES ARE SHOWN IN BOLD.

OWNERSHIP:

ANOKA COUNTY (SIGNALS)
CITY OF ANDOVER (STORM, SANITARY, WATER)
CENTERPOINT ENERGY (GAS)
CENTURYLINK (COMMUNICATIONS)
COMCAST (COMMUNICATIONS)
CONNEXUS ENERGY (ELECTRIC)
LUMEN (COMMUNICATIONS)
VERIZON (COMMUNICATIONS)
ZAYO (COMMUNICATIONS)



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SCALE IN FEET

LEGEND

- INPLACE R/W
- CONSTRUCTION LIMITS
- EXISTING DRAINAGE & UTILITY EASEMENT
- WATERMAIN
- FIBER OPTIC BURIED
- TELEPHONE CABLE BURIED
- ELECTRIC CABLE BURIED
- COMMUNICATION LINE
- STORM SEWER
- SANITARY SEWER
- GAS MAIN
- GATE VALVE
- HYDRANT
- CATCH BASIN
- LIGHT POLE

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DESIGN BY EVJ DATE 11/26/24

CHECKED BY THG DATE 11/26/24

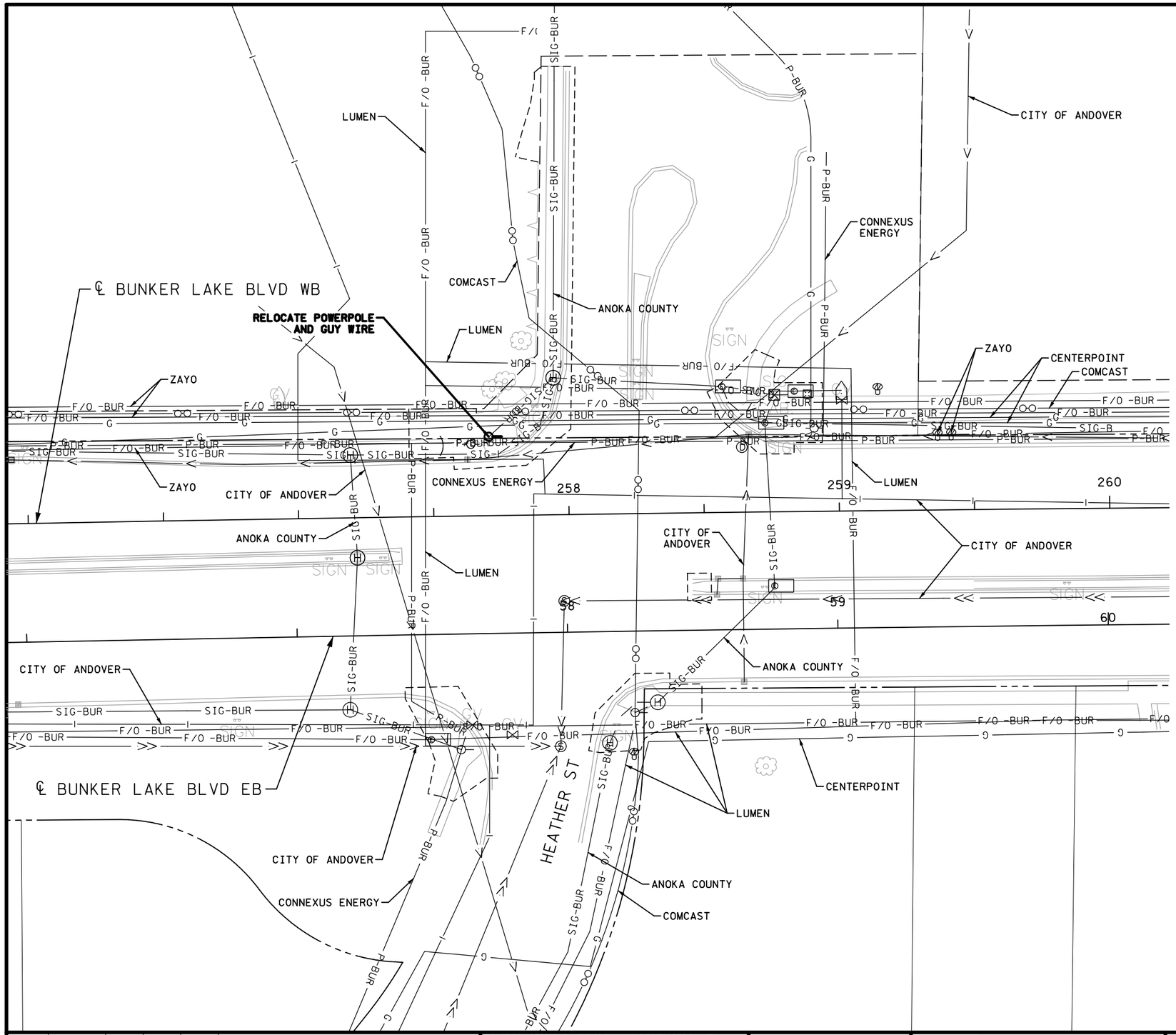
ANOKA COUNTY HIGHWAY DEPT.

INPLACE TOPO AND UTILITY PLANS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 12 of 174 Sheets



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SCALE IN FEET

LEGEND

- INPLACE R/W
- CONSTRUCTION LIMITS
- EXISTING DRAINAGE & UTILITY EASEMENT
- WATERMAIN
- FIBER OPTIC BURIED (F/O -BUR)
- TELEPHONE CABLE BURIED (T-BUR)
- ELECTRIC CABLE BURIED (P-BUR)
- COMMUNICATION LINE
- STORM SEWER
- SANITARY SEWER (SIG-BUR)
- GAS MAIN (G)
- GATE VALVE (GV)
- HYDRANT
- CATCH BASIN
- LIGHT POLE (LP)

NO	DATE	BY	CKD	APPR	REVISION		
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NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_ut02.dgn 11/26/2024 2:36:44 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: TANYA H GYTRI

SIGNATURE: Tanya H Gytri

DATE: 11/26/24 LICENSE NO. 43919

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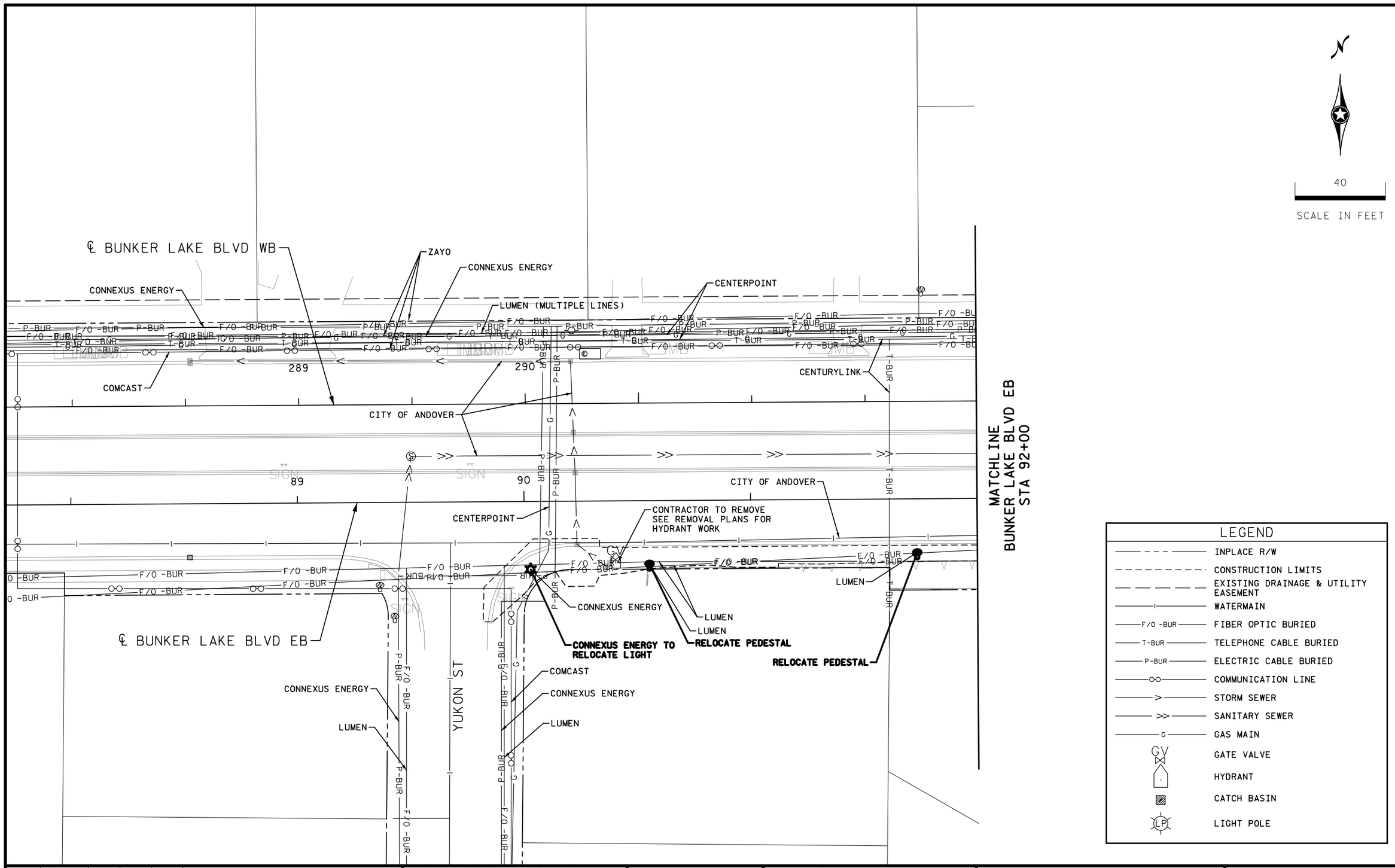
CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 13 of 174 Sheets



LEGEND

- INPLACE R/W
- CONSTRUCTION LIMITS
- EXISTING DRAINAGE & UTILITY EASEMENT
- WATERMAIN
- F/O -BUR — FIBER OPTIC BURIED
- T-BUR — TELEPHONE CABLE BURIED
- P-BUR — ELECTRIC CABLE BURIED
- COMMUNICATION LINE
- STORM SEWER
- SANITARY SEWER
- G — GAS MAIN
- GV — GATE VALVE
- HYDRANT
- CATCH BASIN
- LP — LIGHT POLE

NO	DATE	BY	CKD	APPR	REVISION		
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ANOKA COUNTY

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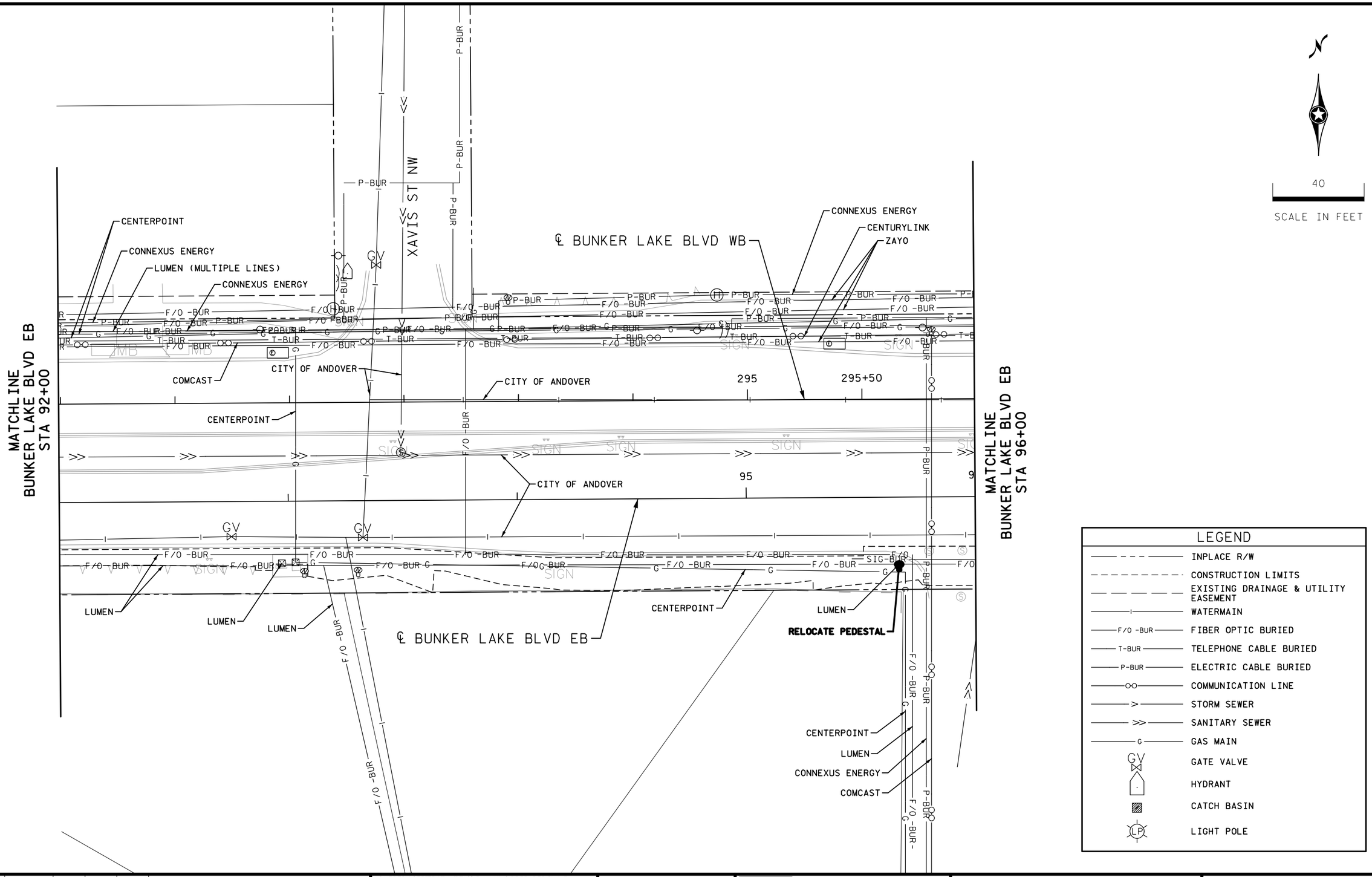
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 14 of 174 Sheets



LEGEND

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- GATE VALVE
- HYDRANT
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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

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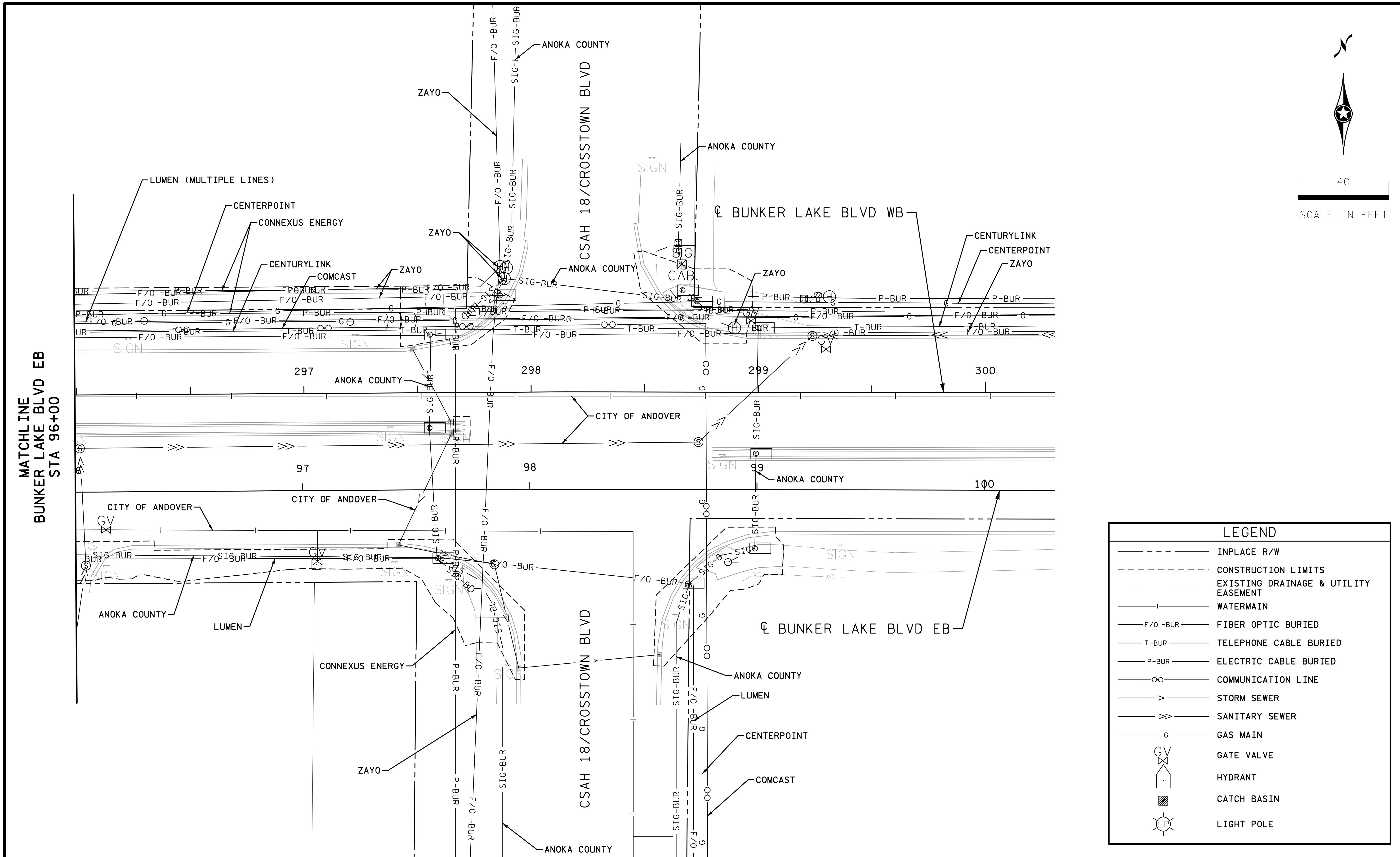
COUNTY PROJECT SAP 002-716-024

CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 15 of 174 Sheets



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PRINT NAME: TANYA H GYTRI
SIGNATURE: Tanya H Gytri
DATE: 11/26/24 LICENSE NO. 43919

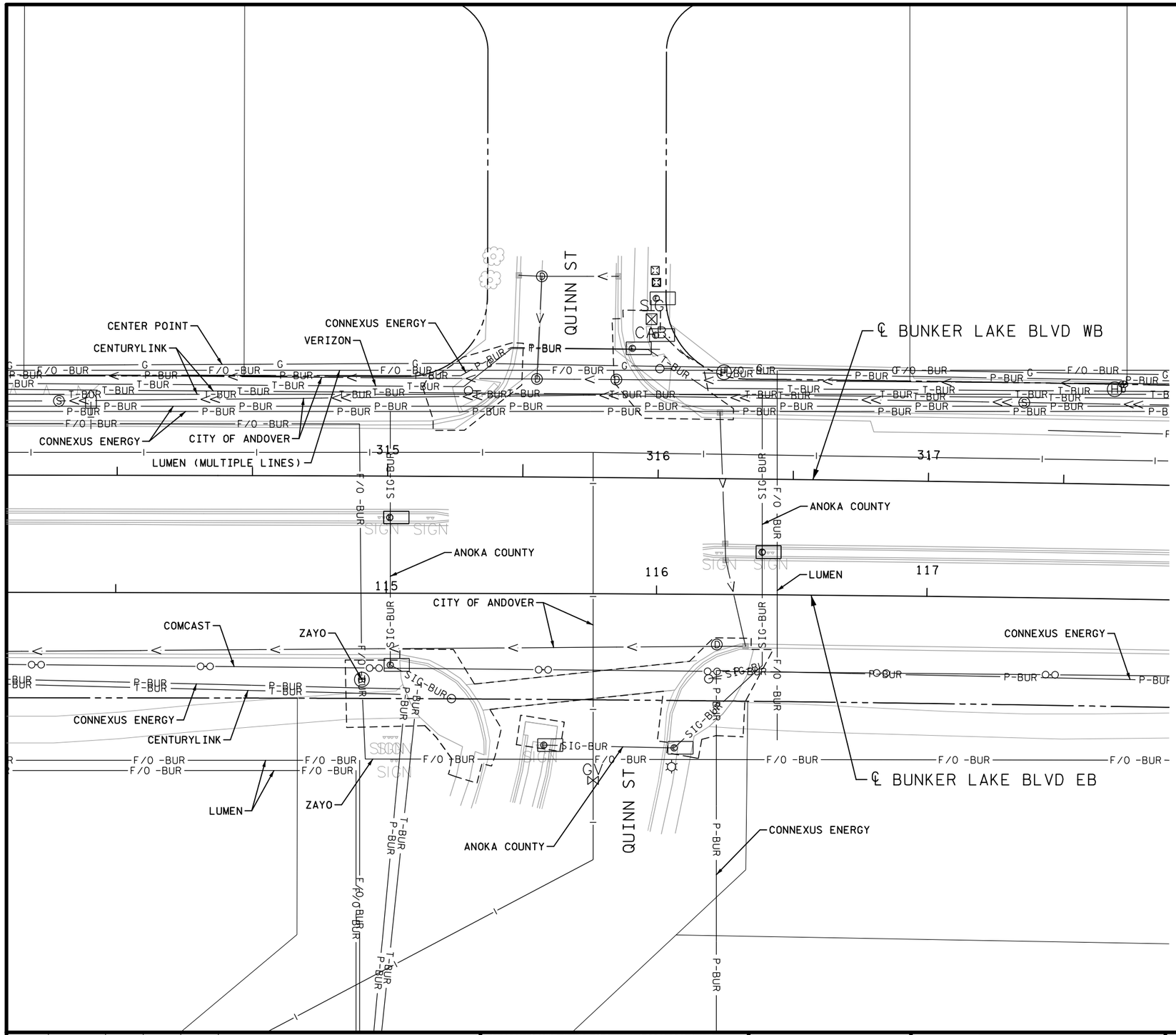
DRAWN BY BBF DATE 11/26/24
DESIGN BY EVJ DATE 11/26/24
CHECKED BY THG DATE 11/26/24

ANOKA COUNTY
ANOKA COUNTY HIGHWAY DEPT.

INPLACE TOPO AND UTILITY PLANS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS



N

40

SCALE IN FEET

LEGEND

- INPLACE R/W
- CONSTRUCTION LIMITS
- EXISTING DRAINAGE & UTILITY EASEMENT
- WATERMAIN
- FIBER OPTIC BURIED
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- STORM SEWER
- SANITARY SEWER
- GAS MAIN
- GATE VALVE
- HYDRANT
- CATCH BASIN
- LIGHT POLE

NO	DATE	BY	CKD	APPR	REVISION		
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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.

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SIGNATURE: Tanya H Gytri

DATE: 11/26/24 LICENSE NO. 43919

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ANOKA COUNTY

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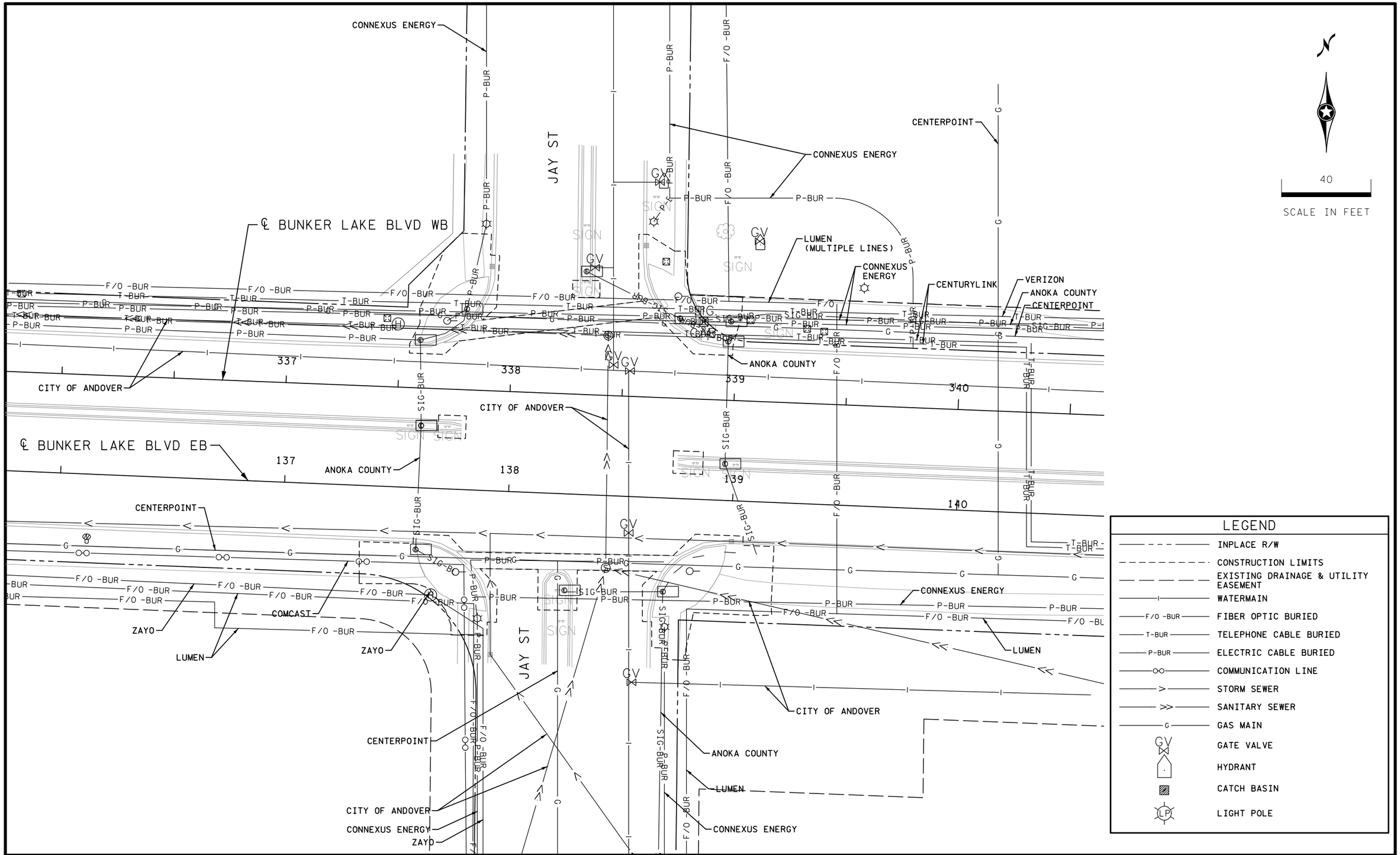
INPLACE TOPO AND UTILITY PLANS

COUNTY PROJECT SAP 002-716-024

CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS

Sheet 17 of 174 Sheets



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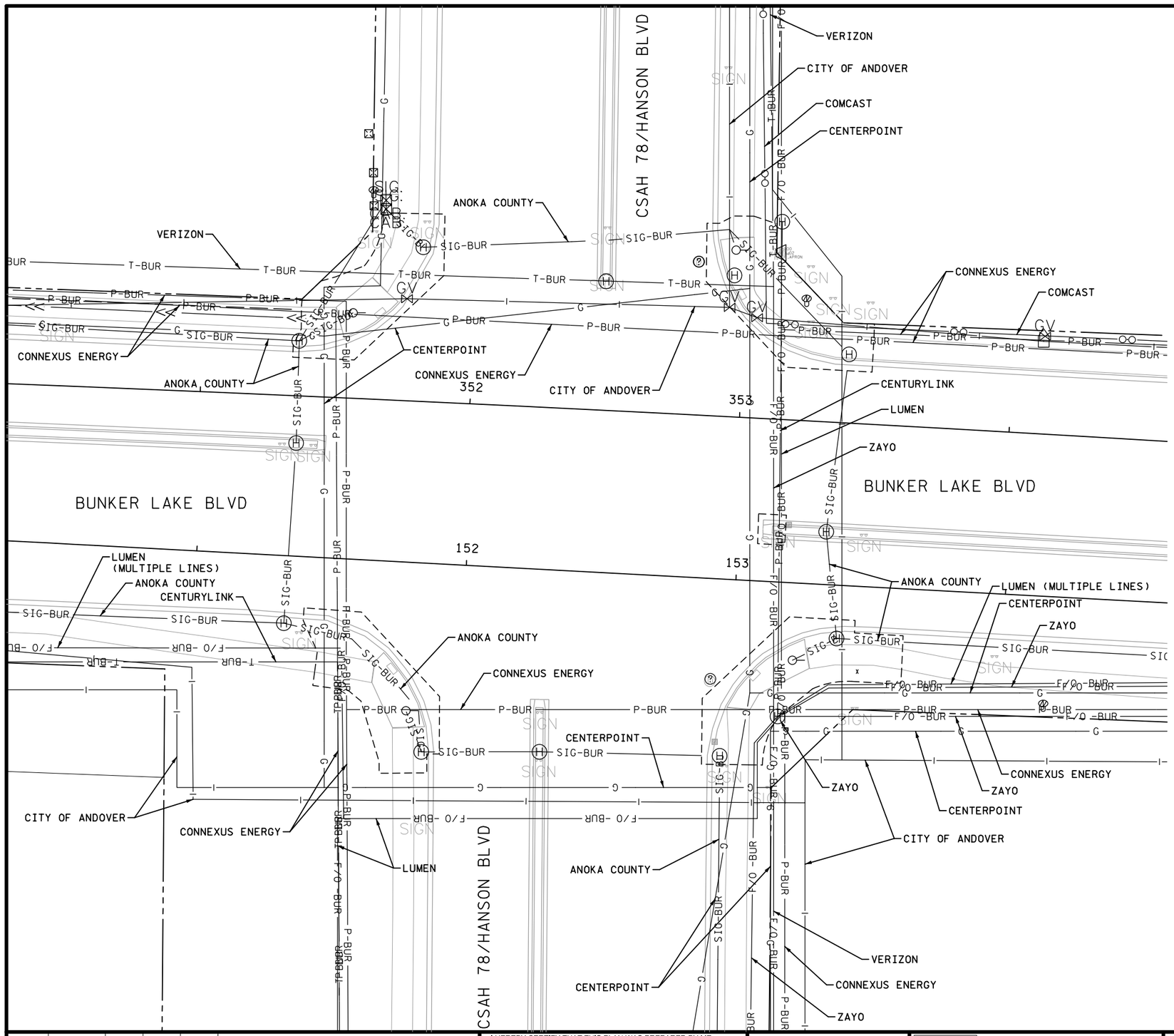
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 18 of 174 Sheets



LEGEND

- INPLACE R/W
- CONSTRUCTION LIMITS
- EXISTING DRAINAGE & UTILITY EASEMENT
- WATERMAIN
- FIBER OPTIC BURIED
- TELEPHONE CABLE BURIED
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CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

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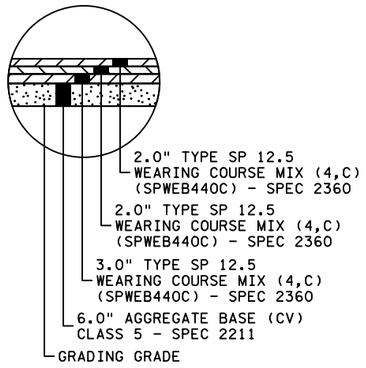
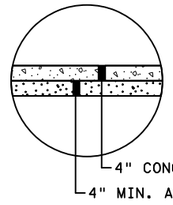
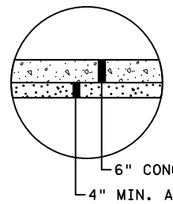
INSET A - BITUMINOUS FULL DEPTH PATCHING AND RIGHT TURN LANE CONSTRUCTION AT HEATHER STREET (2)



INSET B - CONCRETE WALK/MEDIAN (1)



INSET F - CONCRETE CURB RAMP WALK (1)



GENERAL NOTES:

A. ALL CROSS SLOPES ARE IN FT. PER FT.

B. UNLESS OTHERWISE SPECIFIED, THE GRADING GRADE CROSS SLOPES WILL BE THE SAME AS THE PROPOSED DRIVING SURFACE.

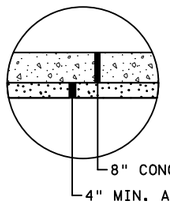
C. MAXIMUM SUPERELEVATION ROLLOVER MUST BE 0.07 FT./FT

SPECIFIC NOTES:

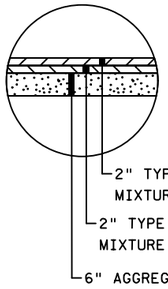
(1) SEE REMOVAL PLAN, CONSTRUCTION PLAN AND INTERSECTION DETAILS FOR WALK AND TRAIL RECONSTRUCTION LOCATIONS.

(2) 7.0" INPLACE BITUMINOUS PAVEMENT ASSUMED IN FULL DEPTH PATCH AREAS BASED ON AS-BUILT RECORDS. MATCH INPLACE PAVEMENT THICKNESS IF GREATER THAN 7.0".

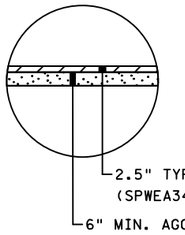
INSET C (NOT SHOWN) - CONCRETE DRIVEWAY PAVEMENT



INSET D (NOT SHOWN) - BITUMINOUS DRIVEWAY



INSET E (NOT SHOWN) - 2.5" BITUMINOUS TRAIL (1)



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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

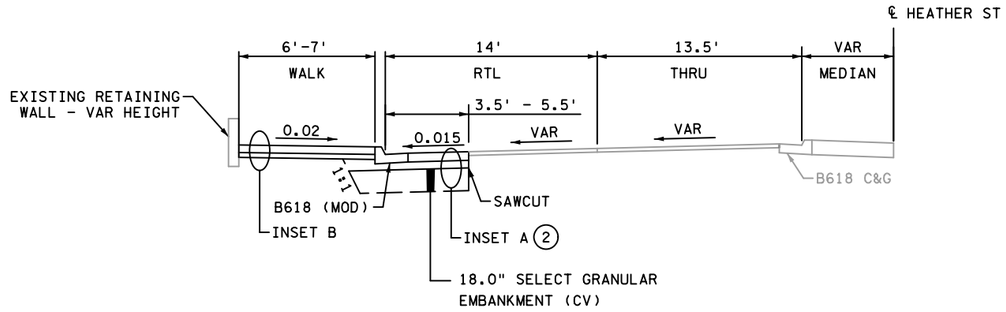
TYPICAL SECTIONS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

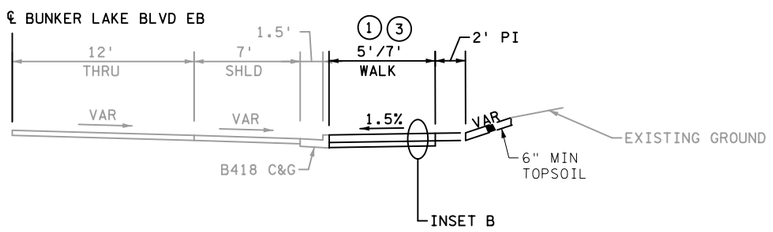
CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 20 of 174 Sheets

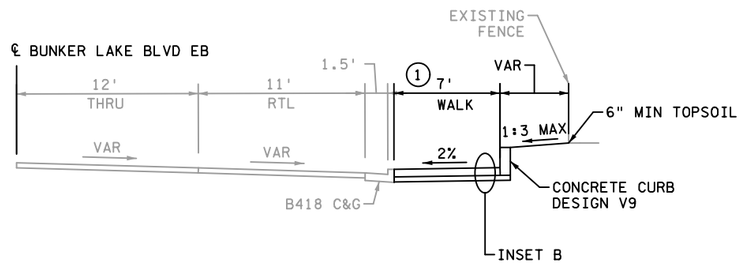
HEATHER ST



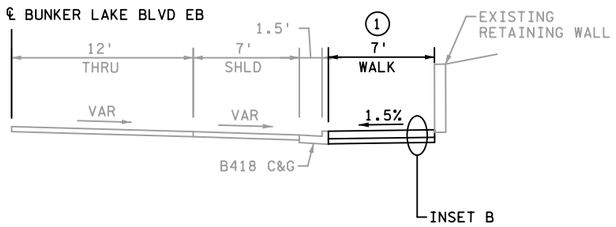
BUNKER LAKE BLVD EB
STA 0+00.00 TO STA 0+93.00
STA 2+66.36 TO STA 2+66.36



BUNKER LAKE BLVD
STA 3+45.00 TO STA 5+10.00



BUNKER LAKE BLVD EB
STA 0+93.00 TO STA 2+66.36



GENERAL NOTES:

A. ALL CROSS SLOPES ARE IN FT. PER FT.

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C. MAXIMUM SUPERELEVATION ROLLOVER MUST BE 0.07 FT./FT.

SPECIFIC NOTES:

(1) SEE REMOVAL PLAN, CONSTRUCTION PLAN AND INTERSECTION DETAILS FOR WALK AND TRAIL RECONSTRUCTION LOCATIONS.

(2) 7.0" INPLACE BITUMINOUS PAVEMENT ASSUMED IN FULL DEPTH PATCH AREAS BASED ON AS-BUILT RECORDS. MATCH INPLACE PAVEMENT THICKNESS IF GREATER THAN 7.0".

(3) 5' WALK BETWEEN STA 6+20.29 AND STA 7+24.84.

NO	DATE	BY	CKD	APPR	REVISION

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TYPICAL SECTIONS

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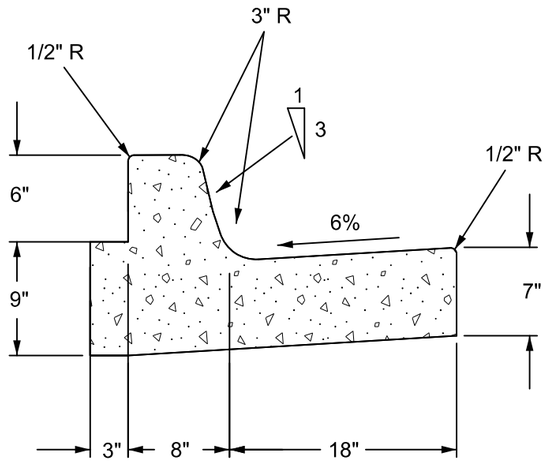
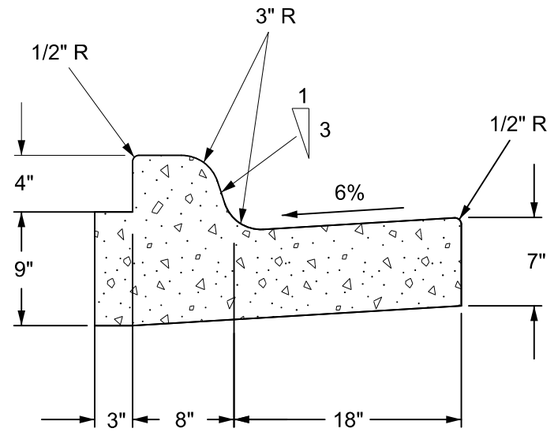
CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS



CONCRETE CURB & GUTTER DESIGN B618 (MOD)



CONCRETE CURB & GUTTER DESIGN B418 (MOD)

NO	DATE	BY	CKD	APPR	REVISION

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ANOKA COUNTY

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MISCELLANEOUS DETAILS

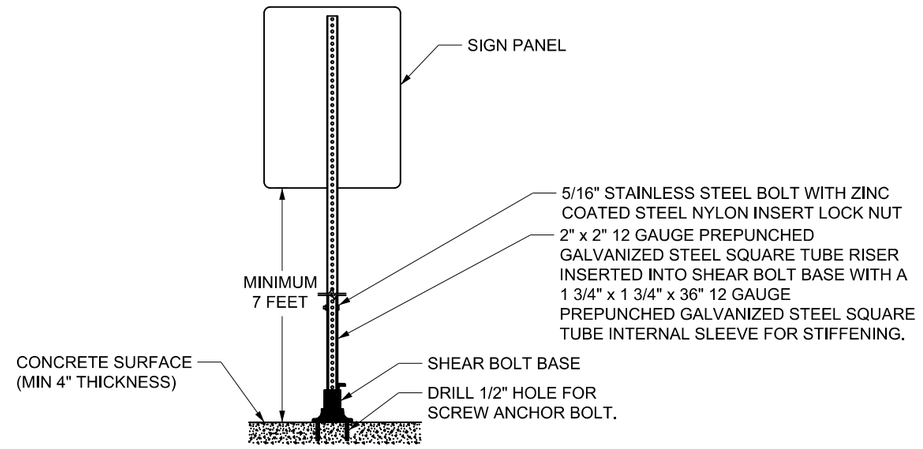
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 22 of 174 Sheets

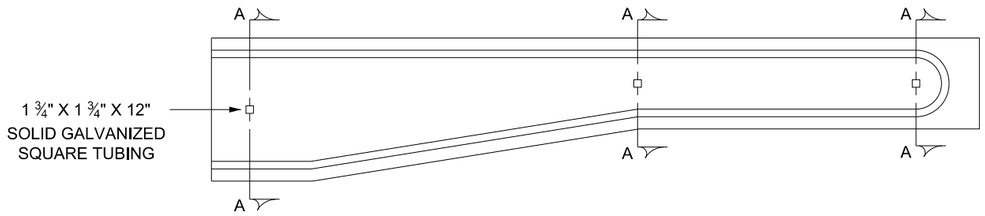
SIGN INSTALLATION TYPICALS

SHEAR BOLT BASE MOUNTED TO CONCRETE SURFACE

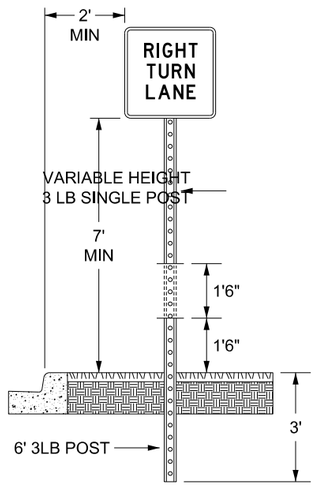


RISER POSTS TO BE MOUNTED CLOSE TO PLUMB. UP TO A MAXIMUM OF 1/2" OF SHIM WASHERS MAY BE USED BETWEEN SHEAR BOLT BASE AND CONCRETE FOR LEVELING. IF MORE THAN 1/2" OF SHIMS ARE REQUIRED, THEN CORE THROUGH THE CONCRETE.

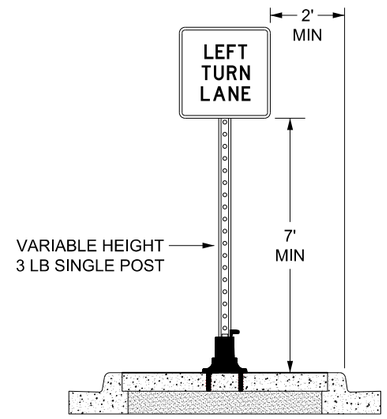
SECTION A-A



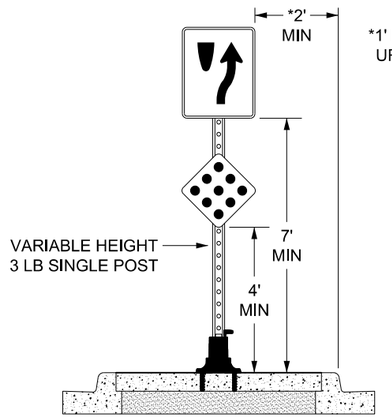
GROUND POST MOUNT SIGN INSTALLATION TYPICAL



ISLAND MOUNT BREAK-AWAY SIGN INSTALLATION TYPICAL



ISLAND MOUNT BREAK-AWAY SIGN INSTALLATION KEEP RIGHT/CLUSTER TYPICAL



*1' MIN FOR NARROW URBAN LOCATIONS

INSTALLATION NEAR SHARED-USE PATHWAY (MN MUTCD):

- THE MINIMUM HEIGHT MEASURED VERTICALLY FROM THE SHARED-USE PATHWAY TO THE BOTTOM OF THE SIGN SHALL BE 7 FEET. IF A SECONDARY SIGN IS MOUNTED BELOW THE PRIMARY SIGN AND IS MOUNTED LESS THAN 7 FEET, IT SHALL NOT PROJECT MORE THAN 4 INCHES INTO THE SHARED-USE PATHWAY.

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_psd01.dgn 12/5/2024 11:59:51 AM

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: NICK VANGUNST

SIGNATURE:

DATE: 11/26/24 LICENSE NO. 44683

DRAWN BY BBF DATE 11/26/24

DESIGN BY JDD DATE 11/26/24

CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

MISCELLANEOUS DETAILS

COUNTY PROJECT SAP 002-716-024

CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS

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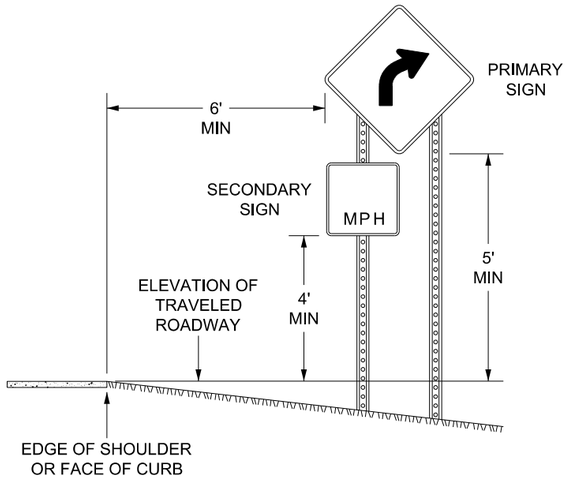
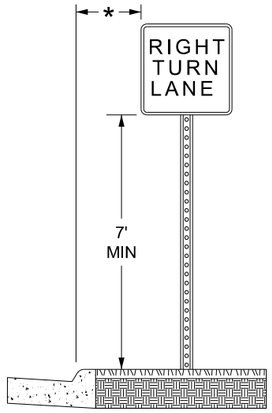
SIGN PLACEMENT TYPICALS

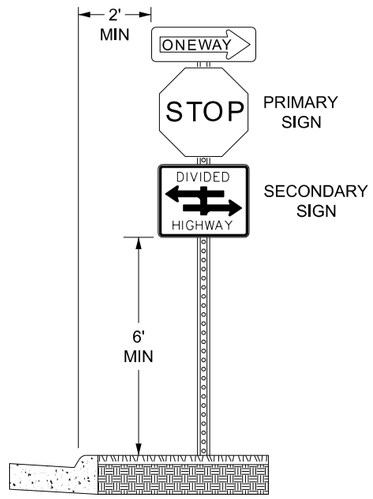
RURAL

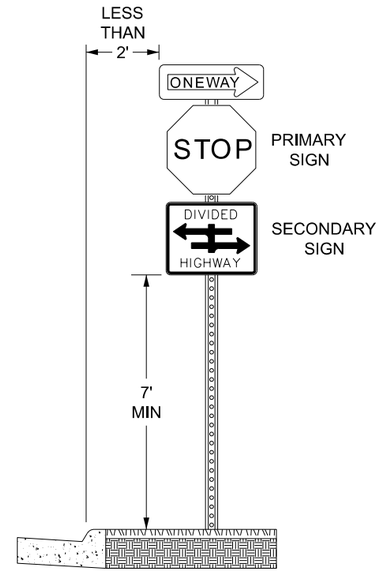


URBAN

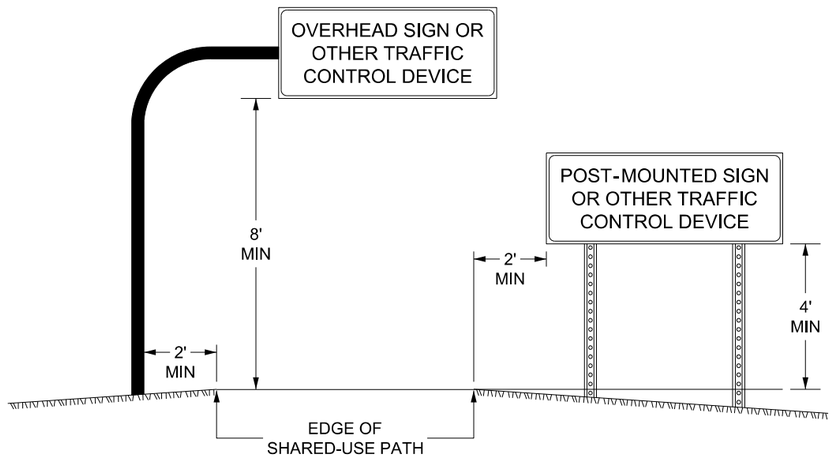


* 2' - NARROW BOULEVARD (≤ 8' WIDE)
  6' - WIDE BOULEVARD





SHARED-USE PATH



NOTES:
- ALL DIMENSIONS ARE MINIMUMS.
- MAINTAIN A DISTANCE OF 2' BETWEEN TRAFFIC CONTROL DEVICE AND SHARED-USE PATH.
- 7' SIGN CLEARANCE IF 2' DISTANCE BETWEEN SIGN AND SHARED-USE PATH CANNOT BE MAINTAINED.

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_psd02.dgn 11/26/2024 2:39:19 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: NICK VANGUNST
SIGNATURE: Nick VanGunst
DATE: 11/26/24 LICENSE NO. 44683

DRAWN BY BBF DATE 11/26/24
DESIGN BY JDD DATE 11/26/24
CHECKED BY NHV DATE 11/26/24

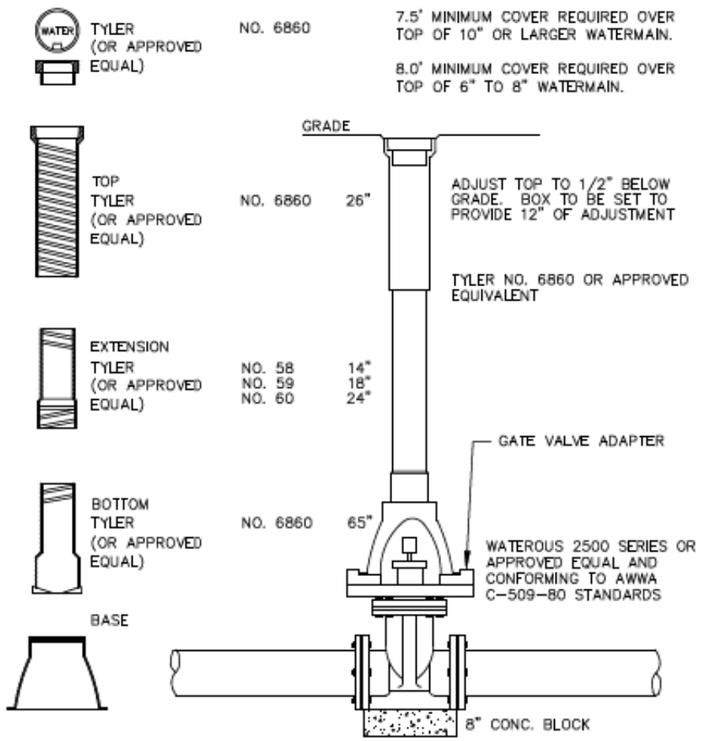
ANOKA COUNTY HIGHWAY DEPT.

MISCELLANEOUS DETAILS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 24 of 174 Sheets



GATE VALVE AND BOX

6/19/12

CITY OF ANDOVER

STANDARD DRAWING NO.
202A

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_std01.dgn 11/26/2024 2:39:34 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: TANYA H GYTRI

SIGNATURE: Tanya H Gytri

DATE: 11/26/24 LICENSE NO. 43919

DRAWN BY BBF DATE 11/26/24

DESIGN BY EVJ DATE 11/26/24

CHECKED BY THG DATE 11/26/24

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

MISCELLANEOUS DETAILS

COUNTY PROJECT SAP 002-716-024
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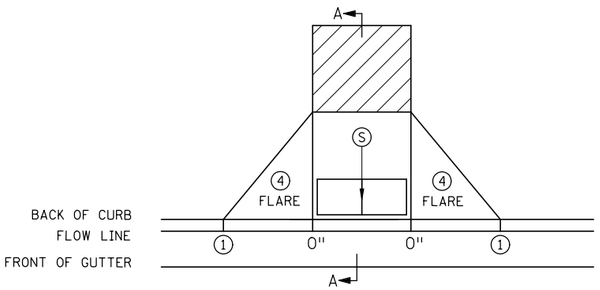
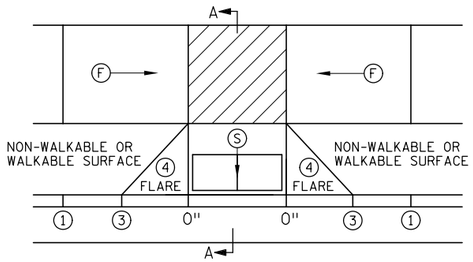
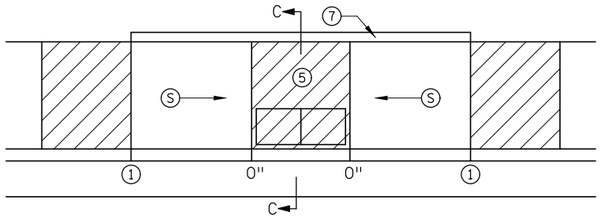


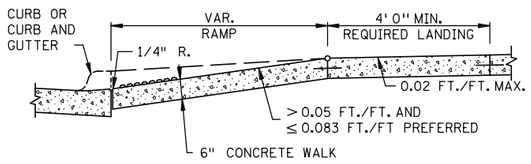
PERPENDICULAR



TIERED PERPENDICULAR

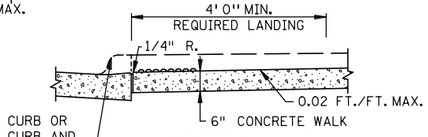


PARALLEL



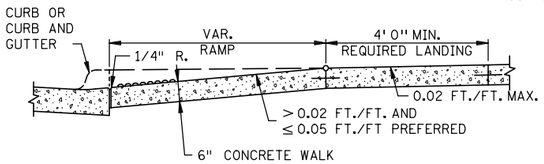
SECTION A-A

PERPENDICULAR/TIERED/DIAGONAL



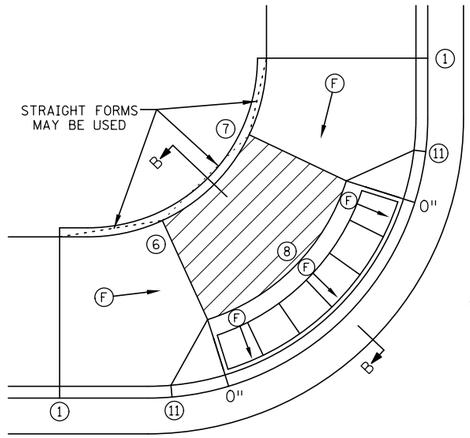
SECTION C-C

PARALLEL/DEPRESSED CORNER

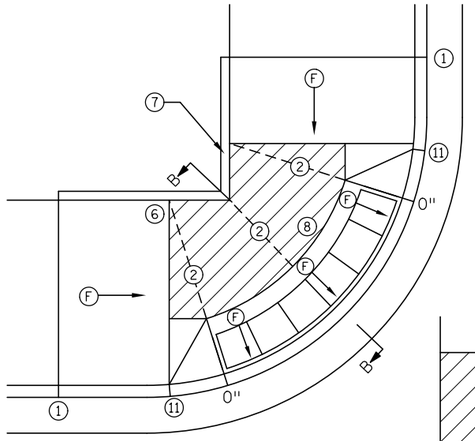


SECTION B-B

FAN

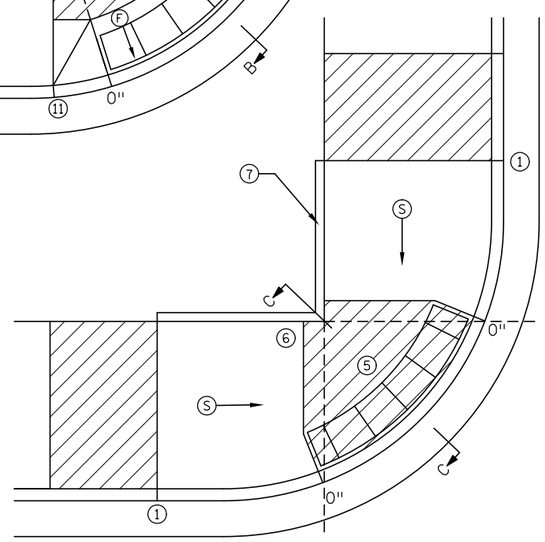


FAN (10)

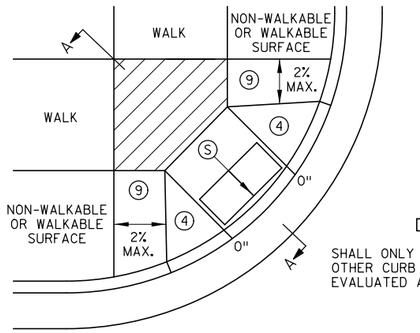


MODIFIED FAN (10)

USED WHEN RIGHT-OF-WAY
IS CONSTRAINED



DEPRESSED CORNER



DIAGONAL

SHALL ONLY BE USED AFTER ALL OTHER CURB RAMP TYPES HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL

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 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 SHEET 6 OF 6 FOR ALL SEPARATELY POURED INITIAL LANDINGS.

WHEN SIDEWALK IS AT BACK OF CURB, TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

MAINTAIN POSITIVE BOULEVARD DRAINAGE TO TOP OF CURB.

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 THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB.

(1) MATCH FULL HEIGHT CURB.

(2) 4' MINIMUM DEPTH LANDING REQUIRED ACROSS TOP OF RAMP.

(3) 3" HIGH CURB WHEN USING A 3' LONG RAMP, 4" HIGH CURB WHEN USING A 4' LONG RAMP.

(4) SEE SHEET 4 OF 6, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.

(5) DETECTABLE WARNINGS MAY BE PART OF THE 4' X 4' MIN. LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.

(6) THE GRADE BREAK SHALL BE PERPENDICULAR TO THE BACK OF WALK. THIS WILL ENSURE THAT THE GRADE BREAK IS PERPENDICULAR TO THE DIRECTION OF TRAVEL. (TYPICAL FOR ALL)

(7) WHEN ADJACENT TO GRASS, GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS LESS THAN 5% RUNNING SLOPE SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.

(8) A 7' MIN TOP RADIUS GRADE BREAK IS REQUIRED TO BE CONSTRUCTIBLE.

(9) PAVE FULL WALK WIDTH.

(10) "S" SLOPES ON FANS SHALL ONLY BE USED WHEN ALL OTHER FEASIBLE OPTIONS HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.

(11) INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3" CURB HEIGHT. REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

LEGEND

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

(S) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.

(F) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.

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.

X" CURB HEIGHT

PEDESTRIAN CURB RAMP DETAILS

APPROVED: 11-04-2021
REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.250

1 OF 6

ANOKA COUNTY HIGHWAY DEPT.

STANDARD PLANS

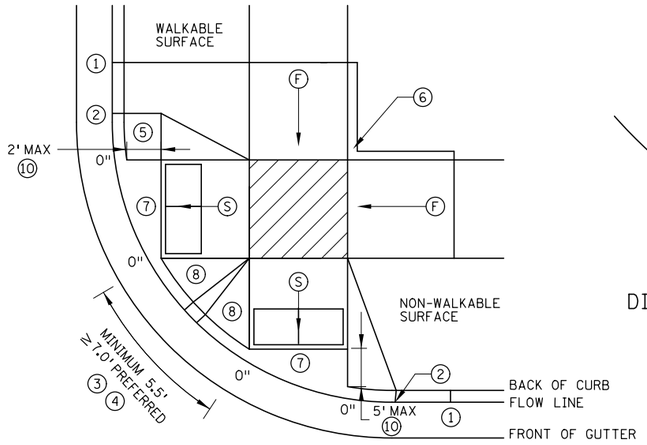
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

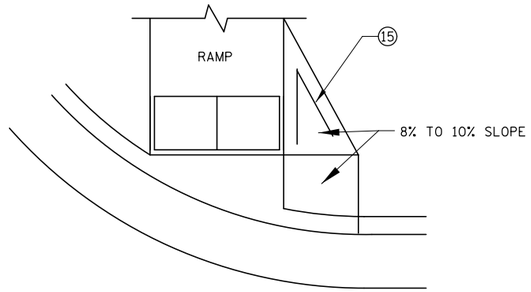
Sheet 26 of 174 Sheets

LEAD EXPERT OFFICE
JEFFREY PERKINS
OPERATIONS DIVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\s250_1_spn.dgn 11/26/2024 2:39:48 PM

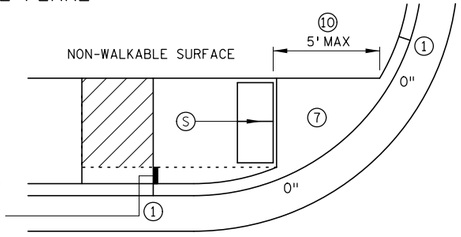


COMBINED DIRECTIONAL

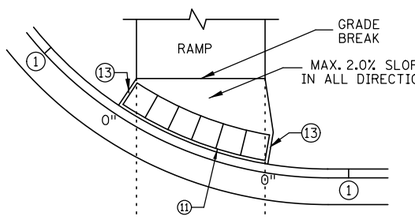


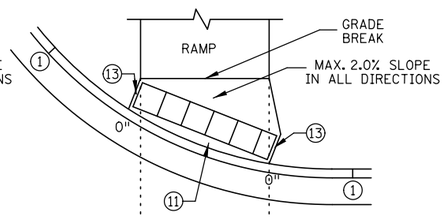
DIRECTIONAL RAMP WALKABLE FLARE

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.



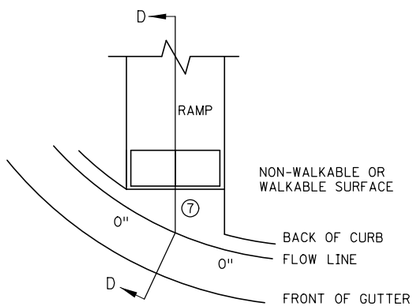
STANDARD ONE-WAY DIRECTIONAL ⑨

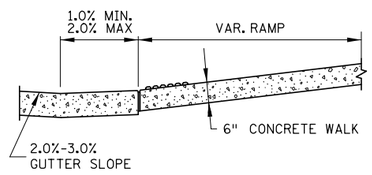




DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED ⑫

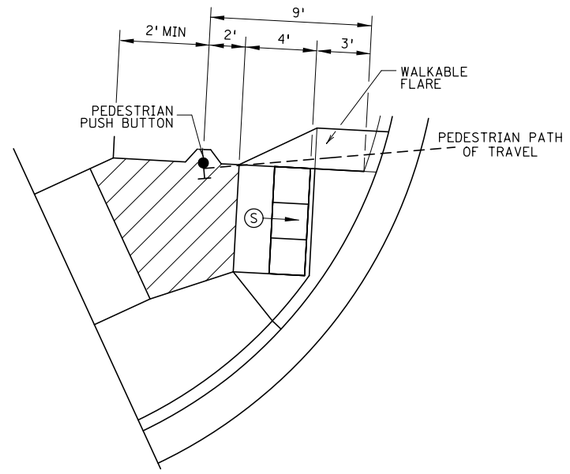
ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB





SECTION D-D

CURB FOR DIRECTIONAL RAMPS ⑭



SEMI-DIRECTIONAL RAMP ③④⑨

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

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

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 THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE 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 SHALL 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.

⑮ PLACE 2 NO. 4 BARS 4 INCHES FROM SIDE OF FORMS WITH A MINIMUM 2 INCHES OF CONCRETE COVER ALONG EACH SIDE OF FLARE (INCIDENTAL).

LEGEND

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

(S) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.

(F) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.

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.

X" CURB HEIGHT

PEDESTRIAN CURB RAMP DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.250	2 OF 6

LEAD EXPERT OFFICE: JEFFREY PERKINS, OPERATIONS DIVISION

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ANOKA COUNTY HIGHWAY DEPT.

STANDARD PLANS

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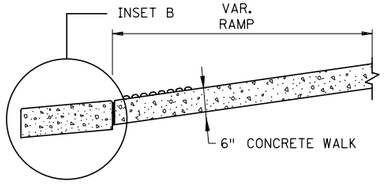
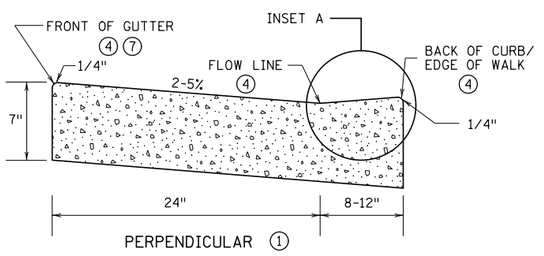
CITY PROJECT SAP 198-020-040

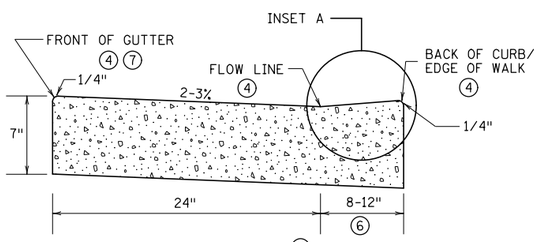
CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS

Sheet 27 of 174 Sheets

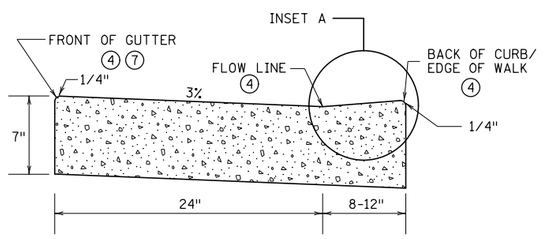




PERPENDICULAR ①

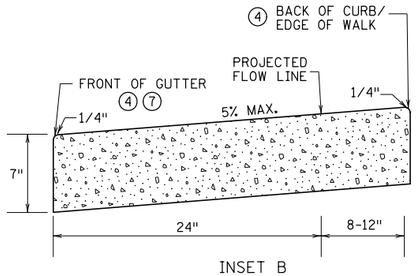


NON PERPENDICULAR ②

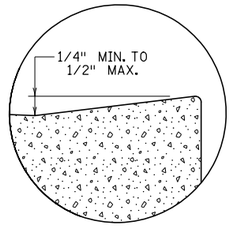


FOR CURB MACHINE PLACEMENT AROUND RADIUS ③
(REGARDLESS OF RAMP TYPE)

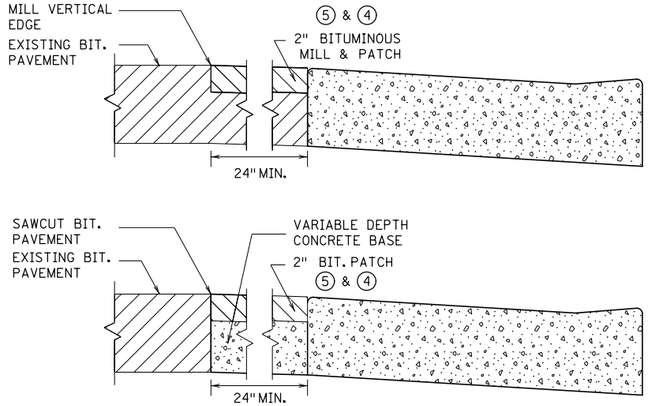
PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL



INSET B
OUTFLOW GUTTER ⑧



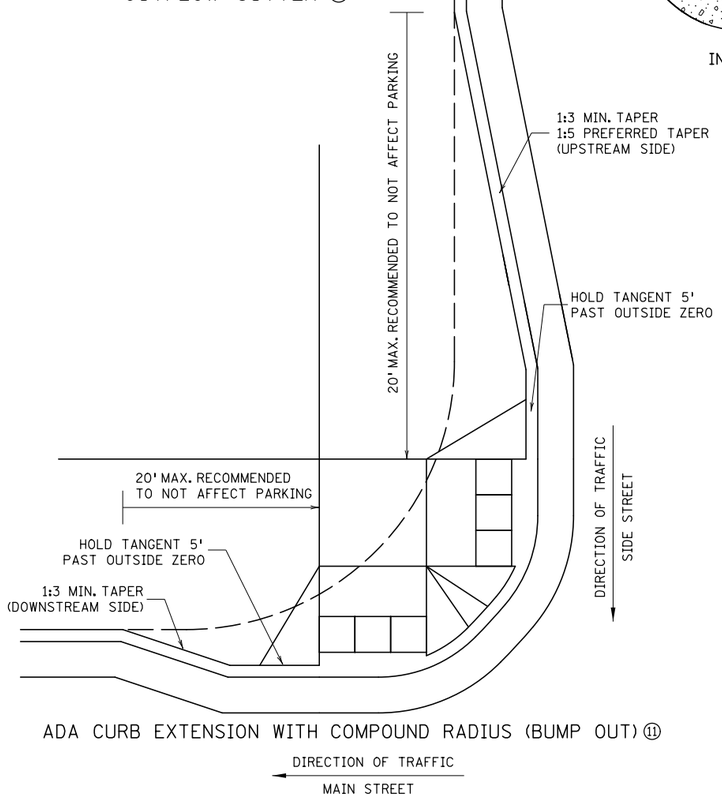
INSET A



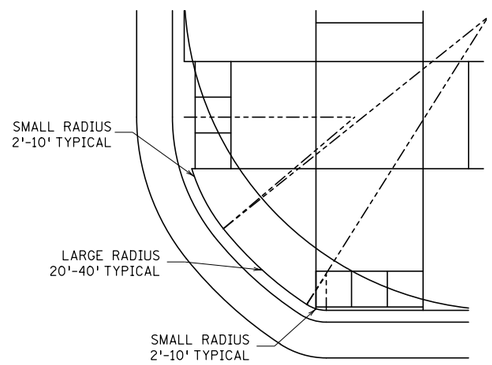
ONLY ALLOWED PER ENGINEER'S APPROVAL

PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER

FOR USE ON CURB RAMP RETROFITS



ADA CURB EXTENSION WITH COMPOUND RADIUS (BUMP OUT) ⑪



COMBINED DIRECTIONAL ⑩
(COMPOUND RADIUS)

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.

PEDESTRIAN CURB RAMP DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.250	3 OF 6

ANOKA COUNTY HIGHWAY DEPT.	STANDARD PLANS COUNTY PROJECT SAP 002-716-024 CITY PROJECT SAP 198-020-040	CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS	Sheet 28 of 174 Sheets

LEAD EXPERT OFFICE	JEFFREY PERKINS OPERATIONS DIVISION

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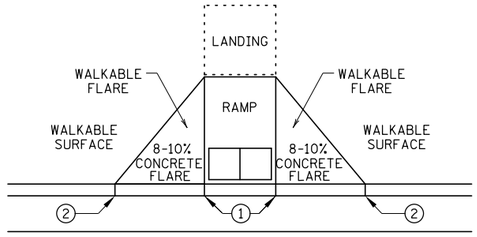
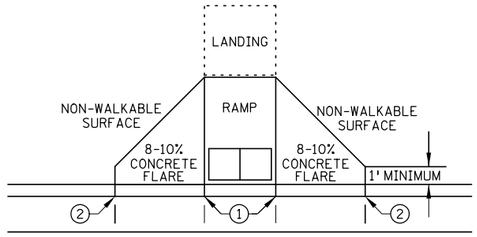
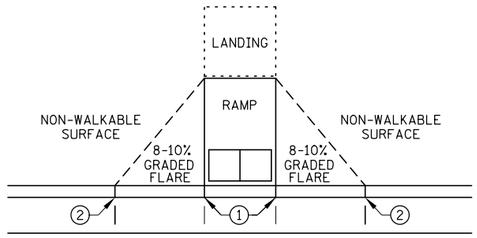


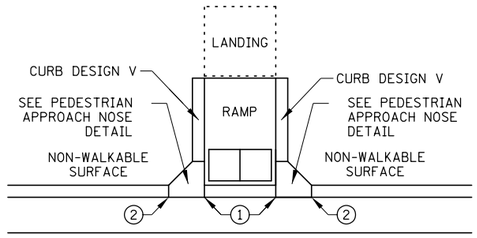
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

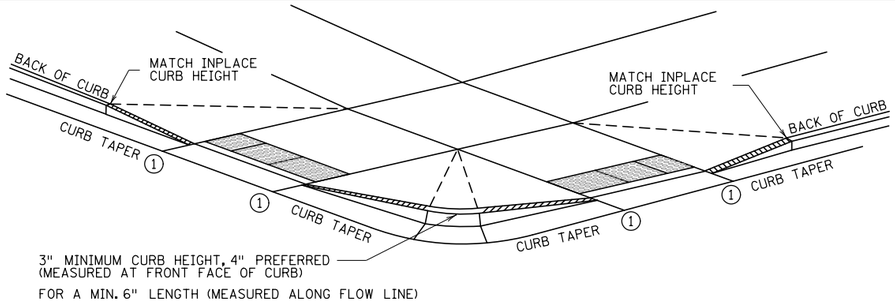


GRADED FLARES

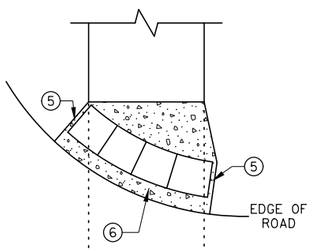


RETURNED CURB ④

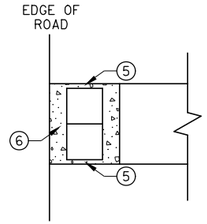
TYPICAL SIDE TREATMENT OPTIONS ③ ⑩



DETECTABLE EDGE WITH ⑦
CURB AND GUTTER

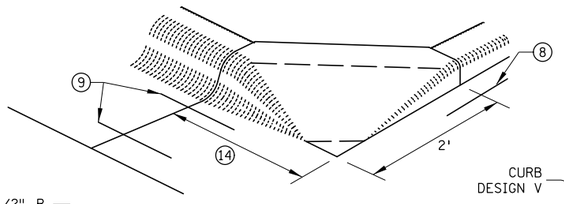


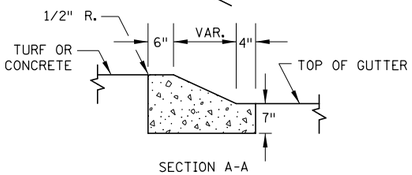
RADIAL DETECTABLE WARNING



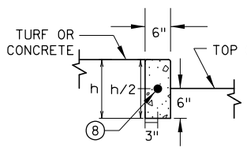
RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

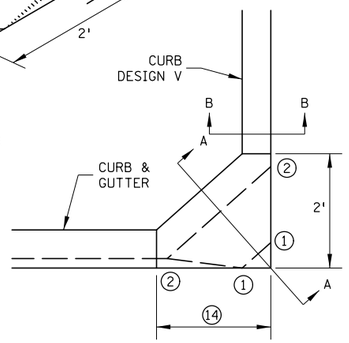




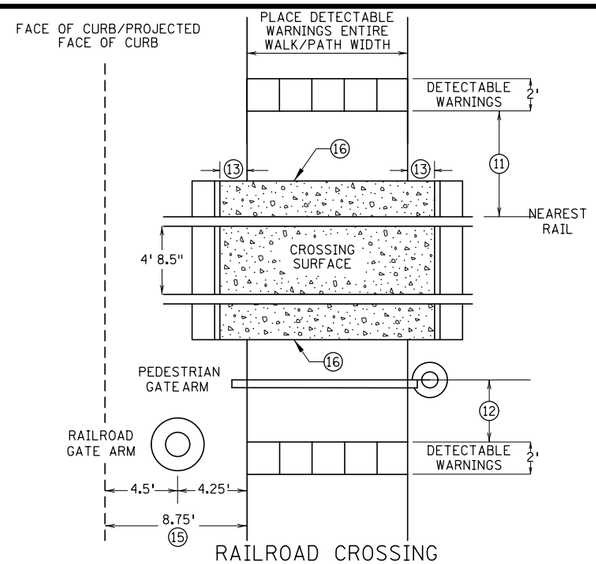
SECTION A-A



SECTION B-B



PEDESTRIAN APPROACH
NOSE DETAIL
(FOR RETURNED CURB
SIDE TREATMENT)



RAILROAD CROSSING
PLAN VIEW

NOTES:

INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3 INCH CURB HEIGHT. INCREASE CURB TAPER LENGTH AT LESS THAN 8% OR REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

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. SEE INSET A ON SHEET 3 OF 6.

② FULL CURB HEIGHT.

③ 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.

④ TYPICALLY USED FOR MEDIANS AND ISLANDS.

⑤ 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.

⑥ 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.

⑦ 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.

⑧ 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.

⑨ 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.

⑩ 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. CONSTRUCT THESE TAPERS AT 0"-3" AT 8-10%, THEN LESS THAN 5% FROM 3" CURB TO FULL CURB HEIGHT.

⑪ 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.

⑫ 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 ⑪.

⑬ CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED-USE PATH.

⑭ 3' FOR MEDIANS AND SPLITTER ISLANDS. NOSE CAN BE REDUCED TO 2' ON FREE RIGHT ISLANDS.

⑮ 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.

⑯ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.

PEDESTRIAN CURB RAMP DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.250	4 OF 6

ANOKA COUNTY HIGHWAY DEPT.	STANDARD PLANS COUNTY PROJECT SAP 002-716-024 CITY PROJECT SAP 198-020-040	CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS	Sheet 29 of 174 Sheets

LEAD EXPERT OFFICE	JEFFREY PERKINS OPERATIONS DIVISION	

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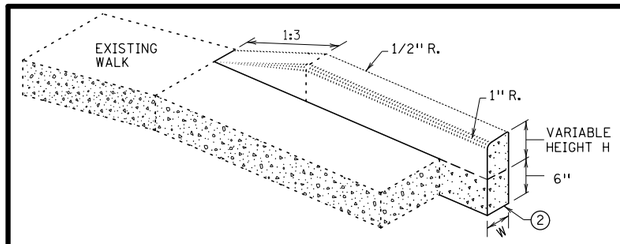
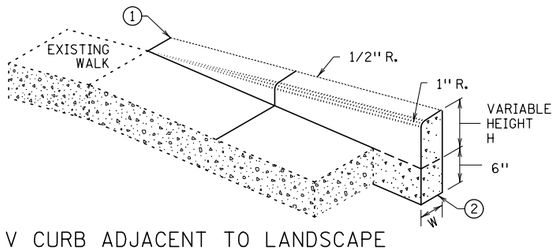


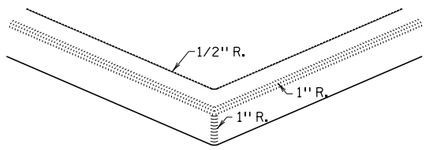
V CURB ADJACENT TO LANDSCAPE

CURB WITHIN SIDEWALK LIMITS



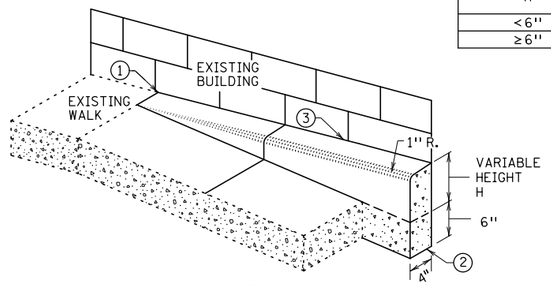
V CURB ADJACENT TO LANDSCAPE

CURB OUTSIDE SIDEWALK LIMITS

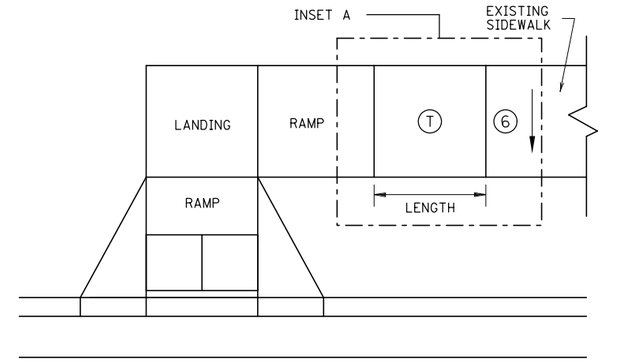


V CURB INTERSECTION

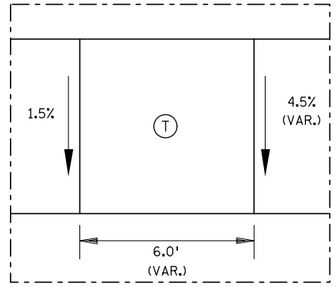
CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
<6"	4"
≥6"	6"



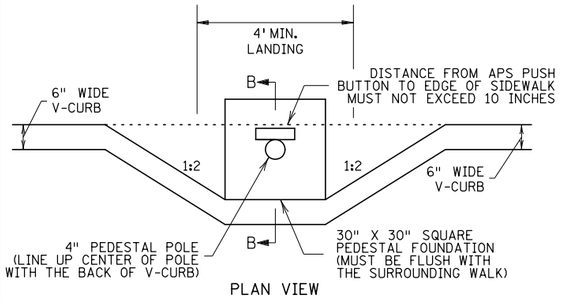
V CURB ADJACENT TO BUILDING OR BARRIER



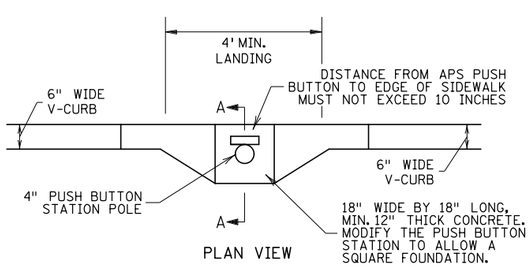
TRANSITION PANEL ④⑤



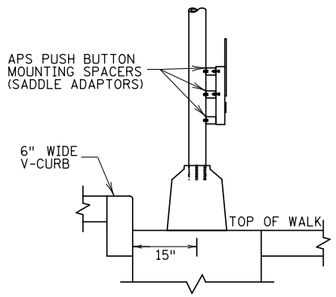
INSET A



PLAN VIEW

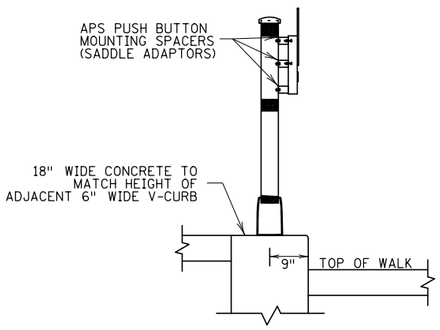


PLAN VIEW



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 CONSTRUCT USING APPROVED EXPANSION MATERIAL PER MNDOT TYPE A-E EXPANSION. LEAVE A MINIMUM ½" TOP GAP AND SEAL WITH MNDOT APPROVED SILICONE PER MNDOT SPEC 3722.

④ THE MAX. RATE OF CROSS SLOPE TRANSITIONING IS 1' LINEAR FOOT OF SIDEWALK PER HALF PERCENT CROSS SLOPE. WHEN PAR WIDTH IS GREATER THAN 6' OR THE RUNNING SLOPE IS GREATER THAN 5%, DOUBLE THE CALCULATED TRANSITION LENGTH.

⑤ TRANSITION PANELS ARE TO ONLY BE USED AFTER THE RAMP, OR IF NEEDED, LANDING ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).

⑥ EXISTING CROSS SLOPE GREATER THAN 2.0%.

LEGEND

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

Ⓢ 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.

Ⓣ 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.

PEDESTRIAN CURB RAMP DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.250	5 OF 6

LEAD EXPERT OFFICE	JEFFREY PERKINS OPERATIONS DIVISION

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ANOKA COUNTY HIGHWAY DEPT.

STANDARD PLANS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

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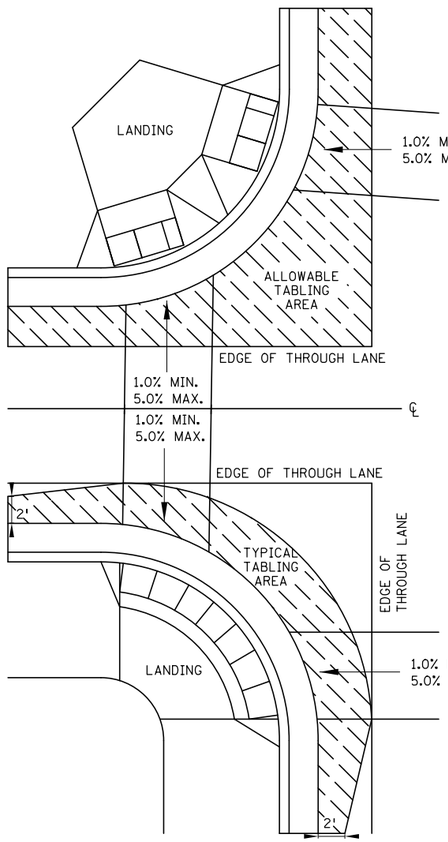
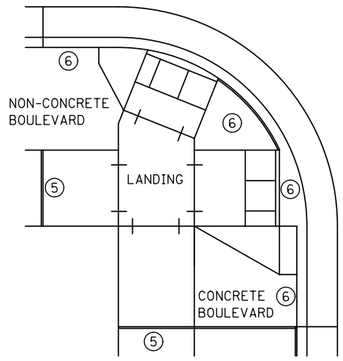
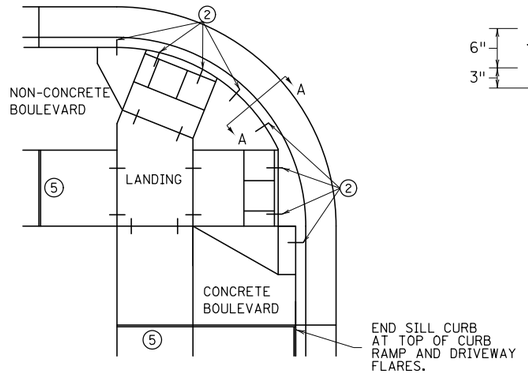


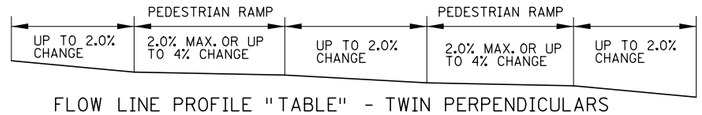
CURB LINE AND ROAD CROSSING ADJUSTMENTS



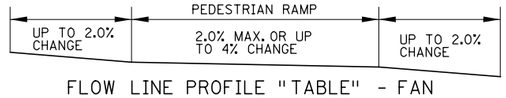
EXPANSION MATERIAL PLACEMENT
FOR CONCRETE ROADWAYS



CURB LINE REINFORCEMENT ④
PLACEMENT ON BITUMINOUS ROADWAYS



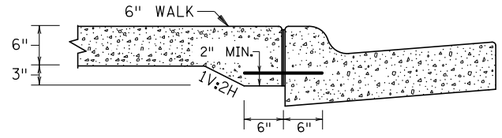
FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



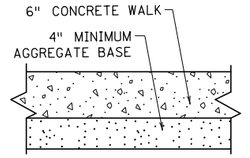
FLOW LINE PROFILE "TABLE" - FAN

FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS

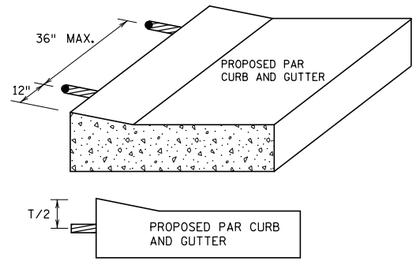
FLOW LINE PROFILE RAISE - FAN



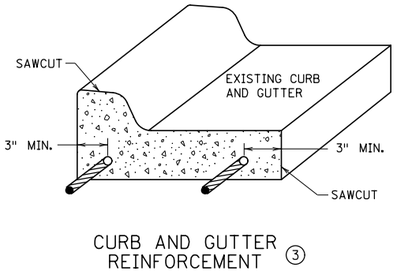
SECTION VIEW A-A
THICKENED SECTION
THROUGH CURB RAMP FLARES



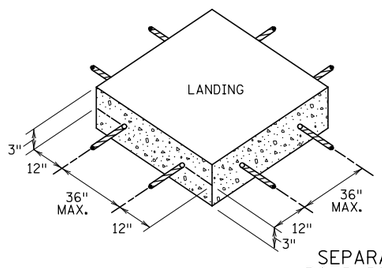
TYPICAL SIDEWALK SECTION
WITHIN INTERSECTION CORNER

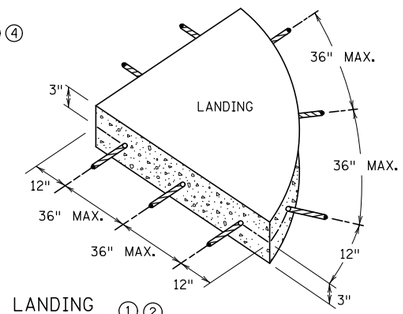


CURB RAMP REINFORCEMENT DETAILS ②④



CURB AND GUTTER
REINFORCEMENT ③





SEPARATE LANDING
POUR REINFORCEMENT ①②

GENERAL NOTES:

"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 (EPOXY COATED) AT 36" MAXIMUM CENTER TO CENTER MINIMUM 12" SPACING FROM CONSTRUCTION JOINTS. BARS TO BE ADJUSTED TO MATCH RAMP GRADE. BARS TO BE PAID BY EACH.

③ DRILL AND GROUT 2 - NO. 4 X 12" LONG (6" EMBEDDED) REINFORCEMENT BARS (EPOXY COATED). REINFORCEMENT REQUIRED FOR ALL CONSTRUCTION JOINTS. BARS TO BE PAID BY EACH.

④ THIS CURB LINE REINFORCEMENT DETAIL SHALL BE USED ON BITUMINOUS ROADWAYS. FOR CONCRETE ROADWAYS, SEE NOTE 6.

⑤ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.

⑥ USE AN APPROVED TYPE F (1/4 INCH THICK) SEPARATION MATERIAL. SEPARATION MATERIAL SHALL MATCH FULL HEIGHT DIMENSION OF ADJACENT CONCRETE.

PEDESTRIAN CURB RAMP DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.250	6 OF 6

ANOKA COUNTY HIGHWAY DEPT.	STANDARD PLANS COUNTY PROJECT SAP 002-716-024 CITY PROJECT SAP 198-020-040	CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS	Sheet 31 of 174 Sheets

LEAD EXPERT OFFICE	JEFFREY PERKINS	OPERATIONS DIVISION

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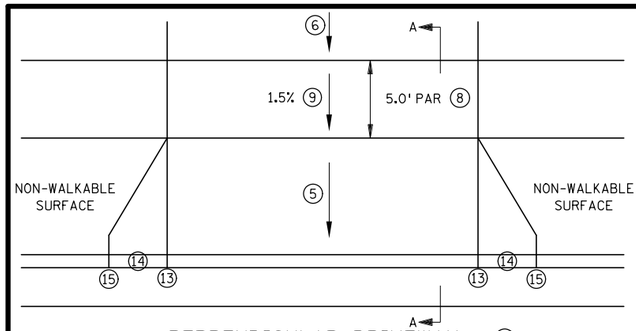
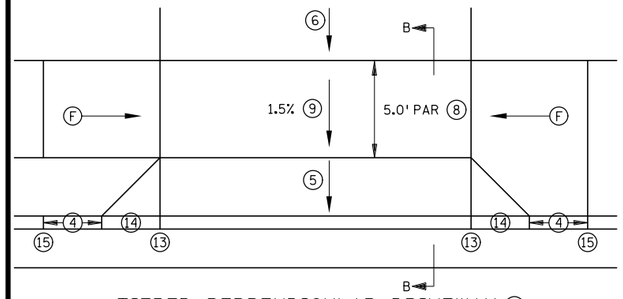
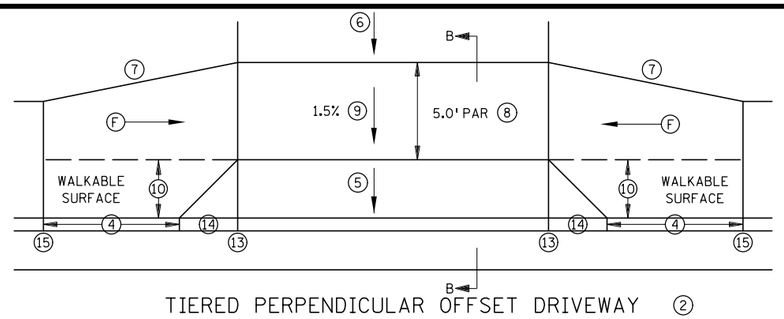


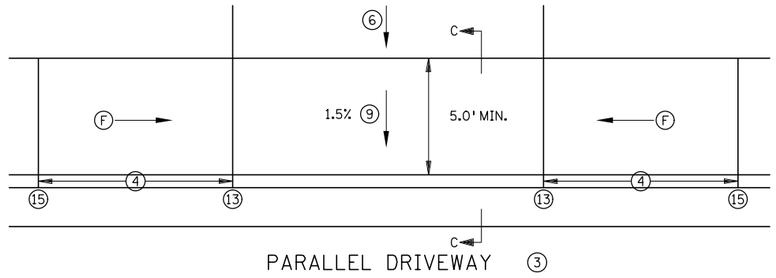
PERPENDICULAR DRIVEWAY ①



TIERED PERPENDICULAR DRIVEWAY ②



TIERED PERPENDICULAR OFFSET DRIVEWAY ②



PARALLEL DRIVEWAY ③

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%

NOTES:

ALL SIDEWALK AND BOULEVARD WIDTHS SHALL BE MEASURE FROM BACK OF CURB.

IN URBAN ROADWAY SECTIONS, 6" CURB HEIGHT SHOULD BE USED WHEN 6' OR GREATER BOULEVARD WIDTH IS PROPOSED. WHEN BOULEVARD IS LESS THAN 6' WIDE, 4" CURB HEIGHT SHOULD BE USED.

MAINTAIN EXISTING DRAINAGE PATTERNS FLOWING TO PUBLIC RIGHT OF WAY.

ACQUIRE ADEQUATE L3 TO ALLOW FOR A CONTINUOUS PAR PROFILE (UNIFORM TYPICAL SIDEWALK SECTION) THROUGH THE DRIVEWAY APRON.

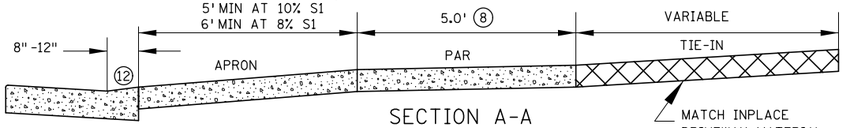
IN NO CASE SHALL SIDEWALK PROFILES EXCEED 5.0%, EXCEPT SIDEWALK PROFILES CAN MATCH ROADWAY GRADE IF ROADWAY GRADE IS GREATER THAN 5.0%. RAMPS FOR DRIVEWAYS ARE REQUIRED TO FOLLOW THE ABOVE SIDEWALK CRITERIA.

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.

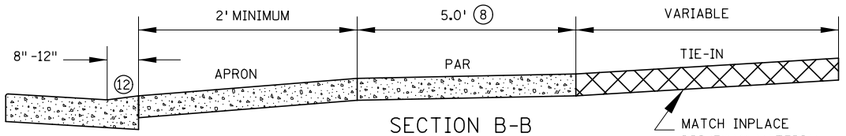
DRIVEWAY TYPES FROM MOST PREFERRED TO LEAST PREFERRED ARE AS FOLLOWS: PERPENDICULAR, TIERED PERPENDICULAR, TIERED PERPENDICULAR OFFSET & PARALLEL.

1. PERPENDICULAR DRIVEWAYS ARE THE STANDARD AND STARTING POINT FOR ALL DRIVEWAY DESIGN AND CONSTRUCTION. SHOULD BE USED TO ACHIEVE CONTINUOUS PAR PROFILE THROUGH THE DRIVEWAY. OBTAINING A PERPENDICULAR DRIVEWAY DESIGN BECOMES MORE CRITICAL WITH STEEP ROADWAY PROFILES.
2. TO BE USED WHEN PERPENDICULAR DRIVEWAY DESIGN CANNOT BE ACHIEVED, THE DRIVEWAY PAR IS BELOW ROADWAY CURB HEIGHT. THIS DRIVEWAY TYPE CAN BE USED FOR BOTH PAVED (AS SHOWN) AND GRASS BOULEVARDS.
3. TO BE USED WHEN PERPENDICULAR AND TIERED PERPENDICULAR DRIVEWAY DESIGN CANNOT BE ACHIEVED. CAN BE USED FOR STEEP NEGATIVE SLOPED DRIVEWAYS. DW CURB TYPE 2 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% STANDARD, 10% MAX. FOR COMMERCIAL AND 12% MAX. FOR RESIDENTIAL. SEE GENERAL NOTES ON SHEET 2 FOR MORE INFORMATION.
6. S3 8% MAXIMUM. IF THE SLOPE IS EXCEEDED OR CONTINUED FOR MORE THAN 5', ANALYZE VEHICLE TEMPLATES FOR VERTICAL CLEARANCE. IF EXISTING DRIVEWAY IS NEGATIVELY DRAINING, S3 CAN BECOME SLIGHTLY MORE NEGATIVE TO ACHIEVE PERPENDICULAR DRIVEWAY DESIGN IF THE VERTICAL CLEARANCE IS ACHIEVED IN VEHICLE TEMPLATES.
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. INTEGRAL DRIVEWAY APRON TO BE POURED MONOLITHICALLY/INTEGRAL WITH THE CURB AND GUTTER. SEE SHEET 2 FOR MORE INFORMATION.
12. SEE SHEET 2 FOR CURB TYPE INFORMATION.
13. 0" CURB IS AT FLOW LINE. SEE DRIVEWAY TABLE FOR BACK OF CURB HEIGHTS.
14. 3' LONG AT 8-10% PREFERRED FOR INITIAL CURB TAPER. REDUCE CURB TAPER SLOPE IF NECESSARY TO MATCH ADJACENT SIDEWALK GRADES.
15. MATCH FULL CURB HEIGHT.
16. 1:2 TAPER RATE ON INTEGRAL DRIVEWAY APRONS.
17. SEE SHEET 4 FOR WHEN 6" WALK IS REQUIRED.

WITH 4" CURB HEIGHT;
3' MIN AT 10% S1
4' MIN AT 8% S1
WITH 6" CURB HEIGHT;
5' MIN AT 10% S1
6' MIN AT 8% S1



SECTION A-A



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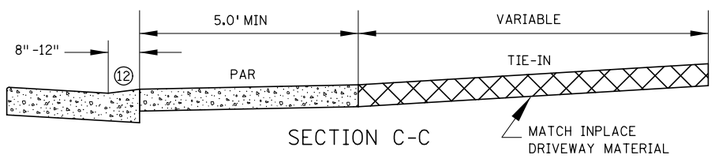

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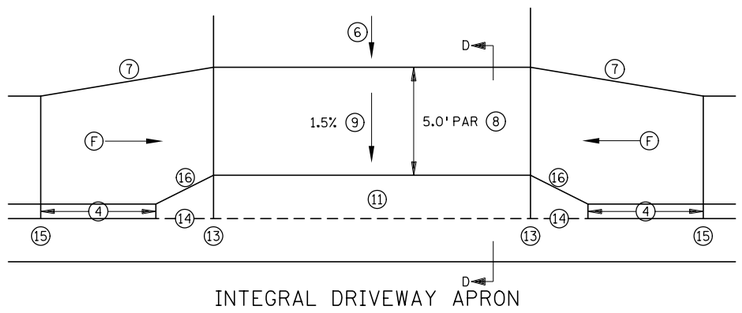
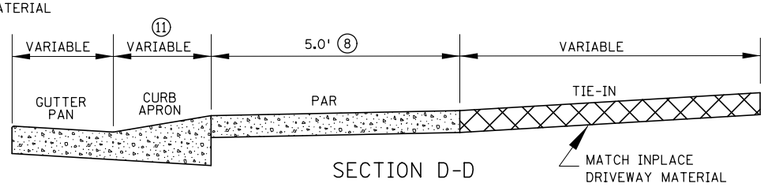


INTEGRAL DRIVEWAY APRON



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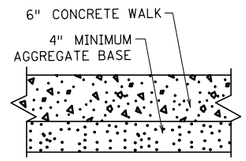
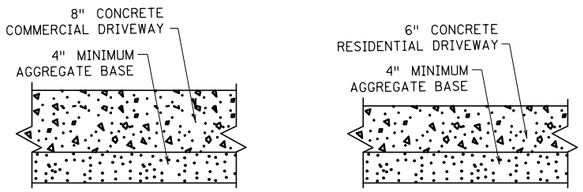


TYPICAL SIDEWALK SECTION ⑰



TYPICAL DRIVEWAY SECTIONS

DRIVEWAY AND SIDEWALK DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.254	1 OF 4

ANOKA COUNTY HIGHWAY DEPT.	STANDARD PLANS COUNTY PROJECT SAP 002-716-024 CITY PROJECT SAP 198-020-040	CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS	Sheet 32 of 174 Sheets

LEAD EXPERT OFFICE	JEFFREY PERKINS OPERATIONS DIVISION	

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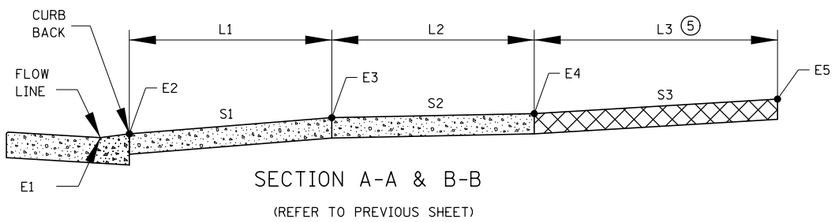
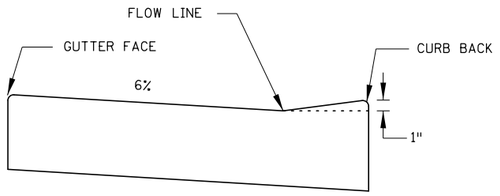
DRIVEWAY TABLE (1)

STATION	SIDE	DRIVEWAY TYPE (2)	CURB TYPE (3)	E1	E2	L1 FT	S1 %	E3	L2 FT	S2 (4) %	E4	L3 (5) FT	S3 %	EXISTING (6) %	E5	COMMENTS



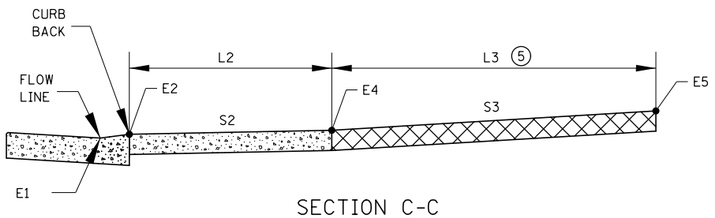
SECTION A-A & B-B

(REFER TO PREVIOUS SHEET)



DW CURB TYPE 1

STANDARD CURB AT DRIVEWAY



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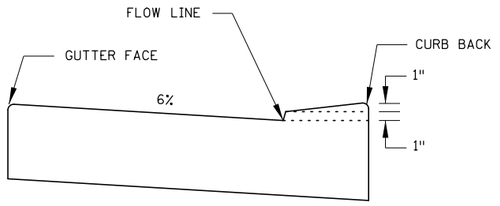
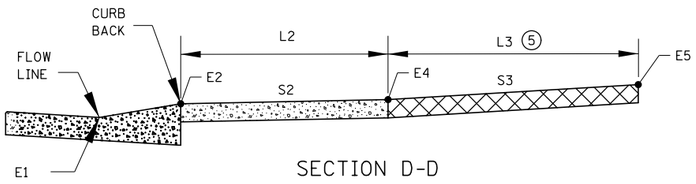


DW CURB TYPE 2

VERTICALLY CONSTRAINED



SECTION D-D

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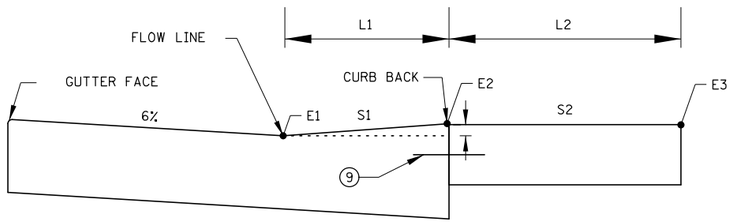

INTEGRAL DRIVEWAY APRON (IDA)

NOTES:

ALL SIDEWALK AND BOULEVARD WIDTHS SHALL BE MEASURED FROM BACK OF CURB.

DW CURB TYPE 1 SHALL BE USED WHEN THE DRIVEWAY ACTS AS A PEDESTRIAN RAMP. THE MAX. APRON SLOPE MUST ADHERE TO ADA CRITERIA AS WELL. DW CURB TYPE 1 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% STANDARD, 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.

S3 8% MAXIMUM, IF THIS SLOPE IS EXCEEDED OR CONTINUED FOR MORE THAN 5', ANALYZE VEHICLE TEMPLATES FOR VERTICAL CLEARANCE. SEE FACILITY DESIGN GUIDE, CHAPTER 6, FOR GEOMETRIC DESIGNS OF DRIVEWAYS.

(1) EXAMPLE SHOWN TO BE INCLUDED IN PLAN FOR EACH DRIVEWAY THAT HAS PAR THROUGH IT.

(2) REFERS TO THE FOLLOWING TYPES; PERPENDICULAR DRIVEWAY, TIERED PERPENDICULAR OFFSET DRIVEWAY, TIERED PERPENDICULAR DRIVEWAY, PARALLEL DRIVEWAY, AND INTEGRAL DRIVEWAY APRON.

(3) DW CURB TYPE 1 IS THE STANDARD AND SHALL BE THE STARTING POINT FOR ALL PERPENDICULAR AND TIERED DRIVEWAYS. DW CURB TYPE 2 SHALL ONLY BE USED AFTER UTILIZING BEST PRACTICES SUCH AS MAXIMIZING S1, S3, AND L3.

(4) SHOULD BE DESIGNED AT 1.5%.

(5) ACQUIRE ADEQUATE L3 TO ALLOW FOR CONTINUOUS PAR PROFILE (UNIFORM SIDEWALK SECTION) THROUGH THE DRIVEWAY APRON.

(6) PROVIDE INPLACE TIE-IN SLOPE INFORMATION AT BACK OF PROPOSED WALK (S3 AREA).

(7) INFORMATION TO BE INCORPORATED INTO DRIVEWAY TABLE WHEN INTEGRAL DRIVEWAY APRON IS USED. OTHER CURB HEIGHTS & CURB APRON LENGTHS CAN BE USED.

(8) L1 & S1 FOR INTEGRAL DRIVEWAY APRON IS TO FLOWLINE. 12.5% IS MAXIMUM PREFERRED SLOPE.

(9) TIE ADJACENT SECTIONS. CONCRETE DRIVEWAY APRON AND CONCRETE DRIVEWAY SIDEWALK SHALL BE CONSTRUCTED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. DRILL AND GROUT OR CAST IN-PLACE THROUGH HOLES IN THE FORMS NO. 4 X 12" LONG TIE BARS (EPOXY COATED). 36" MAXIMUM SPACING WITH 2" MINIMUM CONCRETE COVER PLACED 1' MINIMUM FROM ADJACENT CONSTRUCTION JOINT.

TYPICAL INTEGRAL DRIVEWAY APRON (7)

CURB TYPE	L1 FT	E2	S1 (8) %
IDA 216	1.33	+0.16	12.5
IDA 220	1.67	+0.16	10
IDA 324	2	+0.24	12.5
IDA 432	2.67	+0.33	12.5

DRIVEWAY AND SIDEWALK DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.254	2 OF 4

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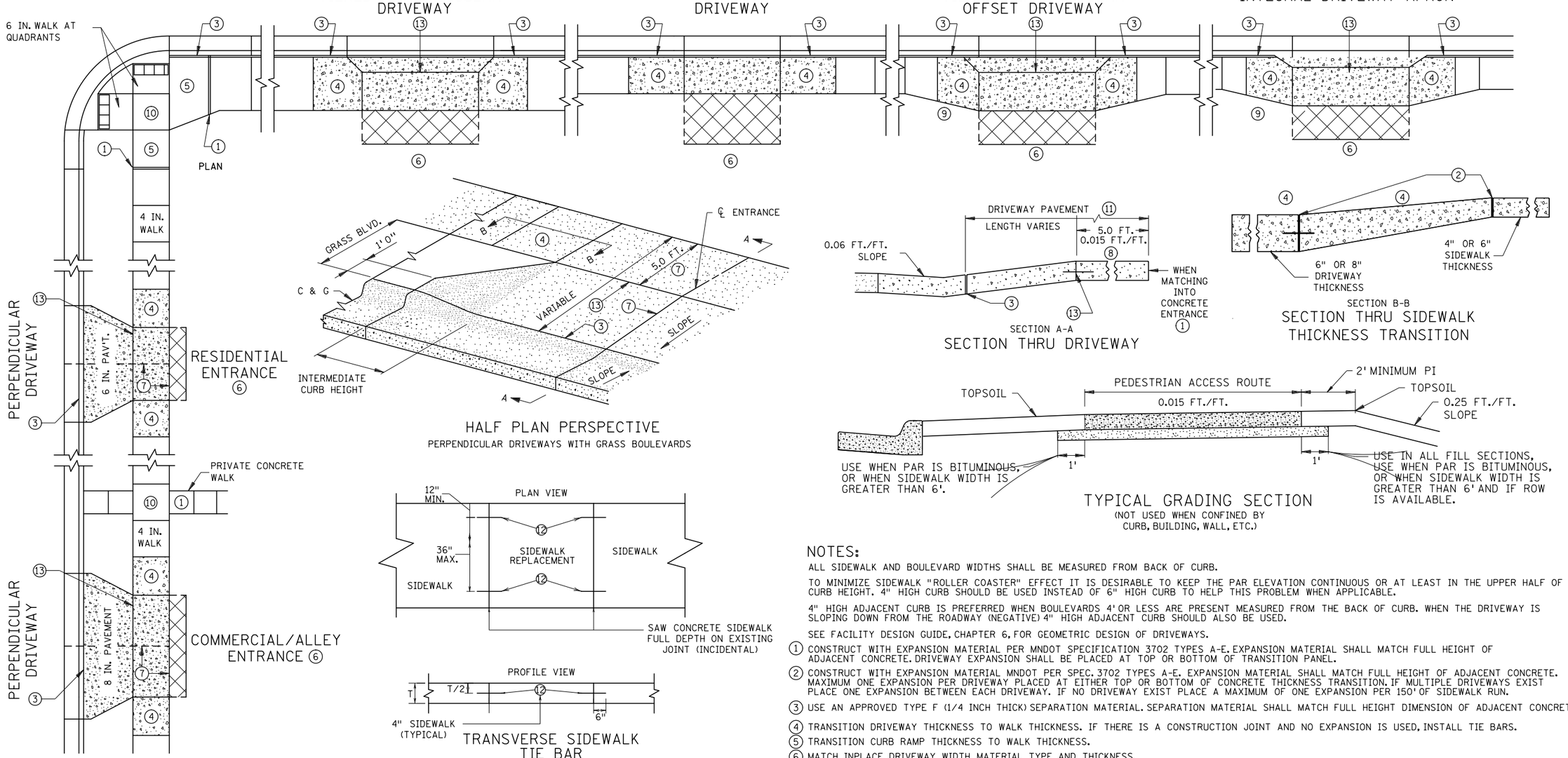
ANOKA COUNTY HIGHWAY DEPT.	STANDARD PLANS COUNTY PROJECT SAP 002-716-024 CITY PROJECT SAP 198-020-040	CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS Sheet 33 of 174 Sheets



SIDEWALK LONGITUDINAL JOINT TIE BAR TABLE				
SIDEWALK WIDTH, W	SIDEWALK THICKNESS, T	TIE BAR SIZE	LENGTH	SPACING
> 7′	4"	No. 4	12"	24"
>10′	6"	No. 4	12"	36"

FOR 4" CONCRETE ONLY: CAST IN PLACE BARS MUST BE SUPPORTED WITH P-STAKES OR REINFORCEMENT BASKETS FOR FULL WIDTH CONCRETE PLACEMENTS.

FOR 6" CONCRETE ONLY: DRILL AND GROUT OR CAST IN PLACE THROUGH HOLES IN THE FORMS REQUIRED FOR STAGED ADJACENT CONCRETE PLACEMENTS.

NOTES:

ALL SIDEWALK AND BOULEVARD WIDTHS SHALL BE MEASURED FROM BACK OF CURB.

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 FACILITY DESIGN GUIDE, CHAPTER 6, FOR GEOMETRIC DESIGN OF DRIVEWAYS.

① CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE. DRIVEWAY EXPANSION SHALL BE PLACED AT TOP OR BOTTOM OF TRANSITION PANEL.

② CONSTRUCT WITH EXPANSION MATERIAL MNDOT PER SPEC. 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE. MAXIMUM ONE EXPANSION PER DRIVEWAY PLACED AT EITHER TOP OR BOTTOM OF CONCRETE THICKNESS TRANSITION. IF MULTIPLE DRIVEWAYS EXIST PLACE ONE EXPANSION BETWEEN EACH DRIVEWAY. IF NO DRIVEWAY EXIST PLACE A MAXIMUM OF ONE EXPANSION PER 150' OF SIDEWALK RUN.

③ USE AN APPROVED TYPE F (1/4 INCH THICK) SEPARATION MATERIAL. SEPARATION MATERIAL SHALL MATCH FULL HEIGHT DIMENSION OF ADJACENT CONCRETE.

④ TRANSITION DRIVEWAY THICKNESS TO WALK THICKNESS. IF THERE IS A CONSTRUCTION JOINT AND NO EXPANSION IS USED, INSTALL TIE BARS.

⑤ TRANSITION CURB RAMP THICKNESS TO WALK THICKNESS.

⑥ MATCH INPLACE DRIVEWAY WIDTH, MATERIAL TYPE AND THICKNESS.

⑦ FORM CONTRACTION JOINT AS NEEDED TO PRODUCE APPROXIMATELY SQUARE PANELS. CONCRETE PANEL SIZE SHOULD NOT EXCEED 1 1/2 : 1 LENGTH X WIDTH. 81 SF FOR 6" CONCRETE DRIVEWAY WITH 9'X9' MAXIMUM PANEL SIZE. 144 SF FOR 8" CONCRETE DRIVEWAY WITH 12'X12' MAXIMUM PANEL SIZE. MATCH DRIVEWAY APRON AND SIDEWALK JOINTS.

⑧ THE PEDESTRIAN ACCESS ROUTE CROSS-SLOPE, SHALL NOT EXCEED 0.02 FT./FT. AS CONSTRUCTED.

⑨ 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.

⑩ LANDING REQUIRED, SEE NEXT SHEET FOR MORE INFORMATION.

⑪ CONCRETE DRIVEWAY APRON AND CONCRETE DRIVEWAY SIDEWALK SECTIONS SHALL BE CONSTRUCTED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. ENGINEER'S APPROVAL REQUIRED FOR MONOLITHIC PLACEMENTS.

⑫ DRILL AND GROUT NO. 4 X 12" LONG TIE BARS (EPOXY COATED). 36" MAXIMUM SPACING BETWEEN BARS COVER PLACED 1' MINIMUM FROM ADJACENT CONSTRUCTION JOINTS. 1' MINIMUM FROM ADJACENT CONCRETE JOINTS. BARS TO BE ADJUSTED TO MATCH SIDEWALK GRADES. TO BE PAID BY EACH.

⑬ DRILL AND GROUT OR CAST IN-PLACE THROUGH HOLES IN THE FORMS NO. 4 X 12" LONG TIE BARS (EPOXY COATED). 36" MAXIMUM SPACING BETWEEN BARS WITH 2" MINIMUM CONCRETE COVER PLACED 1' MINIMUM FROM ADJACENT CONSTRUCTION JOINTS. 1' MINIMUM FROM ADJACENT CONCRETE JOINTS.

DRIVEWAY AND SIDEWALK DETAILS	APPROVED: 11-04-2021 REVISED: 12-23-2021	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.254	3 OF 4

LEAD EXPERT OFFICE: JEFFREY PERKINS, OPERATIONS DIVISION

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ANOKA COUNTY HIGHWAY DEPT.

STANDARD PLANS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS

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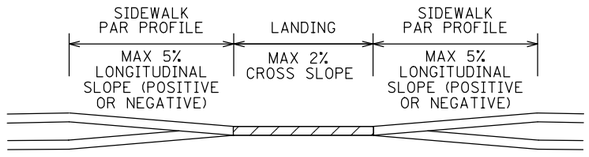
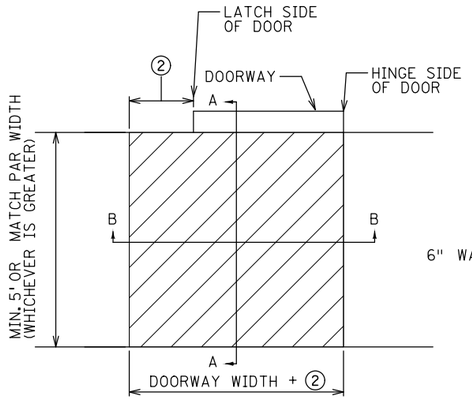
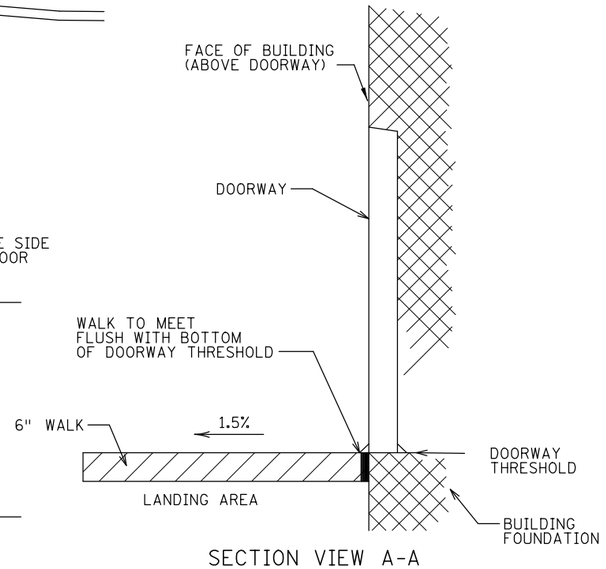


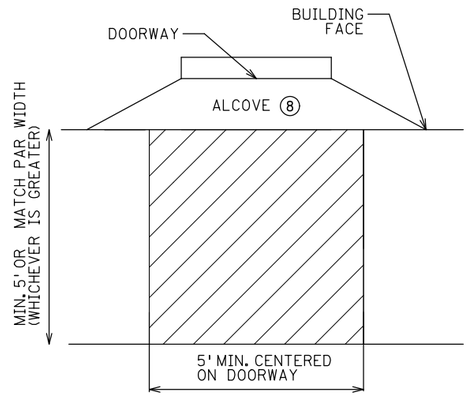
SECTION VIEW B-B



PLAN VIEW DOORWAY

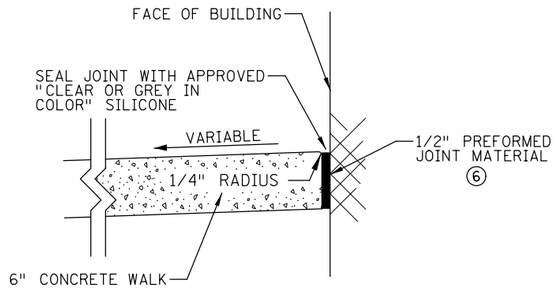


SECTION VIEW A-A

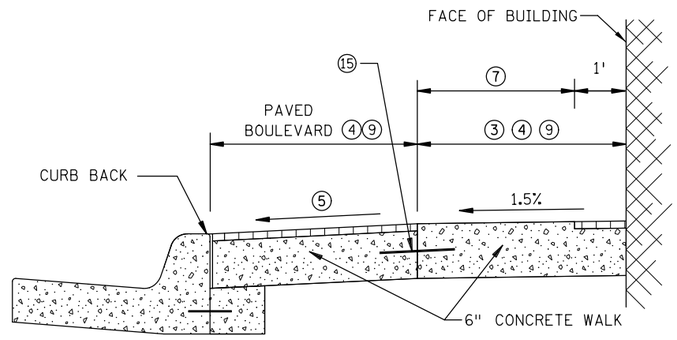


PLAN VIEW DOORWAY WITH ALCOVE

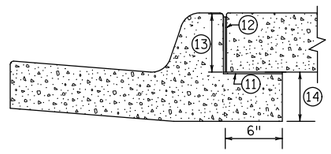
SIDEWALK LANDING REQUIREMENTS (1)



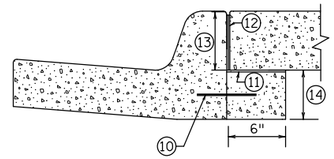
BUILDING JOINT SEAL (INCIDENTAL)



DOWNTOWN SIDEWALK TYPICAL SECTION



SLIP FORM SILL



FIXED FORM SILL

SILL CURB SHOULD BE USED AT ALL LOCATIONS WHEN CONCRETE WALK IS AT BACK OF CURB, INCLUDING PAVED BOULEVARD.

SILL CURB SHALL NOT BE USED IN CURB RAMP AND DRIVEWAY AREAS, INCLUDING CONCRETE FLARES.

SILL CURB WITH 4" WALK CAN USE FIXED OR SLIP FORM OPTIONS.

NOTES:

6" WALK IS REQUIRED:
1) IN ALL SIDEWALK LOCATIONS WHERE VARIABLE SLOPED CONCRETE BOULEVARDS ARE PAVED, SUCH AS COMMERCIAL (STORE FRONT, DOWNTOWN) AREAS.
2) ANYTIME DRILL AND REINFORCEMENT IS USED TO TIE LONGITUDINAL JOINTS TOGETHER.
3) TO ELIMINATE LONGITUDINAL JOINT WHEN INCREASING PANEL SIZE OVER 36SF.
4) AT LOCATIONS WHERE MAINTENANCE EQUIPMENT WILL SUBJECT CONCRETE TO HEAVY LOADS.

ALL SIDEWALK AND BOULEVARD WIDTHS SHALL BE MEASURED FROM BACK OF CURB.

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, STEPS, AND PRIVATE WALKS. FEASIBILITY DECREASES WITH NARROWER BOULEVARDS AND STEEPER SIDEWALK PROFILES.
(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. HOLD UNIFORM BOULEVARD WIDTH. 4' PREFERRED MINIMUM BOULEVARD.
(5) 1%-5% FOR THE MAJORITY OF THE BLOCK, WITH EXCEPTIONS UP TO 8% IN CONSTRAINED AREAS.
(6) CONSTRUCT USING APPROVED EXPANSION MATERIAL PER MNDOT TYPE A-E EXPANSION. LEAVE A MINIMUM 1/2" TOP GAP AND SEAL WITH MNDOT APPROVED SILICONE PER MNDOT SPEC 3722.
(7) TO MINIMIZE VIBRATION AND ROLLING RESISTANCE, AREA SHALL BE FREE OF PAVERS, STAMPED CONCRETE, AND/OR EXCESSIVE JOINTING.
(8) 2% MAX. PER BUILDING CODE. IF GREATER THAN 2%, FLATTEN AS FEASIBLE.
(9) FORM CONTRACTION JOINTS AS NEEDED TO PRODUCE APPROXIMATELY SQUARE PANEL SIZE. CONRETE PANEL SIZE SHOULD NOT EXCEED 1 1/2 : 1 LENGTH X WIDTH.
(10) DRILL AND GROUT NO. 4 X 8" LONG TIE BARS (EPOXY COATED). 36" MAXIMUM SPACING BETWEEN BARS WITH 2" MINIMUM CONCRETE COVER PLACED 1' MINIMUM FROM ADJACENT CONSTRUCTION JOINTS. 1' MINIMUM FROM ADJACENT CONCRETE JOINTS. TIE BARS SHALL BE EMBEDDED 4" WITH 2" MINIMUM CONCRETE COVER AND ARE INCIDENTAL TO SILL PLACEMENT.
(11) FURNISH AND INSTALL THE FULL WIDTH OF THE TOP OF SILL A MINIMUM 2ML THICK POLYTHENE SHEETING.
(12) USE AN APPROVED TYPE F (1/4 INCH THICK) SEPARATION MATERIAL. SEPARATION MATERIAL SHALL MATCH FULL HEIGHT DIMENSION OF ADJACENT CONCRETE.
(13) DIMENSION TO BE SAME AS SIDEWALK THICKNESS, 4" MIN.
(14) 6" WALK: 5" MIN. FOR B424; 7" MIN. FOR B624
4" WALK: 7" MIN. FOR B424; 9" MIN. FOR B624
(15) DRILL AND GROUT NO. 4 X 12" LONG TIE BARS (EPOXY COATED). 36" MAXIMUM SPACING BETWEEN BARS WITH 2" MINIMUM CONCRETE COVER PLACED 1' MINIMUM FROM ADJACENT CONCRETE JOINTS.

DRIVEWAY AND SIDEWALK DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.254	4 OF 4

LEAD EXPERT OFFICE	JEFFREY PERKINS OPERATIONS DIVISION

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ANOKA COUNTY HIGHWAY DEPT.

STANDARD PLANS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

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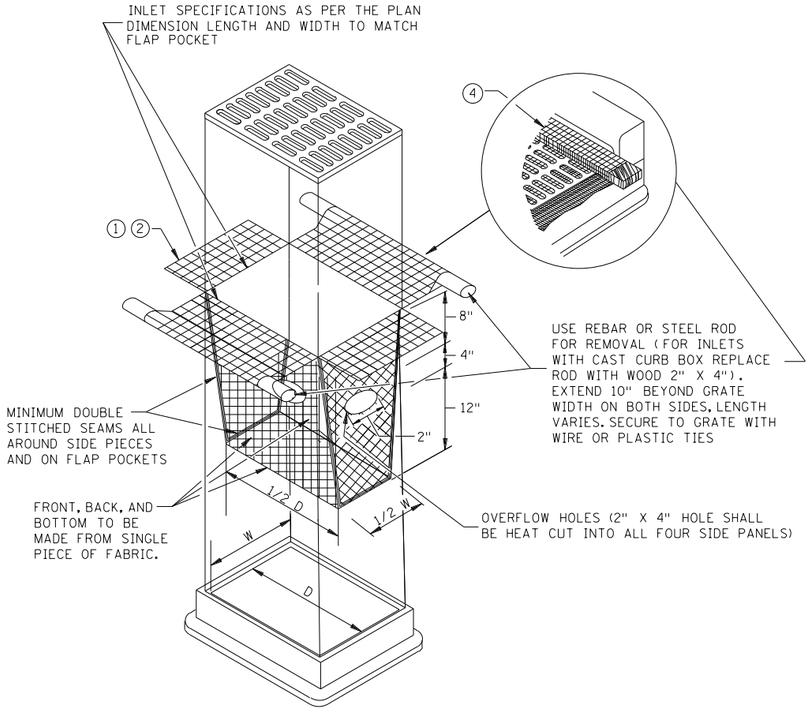
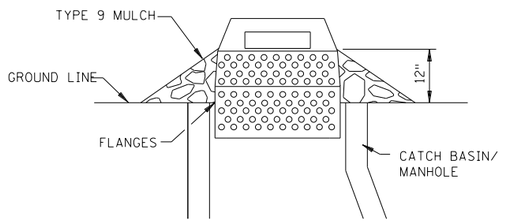


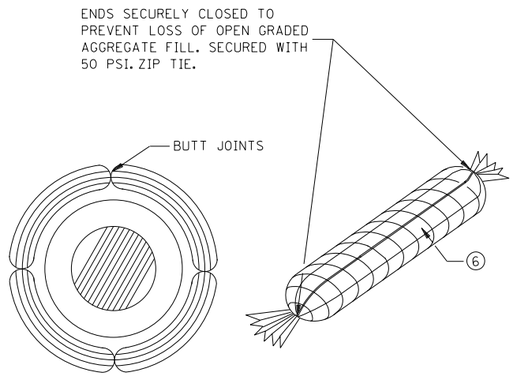
FILTER BAG INSERT ③

(CAN BE INSTALLED IN ANY INLET TYPE
WITH OR WITHOUT A CURB BOX)

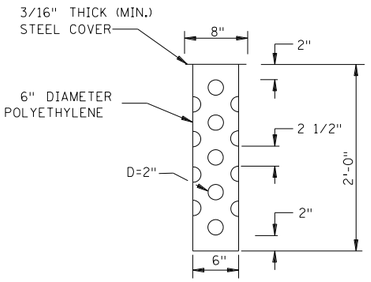


SEDIMENT CONTROL INLET HAT

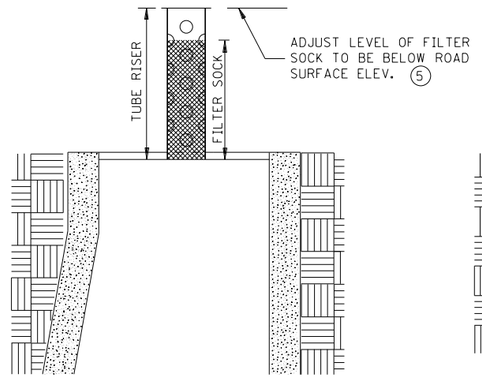
NOTE:
THE SEDIMENT CONTROL BARRIER SHALL BE A METAL OR PLASTIC/POLYETHYLENE RISER SIZED TO FIT INSIDE THE CATCH BASIN/MANHOLE; HAVE PERFORATIONS TO ALLOW FOR WATER INFILTRATION; HAVE AN OVERFLOW OPENING, FLANGES AND A LID/COVER.



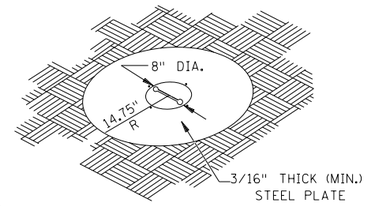
ROCK LOG/COMPOST LOG



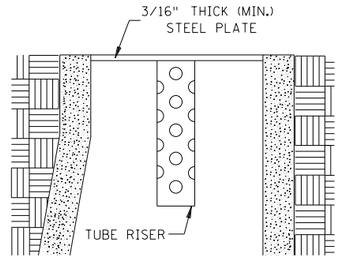
TUBE RISER



SECTION
(UP POSITION)

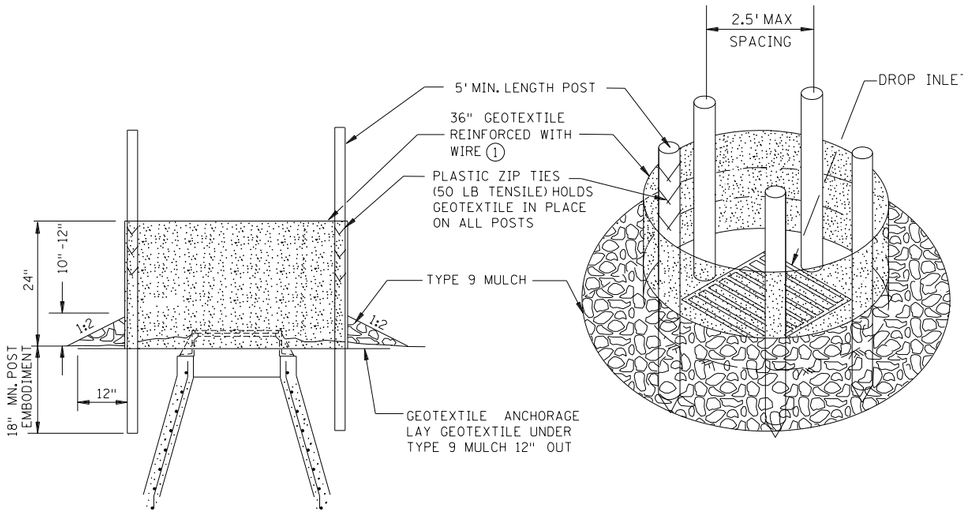


PERSPECTIVE VIEW



SECTION
(DOWN POSITION)

POP-UP HEAD



SILT FENCE RING AND ROCK FILTER BERM

USE WHERE INLET DRAINS IN AN AREA WITH SLOPES AT 1:3 or LESS

NOTES:
SEE SPECS. 2573, 3137, & 3886.

DEVICES MUST BE ADJUSTED ACCORDINGLY AS TO NOT CAUSE FLOODING ON ROADWAY THAT WOULD IMPEED TRAFFIC FLOW.

1. ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE MONOFILAMENT IN BOTH DIRECTIONS, MEETING SPEC. 3886.
2. FINISHED SIZE, INCLUDING POCKETS WHERE REQUIRED SHALL EXTEND A MINIMUM OF 10 INCHES AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
3. INSTALLATION NOTES:
   DO NOT PLACE FILTER BAG INSERT IN INLETS SHALLOWER THAN 30 INCHES, MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE. THE PLACED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE OF 3 INCHES BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES. WHERE NECESSARY THE CONTRACTOR SHALL CLINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3 INCH SIDE CLEARANCE.
4. FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2 INCH X 4 INCH OR USE A ROCK SOCK OR SAND BAGS IN PLACE OF THE FLAP POCKETS.
5. SOCK HEIGHT MUST NOT BE SO HIGH AS TO SLOW DOWN WATER FILTRATION TO CAUSE FLOODING OF THE ROADWAY.
6. GEOTEXTILE SOCK BETWEEN 4-10 FEET LONG AND 4-6 INCH DIAMETER. SEAM TO BE JOINED BY TWO ROWS OF STITCHING WITH A PLASTIC MESH BACKING OR PROVIDE A HEAT BONDED SEAM (OR APPROVED EQUIVALENT). FILL ROCK LOG WITH OPEN GRADED AGGREGATE CONSISTING OF SOUND DURABLE PARTICLES OF COARSE AGGREGATE CONFORMING TO SPEC. 3137 TABLE 3137-1; CA-3 GRADATION.

TEMPORARY SEDIMENT CONTROL STORM DRAIN INLET PROTECTION	APPROVED: 02-28-2017 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.405	4 OF 8

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LEAD EXPERT OFFICE	LYNN CLARKOWSKI CHIEF ENVIRONMENTAL OFFICER OFFICE OF ENVIRNOMENTAL STEWARDSHIP

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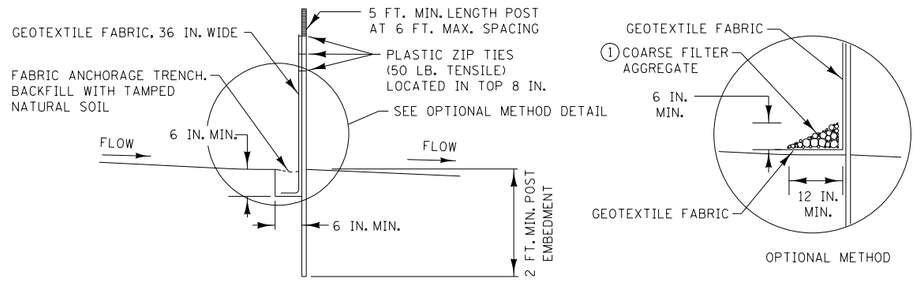
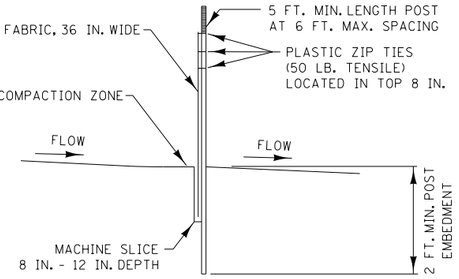
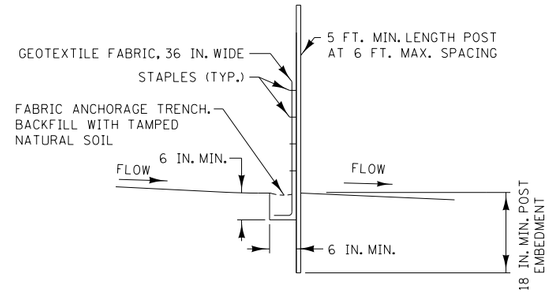


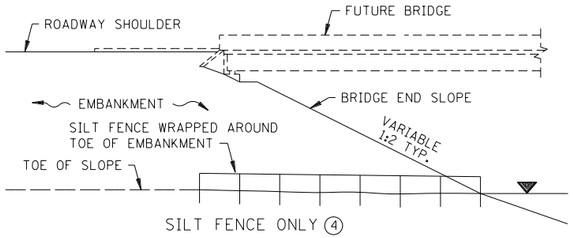
SILT FENCE TYPE HI ②
(HAND INSTALLED)



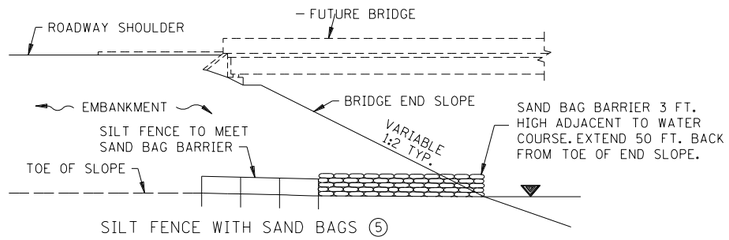
SILT FENCE TYPE MS ②
(MACHINE SLICED)



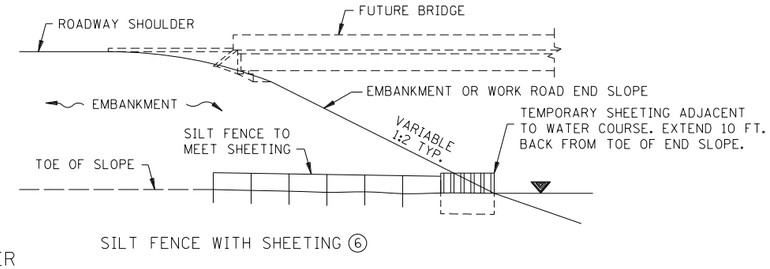
SILT FENCE TYPE PA ③
(PREASSEMBLED)



SILT FENCE ONLY ④

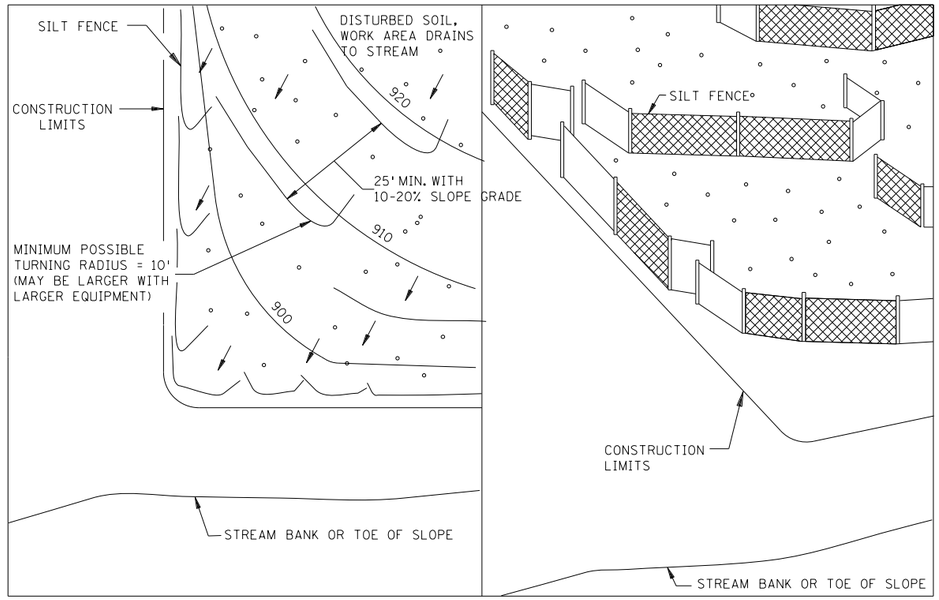


SILT FENCE WITH SAND BAGS ⑤

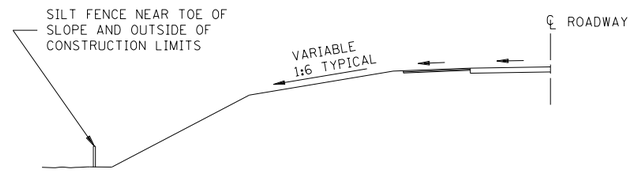


SILT FENCE WITH SHEETING ⑥

INSTALLATION AT BRIDGE EMBANKMENT ADJACENT TO WATER



J-HOOK INSTALLATION



LOCATION AT TOE OF ROADWAY EMBANKMENT

NOTES:

SEE SPECS. 2573, 3149 & 3886.

① COARSE FILTER AGGREGATE (SPEC. 3149) SHALL BE INCIDENTAL.

② TO PROTECT AREAS FROM SHEET FLOW. MAXIMUM CONTRIBUTING AREA: 1 ACRE.

③ TO PROTECT AREAS FROM SHEET FLOW. MAXIMUM CONTRIBUTING AREA: 0.25 ACRE.

④ WATER COURSE FLOW VELOCITY: STANDING.
CONTRIBUTING SLOPE AREA: 1./2 ACRE.

⑤ WATER COURSE FLOW VELOCITY: 1 TO 7 FT./SEC.
CONTRIBUTING SLOPE AREA: 1. ACRE.

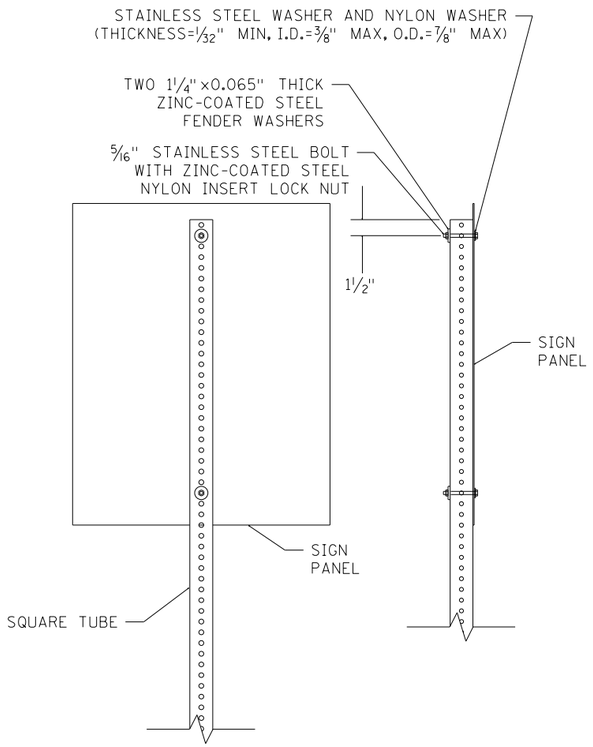
⑥ WATER COURSE FLOW VELOCITY: 8 TO 15 FT./SEC.
CONTRIBUTING SLOPE AREA: 3 ACRES.

TEMPORARY SEDIMENT CONTROL SILT FENCE	APPROVED: 02-28-2017 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.405	6 OF 8

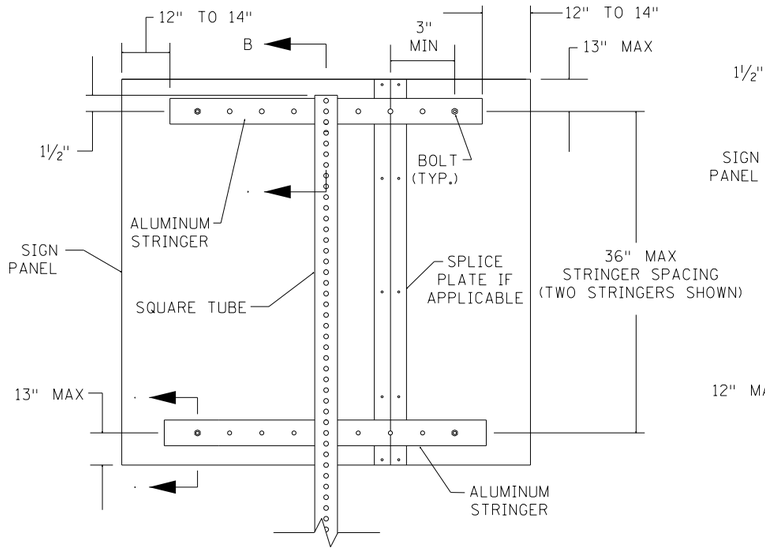
ANOKA COUNTY HIGHWAY DEPT.	STANDARD PLANS COUNTY PROJECT SAP 002-716-024 CITY PROJECT SAP 198-020-040	CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS	Sheet 37 of 174 Sheets

LEAD EXPERT OFFICE	LYNN CLARKOWSKI CHIEF ENVIRONMENTAL OFFICER OFFICE OF ENVIRNOMENTAL STEWARDSHIP

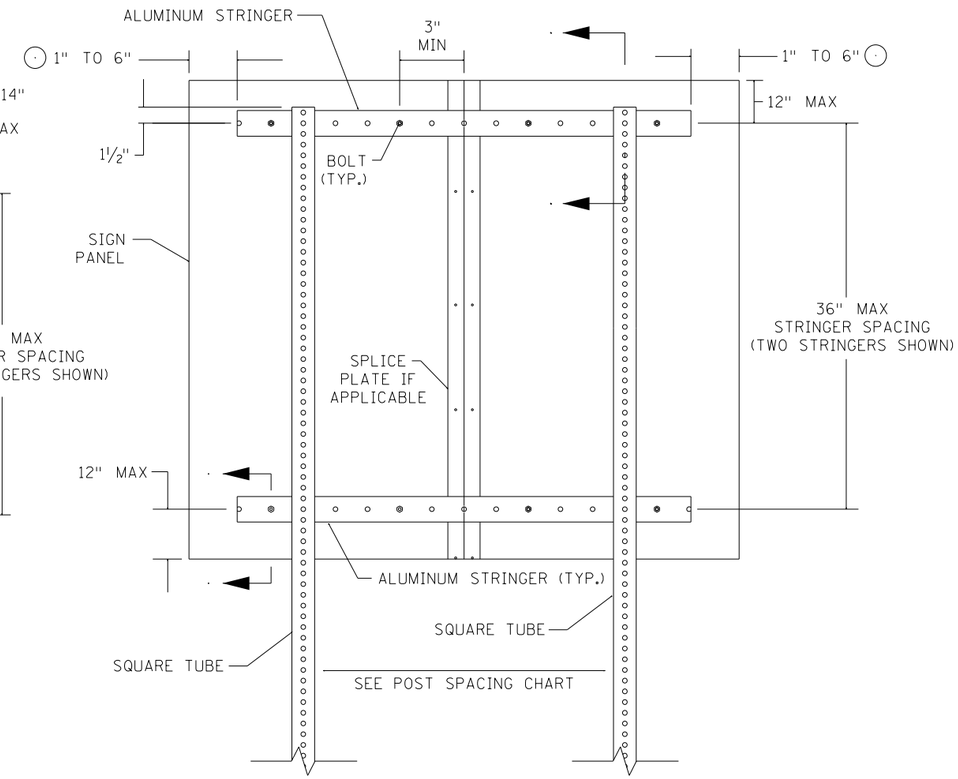
NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\s405_6_spn_converted 11/26/2024 2:42:19 PM



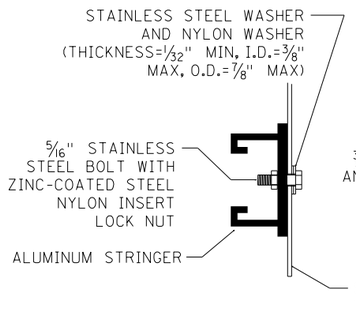
FOR SIGN PANELS UP TO 30" WIDE



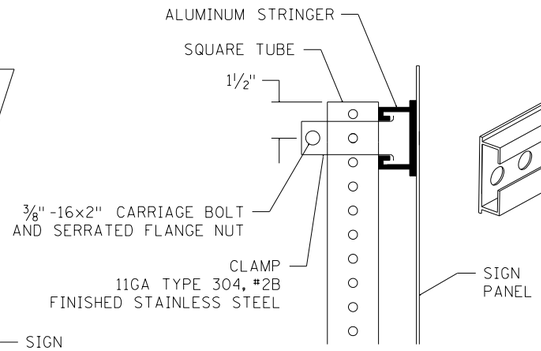
FOR SIGN PANELS 36" WIDE OR GREATER ON ONE POST



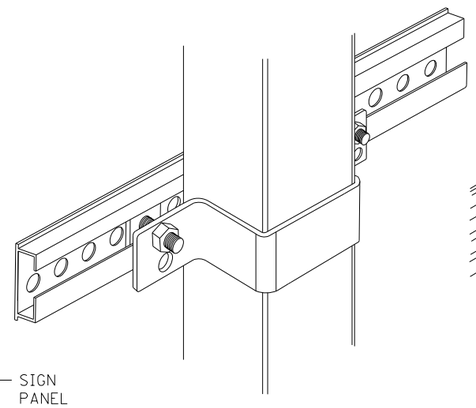
FOR SIGN PANELS ON TWO OR MORE POSTS



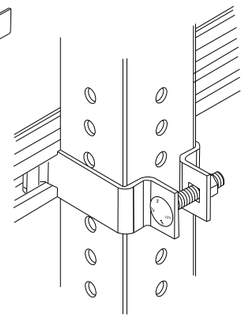
VIEW A-A



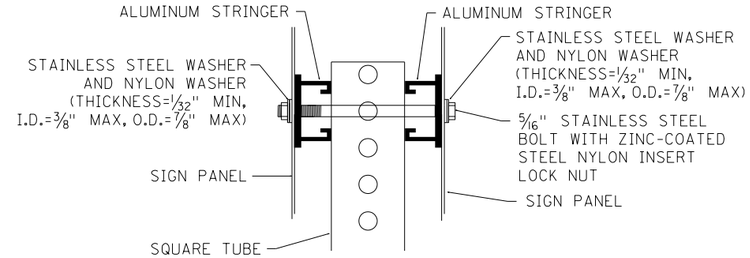
VIEW B-B



CLAMP DETAIL
4" SQUARE TUBE



CLAMP DETAIL
2" AND 2 1/2" SQUARE TUBE



BACK-TO-BACK SIGN MOUNTING WITH STRINGERS

NOTES:

BOLT SIGN PANELS TO STRINGERS OR RISER POSTS AT NO GREATER THAN 24" SPACING OR ACCORDING TO THE MNDOT STANDARD SIGNS AND MARKINGS MANUAL FOR MOUNTING HOLES (PUNCH CODES) INFORMATION.

CENTER STRINGERS ON SIGN PANEL.

(·) IF POST SPACING REQUIRES PLACEMENT OF A POST WITHIN THIS AREA, EXTEND STRINGERS AS NEEDED TO ACCOMMODATE THE STRINGER TO POST CLAMP.

SQUARE-TUBE SIGN MOUNTING DETAILS	APPROVED: 08-09-2023 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.718	1 OF 3

ANOKA COUNTY HIGHWAY DEPT.	STANDARD PLANS COUNTY PROJECT SAP 002-716-024 CITY PROJECT SAP 198-020-040	CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS	Sheet 38 of 174 Sheets

LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING	

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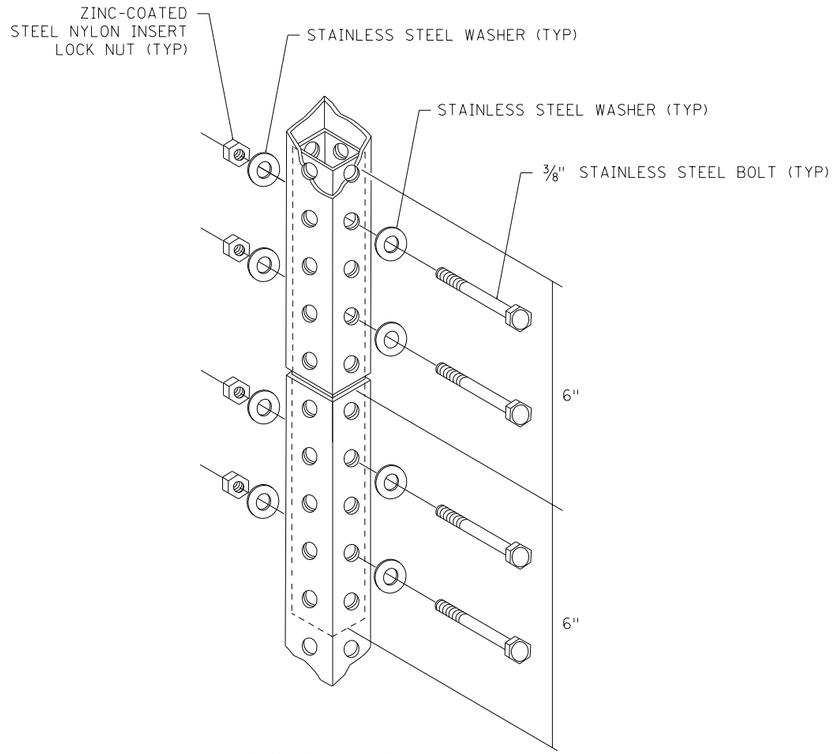

SPLICE DETAIL

PANEL WIDTH	SQUARE TUBE POST SPACING						
	2 POSTS	3 POSTS	4 POSTS	5 POSTS	6 POSTS	7 POSTS	8 POSTS
(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)
42	15						
48	21						
54	30						
60	36						
66	36						
72	42						
78	42						
84	48						
90	48	42					
96	48	42					
102	54	42					
108	54	42					
114	60	42					
120	60	48					
126	66	48					
132	66	48	42				
138	72	48	42				
144	72	48	42				
150	78	54	42				
156	78	54	42				
162	84	54	42				
168	84	60	48				
174	90	60	48	42			
180	90	60	48	42			
186	96	66	48	42			
192	96	66	48	42			
198	102	66	54	42			
204	102	72	54	42			
210	108	72	54	42			
216	108	72	54	48	42		
222	114	78	60	48	42		
228	114	78	60	48	42		
234	120	78	60	48	42		
240	120	84	60	48	42		
246		84	66	54	42		
252		84	66	54	42		
258		90	66	54	42	42	
264		90	66	54	48	42	
270		90	72	54	48	42	
276		96	72	60	48	42	
282		96	72	60	48	42	
288		96	72	60	48	42	
294		102	78	60	54	42	
300		102	78	60	54	42	42
306		102	78	66	54	42	42
312		108	78	66	54	48	42
318		108	84	66	54	48	42
324		108	84	66	54	48	42
330		114	84	66	60	48	42
336		114	84	72	60	48	42

DISTANCES ARE CENTER-TO-CENTER OF POSTS

NOTES:

NO MORE THAN ONE SPLICE PER POST.

WHEN USED, THE SPLICE MUST BE PLACED AT LEAST 8' ABOVE GROUND. THE PREFERRED PLACEMENT LOCATION IS BEHIND THE SIGN PANEL.

INTERIOR POST STUD SHALL BE ONE SIZE SMALLER FOR TIGHT FIT. IF RISER POST IS 2½", INTERIOR POST IS 2 3/16". IF RISER POST IS 2", INTERIOR POST IS 1¾".

SQUARE-TUBE SIGN MOUNTING DETAILS	APPROVED: 08-09-2023 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.718	2 OF 3

ANOKA COUNTY HIGHWAY DEPT.	STANDARD PLANS COUNTY PROJECT SAP 002-716-024 CITY PROJECT SAP 198-020-040	CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS	Sheet 39 of 174 Sheets

LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING	

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NUMBER OF ALUMINUM STRINGERS FOR 2½" OR SMALLER POSTS

PANEL HEIGHT (INCHES)

	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324	330	336
120	0		0		0		4		4		4		4						4																																							
114	0		0		0		4		4		4		4						4	4																																						
108	0		0		0		4		4		4		4						4	4	4																																				
102	0		0		0		4		4		4		4						4	4	4	4	4																																		
96	0		0		0		3		3		3		3						3	3	3	3	3	3																																	
90	0		0		0		3		3		3		3						3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3									
84	0		0		0		3		3		3		3						3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3						
78	0		0		0		3		3		3		3						3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
72	0		0		0		3		3		3		3						3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
66	0		0		0		3		3		3		3						3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
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54	0		0		0		3		3		3		3						3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
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42	0		0		0		2		2		2		2						2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
36	0		0		0		2		2		2		2						2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
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	1 POST									2 POST										3 POST										4 POST										5 POST										6 POST								

PANEL WIDTH (INCHES)

NUMBER OF STRINGERS FOR 4" POSTS

PANEL HEIGHT (INCHES)

	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324	330	336
144			5		5		5		6		5		5		5		6		6		7		5		5		6		6		6		6		7		5		6		6		6		6		7		7									
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132			4		4		4		5		6		7		7		4		4		5		5		5		6		6		7		7		5		5		5		6		6		6		6		7		7		7			
126					4		4		4		5		5		6		6		7		7		7		5		5		6		6		6		6		6		7		7		7		5		6		6		6		6		7	
120					4		4		4		5		5		6		6		6		7		7		7		5		5		6		6		6		6		6		7		7		7		7		6		6		6		6	
114							4		4		4		5		5		6		6		6		7		7		7		7		5		5		6		6		6		6		6		7		7		7		7		7		7	
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12											2		2		2		2		2		2		2		2		2		2		2		2		2		2		2		2		2		2		2		2		2		2	
	1 POST									2 POST										3 POST										4 POST																											

PANEL WIDTH (INCHES)

SQUARE-TUBE SIGN MOUNTING DETAILS	APPROVED: 08-09-2023 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.718	3 OF 3

ANOKA COUNTY HIGHWAY DEPT.	STANDARD PLANS COUNTY PROJECT SAP 002-716-024 CITY PROJECT SAP 198-020-040	CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS	Sheet 40 of 174 Sheets

LEAD EXPERT OFFICE: BRIAN SORENSON, STATE TRAFFIC ENGINEER, OFFICE OF TRAFFIC ENGINEERING

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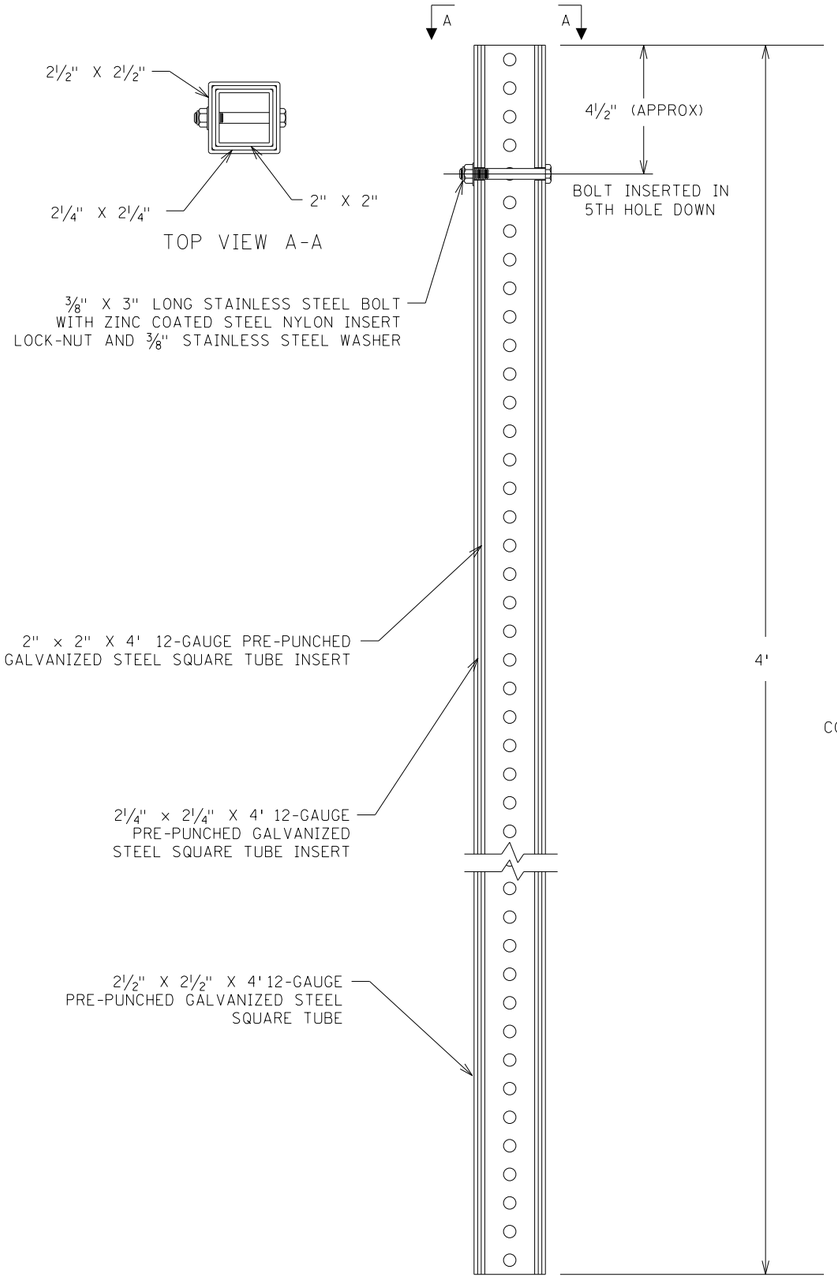
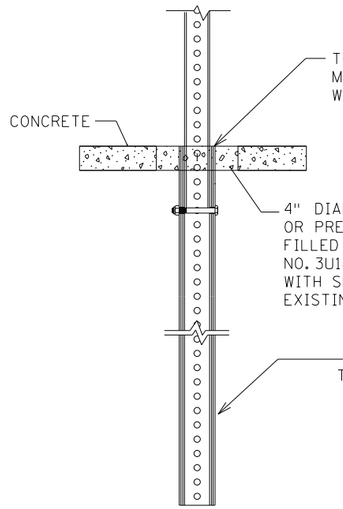
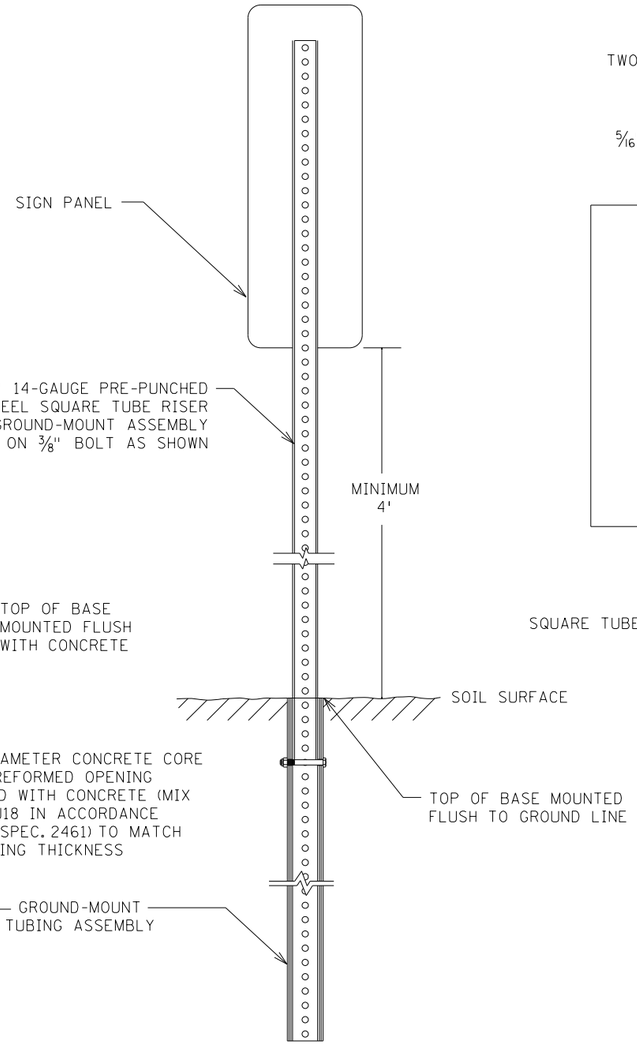


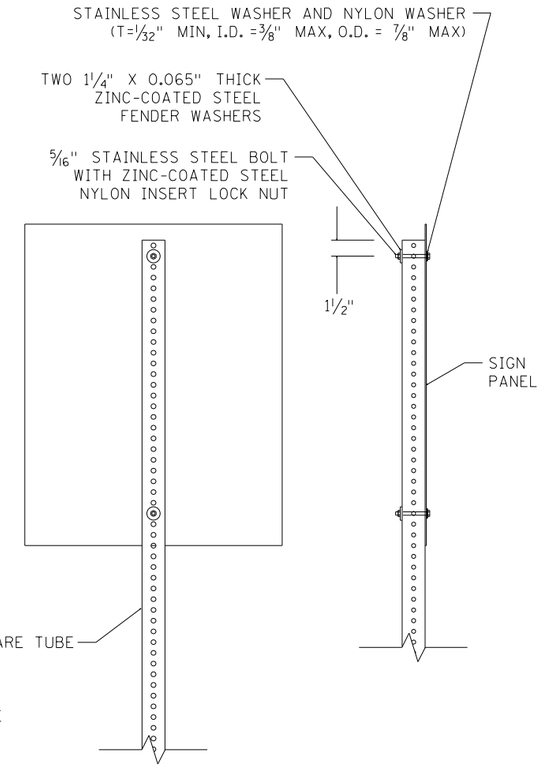
GROUND MOUNT TUBING ASSEMBLY



THREE-WALL BASE CORED
THROUGH CONCRETE



THREE-WALL BASE IN SOIL



MOUNTING DETAIL

NOTES:

THE CRASH RESPONSE FOR THIS STRUCTURE IS BENDABLE.

TO MEET CRASHWORTHY REQUIREMENTS THE DISTANCE BETWEEN THE BOTTOM OF THE SIGN PANEL AND THE GROUND SURFACE BELOW ANY PORTION OF THE SIGN PANEL SHALL BE A MINIMUM OF 4'. SEE TABULATIONS FOR MOUNTING HEIGHT.

SQUARE TUBE SIGN POSTS PER MnDOT SPEC. 3402.

THREE-WALL BASE FOR 1¾" SQUARE-TUBE RISER POST	APPROVED: 11-29-2022 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.721	1 OF 1

ANOKA COUNTY HIGHWAY DEPT.	STANDARD PLANS COUNTY PROJECT SAP 002-716-024 CITY PROJECT SAP 198-020-040	CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS Sheet 41 of 174 Sheets

LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING	

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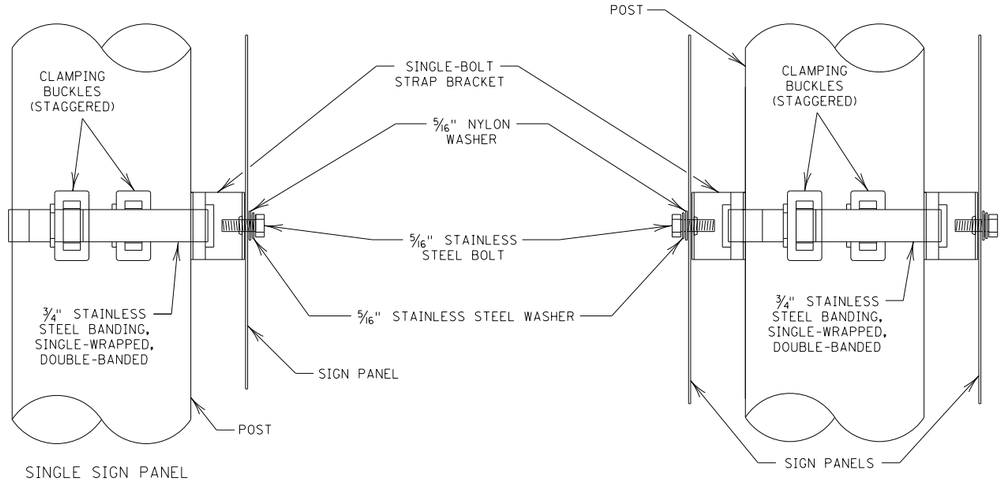
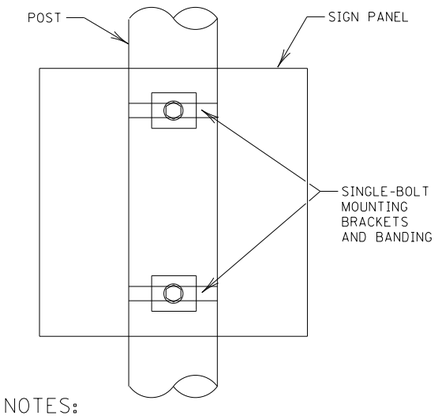


SINGLE SIGN PANEL

BACK TO BACK SIGN PANELS

NON-STIFFENER MOUNTING DETAILS

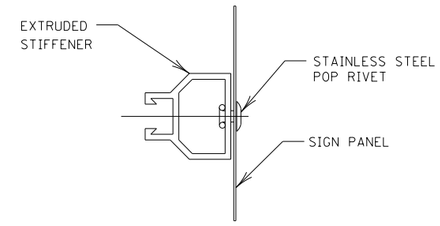
FOR SIGN PANELS UP TO 24" WIDE AND OVERHEAD SIGN IDENTIFICATION PLATES



NOTES:

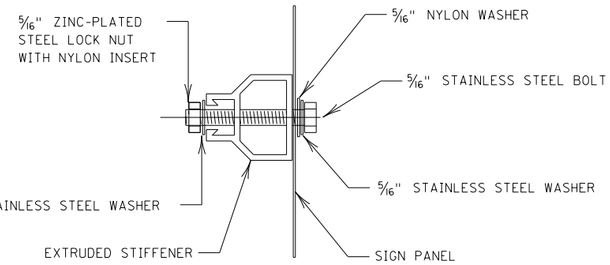
TENSION THE BANDING IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION REQUIREMENTS.

DO NOT MOUNT SIGNS ON BREAKAWAY TRAFFIC SIGNALS AND LUMINAIRE SUPPORTS.



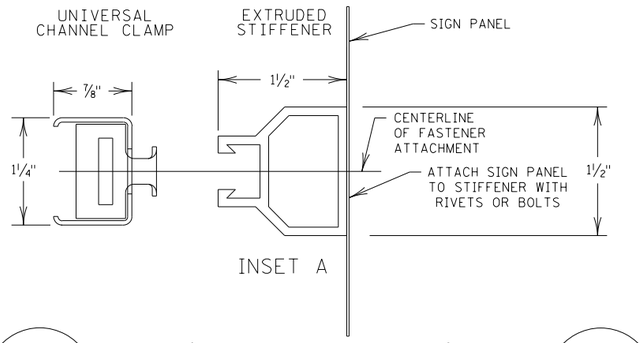
ATTACH 3/16" RIVETS AT 6" INTERVALS.
ATTACH END RIVETS 3" FROM SIGN EDGE.
USE 1/4" RIVETS FOR THE END RIVETS.

RIVET ATTACHMENT

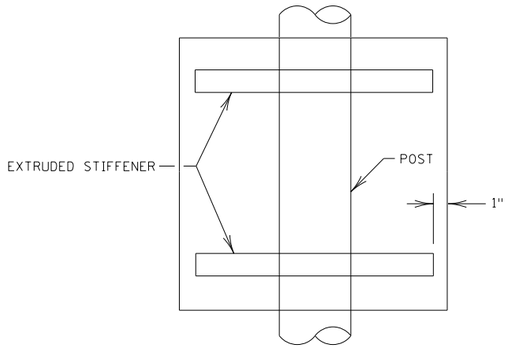


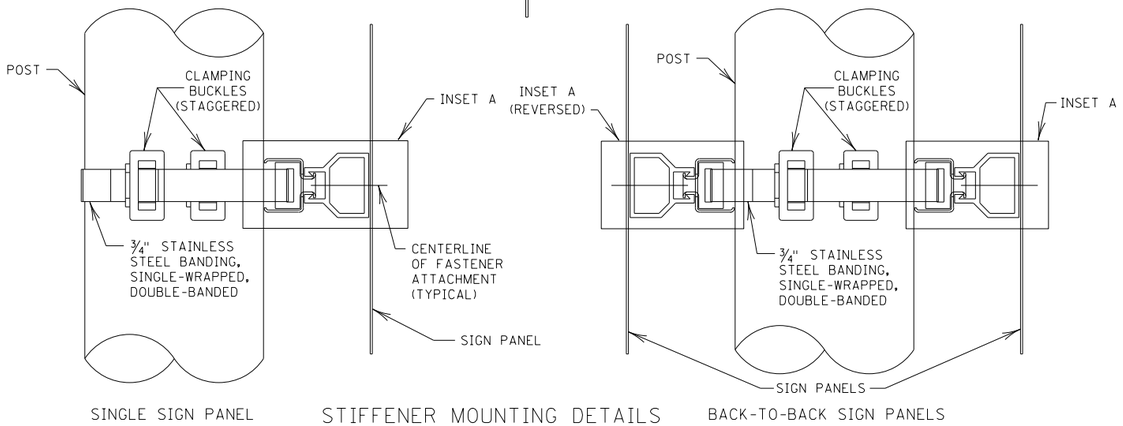
ATTACH AT STANDARD PUNCH CODE LOCATIONS

BOLT ATTACHMENT



INSET A





SINGLE SIGN PANEL

BACK-TO-BACK SIGN PANELS

STIFFENER MOUNTING DETAILS

FOR SIGN PANELS 30" WIDE AND LARGER

NUMBER OF EXTRUDED STIFFENERS REQUIRED						
		PANEL WIDTH				
		2'	3'	4'	5'	6'
PANEL HEIGHT	2'	2	2	2	2	3
	3'	2	2	2	2	3
	4'	2	2	2	2	3
	5'	3	3	3	3	3
	6'	3	3	3	4	4
	7'	3	3	3	4	4

PROVIDE VERTICAL SPACING OF NO MORE THAN 36" BETWEEN STIFFENERS.

PROVIDE A VERTICAL DISTANCE OF NO MORE THAN 12" FROM PANEL EDGE TO STIFFENER.

NOTES:

SPACE STIFFENERS IN ACCORDANCE WITH THE PUNCH CODES SHOWN IN THE MnDOT STANDARD SIGNS AND MARKINGS MANUAL.

ATTACH STIFFENERS TO SIGN PANELS USING FASTENERS. PLACE STIFFENERS AT THE VERTICAL LOCATIONS OF THE MOUNTING HOLES FOR EACH SIGN.

FURNISH AND INSTALL HARDWARE COMPATIBLE WITH STIFFENER MOUNTING SYSTEMS.

FURNISH TWO TYPE 201 STAINLESS STEEL 3/4" WIDE BY 1/32" THICK STRAPS, EACH WITH CLAMPING BUCKLES AND INSTALL SEPARATELY WITH A SINGLE WRAP AROUND THE MAST ARM CHORD. PLACE THE SECOND BANDING STRAP OVER THE FIRST STRAP AND STAGGER THE CLAMPING BUCKLES SO THE BUCKLES ARE NOT DIRECTLY OVER ONE ANOTHER.

SIGN MOUNTING SYSTEMS FOR ROUND SUPPORTS	APPROVED: 10-16-2019 REVISED:	Peter A Harff PETER A. HARFF STATE DESIGN ENGINEER	STANDARD PLAN 5-297.730	1 OF 1

LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING		
ANOKA COUNTY HIGHWAY DEPT.	STANDARD PLANS COUNTY PROJECT SAP 002-716-024 CITY PROJECT SAP 198-020-040	CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS	Sheet 42 of 174 Sheets

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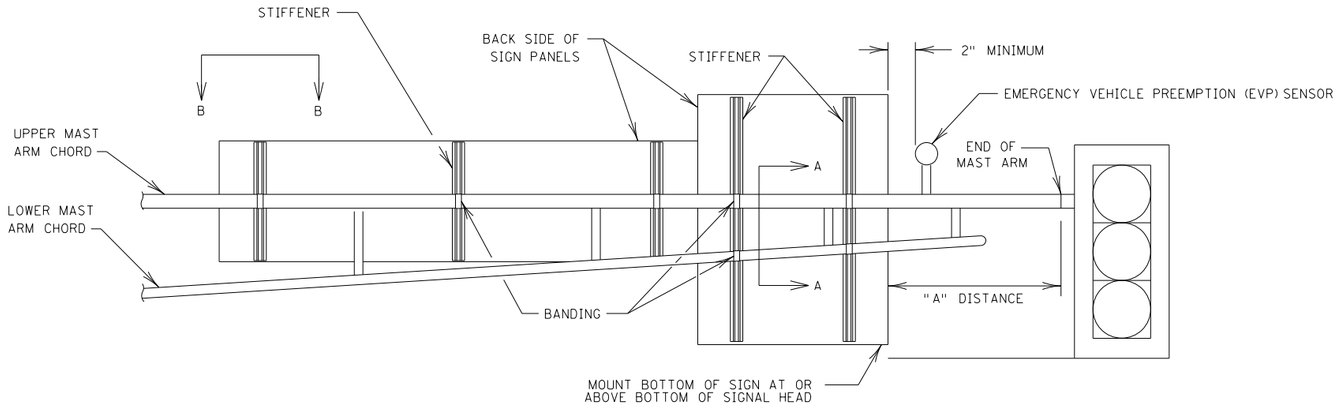


MAST ARM SIGN MOUNTING

NUMBER OF EXTRUDED STIFFENERS REQUIRED*														
		PANEL WIDTH												
		2'	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'
PANEL HEIGHT	2'	2	2	2	3	3	3	4	4	4	5	5	5	5
	3'	2	2	2	3	3	3	4	4	5	5	5	5	5
	4'	2	2	2	3	3	3	4	4	5	5	5	5	6
	5'	2	2	2	3	4	4	5	5	5	5	5	5	6
	6'			2	3	4	4	5	5	5	5	5	5	6
	7'				4	4	5	5	5	5	5	5	5	6

* WHERE SIGN PANEL DIMENSIONS FALL BETWEEN 1' INCREMENTS, USE NEXT HIGHER WIDTH AND/OR HEIGHT DIMENSION.

NOTES:

FURNISH AND INSTALL AT LEAST ONE SPACER FOR EACH SIGN PANEL WHEN PANELS ARE ATTACHED TO THE LOWER MAST ARM CHORD.

AFFIX SIGNS TO UPPER AND LOWER MAST ARM CHORDS WHEN POSSIBLE.

POSITION BOTTOM OF SIGN PANEL AT LEAST 17' ABOVE ROADWAY.

MOUNT SIGN PANELS PLUMB AND SHIM WITH REQUIRED SPACERS AS SHOWN.

PROVIDE SPACING BETWEEN STIFFENERS OF NO MORE THAN 36".

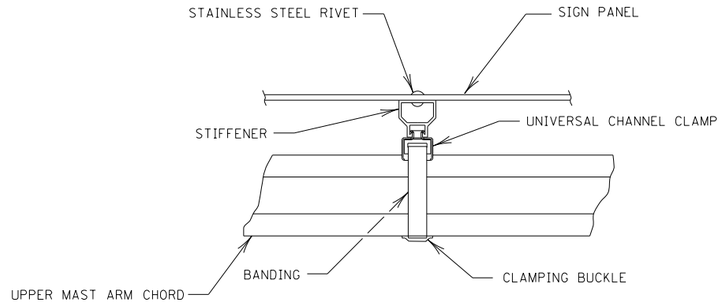
PROVIDE A HORIZONTAL DISTANCE OF NO MORE THAN 12" FROM PANEL EDGE TO STIFFENER.

PROVIDE A VERTICAL DISTANCE OF NO MORE THAN 1" FROM PANEL EDGE TO STIFFENER.

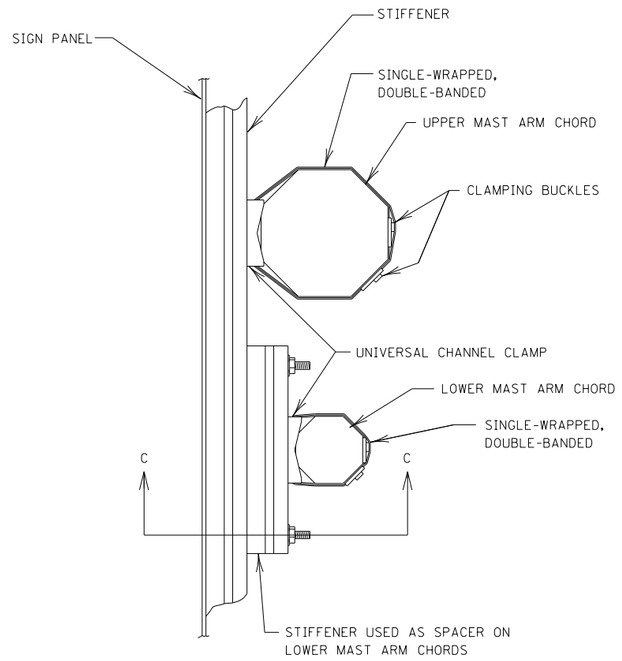
FURNISH AND INSTALL 1/4" STAINLESS STEEL RIVETS 3" FROM THE PANEL EDGE TO ATTACH THE STIFFENERS TO THE SIGN PANELS. FURNISH AND INSTALL 3/16" STAINLESS STEEL RIVETS AT 6" ON CENTER TO ATTACH THE REMAINDER OF THE STIFFENER TO THE SIGN PANEL.

FURNISH TWO TYPE 201 STAINLESS STEEL 3/4" WIDE BY 1/32" THICK STRAPS, EACH WITH CLAMPING BUCKLES AND INSTALL SEPARATELY WITH A SINGLE WRAP AROUND THE MAST ARM CHORD. PLACE THE SECOND BANDING STRAP OVER THE FIRST STRAP AND STAGGER THE CLAMPING BUCKLES SO THE BUCKLES ARE NOT DIRECTLY OVER ONE ANOTHER.

THE "A" DISTANCE IS SHOWN ON THE PLANS. IT IS THE DISTANCE FROM THE END OF THE MAST ARM TO THE EDGE OF EACH SIGN.

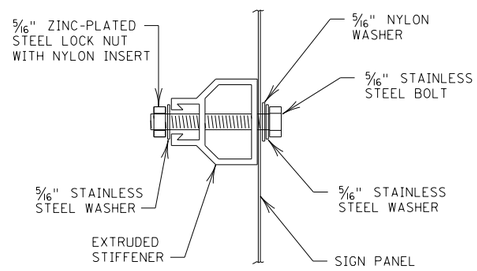


VIEW B-B



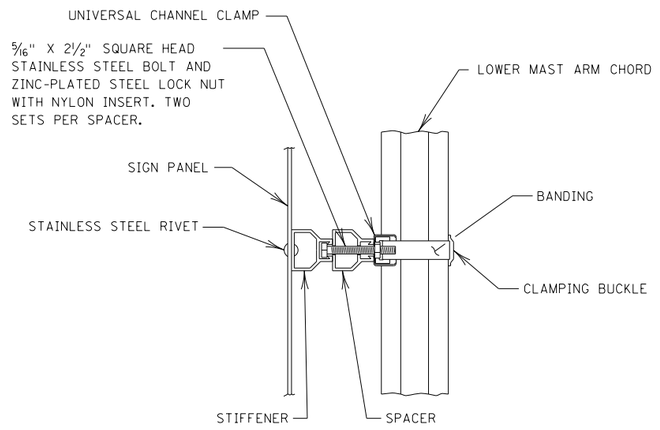
VIEW A-A ①

① SIGN PANELS TALLER THAN 36" MUST BE BANDED TO THE LOWER MAST ARM CHORD AT A MINIMUM OF ONE LOCATION. SIGN PANEL SHALL BE BANDED TO THE LOWER MAST ARM AT A LOCATION THAT WILL PROVIDE THE CLOSEST TO PLUMB ALIGNMENT FOR THE SIGN PANEL.



BOLT ATTACHMENT

ATTACH AT STANDARD PUNCH CODE LOCATIONS



VIEW C-C

SIGN MOUNTING DETAILS FOR SIGNAL MAST ARMS	APPROVED: 10-16-2019 REVISED: 04-17-2020	Peter A Harff PETER A. HARFF STATE DESIGN ENGINEER	STANDARD PLAN 5-297.731	1 OF 1

ANOKA COUNTY HIGHWAY DEPT.	STANDARD PLANS COUNTY PROJECT SAP 002-716-024 CITY PROJECT SAP 198-020-040	CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS	Sheet 43 of 174 Sheets

LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING

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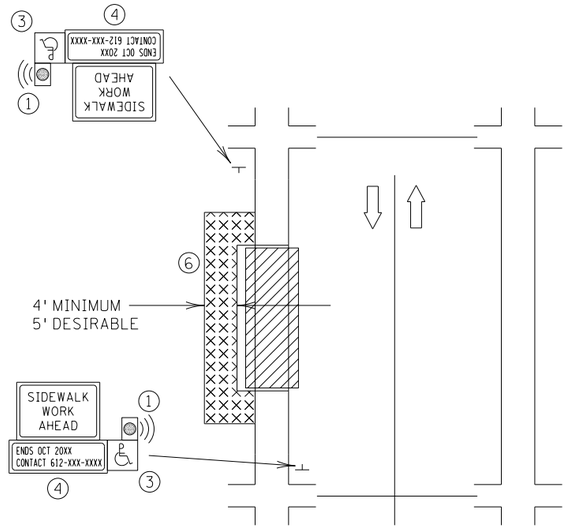
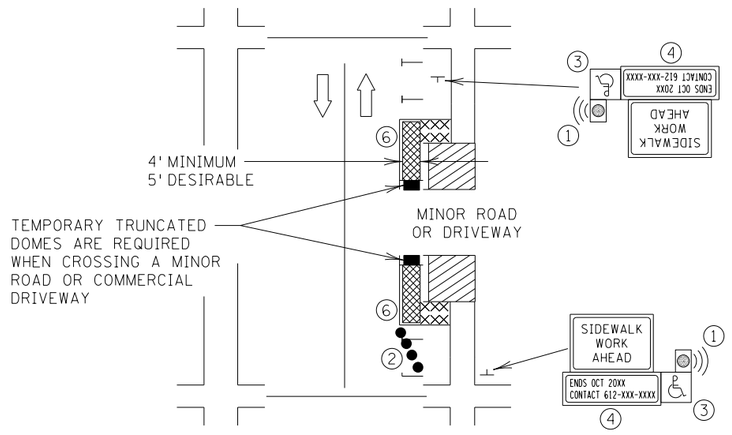


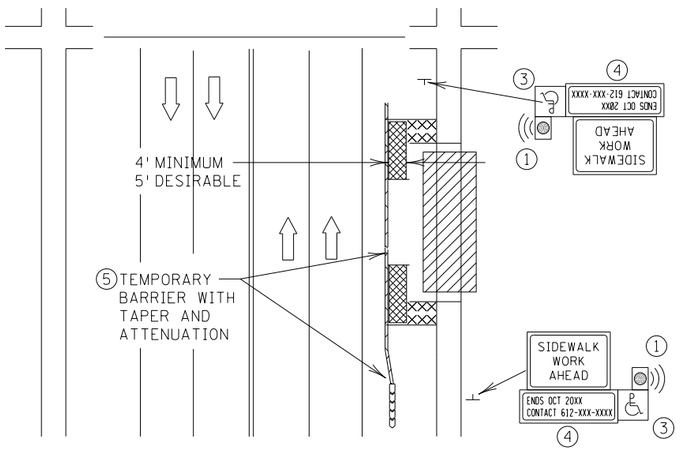
BYPASS TYPE A

BYPASS ON ADJACENT AVAILABLE
RIGHT OF WAY



BYPASS TYPE B

SIDEWALK BYPASS USING PARKING OR
SHOULDER ON LOW-SPEED ROADWAY



BYPASS TYPE C

SIDEWALK BYPASS USING SHOULDER
OR PARKING LANE ON A MULTI-LANE
OR HIGH-SPEED ROADWAY

NOTES:

WHEN CLOSING OR RELOCATING CROSSWALKS OR SIDEWALKS, PROVIDE DETECTABLE TEMPORARY FACILITIES AND INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH EXISTING PEDESTRIAN FACILITIES. THE ALTERNATE PEDESTRIAN ROUTE (APR) MUST REMAIN OPEN AT ALL TIMES.

TEMPORARY TRAFFIC CONTROL DEVICES FOR PEDESTRIANS ARE SHOWN. OTHER DEVICES MAY BE NECESSARY TO CONTROL VEHICULAR TRAFFIC. STAGE WORK AS NECESSARY TO PROVIDE AN APR AT ALL TIMES FOR ROADWAYS WITH NO AVAILABLE DETOURS. PROVIDE A SMOOTH, CONTINUOUS, HARD SURFACE THROUGH THE LENGTH OF THE APR.

PROVIDE A FIRM, STABLE, FREE-DRAINING, NON-SLIP, TEMPORARY WALKWAY SURFACE REGARDLESS OF WEATHER CONDITIONS. SUPPORT THE TEMPORARY WALKWAY SURFACE WITH A SOLID BASE TO COVER SHORT SEGMENTS OF ROUGH, SOFT, OR UNEVEN GROUND. THE TEMPORARY WALKWAY SURFACE WILL ALLOW NORMAL USAGE OF WHEELCHAIRS, WALKERS, STROLLERS, AND OTHER MOBILITY DEVICES. CONCRETE, BITUMINOUS, STEEL, RUBBER, WOOD (¾" OR THICKER), AND PLASTIC ARE ACCEPTABLE SURFACE MATERIALS FOR THE TEMPORARY WALKWAY SURFACE. GRAVEL, MILLINGS, AND OTHER UNEVEN SURFACES ARE NOT ACCEPTABLE SURFACE MATERIALS. IF NEEDED, PROVIDE SOIL STABILIZATION TO PREVENT EROSION AROUND TEMPORARY SURFACES. IF NEEDED, PROVIDE SOIL STABILIZATION TO PREVENT EROSION AROUND TEMPORARY SURFACES.

IF A 60" PEDESTRIAN WALKWAY WIDTH ISN'T PROVIDED FOR THE ROUTE, THEN A 60" BY 60" PASSING SPACE IS REQUIRED EVERY 200'. THE MINIMUM WIDTH OF THE WALKWAY IS 48".

COVER OR DEACTIVATE ANY PEDESTRIAN TRAFFIC SIGNALS CONTROLLING CLOSED CROSSWALKS.

POST-MOUNTED SIGNS LOCATED ADJACENT TO A SIDEWALK SHALL HAVE A 7' MINIMUM CLEARANCE FROM THE BOTTOM OF THE LOWEST SIGN TO THE SIDEWALK SURFACE. SHARED-USE PATH SHALL HAVE 8' MINIMUM CLEARANCE FROM THE BOTTOM OF THE LOWEST SIGN TO THE SHARED USE PATH SURFACE.

APR SHOULD BE KEPT FREE OF TRASH, SEDIMENT, AND DEBRIS.

ANY PORTABLE SIGN OR BARRICADE PLACED OR STORED IN A PEDESTRIAN WALKWAY THAT COULD POSE A HAZARD TO A VISUALLY-IMPAIRED PEDESTRIAN SHALL HAVE A DETECTABLE EDGE TO GUIDE THE PEDESTRIAN AROUND THE HAZARD. FOR ADDITIONAL GUIDANCE, SEE THE "DETECTABLE EDGE FOR SIGN ON PORTABLE STAND" DETAIL ON STADARD PLAN 5-297.813.

MINIMIZE DISRUPTION TO PEDESTRIANS TO THE MAXIMUM EXTENT FEASIBLE BY PROVIDING AN APR IN THE FOLLOWING ORDER OF PREFERENCE:

2. PROVIDE THE APR ON THE SAME SIDE OF THE ROADWAY AS THE DISRUPTED ROUTE UTILIZING BYPASSES.

3. WHERE NOT FEASIBLE TO PROVIDE A SAME-SIDE APR, PROVIDE AN APR DETOUR ON THE OTHER SIDE OF THE ROADWAY.

   WHERE NOT FEASIBLE TO PROVIDE AN APR ON EITHER SIDE OF THE ROADWAY, PROVIDE AN APR DETOUR WITH TRAILBLAZING SIGNS.

(1) CONSIDER PROVIDING AN APPROVED AUDIBLE MESSAGE DEVICE OR TACTILE MESSAGE FOR PEDESTRIANS WITH VISUAL DISABILITIES.

(2) RECOMMENDED TAPER WHEN THE CLOSED AREA WAS PREVIOUSLY USED AS AN INTERMITTENT TRAFFIC LANE OR BYPASS LANE IS 25' LONG USING FIVE EQUALLY-SPACED CHANNELIZING DEVICES.

(3) FOR FULLY-ACCESSIBLE WALKWAYS THROUGH WORKZONES, CONSIDER DISPLAYING THE INTERNATIONAL SYMBOL OF ACCESSIBILITY.

(4) INCLUDE INFORMATION SUCH AS THE DURATION OF THE WALKWAY RESTRICTIONS (BEGINNING AND/OR END DATES) AND A PROJECT CONTACT NUMBER FOR 24/7 QUESTIONS OR REPORTING HAZARDS ON SIGNS FOR TEMPORARY PEDESTRIAN DETOURS.

(5) SEE THE MOST CURRENT EDTION OF THE MNDOT TEMPORARY BARRIER GUIDANCE MANUAL FOR GUIDANCE ON PLACEMENT AND USAGE OF TEMPORARY BARRIER.

(6) PROVIDE SOIL STABILIZATION AROUND TEMPORARY SURFACES TO PREVENT EROSION, IF NEEDED.

LEGEND

- SIGN
- WORK AREA
- PEDESTRIAN CHANNELIZATION DEVICE
- TEMPORARY BARRIER
- DIRECTION OF TRAFFIC
- CHANNELIZER
- AUDIBLE MESSAGE DEVICE (AMD)
- TEMPORARY CURB RAMP WITH DETECTABLE EDGES
- TEMPORARY WALKWAY SURFACE

ALTERNATE PEDESTRIAN ROUTE (APR) LAYOUTS	APPROVED: 03-18-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.811	1 OF 2

LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING		
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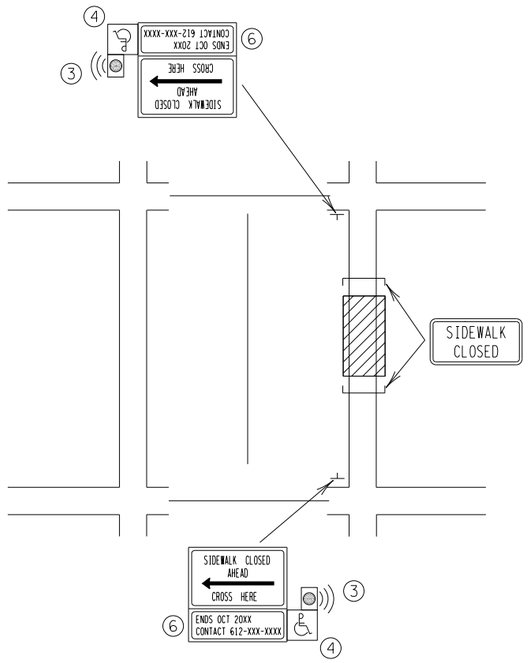
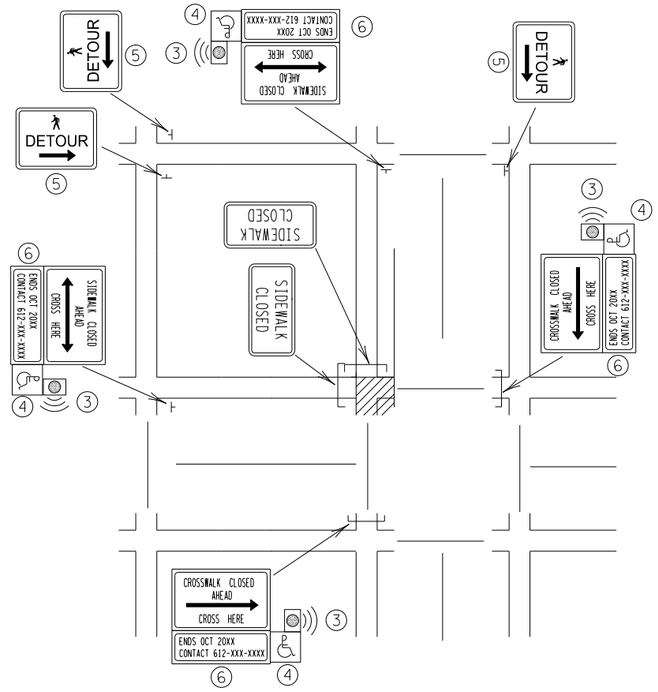
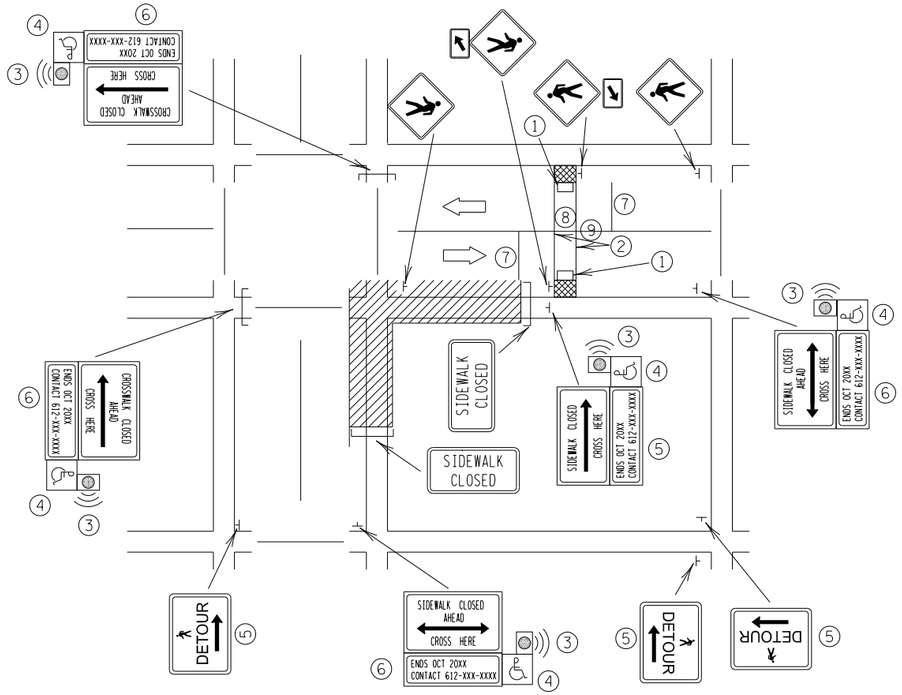
ANOKA COUNTY HIGHWAY DEPT.	STANDARD PLANS COUNTY PROJECT SAP 002-716-024 CITY PROJECT SAP 198-020-040	CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS Sheet 44 of 174 Sheets



OTHER SIDE OF ROADWAY DETOUR
FOR MID-BLOCK CLOSURE



ONE QUADRANT CLOSED



OTHER SIDE OF STREET DETOUR OR DETOUR WITH TRAILBLAZING SIGNS
FOR CORNER SIDEWALK CLOSURE WITH OPTIONAL TEMPORARY CROSSWALK

NOTES:

WHEN CLOSING OR RELOCATING CROSSWALKS OR SIDEWALKS, PROVIDE DETECTABLE TEMPORARY FACILITIES AND INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH EXISTING PEDESTRIAN FACILITIES. THE MINIMUM TEMPORARY WALKWAY WIDTH SHOULD BE THE WIDTH OF THE EXISTING FACILITY. IF THE EXISTING FACILITY HAS A WIDTH GREATER THAN 60", THE WIDTH OF THE TEMPORARY FACILITY MAY BE 60". IF THE WIDTH OF THE DETOUR IS LESS THAN 60", A 60"-WIDE PASSING SPACE IS REQUIRED EVERY 200'.

TEMPORARY TRAFFIC CONTROL DEVICES FOR PEDESTRIANS ARE SHOWN. OTHER TRAILBLAZING SIGNS OR DEVICES MAY BE NEEDED FOR ADEQUATE ROUTING. STAGE WORK AS NECESSARY TO PROVIDE AN ALTERNATE PEDESTRIAN ROUTE (APR) AT ALL TIMES.

PROVIDE A SMOOTH, CONTINUOUS, HARD SURFACE THROUGH THE LENGTH OF THE APR. PROVIDE A FIRM, STABLE, FREE-DRAINING, NON-SLIP, TEMPORARY WALKWAY SURFACE REGARDLESS OF WEATHER CONDITIONS. SUPPORT THE TEMPORARY WALKWAY SURFACE WITH A SOLID BASE TO COVER SHORT SEGMENTS OF ROUGH, SOFT, OR UNEVEN GROUND. THE TEMPORARY WALKWAY SURFACE WILL ALLOW NORMAL USAGE OF WHEELCHAIRS, WALKERS, STROLLERS, AND OTHER MOBILITY DEVICES. CONCRETE, BITUMINOUS, STEEL, RUBBER, WOOD (3/4" OR THICKER), AND PLASTIC ARE ACCEPTABLE SURFACE MATERIALS FOR THE TEMPORARY WALKWAY SURFACE. GRAVEL, MILLINGS, OR OTHER UNEVEN SURFACES ARE NOT ACCEPTABLE SURFACE MATERIALS. IF NEEDED, PROVIDE SOIL STABILIZATION TO PREVENT EROSION AROUND TEMPORARY SURFACES.

COVER OR DEACTIVATE ANY PEDESTRIAN TRAFFIC SIGNALS CONTROLLING CLOSED CROSSWALKS.

APR SHOULD BE KEPT FREE OF TRASH, SEDIMENT, AND DEBRIS.

POST-MOUNTED SIGNS ADJACENT TO SIDEWALKS SHALL HAVE 7' MINIMUM CLEARANCE FROM THE BOTTOM OF THE LOWEST SIGN TO THE SIDEWALK SURFACE. SHARED-USE PATHS SHALL HAVE 8' MINIMUM CLEARANCE FROM THE BOTTOM OF THE LOWEST SIGN TO THE SHARED-USE PATH SURFACE.

ANY PORTABLE SIGN OR BARRICADE PLACED OR STORED IN A PEDESTRIAN WALKWAY THAT COULD BE A HAZARD TO A VISUALLY-IMPAIRED PEDESTRIAN SHALL HAVE A DETECTABLE EDGE TO GUIDE THE PEDESTRIAN AROUND THE HAZARD. FOR ADDITIONAL GUIDANCE SEE THE "TEMPORARY PEDESTRIAN ACCESS ROUTE (TPAR) DEVICES" STANDARD PLAN, "DETECTABLE EDGE FOR SIGN ON PORTABLE STAND" DETAIL.

MINIMIZE DISRUPTION TO PEDESTRIANS TO THE MAXIMUM EXTENT FEASIBLE BY PROVIDING AN APR IN THE FOLLOWING ORDER OF PREFERENCE:

1. PROVIDE THE APR ON THE SAME SIDE OF THE ROADWAY AS THE DISRUPTED ROUTE UTILIZING BYPASSES.
2. WHERE IT IS NOT FEASIBLE TO PROVIDE A SAME-SIDE APR, PROVIDE AN APR DETOUR ON THE OTHER SIDE OF THE ROADWAY.
3. WHERE IT IS NOT FEASIBLE TO PROVIDE AN APR ON EITHER SIDE OF THE ROADWAY, PROVIDE AN APR DETOUR WITH TRAILBLAZING SIGNS.

(1) TEMPORARY CURB RAMPS WITH DETECTABLE WARNINGS.

(2) TEMPORARY PAVEMENT MARKINGS FOR CROSSWALKS MAY USE CROSSWALK BLOCKS, TWO TRANSVERSE LINES OR TWO STRIPS OF 18" PREFORMED MARKING MATERIAL TO FORM 36" WIDE CROSSWALK BLOCKS.

(3) PROVIDE AN APPROVED AUDIBLE MESSAGE DEVICE OR TACTILE MESSAGE FOR PEDESTRIANS WITH VISUAL DISABILITIES.

(4) FOR FULLY ACCESSIBLE WALKWAYS THROUGH WORKZONES, CONSIDER DISPLAYING THE INTERNATIONAL SYMBOL OF ACCESSIBILITY.

(5) USE PEDESTRIAN DETOUR TRAILBLAZING SIGNS IF THE PEDESTRIAN DETOUR IS NOT LOCATED ACROSS THE ROADWAY FROM THE SIDEWALK CLOSURE.

(6) TYPICAL SIGN MESSAGE FOR AN ALTERNATE PEDESTRIAN ROUTE SHOULD INCLUDE INFORMATION SUCH AS THE DURATION OF THE WALKWAY RESTRICTIONS (BEGINNING AND/OR END DATES) AND A PROJECT CONTACT NUMBER FOR 24/7 QUESTIONS OR REPORTING HAZARDS. TYPICAL INFORMATION INCLUDED IN AN AUDIBLE MESSAGE CAN BE FOUND IN "TPAR - AUDIBLE MESSAGE CONTENT GUIDELINES" AVAILABLE ON THE MNDOT TRAFFIC ENGINEERING WEBSITE ON THE PEDESTRIAN ACCOMMODATIONS THROUGH WORK ZONES WEB PAGE. ADDITIONALLY, A SUMMARY OF THE MESSAGE CONTENT GUIDELINES CAN BE FOUND WITHIN THE PEDESTRIAN ACCOMMODATIONS THROUGH WORK ZONES DESIGN GUIDANCE DOCUMENT.

(7) LOCATE STOP BAR 20' TO 50' BEFORE THE CROSSWALK. RESTRICT PARKING BETWEEN THE STOP BAR AND THE CROSSWALK. ON TWO-WAY ROADWAYS, RESTRICT PARKING BOTH BEFORE AND AFTER THE CROSSWALK FOR BOTH DIRECTIONS.

(8) CONSIDER LIGHTING AT MID-BLOCK CROSSINGS IN ORDER TO ILLUMINATE PEDESTRIANS, IF NOT ALREADY LIT.

(9) CONSIDER THE ADDITION OF R1-6a SIGNS AS MOTORISTS ARE NOT EXPECTING MID-BLOCK CROSSING.

R1-6a

LEGEND

- SIGN
- WORK AREA
- SIDEWALK BARRICADE
- DIRECTION OF TRAFFIC
- AUDIBLE MESSAGE DEVICE (AMD)
- TEMPORARY CURB RAMP WITH DETECTABLE EDGES

ALTERNATE PEDESTRIAN ROUTE (APR) LAYOUTS	APPROVED: 03-18-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.811	2 OF 2

LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING	ANOKA COUNTY HIGHWAY DEPT.	STANDARD PLANS COUNTY PROJECT SAP 002-716-024 CITY PROJECT SAP 198-020-040	CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS Sheet 45 of 174 Sheets

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NOTES;

TPAR SHOULD BE KEPT FREE OF TRASH, SEDIMENT, AND DEBRIS.

RAILINGS OR OTHER OBJECTS MAY PROTRUDE A MAXIMUM OF 4" INTO THE WALKWAY CLEAR SPACE WHEN LOCATED A MINIMUM OF 27" ABOVE THE WALKWAY SURFACE.

USE CRASHWORTHY TEMPORARY BARRIERS WHEN USED AS A PEDESTRIAN CHANNELIZERS.

PLACE SIDEWALK BARRICADES ACROSS THE ENTIRE WIDTH OF THE WALKWAYSURFACE, WHEN USED.

USE INTERLOCKING DEVICES TO CHANNELIZE PEDESTRIAN FLOW TO PREVENT GAPS THAT COULD ALLOW PEDESTRIANS TO STRAY FROM THE CHANNELIZED PATH.

① PROVIDE DETECTABLE EDGE TO ANY TRIPPING HAZARD IN THE WALKWAY. LOCATE BALLAST BEHIND THE DETECTABLE EDGE OR INTEGRAL TO THE DEVICE. ANY SUPPORT ON THE FRONT OF THE DEVICE SHOULD NOT EXTEND INTO THE 48" MINIMUM WALKWAY CLEAR SPACE. ANY SUPPORT THAT EXTENDS INTO THE WALKWAY SHALL NOT EXCEED 1/2" HEIGHT ABOVE THE WALKWAY SURFACE; IF GREATER THAN 1/4", BEVEL AS SHOWN IN THE TRIP HAZARD DETAIL.

② PROVIDE CONTINUOUS DETECTABLE EDGES EXTENDING AT LEAST 6" ABOVE THE WALKWAY SURFACE. MARK DETECTABLE EDGES WITH A COLOR THAT CONTRASTS WITH THE WALKWAY SURFACE. PLACE THE DETECTABLE EDGE AROUND ANY PORTABLE SIGN STAND IN THE WALKWAY AREA WHERE THE SIGN POSES A HAZARD TO A VISUALLY-IMPAIRED PEDESTRIAN.

③ DEVICES AND DETECTABLE EDGES SHALL NOT BLOCK WATER DRAINAGE FROM THE WALKWAY. A GAP HEIGHT OR OPENING FROM THE WALKWAY SURFACE UP TO A MAXIMUM OF 2" IS ALLOWED FOR DRAINAGE PURPOSES.

④ USE HAND AND GUIDE RAILS WHEN REQUIRED. INSTALL TOP RAIL OR TOP SURFACE IN A VERTICAL PLANE PERPENDICULAR TO THE WALKWAY, ABOVE THE DETECTABLE EDGE. PROVIDE CONTINUOUS RAIL AT A HEIGHT OF 34" TO 38" ABOVE THE WALKWAY SURFACE. USE RAIL SUPPORTS THAT MINIMIZE CONTACT WITH PEDESTRIAN'S HANDS AND FINGERS. SEE "PUBLIC RIGHTS OF WAY ACCESSIBILITY GUIDELINES (PROWAG) 2005" FOR ADDITIONAL GUIDANCE ON USE OF HAND AND GUIDE RAILS.

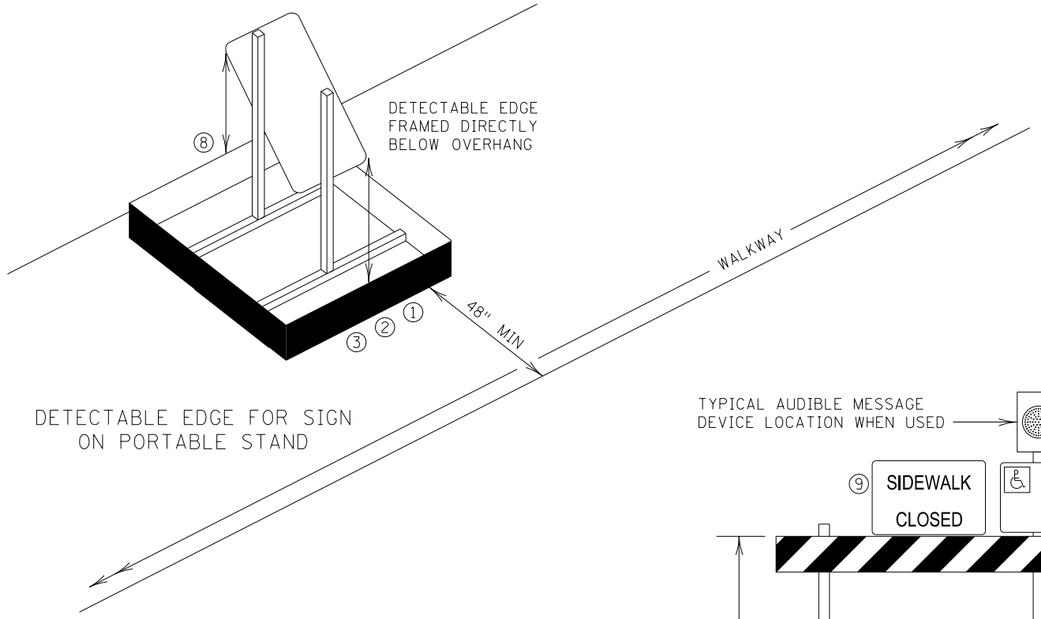
⑤ USE DEVICES FREE OF SHARP OR ROUGH EDGES, AND USE ROUNDED FASTENERS (BOLTS) TO PREVENT HARM TO A PEDESTRIAN'S HANDS, ARMS, AND CLOTHING.

⑥ REGARDLESS OF WEATHER CONDITIONS PROVIDE FIRM, STABLE, FREE-DRAINING, AND NON-SLIP TEMPORARY WALKWAY SURFACES. TEMPORARY WALKWAY SURFACES SHALL ALLOW NORMAL USAGE OF WHEELCHAIRS, WALKERS, STROLLERS, OR OTHER MOBILITY DEVICES. CONCRETE, BITUMINOUS, STEEL, RUBBER, WOOD (3/4" OR THICKER), AND PLASTIC ARE ACCEPTABLE SURFACE MATERIALS FOR A TEMPORARY WALKWAY SURFACE. GRAVEL, MILLINGS, AND OTHER UNEVEN SURFACES ARE NOT ACCEPTABLE SURFACE MATERIALS.

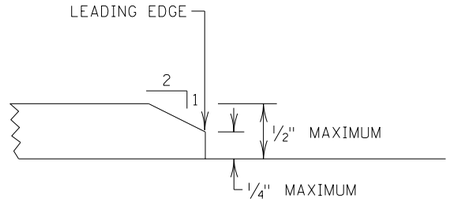
⑦ PROVIDE 32" HIGH OR GREATER LONGITUDINAL CHANNELIZING DEVICES FOR PEDESTRIANS.

⑧ AN EDGE OF THE FRAMING MAY BE REMOVED IF IT IS NOT NEEDED FOR PEDESTRIAN GUIDANCE. STABILITY OF THE DETECTABLE EDGE SHOULD BE MAINTAINED.

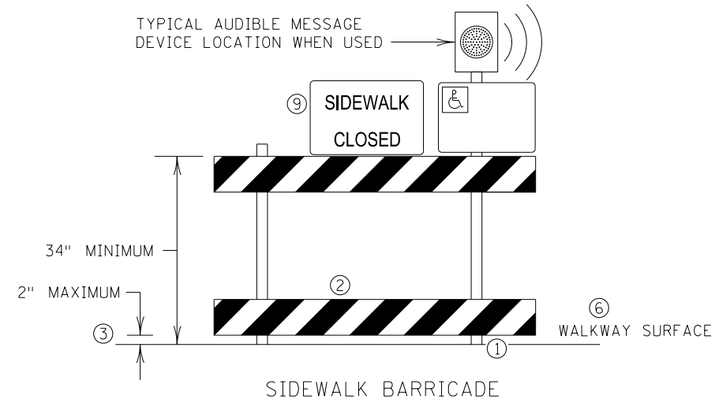
⑨ TYPICAL. SEE SIGNING PLAN FOR DETAILS.



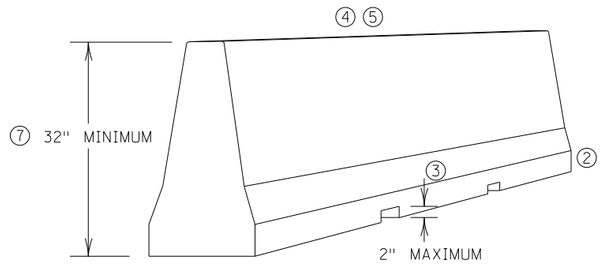
DETECTABLE EDGE FOR SIGN ON PORTABLE STAND



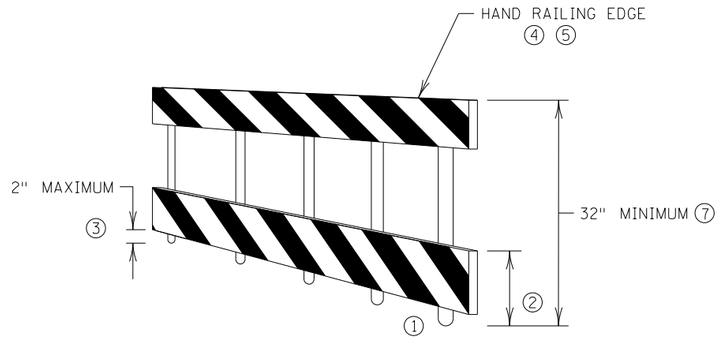
TRIP HAZARD



SIDEWALK BARRICADE



PEDESTRIAN CHANNELIZER DEVICE USING A PORTABLE CONCRETE BARRIER



PEDESTRIAN CHANNELIZER

TEMPORARY PEDESTRIAN ACCESS ROUTE (TPAR) DEVICES CHANNELIZERS, SIDEWALK BARRICADES, AND PORTABLE STANDS	APPROVED: 03-18-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.813	1 OF 2

ANOKA COUNTY HIGHWAY DEPT.	STANDARD PLANS COUNTY PROJECT SAP 002-716-024 CITY PROJECT SAP 198-020-040	CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS	Sheet 46 of 174 Sheets

LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING	

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\s813_1_spn_converted 11/26/2024 2:44:20 PM

NOTES:

CONSTRUCT SLOPES AS INDICATED OR FLATTER, BUT NOT STEEPER.

TPAR SHOULD BE KEPT FREE OF TRASH, SEDIMENT, AND DEBRIS.

① CONSTRUCT CURB RAMPS AT LEAST 48" WIDE WITH A FIRM, STABLE, AND SLIP-RESISTANT SURFACE.

② PLACE PROTECTIVE EDGING WITH A 2" MINIMUM HEIGHT WHEN A CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6" OR GREATER OR HAS A SIDE APRON SLOPE STEEPER THAN 1V:3H. CONSIDER PROTECTIVE EDGING WHEN CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3" OR MORE.

③ PLACE DETECTABLE EDGING WITH 6" MINIMUM HEIGHT AND CONTRASTING COLOR ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION.

④ CONSTRUCT CURB RAMPS AND LANDINGS WITH A 2% OR FLATTER CROSS SLOPE.

⑤ PROVIDE A CLEAR SPACE OF AT LEAST 48" X 48" ABOVE AND BELOW THE CURB RAMP.

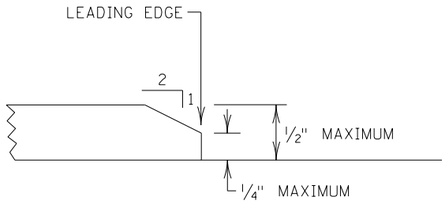
⑥ MARK THE CURB RAMP WALKWAY EDGE WITH A 2" TO 4" WIDE MARKING OF CONTRASTING COLOR. THE MARKING IS OPTIONAL WHERE COLOR-CONTRASTING EDGING IS USED.

⑦ DO NOT IMPEDE WATER FLOW IN THE GUTTER SYSTEM.

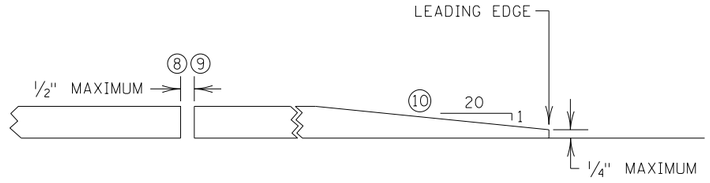
⑧ NO LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL EXCEED ½" WIDTH.

⑨ CHANGES BETWEEN SURFACE HEIGHTS SHALL NOT EXCEED ½". USE VERTICAL LATERAL EDGES UP TO ¼" HIGH, AND BEVELED AT 1V:2H FOR LATERAL EDGES BETWEEN ¼" AND ½" HEIGHT.

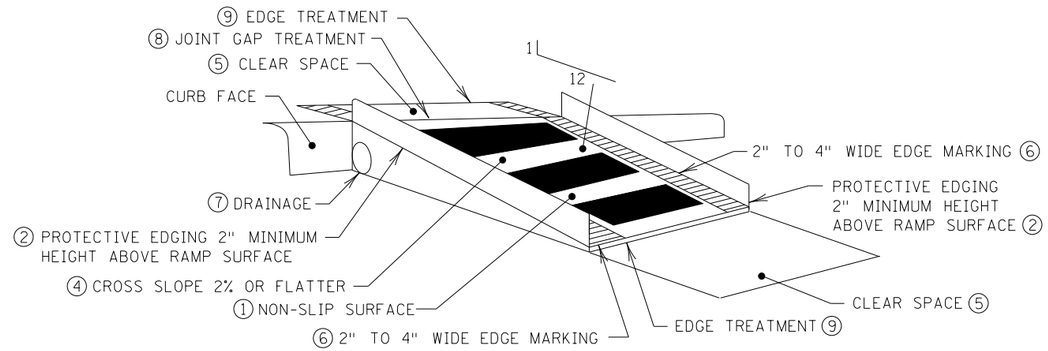
⑩ BEVEL THE EDGE OF TEMPORARY WALKWAY SURFACES ½" OR THINNER AT 1V:2H. FOR THICKER WALKWAY SURFACE BEVEL EDGE 1V:20H OR FLATTER.



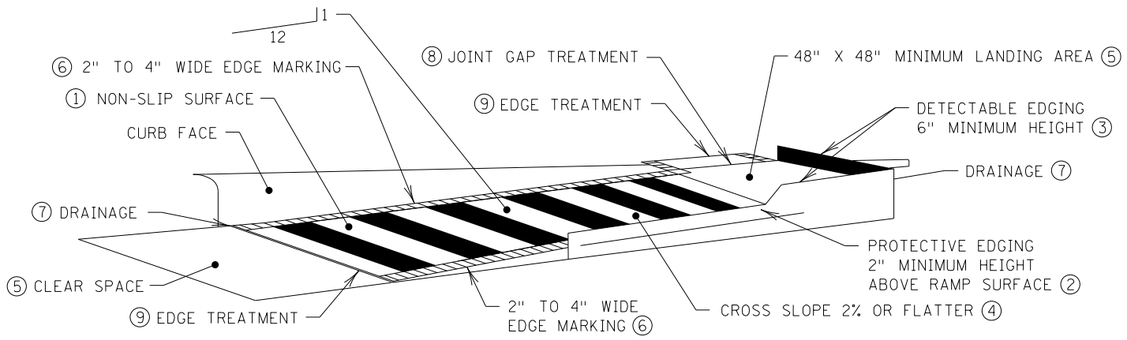
EDGE TREATMENT ⑨



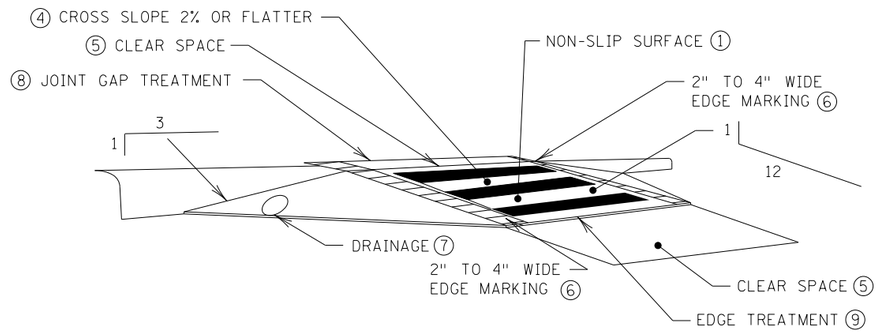
TEMPORARY WALKWAY SURFACE



TEMPORARY CURB RAMP PERPENDICULAR TO CURB
SHOWN WITH PROTECTIVE EDGE



TEMPORARY CURB RAMP
PARALLEL TO CURB



TEMPORARY CURB RAMP PERPENDICULAR TO CURB
SHOWN WITH SIDE APRON

TEMPORARY PEDESTRIAN ACCESS ROUTE (TPAR) DEVICES TEMPORARY CURB RAMPS AND WALKWAY SURFACES	APPROVED: 03-18-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.813	2 OF 2

ANOKA COUNTY HIGHWAY DEPT.	STANDARD PLANS COUNTY PROJECT SAP 002-716-024 CITY PROJECT SAP 198-020-040	CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS Sheet 47 of 174 Sheets

LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING	

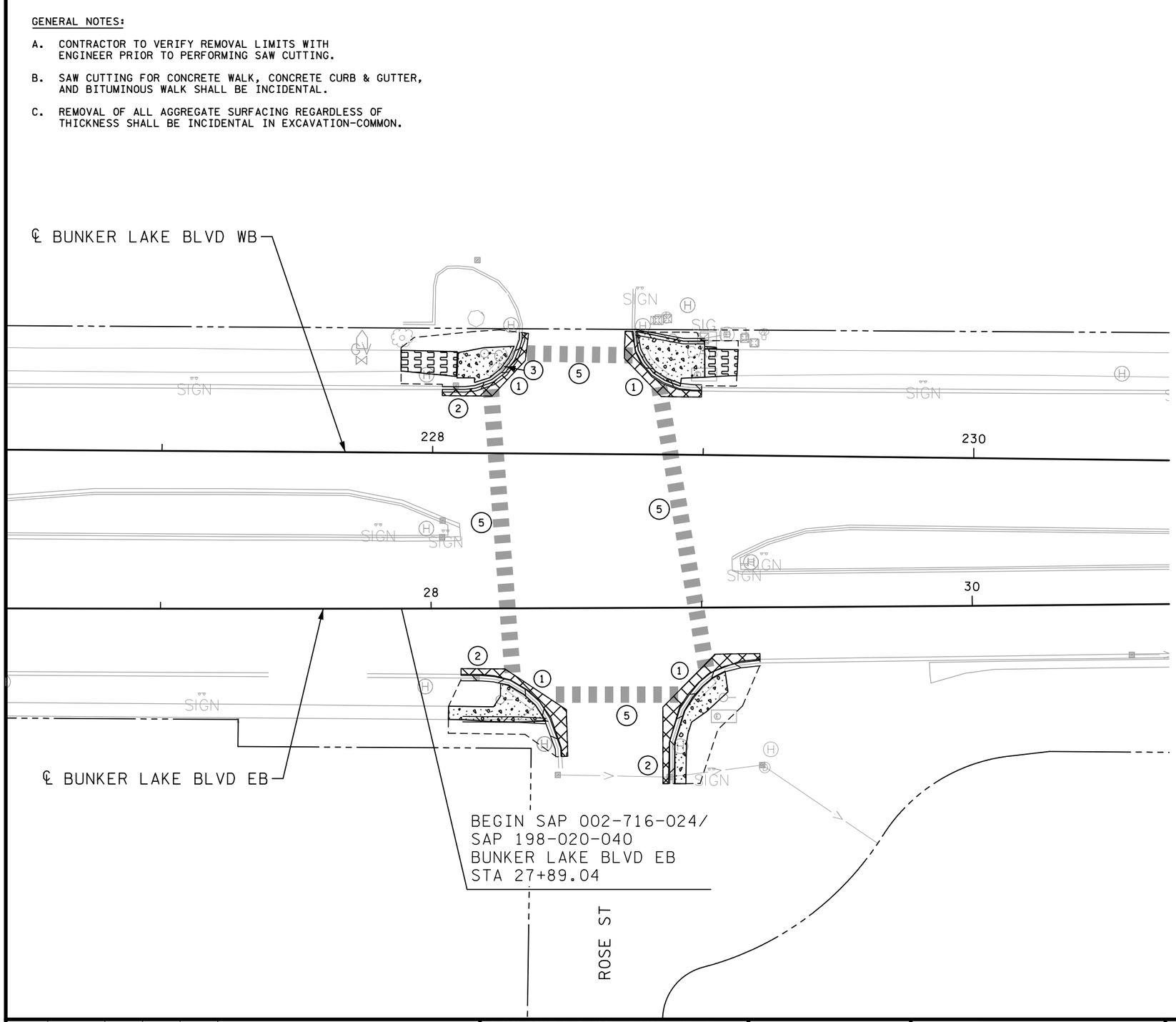
NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\s813_2_spn_converted 11/26/2024 2:44:32 PM

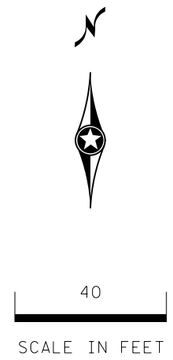
GENERAL NOTES:

A. CONTRACTOR TO VERIFY REMOVAL LIMITS WITH ENGINEER PRIOR TO PERFORMING SAW CUTTING.

B. SAW CUTTING FOR CONCRETE WALK, CONCRETE CURB & GUTTER, AND BITUMINOUS WALK SHALL BE INCIDENTAL.

C. REMOVAL OF ALL AGGREGATE SURFACING REGARDLESS OF THICKNESS SHALL BE INCIDENTAL IN EXCAVATION-COMMON.





LEGEND

- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE PAVEMENT
- REMOVE BITUMINOUS WALK
- REMOVE CONCRETE WALK
- REMOVE CURB AND GUTTER
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- TEMPORARY EASEMENT
- CONSTRUCTION LIMITS
- EXISTING DRAINAGE & UTILITY EASEMENT

1. SAWING BITUMINOUS PAVEMENT (FULL DEPTH)
2. ADJUST FRAME & RING CASTING
3. ADJUST VALVE BOX - WATER
4. SALVAGE SIGN
5. REMOVE EXISTING CROSSWALK PAVEMENT MARKINGS. PAID AS PAVEMENT MARKING REMOVAL.

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_rem01.dgn 11/26/2024 2:44:49 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: JACOB DINGMAN

SIGNATURE: Jdbe Dingman

DATE: 11/26/24 LICENSE NO. 61955

DRAWN BY BBF DATE 11/26/24

DESIGN BY EVJ DATE 11/26/24

CHECKED BY THG DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

REMOVAL PLANS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

GENERAL NOTES:

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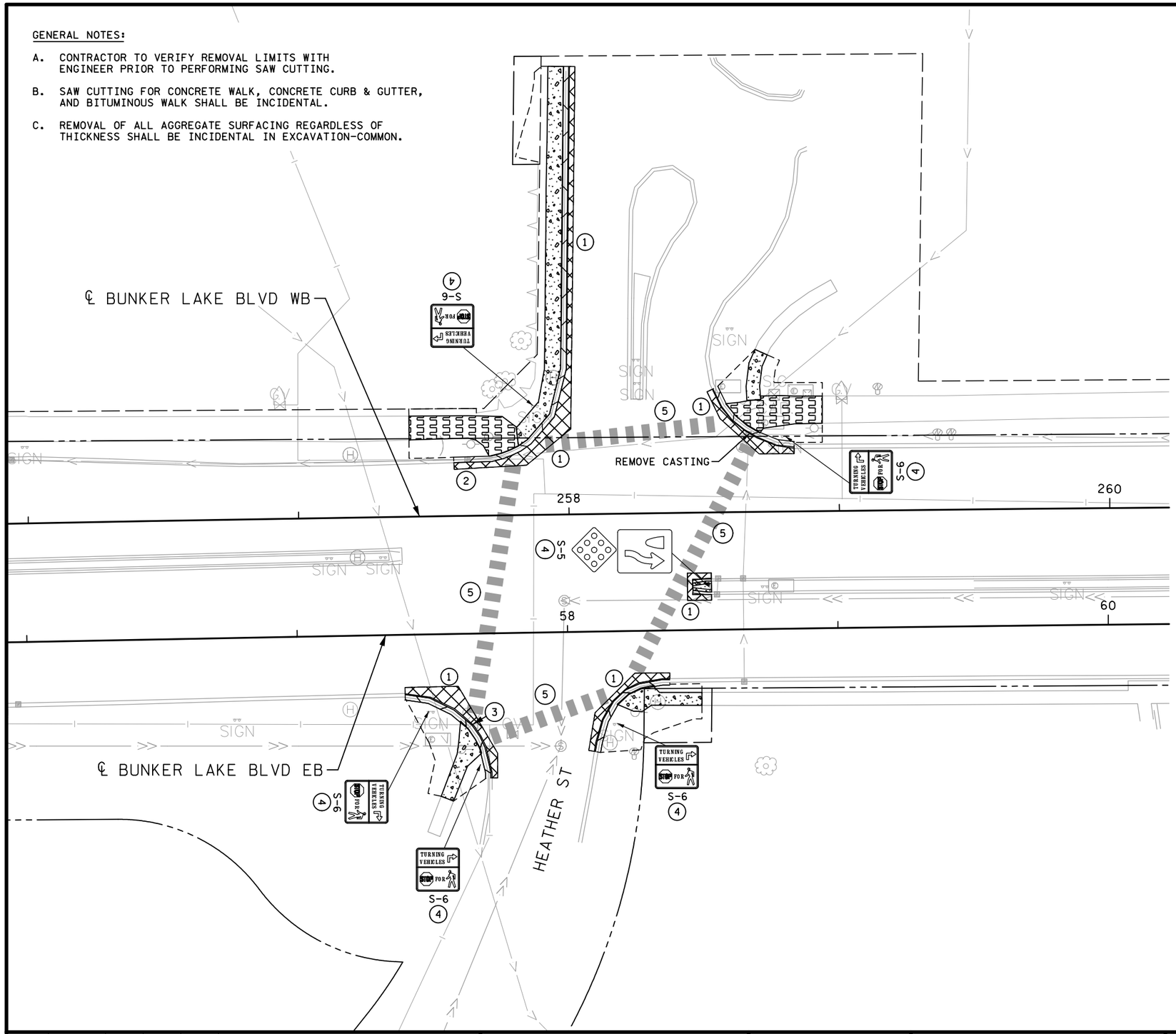

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SCALE IN FEET

LEGEND

- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE PAVEMENT
- REMOVE BITUMINOUS WALK
- REMOVE CONCRETE WALK
- REMOVE CURB AND GUTTER
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NO	DATE	BY	CKD	APPR	REVISION		
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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: JACOB DINGMAN

SIGNATURE: Jake Dingman

DATE: 11/26/24 LICENSE NO. 61955

DRAWN BY BBF DATE 11/26/24

DESIGN BY EVJ DATE 11/26/24

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ANOKA COUNTY HIGHWAY DEPT.

REMOVAL PLANS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 49 of 174 Sheets

GENERAL NOTES:

A. CONTRACTOR TO VERIFY REMOVAL LIMITS WITH ENGINEER PRIOR TO PERFORMING SAW CUTTING.

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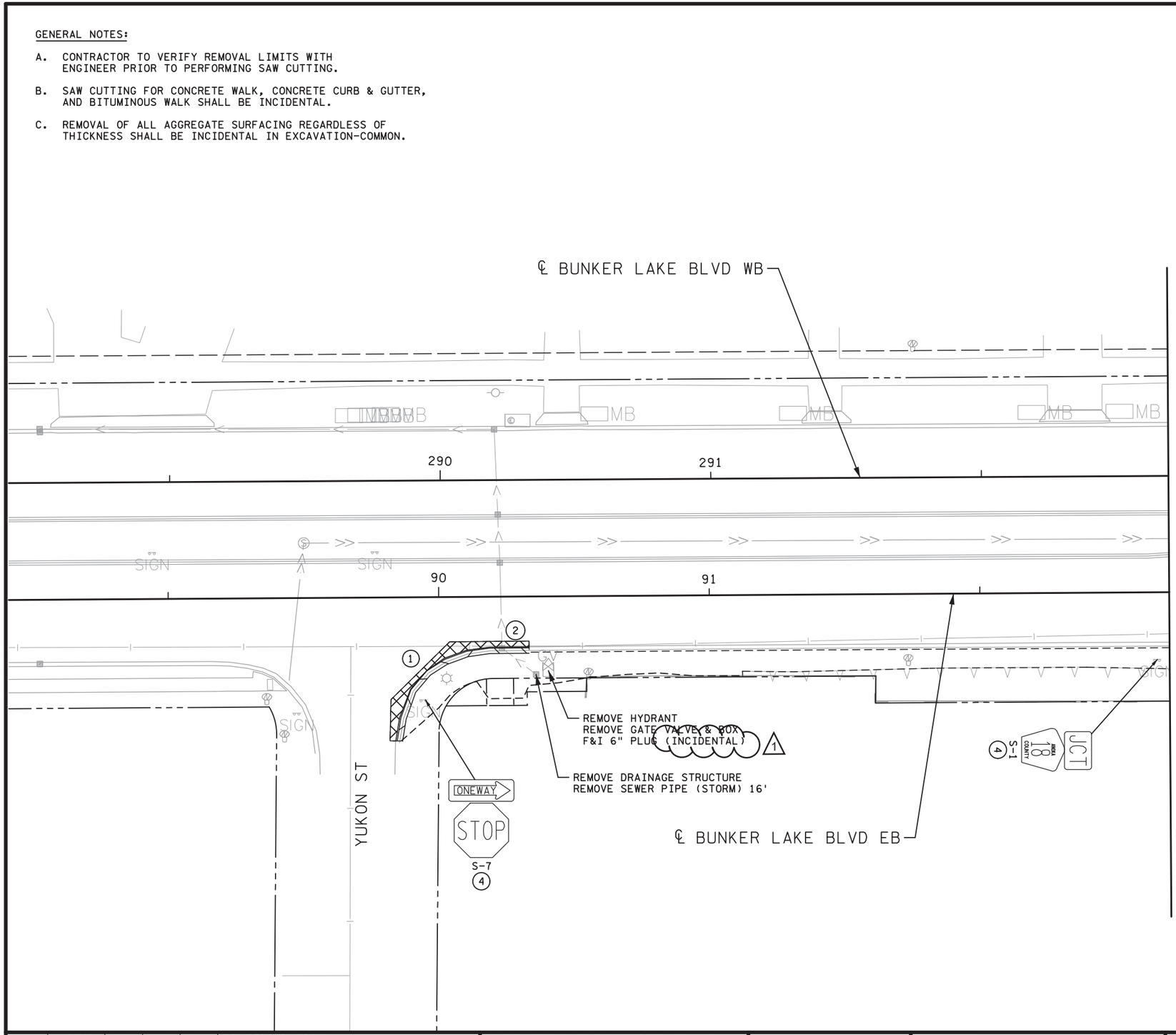

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SCALE IN FEET

LEGEND

- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE PAVEMENT
- REMOVE BITUMINOUS WALK
- REMOVE CONCRETE WALK
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NO	DATE	BY	CKD	APPR	REVISION		
1	1/10/2025	NHV	NHV	NHV	6" PLUG PAID AS INCIDENTAL		
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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: JACOB DINGMAN

SIGNATURE: Jake Dingman

DATE: 11/26/24 LICENSE NO. 61955

DRAWN BY BBF DATE 11/26/24

DESIGN BY EVJ DATE 01/10/25

CHECKED BY THG DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

REMOVAL PLANS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 50 of 174 Sheets

GENERAL NOTES:

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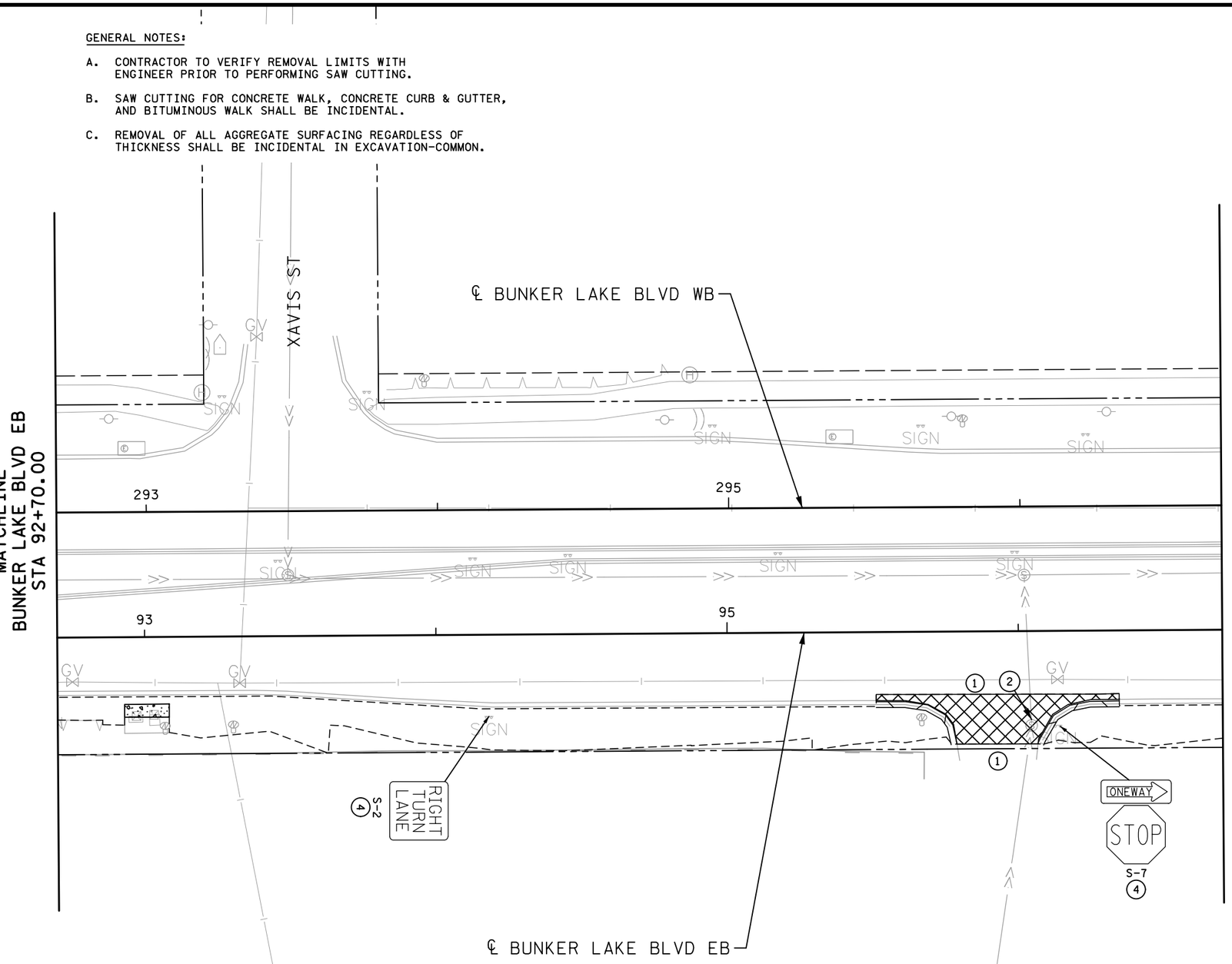

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SCALE IN FEET

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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.

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

REMOVAL PLANS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 51 of 174 Sheets

GENERAL NOTES:

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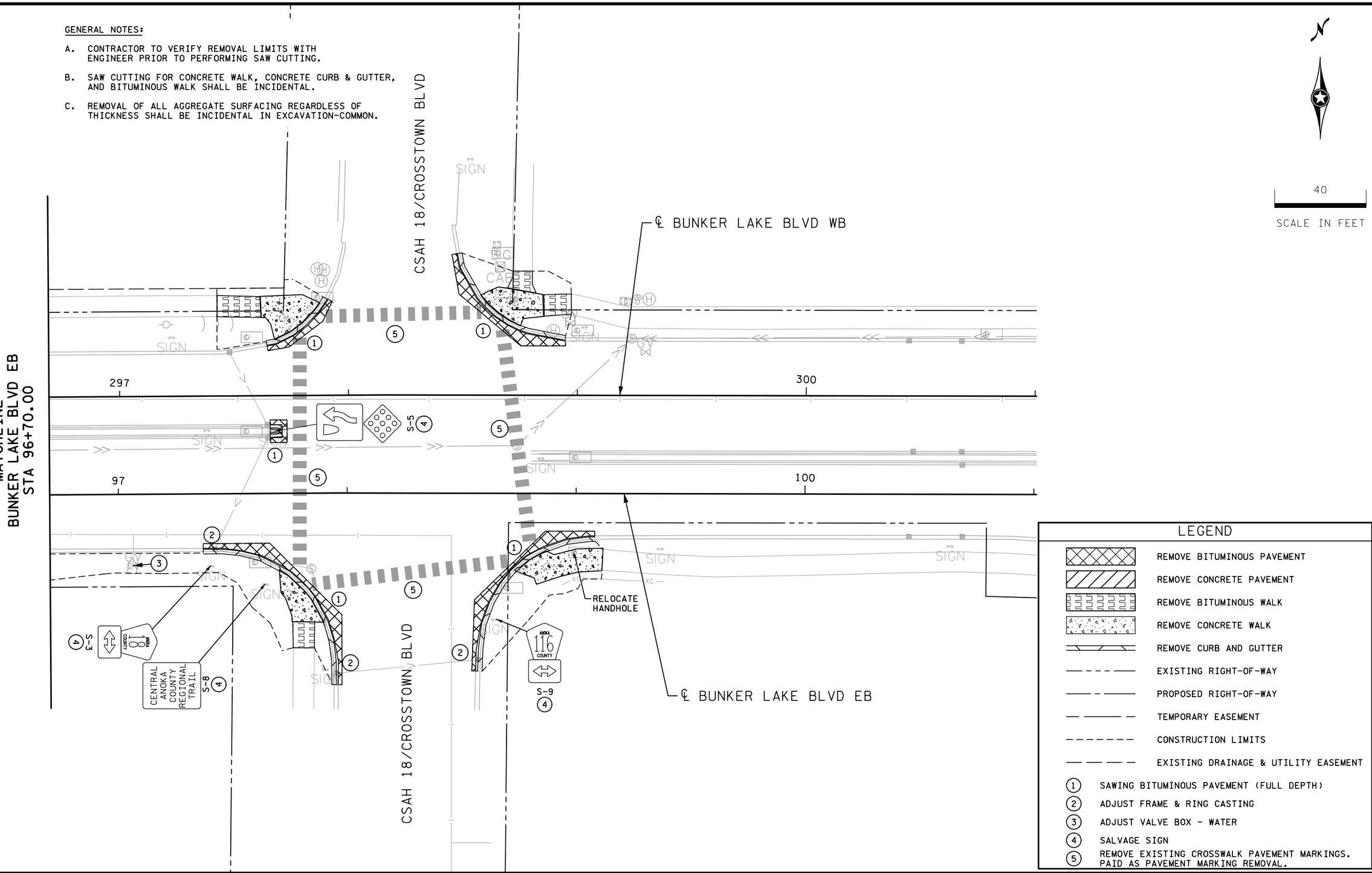

LEGEND

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- REMOVE CONCRETE PAVEMENT
- REMOVE BITUMINOUS WALK
- REMOVE CONCRETE WALK
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PRINT NAME: JACOB DINGMAN
SIGNATURE: Jake Dingman
DATE: 11/26/24 LICENSE NO. 61955

DRAWN BY BBF DATE 11/26/24
DESIGN BY EVJ DATE 11/26/24
CHECKED BY THG DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

REMOVAL PLANS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS

Sheet 52 of 174 Sheets

GENERAL NOTES:

A. CONTRACTOR TO VERIFY REMOVAL LIMITS WITH ENGINEER PRIOR TO PERFORMING SAW CUTTING.

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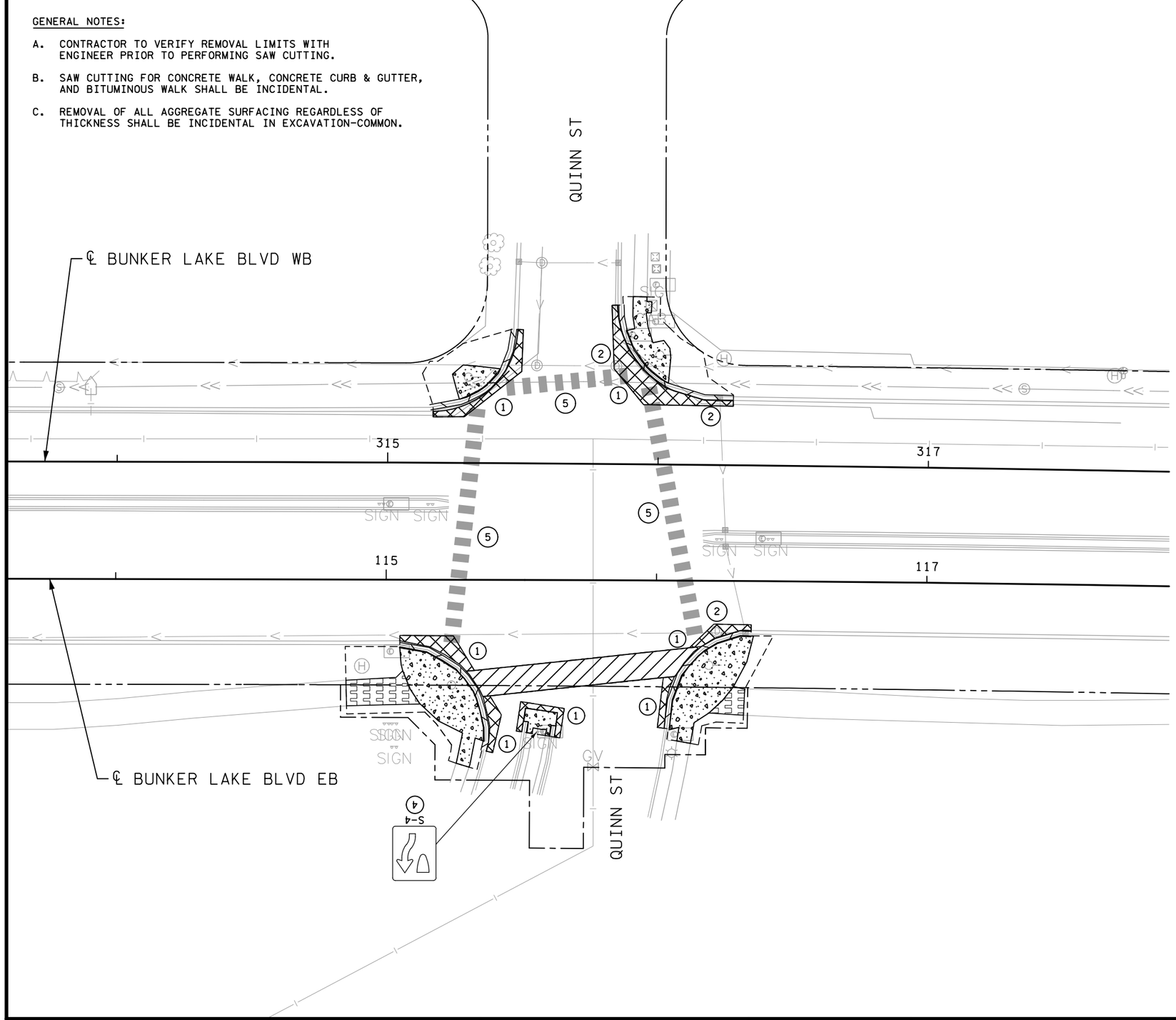

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SCALE IN FEET

LEGEND

- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE PAVEMENT
- REMOVE BITUMINOUS WALK
- REMOVE CONCRETE WALK
- REMOVE CURB AND GUTTER
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NO	DATE	BY	CKD	APPR	REVISION		
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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: JACOB DINGMAN

SIGNATURE: Jdbe Dingman

DATE: 11/26/24 LICENSE NO. 61955

DRAWN BY BBF DATE 11/26/24

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CHECKED BY THG DATE 11/26/24

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

REMOVAL PLANS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 53 of 174 Sheets

GENERAL NOTES:

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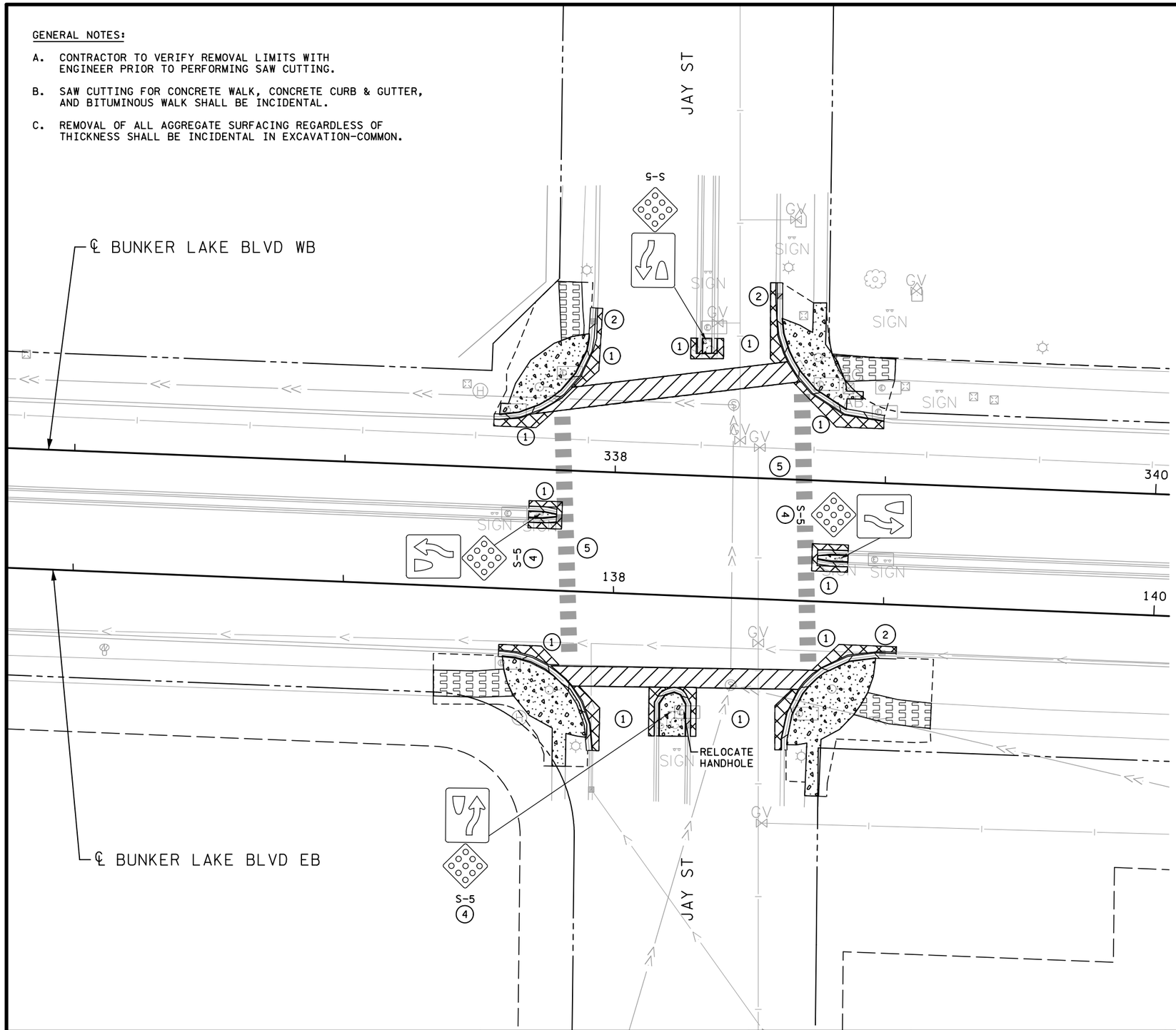

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SCALE IN FEET

LEGEND

- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE PAVEMENT
- REMOVE BITUMINOUS WALK
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NO	DATE	BY	CKD	APPR	REVISION		
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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: JACOB DINGMAN

SIGNATURE: Jake Dingman

DATE: 11/26/24 LICENSE NO. 61955

DRAWN BY BBF DATE 11/26/24

DESIGN BY EVJ DATE 11/26/24

CHECKED BY THG DATE 11/26/24

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

REMOVAL PLANS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 54 of 174 Sheets

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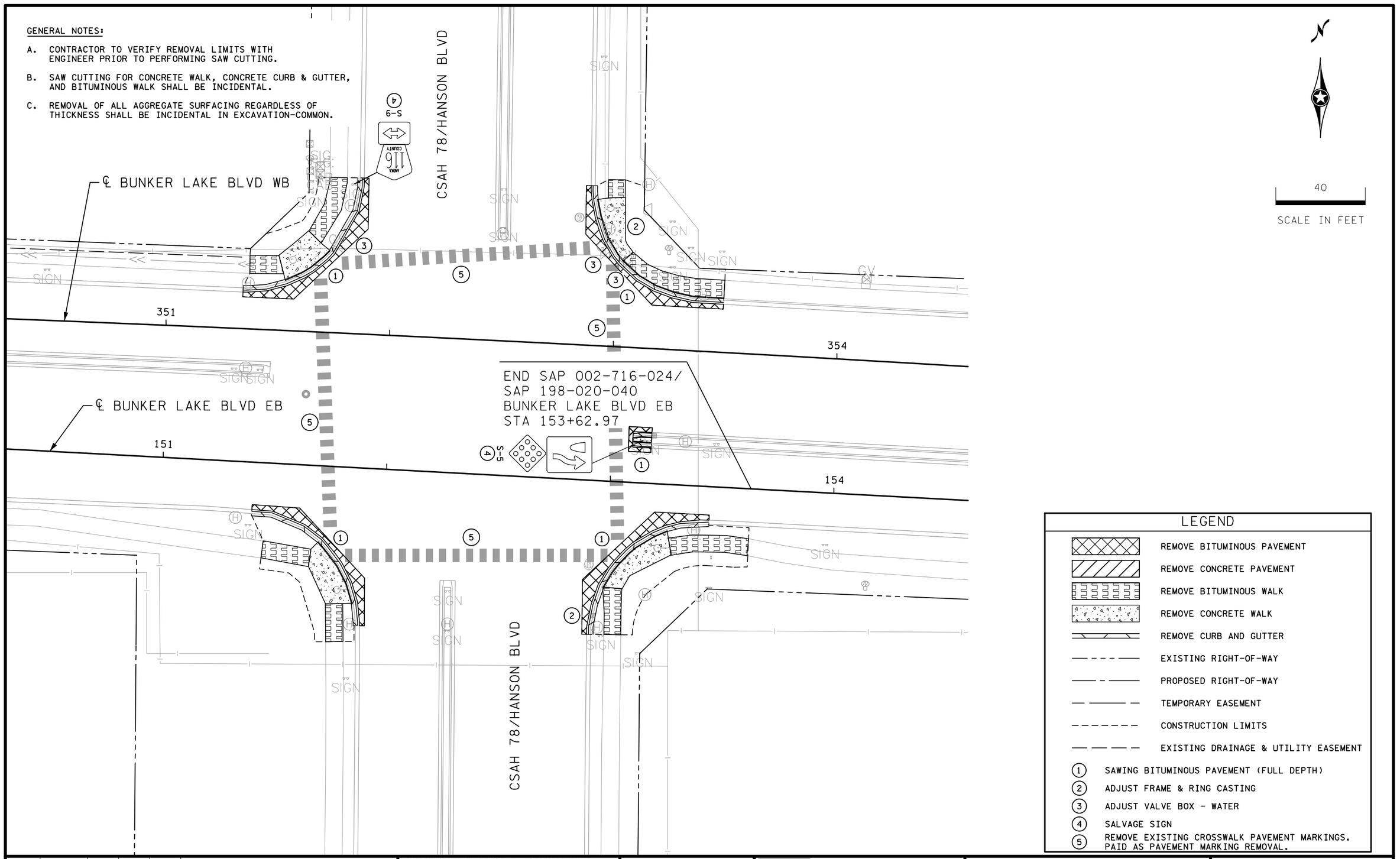

N

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SCALE IN FEET

LEGEND

- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE PAVEMENT
- REMOVE BITUMINOUS WALK
- REMOVE CONCRETE WALK
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NO	DATE	BY	CKD	APPR	REVISION		
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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.

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SIGNATURE: Jake Dingman

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

REMOVAL PLANS

COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 55 of 174 Sheets

GENERAL NOTES:

A. SEE INTERSECTION DETAILS FOR INFORMATION REGARDING PEDESTRIAN RAMPS, AND CURB & GUTTER TYPES.

B. UNLESS NOTED OTHERWISE, ALL DISTURBED AREA TO BE:
SOUTHERN BOULEVARD (160 LBS/ACRE)
FERTILIZER TYPE 3 (200 LBS/ACRE)
HYDRAULIC BONDED FIBER MATRIX (3500 LBS/ACRE)

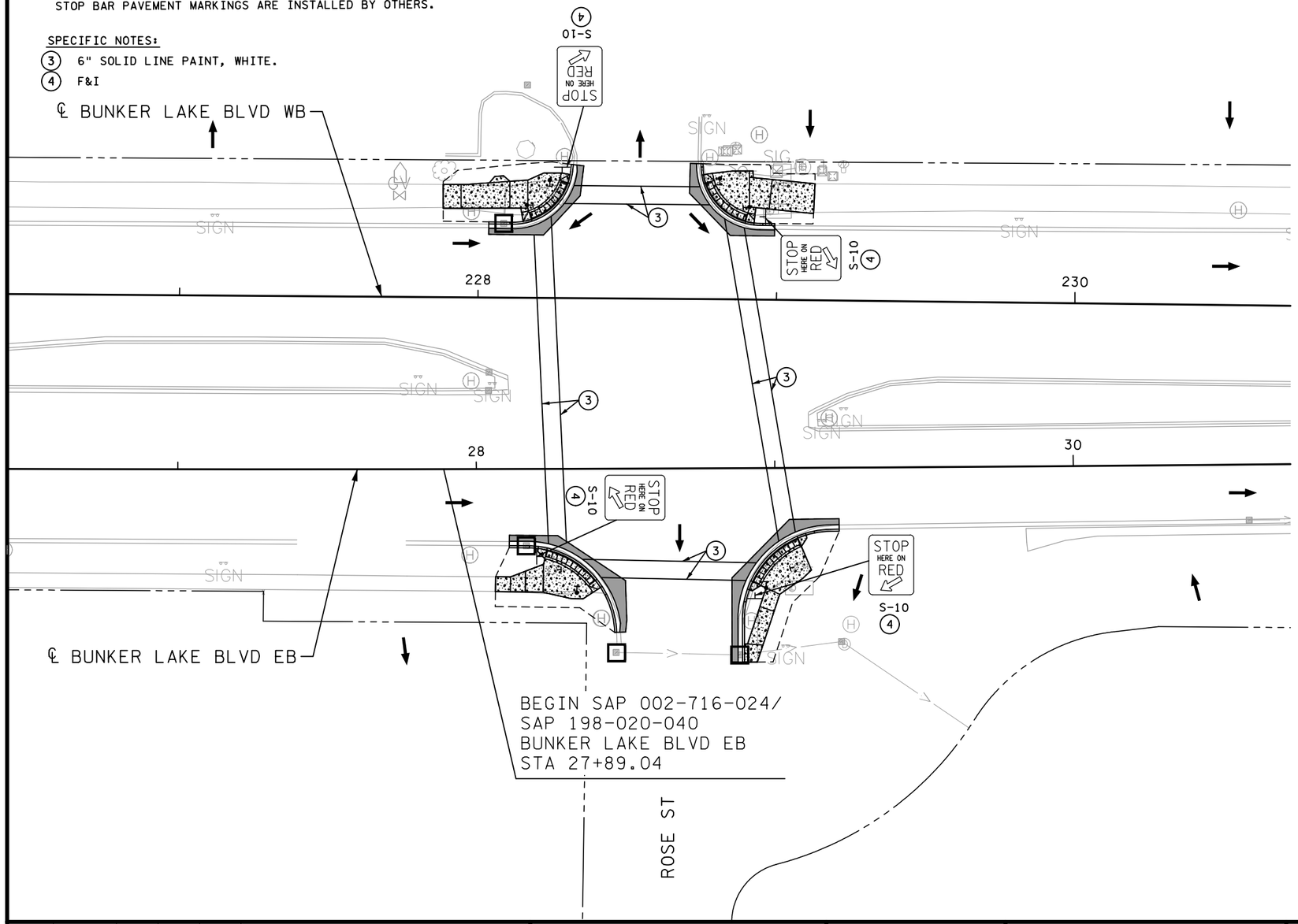
C. STATION CALLOUTS REFERENCE THE ADJACENT ALIGNMENT UNLESS NOTED OTHERWISE.

D. THE "STOP HERE ON RED" SIGNS TO BE FURNISHED BY THE CONTRACTOR ARE MEANT TO BE TEMPORARY. THESE SIGNS WILL BE REMOVED ONCE THE PERMANENT CROSSWALK AND STOP BAR PAVEMENT MARKINGS ARE INSTALLED BY OTHERS.

SPECIFIC NOTES:

(3) 6" SOLID LINE PAINT, WHITE.

(4) F&I



40

SCALE IN FEET

LEGEND

- BITUMINOUS PAVEMENT (SEE INSET A)
- 4" CONCRETE WALK
- CONCRETE CURB RAMP WALK (ADA)
- 8" CONCRETE DRIVEWAY PAVEMENT
- 4" BITUMINOUS TRAIL
- CONCRETE CURB & GUTTER
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- TEMPORARY EASEMENT
- EXISTING DRAINAGE & UTILITY EASEMENT
- CONSTRUCTION LIMITS
- BR — SEDIMENT CONTROL LOG TYPE COMPOST
- MS — SILT FENCE, TYPE MS
- STORM DRAIN INLET PROTECTION
- DRAINAGE FLOW DIRECTION

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_cp01.dgn 12/12/2024 1:24:45 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: JACOB DINGMAN

SIGNATURE: Jake Dingman

DATE: 11/26/24 LICENSE NO. 61955

DRAWN BY BBF DATE 11/26/24

DESIGN BY EVJ DATE 11/26/24

CHECKED BY THG DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

CONSTRUCTION PLANS
ROSE ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 56 of 174 Sheets

GENERAL NOTES:

A. SEE INTERSECTION DETAILS FOR INFORMATION REGARDING PEDESTRIAN RAMPS, AND CURB & GUTTER TYPES.

B. UNLESS NOTED OTHERWISE, ALL DISTURBED AREA TO BE:
SOUTHERN BOULEVARD (160 LBS/ACRE)
FERTILIZER TYPE 3 (200 LBS/ACRE)
HYDRAULIC BONDED FIBER MATRIX (3500 LBS/ACRE)

C. STATION CALLOUTS REFERENCE THE ADJACENT ALIGNMENT UNLESS NOTED OTHERWISE.

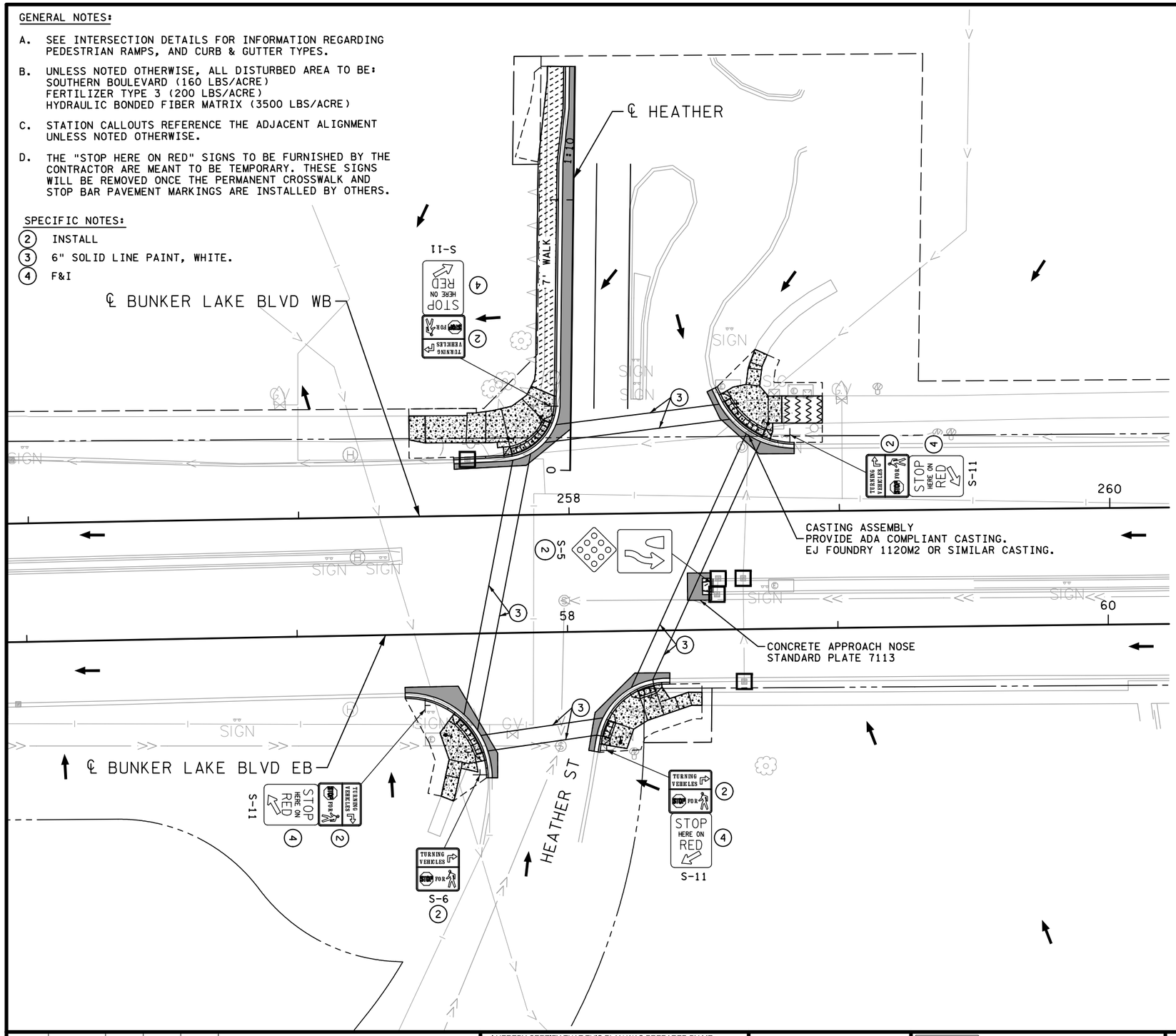
D. THE "STOP HERE ON RED" SIGNS TO BE FURNISHED BY THE CONTRACTOR ARE MEANT TO BE TEMPORARY. THESE SIGNS WILL BE REMOVED ONCE THE PERMANENT CROSSWALK AND STOP BAR PAVEMENT MARKINGS ARE INSTALLED BY OTHERS.

SPECIFIC NOTES:

(2) INSTALL

(3) 6" SOLID LINE PAINT, WHITE.

(4) F&I



LEGEND

- BITUMINOUS PAVEMENT (SEE INSET A)
- 4" CONCRETE WALK
- CONCRETE CURB RAMP WALK (ADA)
- 8" CONCRETE DRIVEWAY PAVEMENT
- 4" BITUMINOUS TRAIL
- CONCRETE CURB & GUTTER
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- TEMPORARY EASEMENT
- EXISTING DRAINAGE & UTILITY EASEMENT
- CONSTRUCTION LIMITS
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- STORM DRAIN INLET PROTECTION
- DRAINAGE FLOW DIRECTION

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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: JACOB DINGMAN

SIGNATURE: Jake Dingman

DATE: 11/26/24 LICENSE NO. 61955

DRAWN BY BBF DATE 11/26/24

DESIGN BY EVJ DATE 11/26/24

CHECKED BY THG DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

CONSTRUCTION PLANS
HEATHER ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 57 of 174 Sheets

GENERAL NOTES:

A. SEE INTERSECTION DETAILS FOR INFORMATION REGARDING PEDESTRIAN RAMPS, AND CURB & GUTTER TYPES.

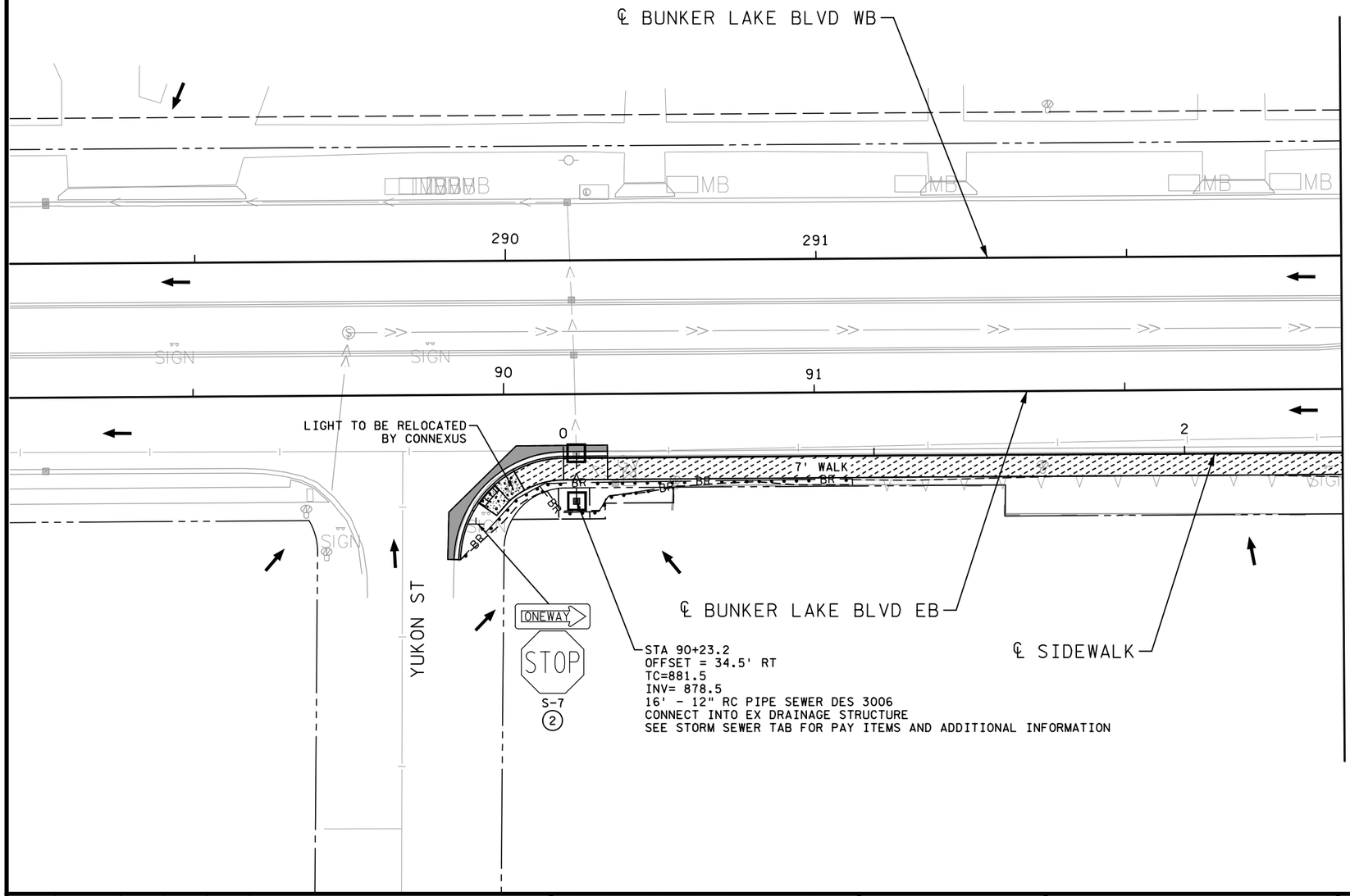
B. UNLESS NOTED OTHERWISE, ALL DISTURBED AREA TO BE:
SOUTHERN BOULEVARD (160 LBS/ACRE)
FERTILIZER TYPE 3 (200 LBS/ACRE)
HYDRAULIC BONDED FIBER MATRIX (3500 LBS/ACRE)

C. STATION CALLOUTS REFERENCE THE ADJACENT ALIGNMENT UNLESS NOTED OTHERWISE.

D. THE "STOP HERE ON RED" SIGNS TO BE FURNISHED BY THE CONTRACTOR ARE MEANT TO BE TEMPORARY. THESE SIGNS WILL BE REMOVED ONCE THE PERMANENT CROSSWALK AND STOP BAR PAVEMENT MARKINGS ARE INSTALLED BY OTHERS.

SPECIFIC NOTES:

(2) INSTALL



N

40

SCALE IN FEET

LEGEND

- BITUMINOUS PAVEMENT (SEE INSET A)
- 4" CONCRETE WALK
- CONCRETE CURB RAMP WALK (ADA)
- 8" CONCRETE DRIVEWAY PAVEMENT
- 4" BITUMINOUS TRAIL
- CONCRETE CURB & GUTTER
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- TEMPORARY EASEMENT
- EXISTING DRAINAGE & UTILITY EASEMENT
- CONSTRUCTION LIMITS
- BR — SEDIMENT CONTROL LOG TYPE COMPOST
- MS — SILT FENCE, TYPE MS
- STORM DRAIN INLET PROTECTION
- DRAINAGE FLOW DIRECTION

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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: JACOB DINGMAN

SIGNATURE: Jake Dingman

DATE: 11/26/24 LICENSE NO. 61955

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DESIGN BY EVJ DATE 11/26/24

CHECKED BY THG DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

CONSTRUCTION PLANS
YUKON ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

GENERAL NOTES:

A. SEE INTERSECTION DETAILS FOR INFORMATION REGARDING PEDESTRIAN RAMPS, AND CURB & GUTTER TYPES.

B. UNLESS NOTED OTHERWISE, ALL DISTURBED AREA TO BE:
SOUTHERN BOULEVARD (160 LBS/ACRE)
FERTILIZER TYPE 3 (200 LBS/ACRE)
HYDRAULIC BONDED FIBER MATRIX (3500 LBS/ACRE)

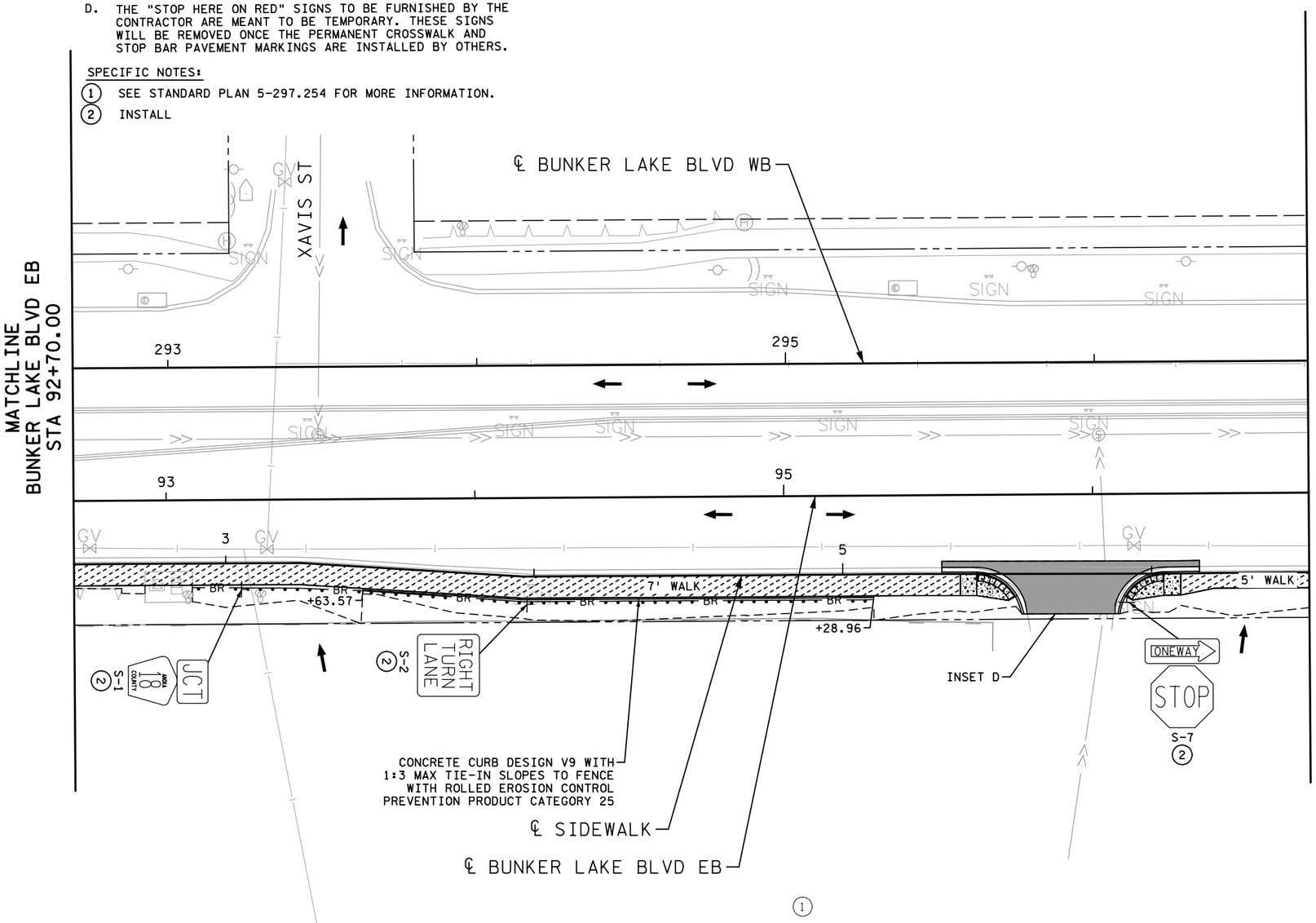
C. STATION CALLOUTS REFERENCE THE ADJACENT ALIGNMENT UNLESS NOTED OTHERWISE.

D. THE "STOP HERE ON RED" SIGNS TO BE FURNISHED BY THE CONTRACTOR ARE MEANT TO BE TEMPORARY. THESE SIGNS WILL BE REMOVED ONCE THE PERMANENT CROSSWALK AND STOP BAR PAVEMENT MARKINGS ARE INSTALLED BY OTHERS.

SPECIFIC NOTES:

(1) SEE STANDARD PLAN 5-297.254 FOR MORE INFORMATION.

(2) INSTALL



(1)

N

40

SCALE IN FEET

LEGEND

- BITUMINOUS PAVEMENT (SEE INSET A)
- 4" CONCRETE WALK
- CONCRETE CURB RAMP WALK (ADA)
- 8" CONCRETE DRIVEWAY PAVEMENT
- 4" BITUMINOUS TRAIL
- CONCRETE CURB & GUTTER
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- TEMPORARY EASEMENT
- EXISTING DRAINAGE & UTILITY EASEMENT
- CONSTRUCTION LIMITS
- BR SEDIMENT CONTROL LOG TYPE COMPOST
- MS SILT FENCE, TYPE MS
- STORM DRAIN INLET PROTECTION
- DRAINAGE FLOW DIRECTION

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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.

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DATE: 11/26/24 LICENSE NO. 61955

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DESIGN BY EVJ DATE 11/26/24

CHECKED BY THG DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

CONSTRUCTION PLANS
XAVIS ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 59 of 174 Sheets

GENERAL NOTES:

A. SEE INTERSECTION DETAILS FOR INFORMATION REGARDING PEDESTRIAN RAMPS, AND CURB & GUTTER TYPES.

B. UNLESS NOTED OTHERWISE, ALL DISTURBED AREA TO BE:
SOUTHERN BOULEVARD (160 LBS/ACRE)
FERTILIZER TYPE 3 (200 LBS/ACRE)
HYDRAULIC BONDED FIBER MATRIX (3500 LBS/ACRE)

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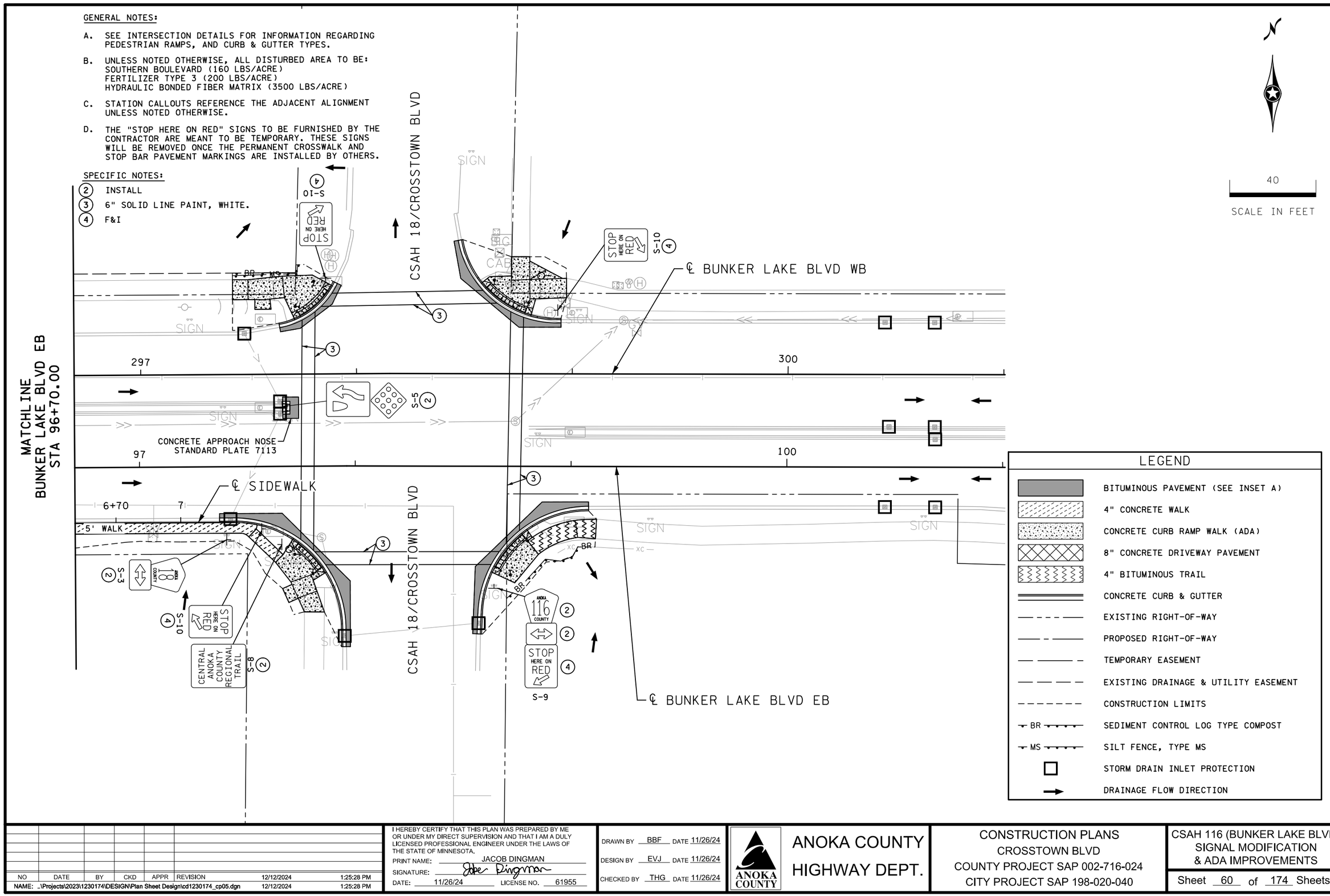
SPECIFIC NOTES:

(2) INSTALL

(3) 6" SOLID LINE PAINT, WHITE.

(4) F&I



N

40

SCALE IN FEET

LEGEND

- BITUMINOUS PAVEMENT (SEE INSET A)
- 4" CONCRETE WALK
- CONCRETE CURB RAMP WALK (ADA)
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- DRAINAGE FLOW DIRECTION

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SIGNATURE: Jake Dingman

DATE: 11/26/24 LICENSE NO. 61955

DRAWN BY BBF DATE 11/26/24

DESIGN BY EVJ DATE 11/26/24

CHECKED BY THG DATE 11/26/24

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

CONSTRUCTION PLANS
CROSSTOWN BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 60 of 174 Sheets

GENERAL NOTES:

A. SEE INTERSECTION DETAILS FOR INFORMATION REGARDING PEDESTRIAN RAMPS, AND CURB & GUTTER TYPES.

B. UNLESS NOTED OTHERWISE, ALL DISTURBED AREA TO BE:
SOUTHERN BOULEVARD (160 LBS/ACRE)
FERTILIZER TYPE 3 (200 LBS/ACRE)
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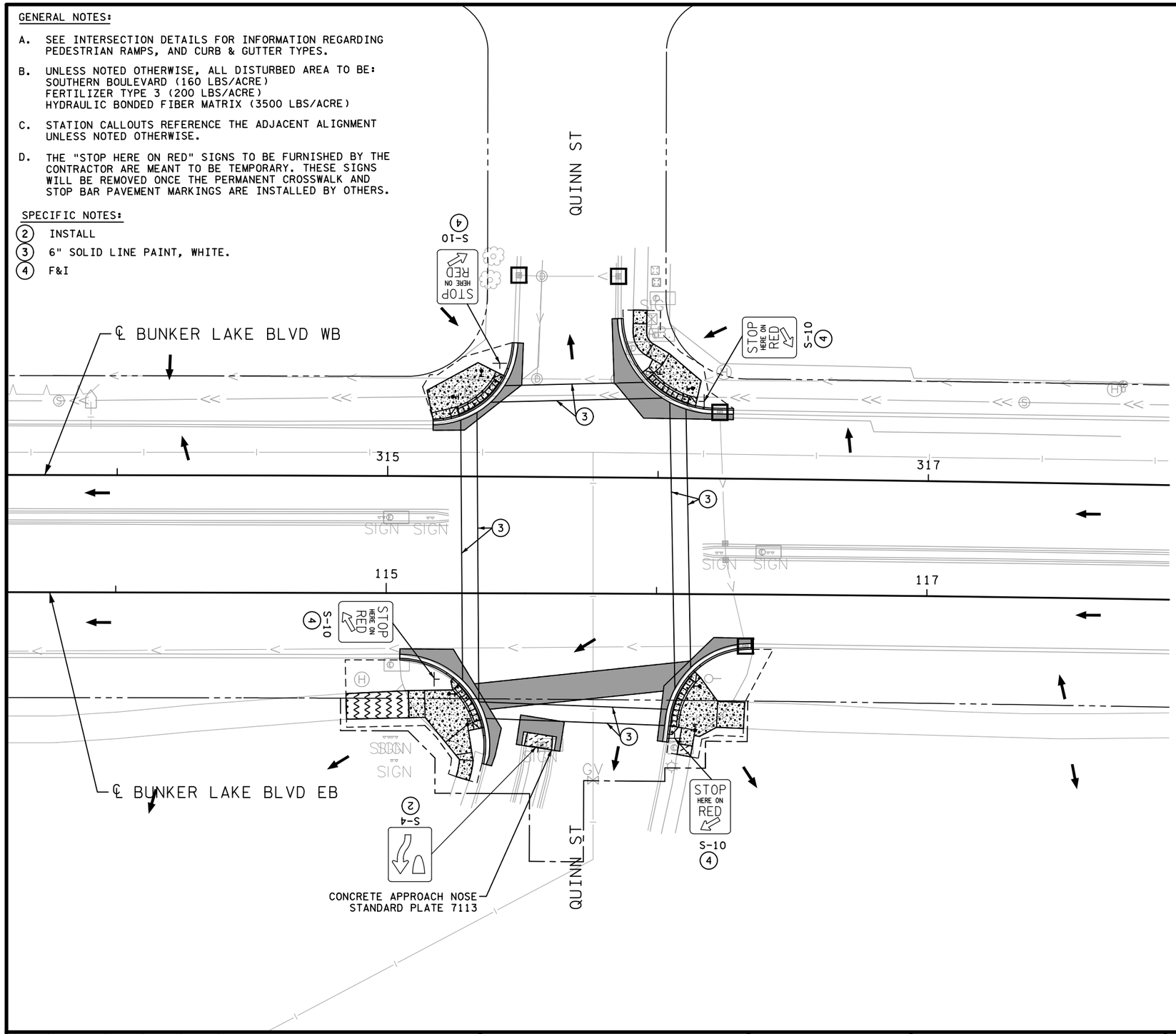
SPECIFIC NOTES:

(2) INSTALL
(3) 6" SOLID LINE PAINT, WHITE.
(4) F&I



N

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SCALE IN FEET

LEGEND

- BITUMINOUS PAVEMENT (SEE INSET A)
- 4" CONCRETE WALK
- CONCRETE CURB RAMP WALK (ADA)
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- DRAINAGE FLOW DIRECTION

NO	DATE	BY	CKD	APPR	REVISION		
NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_cp06.dgn						12/12/2024	1:25:37 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: JACOB DINGMAN
SIGNATURE: Jake Dingman
DATE: 11/26/24 LICENSE NO. 61955

DRAWN BY BBF DATE 11/26/24
DESIGN BY EVJ DATE 11/26/24
CHECKED BY THG DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

CONSTRUCTION PLANS
QUINN ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 61 of 174 Sheets

GENERAL NOTES:

A. SEE INTERSECTION DETAILS FOR INFORMATION REGARDING PEDESTRIAN RAMPS, AND CURB & GUTTER TYPES.

B. UNLESS NOTED OTHERWISE, ALL DISTURBED AREA TO BE:
SOUTHERN BOULEVARD (160 LBS/ACRE)
FERTILIZER TYPE 3 (200 LBS/ACRE)
HYDRAULIC BONDED FIBER MATRIX (3500 LBS/ACRE)

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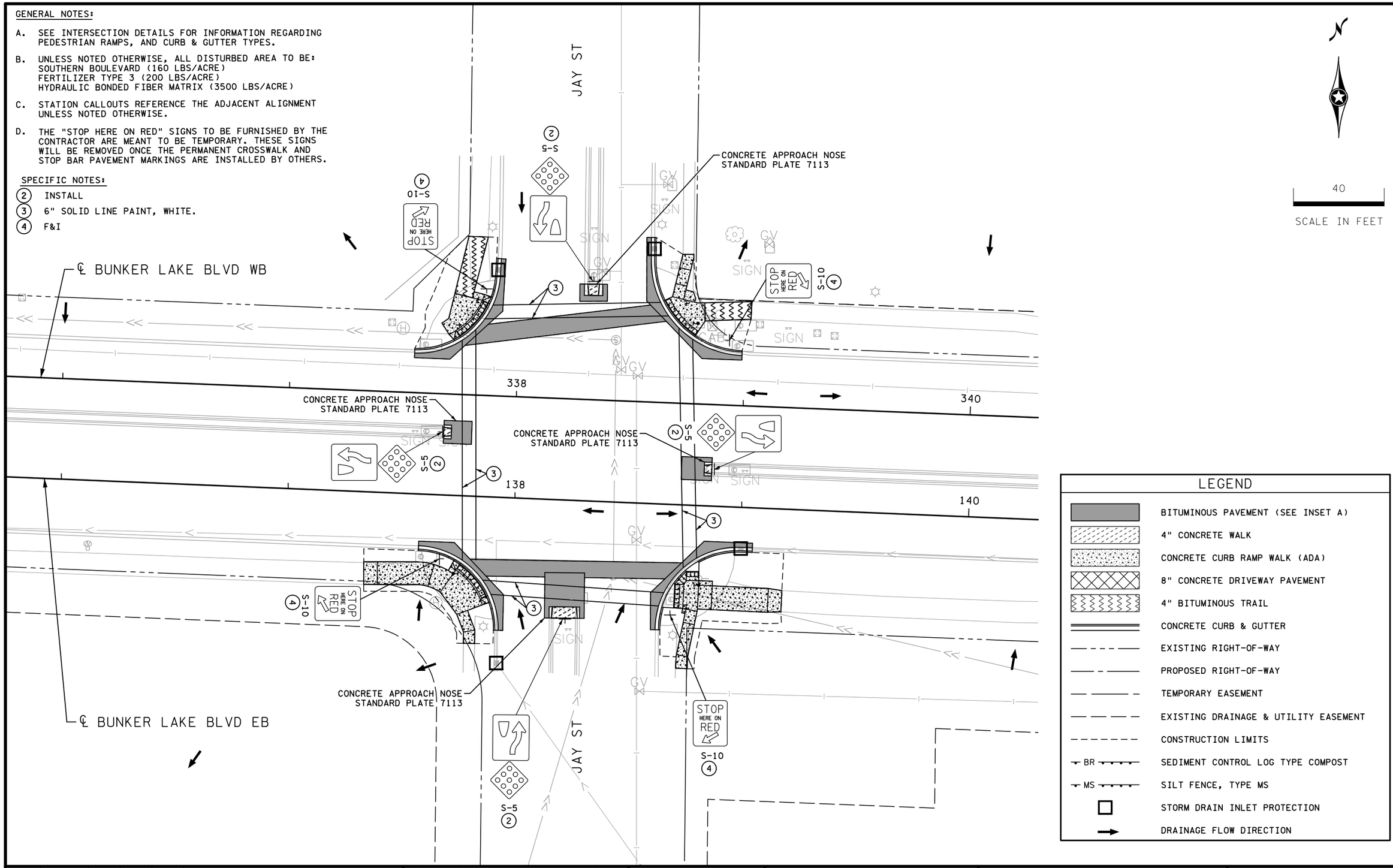
SPECIFIC NOTES:

(2) INSTALL

(3) 6" SOLID LINE PAINT, WHITE.

(4) F&I



N

40

SCALE IN FEET

LEGEND

- BITUMINOUS PAVEMENT (SEE INSET A)
- 4" CONCRETE WALK
- CONCRETE CURB RAMP WALK (ADA)
- 8" CONCRETE DRIVEWAY PAVEMENT
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- DRAINAGE FLOW DIRECTION

NO	DATE	BY	CKD	APPR	REVISION		
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SIGNATURE: Jake Dingman

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ANOKA COUNTY HIGHWAY DEPT.

CONSTRUCTION PLANS
JAY ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 62 of 174 Sheets

GENERAL NOTES:

A. SEE INTERSECTION DETAILS FOR INFORMATION REGARDING PEDESTRIAN RAMPS, AND CURB & GUTTER TYPES.

B. UNLESS NOTED OTHERWISE, ALL DISTURBED AREA TO BE:
SOUTHERN BOULEVARD (160 LBS/ACRE)
FERTILIZER TYPE 3 (200 LBS/ACRE)
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C. STATION CALLOUTS REFERENCE THE ADJACENT ALIGNMENT UNLESS NOTED OTHERWISE.

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SPECIFIC NOTES:

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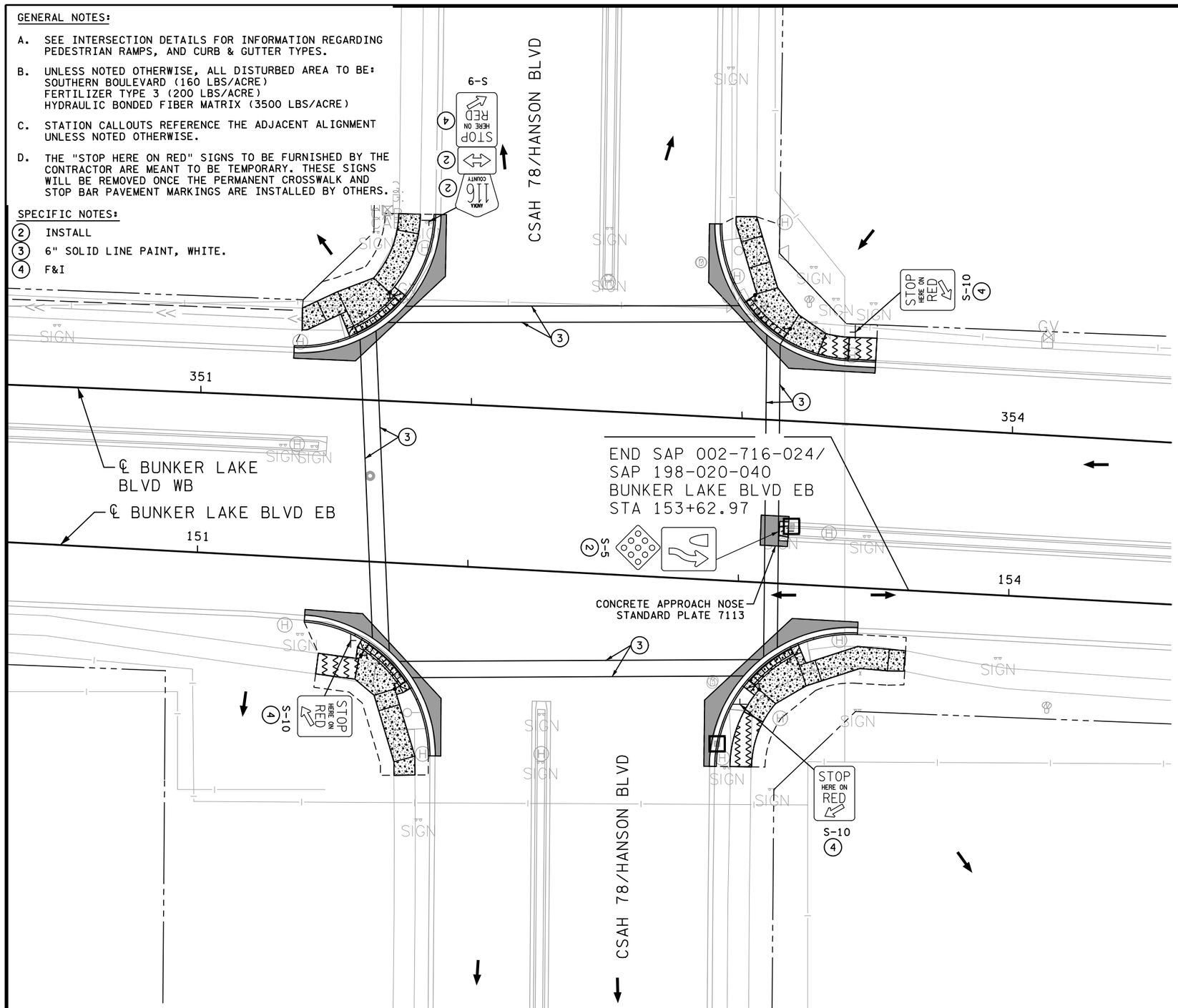
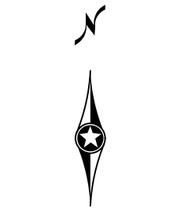
(4) F&I





LEGEND

- BITUMINOUS PAVEMENT (SEE INSET A)
- 4" CONCRETE WALK
- CONCRETE CURB RAMP WALK (ADA)
- 8" CONCRETE DRIVEWAY PAVEMENT
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- EXISTING DRAINAGE & UTILITY EASEMENT
- CONSTRUCTION LIMITS
- BR SEDIMENT CONTROL LOG TYPE COMPOST
- MS SILT FENCE, TYPE MS
- STORM DRAIN INLET PROTECTION
- DRAINAGE FLOW DIRECTION

NO	DATE	BY	CKD	APPR	REVISION		
NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_cp08.dgn						12/12/2024	1:25:56 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: JACOB DINGMAN

SIGNATURE: Jake Dingman

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DESIGN BY EVJ DATE 11/26/24

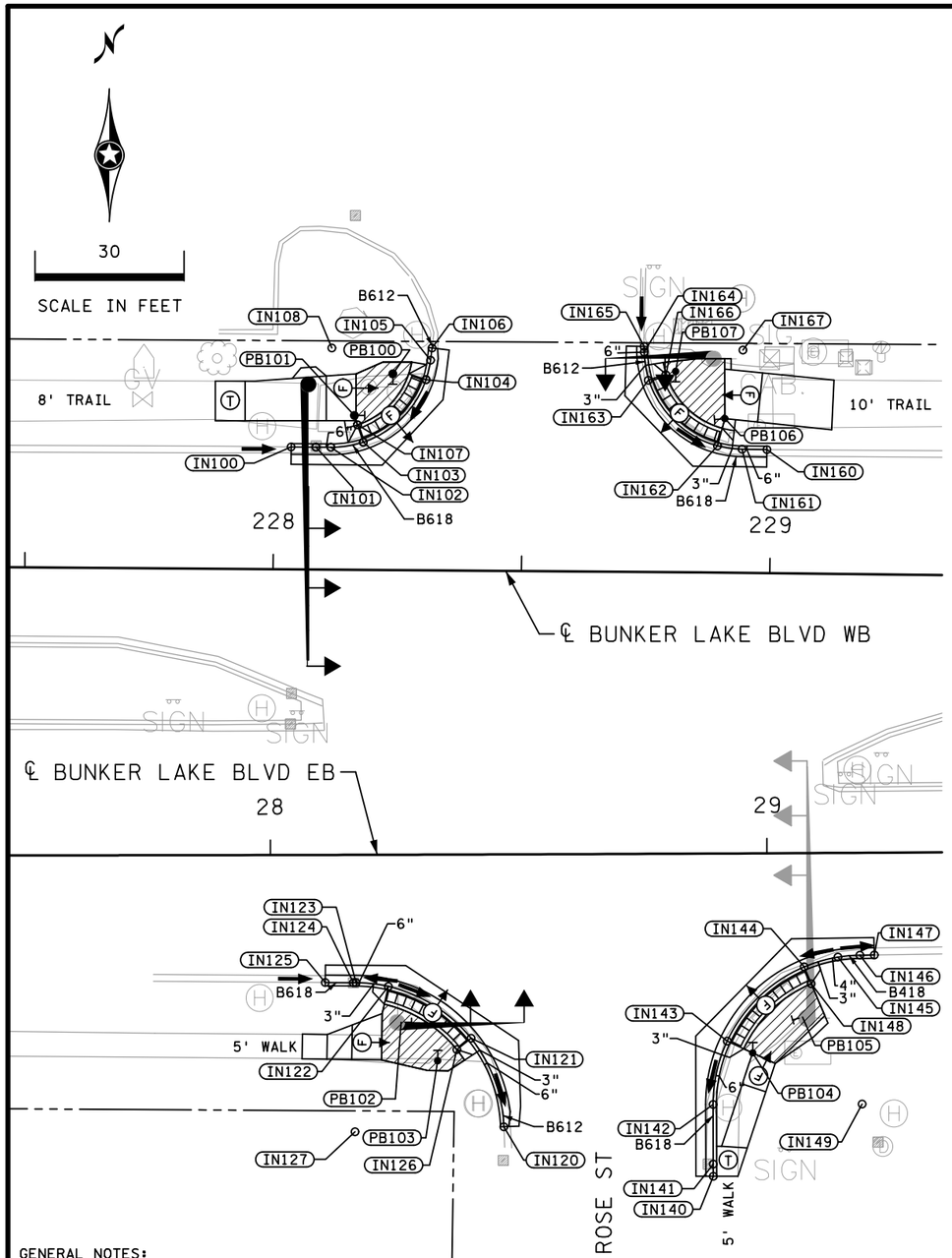
CHECKED BY THG DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

CONSTRUCTION PLANS
HANSON BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 63 of 174 Sheets



GENERAL NOTES:

A. MAINTAIN A MINIMUM 4' WIDE PEDESTRIAN ACCESS ROUTE OBSTRUCTION TO OBSTRUCTION AND/OR OBSTRUCTION TO EDGE OF WALK.

B. THE CROSS SLOPE OF THE PEDESTRIAN ACCESS ROUTE SHALL NOT EXCEED 0.02 FT/FT.

C. SEE MNDOT STANDARD PLAN 5-297.250 FOR PEDESTRIAN RAMP DETAILS.

BUNKER LAKE BLVD/ ROSE ST

CONTROL POINTS

POINT NO.	DESCRIPTION	X	Y	ELEVATION
NORTH WEST QUADRANT				
IN100	POT	477416.11	167249.59	876.24
IN101	POT - LOW POINT	477421.11	167249.54	876.14
IN102	PC	477424.11	167249.51	876.26
IN103	POC - 0" CURB HEIGHT	477430.62	167250.53	876.52
IN104	POC - 0" CURB HEIGHT	477443.26	167263.12	876.83
IN105	PT	477444.16	167267.06	876.88
IN106	POT	477444.46	167269.50	876.98
IN107	TOP OF RAMP	477429.46	167254.01	876.68
IN108	CC - R = 20'	477424.31	167269.51	-
SOUTH WEST QUADRANT				
IN120	POC	477458.95	167112.71	875.30
IN121	POC - 0" CURB HEIGHT	477452.33	167130.53	875.88
IN122	POC - 0" CURB HEIGHT	477435.69	167140.95	876.18
IN123	PT	477429.17	167141.71	876.09
IN124	POT - LOW POINT	477428.65	167141.72	876.08
IN125	POT	477422.97	167141.75	876.14
IN126	TOP OF RAMP	477449.47	167128.23	876.04
IN127	CC - R = 30'	477428.97	167111.71	-
SOUTH EAST QUADRANT				
IN140	POT	477501.12	167102.74	875.10
IN141	POT - LOW POINT	477501.11	167105.20	875.09
IN142	PC	477501.09	167117.21	875.37
IN143	POC - 0" CURB HEIGHT	477503.91	167129.97	875.63
IN144	POC - 0" CURB HEIGHT	477519.40	167144.90	875.90
IN145	POT - HIGH POINT	477526.19	167146.86	875.98
IN146	PT	477530.64	167147.26	875.93
IN147	POT	477533.52	167147.31	875.90
IN148	TOP OF RAMP	477520.83	167141.52	876.06
IN149	CC - R = 30'	477531.09	167117.27	-
NORTH EAST QUADRANT				
IN160	POT	477511.89	167249.05	875.97
IN161	PC	477506.89	167249.10	876.11
IN162	POC - 0" CURB HEIGHT	477501.95	167249.80	876.24
IN163	POC - 0" CURB HEIGHT	477488.13	167263.09	876.34
IN164	PT	477487.21	167268.67	876.42
IN165	POT	477487.19	167269.79	876.44
IN166	TOP OF RAMP	477491.63	167264.19	876.50
IN167	CC - R = 20'	477507.09	167269.10	-

SIGNAL CONTROL POINTS

POINT NO.	DESCRIPTION	X	Y	DISTANCE TO FRONT OF LANDING(FT)	DISTANCE TO BACK OF LANDING(FT)
BUNKER LAKE BLVD/ ROSE ST					
PB100	PUSH BUTTON	477436.58	167264.29	3.2	7.4
PB101	PUSH BUTTON	477428.84	167255.91	2.0	8.3
PB102	ON POLE	-	-	2.7	7.7
PB103	PUSH BUTTON	477445.61	167126.00	4.4	11.3
PB104	PUSH BUTTON	477509.05	167127.57	2.0	5.0
PB105	ON POLE	-	-	5.7	4.6
PB106	PUSH BUTTON	477503.43	167255.27	2.0	10.0
PB107	PUSH BUTTON	477493.54	167264.80	2.0	10.0

LEGEND

- (INXXX) — CONTROL POINT
- TRUNCATED DOMES (SEE STANDARD PLATE 7038)
- CONSTRUCT CONCRETE CURB & GUTTER
- X" — CURB HEIGHT
- LANDING AREA - 4' X 4' MIN. DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
- (S) — INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
- (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%
- DRAINAGE FLOW ARROW
- (T) — 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.
- RIGHT OF WAY
- INPLACE POLE AND PROPOSED MAST ARM
- PROPOSED FOUNDATION AND INPLACE SIGNAL POLE
- PROPOSED/INPLACE SIGNAL POLE
- PEDESTRIAN PUSH BUTTON STATION / PEDESTRIAN PUSH BUTTON
- PEDESTAL BASE
- EXISTING CATCH BASIN

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_in01.dgn 11/26/2024 2:48:53 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: JACOB DINGMAN

SIGNATURE: Jake Dingman

DATE: 11/26/24 LICENSE NO. 61955

DRAWN BY BBF DATE 11/26/24

DESIGN BY EVJ DATE 11/26/24

CHECKED BY THG DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

INTERSECTION DETAILS
ROSE ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

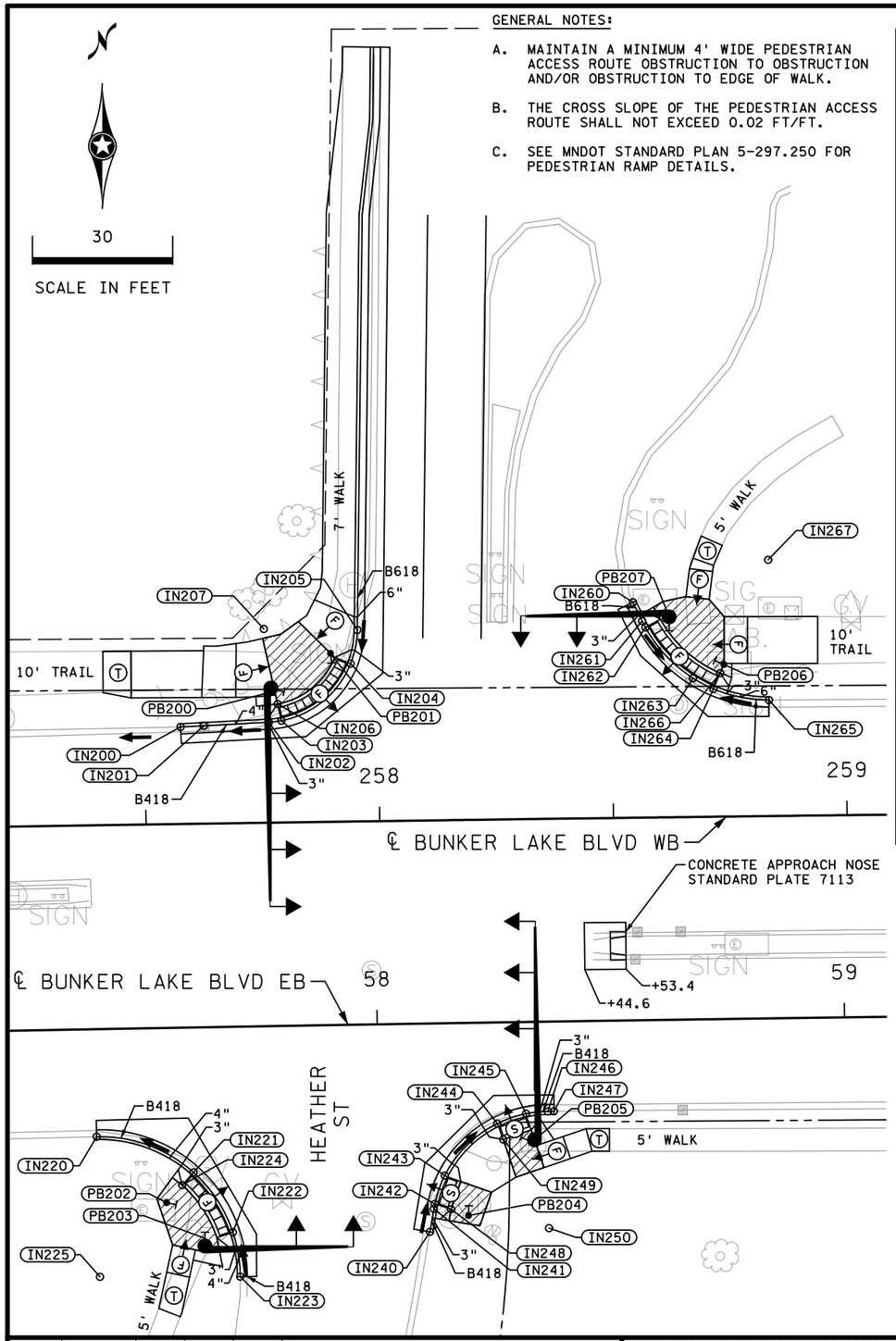
Sheet 64 of 174 Sheets

GENERAL NOTES:

A. MAINTAIN A MINIMUM 4' WIDE PEDESTRIAN ACCESS ROUTE OBSTRUCTION TO OBSTRUCTION AND/OR OBSTRUCTION TO EDGE OF WALK.

B. THE CROSS SLOPE OF THE PEDESTRIAN ACCESS ROUTE SHALL NOT EXCEED 0.02 FT/FT.

C. SEE MNDOT STANDARD PLAN 5-297.250 FOR PEDESTRIAN RAMP DETAILS.



BUNKER LAKE BLVD/ HEATHER ST

CONTROL POINTS

POINT NO.	DESCRIPTION	X	Y	ELEVATION
NORTH WEST QUADRANT				
IN200	POT	480369.68	167244.64	870.12
IN201	POT - LOW POINT	480374.69	167244.91	870.15
IN202	PC	480388.59	167245.65	870.46
IN203	POC - 0" CURB HEIGHT	480391.28	167245.98	870.51
IN204	POC - 0" CURB HEIGHT	480406.08	167258.17	870.66
IN205	PT	480407.52	167265.39	870.69
IN206	TOP OF RAMP	480390.46	167249.56	870.70
IN207	CC - R = 20'	480387.52	167265.62	-
SOUTH WEST QUADRANT				
IN220	POC	480351.74	167156.97	869.99
IN221	POC - 0" CURB HEIGHT	480372.48	167149.33	870.40
IN222	POC - 0" CURB HEIGHT	480380.90	167136.52	870.52
IN223	POC	480382.46	167127.04	870.69
IN224	TOP OF RAMP	480370.06	167146.63	870.56
IN225	CC - R = 30'	480352.46	167126.98	-
SOUTH EAST QUADRANT				
IN240	POT	480423.05	167136.62	871.29
IN241	PC	480423.88	167141.55	871.26
IN242	POC - 0" CURB HEIGHT	480424.07	167142.56	871.26
IN243	POC - 0" CURB HEIGHT	480426.22	167148.68	871.23
IN244	POC - 0" CURB HEIGHT	480437.46	167159.80	871.14
IN245	POC - 0" CURB HEIGHT	480443.59	167161.90	871.11
IN246	PT	480448.28	167162.39	871.08
IN247	POT	480449.59	167162.40	871.07
IN248	TOP OF RAMP	480427.56	167141.43	871.51
IN249	TOP OF RAMP	480438.72	167156.36	871.39
IN250	CC - R = 25'	480448.53	167137.39	-
NORTH EAST QUADRANT				
IN260	POT	480466.49	167271.32	871.87
IN261	PC	480468.43	167267.31	871.77
IN262	POC - 0" CURB HEIGHT	480469.14	167265.94	871.73
IN263	POC - LOW POINT	480479.35	167255.08	871.43
IN264	POC - 0" CURB HEIGHT	480483.72	167252.79	871.45
IN265	POC	480495.58	167250.41	871.48
IN266	TOP OF RAMP	480485.15	167256.17	871.64
IN267	CC - R = 30'	480495.42	167280.41	-

SIGNAL CONTROL POINTS

POINT NO.	DESCRIPTION	X	Y	DISTANCE TO FRONT OF LANDING(FT)	DISTANCE TO BACK OF LANDING(FT)
BUNKER LAKE BLVD/ HEATHER ST					
PB200	ON POLE	-	-	3.1	11.3
PB201	PUSH BUTTON	480401.78	167260.41	1.3	9.7
PB202	PUSH BUTTON	480366.70	167142.87	5.0	2.0
PB203	ON POLE	-	-	2.0	7.4
PB204	PUSH BUTTON	480431.33	167140.10	4.0	3.0
PB205	ON POLE	-	-	2.2	6.3
PB206	PUSH BUTTON	480485.93	167258.01	2.0	10.2
PB207	ON POLE	-	-	1.9	9.3

LEGEND

- (INXXX) — CONTROL POINT
- TRUNCATED DOMES (SEE STANDARD PLATE 7038)
- CONSTRUCT CONCRETE CURB & GUTTER
- X" — CURB HEIGHT
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- (S) — INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
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- DRAINAGE FLOW ARROW
- (T) — 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.
- RIGHT OF WAY
- INPLACE POLE AND PROPOSED MAST ARM
- PROPOSED FOUNDATION AND INPLACE SIGNAL POLE
- PROPOSED/INPLACE SIGNAL POLE
- PEDESTRIAN PUSH BUTTON STATION / PEDESTRIAN PUSH BUTTON
- PEDESTAL BASE
- EXISTING CATCH BASIN

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_in02.dgn 11/26/2024 2:49:07 PM

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PRINT NAME: JACOB DINGMAN

SIGNATURE: Jake Dingman

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DRAWN BY BBF DATE 11/26/24

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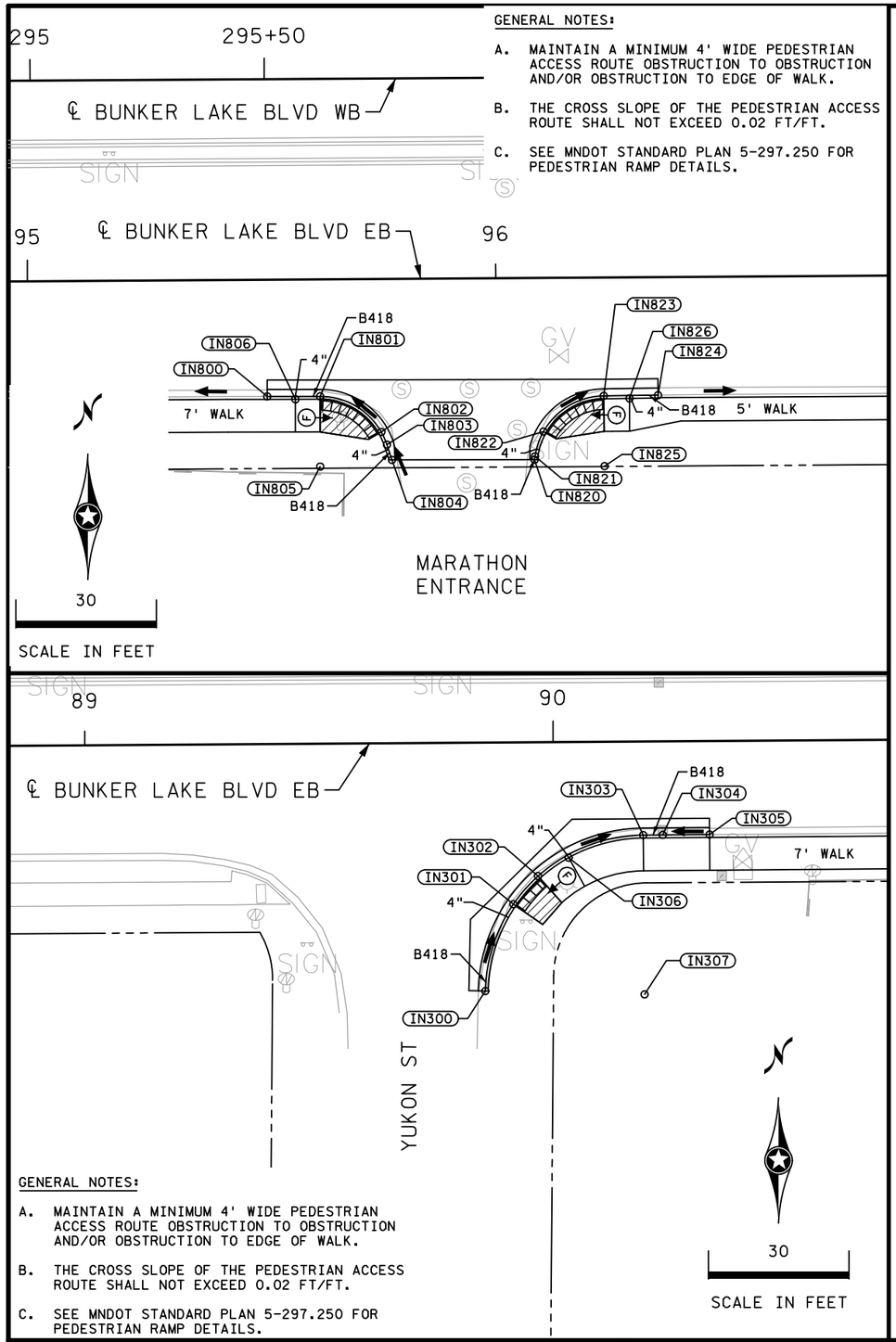
CHECKED BY THG DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

INTERSECTION DETAILS
HEATHER ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 65 of 174 Sheets



GENERAL NOTES:

A. MAINTAIN A MINIMUM 4' WIDE PEDESTRIAN ACCESS ROUTE OBSTRUCTION TO OBSTRUCTION AND/OR OBSTRUCTION TO EDGE OF WALK.

B. THE CROSS SLOPE OF THE PEDESTRIAN ACCESS ROUTE SHALL NOT EXCEED 0.02 FT/FT.

C. SEE MNDOT STANDARD PLAN 5-297.250 FOR PEDESTRIAN RAMP DETAILS.

GENERAL NOTES:

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BUNKER LAKE BLVD/ MARATHON DRIVEWAY

CONTROL POINTS

POINT NO.	DESCRIPTION	X	Y	ELEVATION
	SOUTH WEST QUADRANT			
IN800	POT	484162.87	167172.66	883.98
IN801	POC - 0" CURB HEIGHT - PC	484174.16	167172.67	884.06
IN802	POC - 0" CURB HEIGHT	484187.24	167165.07	884.29
IN803	PT	484188.44	167162.37	884.45
IN804	POT	484189.52	167159.09	884.63
IN805	CC - R = 15'	484174.19	167157.67	-
IN806	TOP OF RAMP	484168.88	167172.05	884.36
	SOUTH EAST QUADRANT			
IN820	POT	484219.96	167159.15	884.50
IN821	PC	484220.06	167159.87	884.45
IN822	POC - 0" CURB HEIGHT	484221.85	167165.16	884.02
IN823	POC - 0" CURB HEIGHT - PT	484234.73	167172.78	883.78
IN824	POT	484246.33	167172.93	883.67
IN825	CC - R = 15'	484234.91	167157.78	-
IN826	TOP OF RAMP	484240.24	167172.23	884.05

BUNKER LAKE BLVD/ YUKON ST

CONTROL POINTS

POINT NO.	DESCRIPTION	X	Y	ELEVATION
	SOUTH EAST QUADRANT			
IN300	POC	483597.23	167140.69	882.24
IN301	POC - 0" CURB HEIGHT	483603.19	167159.23	882.14
IN302	POC - 0" CURB HEIGHT	483608.45	167165.23	882.10
IN303	PT	483630.94	167173.98	881.97
IN304	POT - LOW POINT	483635.10	167174.02	881.95
IN305	POT	483645.10	167174.10	882.31
IN306	TOP OF RAMP	483615.03	167169.18	882.39
IN307	CC - R = 34'	483631.22	167139.99	-

LEGEND

- (INXXX) — CONTROL POINT
- TRUNCATED DOMES (SEE STANDARD PLATE 7038)
- CONSTRUCT CONCRETE CURB & GUTTER
- X" — CURB HEIGHT
- LANDING AREA - 4' X 4' MIN. DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
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- PROPOSED FOUNDATION AND INPLACE SIGNAL POLE
- PROPOSED/INPLACE SIGNAL POLE
- PEDESTRIAN PUSH BUTTON STATION / PEDESTRIAN PUSH BUTTON
- PEDESTAL BASE
- EXISTING CATCH BASIN

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_in03.dgn 11/26/2024 2:49:23 PM

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DESIGN BY EVJ DATE 11/26/24

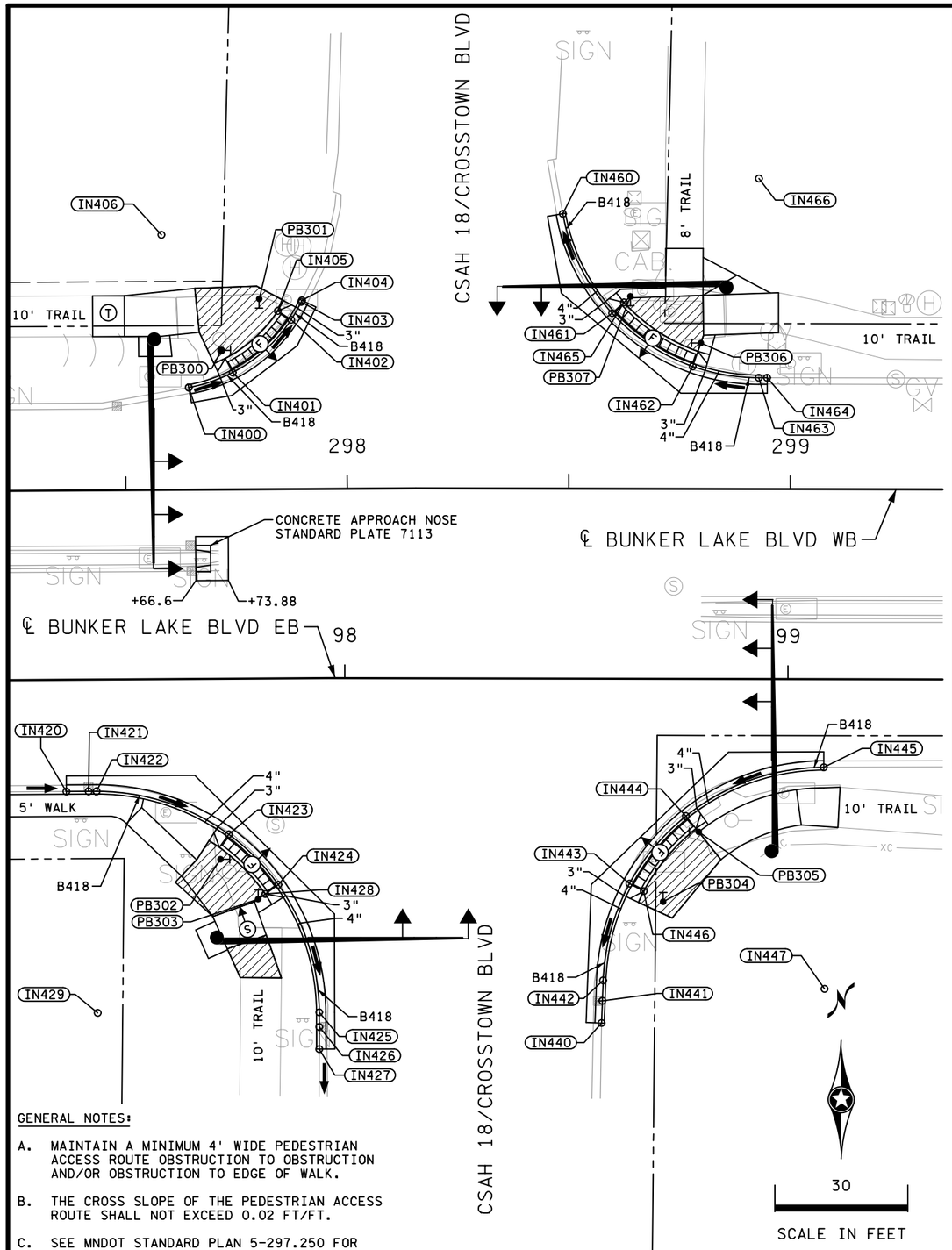
CHECKED BY THG DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

INTERSECTION DETAILS
YUKON ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 66 of 174 Sheets



GENERAL NOTES:

A. MAINTAIN A MINIMUM 4' WIDE PEDESTRIAN ACCESS ROUTE OBSTRUCTION TO OBSTRUCTION AND/OR OBSTRUCTION TO EDGE OF WALK.

B. THE CROSS SLOPE OF THE PEDESTRIAN ACCESS ROUTE SHALL NOT EXCEED 0.02 FT/FT.

C. SEE MNDOT STANDARD PLAN 5-297.250 FOR PEDESTRIAN RAMP DETAILS.

BUNKER LAKE BLVD/ CSAH 18/CROSSTOWN BLVD

CONTROL POINTS

POINT NO.	DESCRIPTION	X	Y	ELEVATION
NORTH WEST QUADRANT				
IN400	POC	484376.43	167264.83	882.92
IN401	POC - 0" CURB HEIGHT	484386.33	167268.19	882.80
IN402	POC - 0" CURB HEIGHT	484399.55	167280.12	882.60
IN403	PT	484401.82	167284.15	882.54
IN404	POT	484401.98	167284.49	882.54
IN405	TOP OF RAMP	484396.52	167282.10	882.76
IN406	CC - R = 35'	484370.26	167299.29	-
SOUTH WEST QUADRANT				
IN420	POT	484348.81	167173.61	883.26
IN421	POT	484353.81	167173.64	883.24
IN422	PC	484355.62	167173.65	883.20
IN423	POC - 0" CURB HEIGHT	484385.50	167163.93	882.92
IN424	POC - 0" CURB HEIGHT	484396.67	167152.57	882.84
IN425	PT	484405.88	167123.76	882.71
IN426	POT	484405.89	167120.47	882.60
IN427	POT	484405.90	167115.48	882.56
IN428	TOP OF RAMP	484393.72	167150.48	883.00
IN429	CC - R = 50'	484355.88	167123.65	-
SOUTH EAST QUADRANT				
IN440	POT	484469.62	167121.35	882.03
IN441	POT	484469.80	167126.37	882.07
IN442	PC	484469.97	167130.99	882.21
IN443	POC - 0" CURB HEIGHT	484475.93	167152.83	882.44
IN444	POC - 0" CURB HEIGHT	484488.65	167168.08	882.64
IN445	POC	484519.76	167179.07	882.83
IN446	TOP OF RAMP	484479.11	167151.11	882.60
IN447	CC - R = 50'	484519.93	167129.07	-
NORTH EAST QUADRANT				
IN460	POC	484460.86	167304.06	882.01
IN461	POC - 0" CURB HEIGHT	484471.99	167281.59	882.24
IN462	POC - 0" CURB HEIGHT	484490.16	167269.58	882.44
IN463	PT	484505.10	167267.01	882.57
IN464	POT	484507.02	167267.01	882.59
IN465	TOP OF RAMP	484474.65	167284.04	882.40
IN466	CC - R = 45'	484505.15	167312.01	-

SIGNAL CONTROL POINTS

POINT NO.	DESCRIPTION	X	Y	DISTANCE TO FRONT OF LANDING(FT)	DISTANCE TO BACK OF LANDING(FT)
BUNKER LAKE BLVD/ CSAH 18/CROSSTOWN BLVD					
PB300	PUSH BUTTON	484383.75	167273.18	2.0	15.2
PB301	PUSH BUTTON	484392.34	167284.84	5.0	5.0
PB302	PUSH BUTTON	484383.60	167158.31	2.0	10.8
PB303	PUSH BUTTON	484392.09	167149.32	2.0	10.9
PB304	PUSH BUTTON	484483.51	167148.73	5.0	4.0
PB305	PUSH BUTTON	484491.54	167164.48	1.0	8.0
PB306	PUSH BUTTON	484492.03	167274.87	2.0	10.7
PB307	PUSH BUTTON	484476.13	167285.40	2.0	16.4

LEGEND

- (INXXX) — CONTROL POINT
- TRUNCATED DOMES (SEE STANDARD PLATE 7038)
- CONSTRUCT CONCRETE CURB & GUTTER
- X" — CURB HEIGHT
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- PEDESTAL BASE — EXISTING CATCH BASIN

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_in04.dgn 11/26/2024 2:49:38 PM

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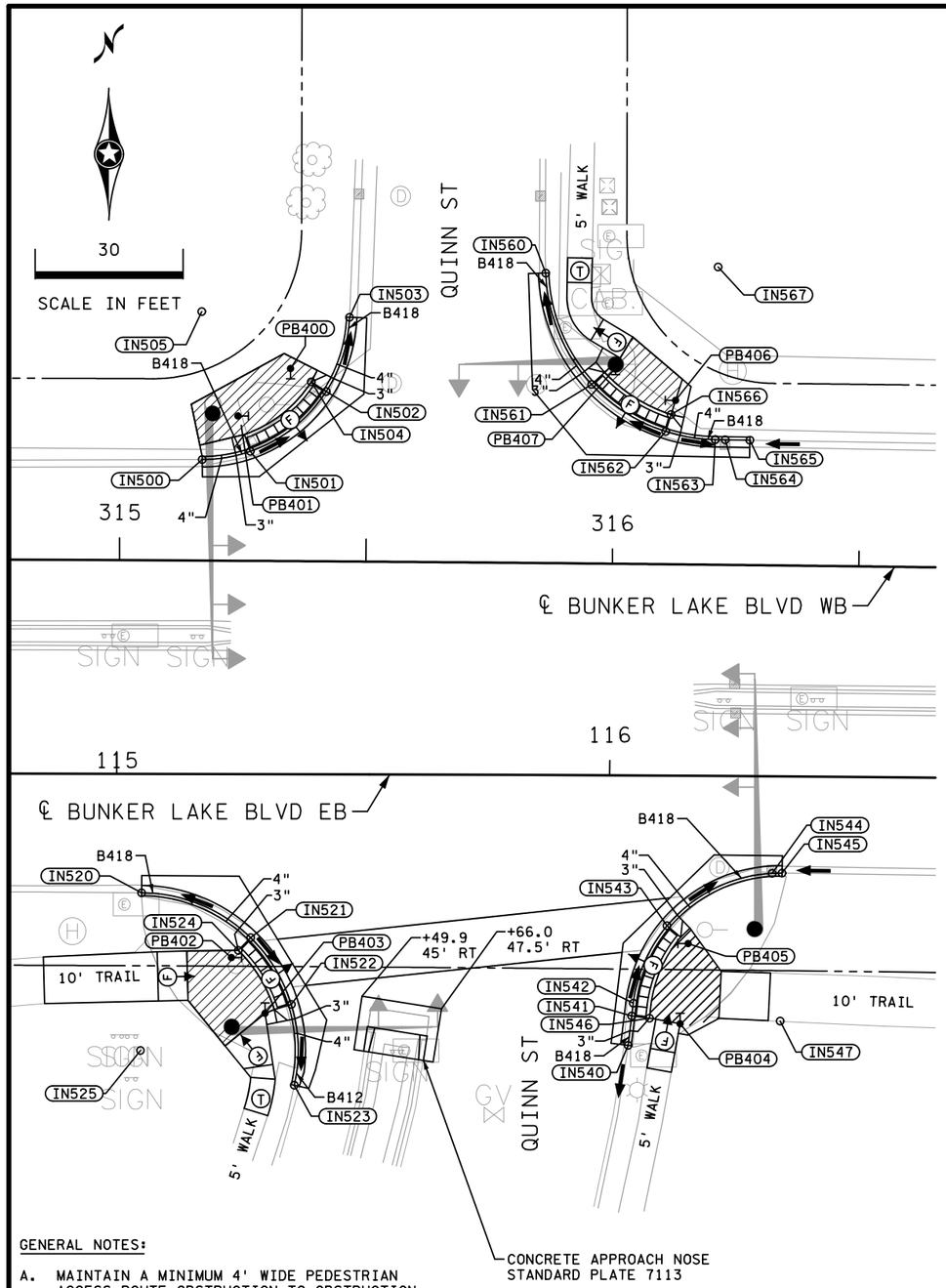
ANOKA COUNTY HIGHWAY DEPT.

INTERSECTION DETAILS
CROSSTOWN BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 67 of 174 Sheets



BUNKER LAKE BLVD/ QUINN ST

CONTROL POINTS

POINT NO.	DESCRIPTION	X	Y	ELEVATION
NORTH WEST QUADRANT				
IN500	POC	486129.01	167259.10	889.40
IN501	POC - 0" CURB HEIGHT	486138.76	167260.76	889.25
IN502	POC - 0" CURB HEIGHT	486154.18	167272.91	888.89
IN503	POC	486158.90	167287.95	888.05
IN504	TOP OF RAMP	486151.14	167274.86	889.08
IN505	CC - R = 30'	486128.92	167289.10	-
SOUTH WEST QUADRANT				
IN520	POC	486116.70	167171.26	889.16
IN521	POC - 0" CURB HEIGHT - HIGH POINT	486138.84	167162.15	889.44
IN522	POC - 0" CURB HEIGHT	486147.07	167148.62	889.31
IN523	POC	486147.69	167132.22	889.19
IN524	TOP OF RAMP	486136.31	167159.56	889.60
IN525	CC - R = 32'	486116.47	167139.26	-
SOUTH EAST QUADRANT				
IN540	POT	486215.40	167140.31	890.33
IN541	POT - 0" CURB HEIGHT - HIGH POINT	486216.13	167146.27	890.38
IN542	PC	486216.45	167148.88	890.35
IN543	POC - 0" CURB HEIGHT	486223.29	167164.58	890.18
IN544	POC - LOW POINT	486244.60	167175.20	889.87
IN545	POC	486246.63	167175.24	889.95
IN546	TOP OF RAMP	486219.72	167145.83	890.51
IN547	CC - R = 30'	486246.23	167145.25	-
NORTH EAST QUADRANT				
IN560	POC	486198.68	167296.93	887.89
IN561	POC - 0" CURB HEIGHT	486208.00	167274.34	899.33
IN562	POC - 0" CURB HEIGHT - HIGH POINT	486223.03	167264.80	889.65
IN563	PT	486233.06	167263.15	889.61
IN564	POT - LOW POINT	486235.09	167263.11	889.57
IN565	POT	486240.10	167263.03	889.76
IN566	TOP OF RAMP	486224.13	167268.24	889.81
IN567	CC - R = 35'	486233.66	167298.14	-

SIGNAL CONTROL POINTS

POINT NO.	DESCRIPTION	X	Y	DISTANCE TO FRONT OF LANDING(FT)	DISTANCE TO BACK OF LANDING(FT)
BUNKER LAKE BLVD/ QUINN ST					
PB400	PUSH BUTTON	486146.93	167277.56	5.0	6.5
PB401	PUSH BUTTON	486136.27	167267.95	4.0	6.8
PB402	PUSH BUTTON	486134.92	167158.13	2.0	12.4
PB403	PUSH BUTTON	486141.75	167146.82	2.0	10.5
PB404	PUSH BUTTON	486225.93	167144.71	6.3	8.0
PB405	PUSH BUTTON	486227.58	167160.96	2.0	8.8
PB406	PUSH BUTTON	486225.04	167271.10	3.0	4.5
PB407	ON POLE	-	-	2.2	7.0

LEGEND

- (INXXX) — CONTROL POINT
- TRUNCATED DOMES (SEE STANDARD PLATE 7038)
- CONSTRUCT CONCRETE CURB & GUTTER
- X" — CURB HEIGHT
- LANDING AREA - 4' X 4' MIN. DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
- (S) — INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
- (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%
- DRAINAGE FLOW ARROW
- (T) — 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.
- RIGHT OF WAY
- INPLACE POLE AND PROPOSED MAST ARM
- PROPOSED FOUNDATION AND INPLACE SIGNAL POLE
- PROPOSED/INPLACE SIGNAL POLE
- PEDESTRIAN PUSH BUTTON STATION
- PEDESTRIAN PUSH BUTTON
- PEDESTAL BASE
- EXISTING CATCH BASIN

GENERAL NOTES:

A. MAINTAIN A MINIMUM 4' WIDE PEDESTRIAN ACCESS ROUTE OBSTRUCTION TO OBSTRUCTION AND/OR OBSTRUCTION TO EDGE OF WALK.

B. THE CROSS SLOPE OF THE PEDESTRIAN ACCESS ROUTE SHALL NOT EXCEED 0.02 FT/FT.

C. SEE MNDOT STANDARD PLAN 5-297.250 FOR PEDESTRIAN RAMP DETAILS.

NO	DATE	BY	CKD	APPR	REVISION

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SIGNATURE: Jake Dingman

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DRAWN BY BBF DATE 11/26/24

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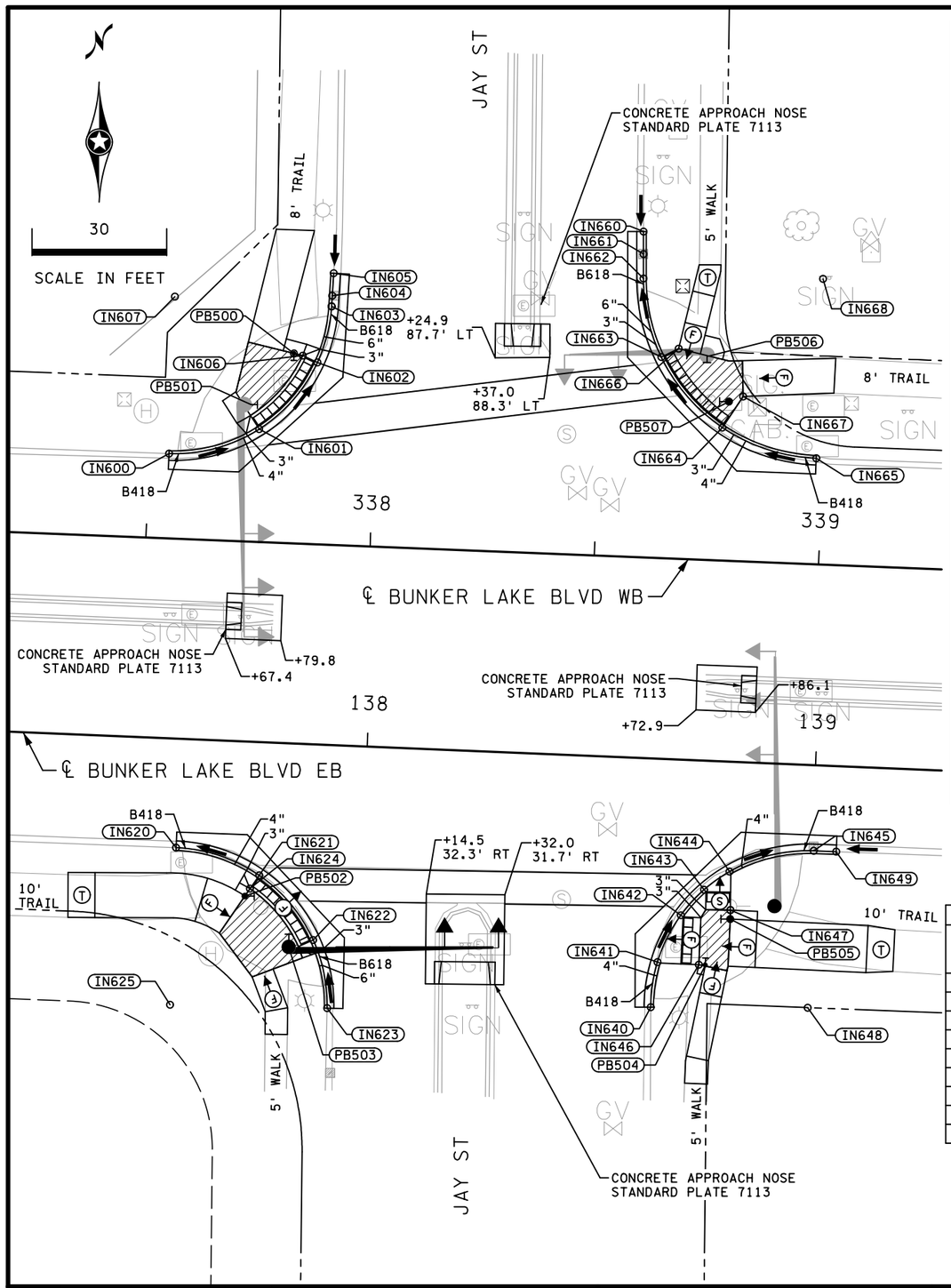
ANOKA COUNTY HIGHWAY DEPT.

INTERSECTION DETAILS
QUINN ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 68 of 174 Sheets



BUNKER LAKE BLVD/ JAY ST

CONTROL POINTS

POINT NO.	DESCRIPTION	X	Y	ELEVATION
NORTH WEST QUADRANT				
IN600	POC	488366.01	167181.93	899.83
IN601	POC - 0" CURB HEIGHT	488386.10	167187.37	899.60
IN602	POC - 0" CURB HEIGHT	488399.08	167202.23	899.38
IN603	PT	488402.24	167214.73	899.25
IN604	POT - LOW POINT	488402.39	167217.10	899.23
IN605	POT	488402.70	167222.10	899.43
IN606	TOP OF RAMP	488395.80	167203.74	899.64
IN607	CC - R = 35'	488367.31	167216.90	-
SOUTH WEST QUADRANT				
IN620	POC	488367.58	167094.13	899.79
IN621	POC - 0" CURB HEIGHT	488386.10	167087.97	900.08
IN622	POC - 0" CURB HEIGHT	488398.13	167073.57	900.27
IN623	POC	488401.23	167058.38	900.48
IN624	TOP OF RAMP	488384.05	167085.00	900.26
IN625	CC - R = 35'	488366.24	167059.15	-
SOUTH EAST QUADRANT				
IN640	POC	488473.33	167058.58	900.74
IN641	POC - 0" CURB HEIGHT	488474.84	167068.62	900.43
IN642	POC - 0" CURB HEIGHT	488480.05	167079.08	900.30
IN643	POC - 0" CURB HEIGHT	488485.24	167084.76	900.08
IN644	POC - 0" CURB HEIGHT	488490.89	167088.80	900.04
IN645	PT - LOW POINT	488509.67	167093.43	899.84
IN646	TOP OF RAMP	488484.05	167068.04	900.64
IN647	TOP OF RAMP	488491.09	167080.22	900.46
IN648	CC - R = 35'	488508.33	167058.46	-
IN649	POT	488514.67	167093.24	899.77
NORTH EAST QUADRANT				
IN660	POT	488471.73	167231.38	899.16
IN661	POT - LOW POINT	488471.73	167226.38	899.12
IN662	PC	488471.72	167220.91	899.13
IN663	POC - 0" CURB HEIGHT	488475.71	167203.43	899.53
IN664	POC - 0" CURB HEIGHT	488489.29	167187.73	899.74
IN665	POC	488510.22	167180.88	899.89
IN666	POINT ON LANDING	488479.56	167205.29	899.62
IN667	POINT ON LANDING	488493.95	167194.62	899.82
IN668	CC - R = 40'	488511.72	167220.85	-

SIGNAL CONTROL POINTS

POINT NO.	DESCRIPTION	X	Y	DISTANCE TO FRONT OF LANDING(FT)	DISTANCE TO BACK OF LANDING(FT)
BUNKER LAKE BLVD/ JAY ST					
PB500	PUSH BUTTON	488393.82	167204.23	2.0	10.5
PB501	ON POLE	-	-	1.9	4.3
PB502	PUSH BUTTON	488382.91	167083.35	2.0	10.0
PB503	ON POLE	-	-	2.0	10.5
PB504	PUSH BUTTON	488485.51	167067.97	1.5	5.0
PB505	PUSH BUTTON	488491.06	167078.22	2.0	10.5
PB506	ON POLE	-	-	9.6	8.0
PB507	PUSH BUTTON	488490.76	167193.51	5.0	3.4

GENERAL NOTES:

A. MAINTAIN A MINIMUM 4' WIDE PEDESTRIAN ACCESS ROUTE OBSTRUCTION TO OBSTRUCTION AND/OR OBSTRUCTION TO EDGE OF WALK.

B. THE CROSS SLOPE OF THE PEDESTRIAN ACCESS ROUTE SHALL NOT EXCEED 0.02 FT/FT.

C. SEE MNDOT STANDARD PLAN 5-297.250 FOR PEDESTRIAN RAMP DETAILS.

SPECIFIC NOTES:

(1) SEE SHEET XX FOR INTERSECTION POINT TABLE AND SIGNAL CONTROL POINT TABLE.

LEGEND

- (INXXX) CONTROL POINT
- TRUNCATED DOMES (SEE STANDARD PLATE 7038)
- CONSTRUCT CONCRETE CURB & GUTTER
- X" CURB HEIGHT
- LANDING AREA - 4' X 4' MIN. DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
- (S) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
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- PROPOSED FOUNDATION AND INPLACE SIGNAL POLE
- PROPOSED/INPLACE SIGNAL POLE
- PEDESTRIAN PUSH BUTTON STATION / PEDESTRIAN PUSH BUTTON
- PEDESTAL BASE
- EXISTING CATCH BASIN

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CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
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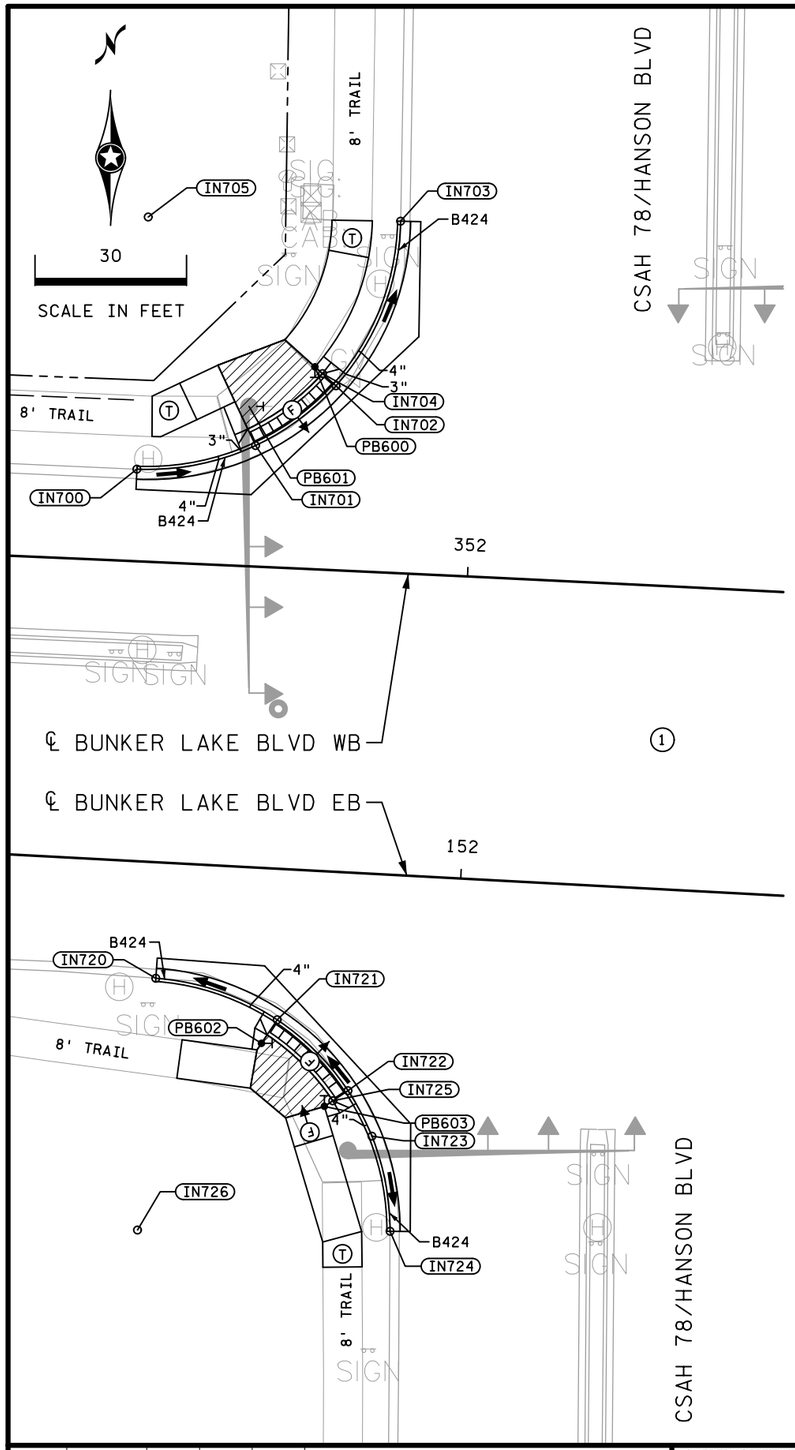
Sheet 69 of 174 Sheets



BUNKER LAKE BLVD/ CSAH 78/HANSON BLVD

CONTROL POINTS

POINT NO.	DESCRIPTION	X	Y	ELEVATION
NORTH WEST QUADRANT				
IN700	POC	489744.43	167131.74	896.17
IN701	POC - 0" CURB HEIGHT	489767.90	167136.43	896.06
IN702	POC - 0" CURB HEIGHT	489783.85	167148.27	895.97
IN703	POC	489796.65	167180.83	895.55
IN704	TOP OF RAMP	489781.16	167150.69	896.13
IN705	CC - R = 50'	489746.66	167181.69	-
SOUTH WEST QUADRANT				
IN720	POC	489748.17	167030.94	896.36
IN721	POC - 0" CURB HEIGHT	489772.20	167022.72	896.49
IN722	POC - 0" CURB HEIGHT	489786.24	167008.66	896.59
IN723	POC - HIGH POINT	489790.95	166999.66	896.64
IN724	POC	489794.54	166980.83	896.34
IN725	TOP OF RAMP	489783.22	167006.67	896.75
IN726	CC - R = 50'	489744.54	166981.07	-

SIGNAL CONTROL POINTS

POINT NO.	DESCRIPTION	X	Y	DISTANCE TO FRONT OF LANDING(FT)	DISTANCE TO BACK OF LANDING(FT)
BUNKER LAKE BLVD/ CSAH 78/HANSON BLVD					
PB600	PUSH BUTTON	489779.68	167152.02	2.0	8.0
PB601	ON POLE	-	-	3.9	9.9
PB602	PUSH BUTTON	489769.10	167018.05	2.0	9.1
PB603	PUSH BUTTON	489781.55	167005.57	2.0	8.0

GENERAL NOTES:

A. MAINTAIN A MINIMUM 4' WIDE PEDESTRIAN ACCESS ROUTE OBSTRUCTION TO OBSTRUCTION AND/OR OBSTRUCTION TO EDGE OF WALK.

B. THE CROSS SLOPE OF THE PEDESTRIAN ACCESS ROUTE SHALL NOT EXCEED 0.02 FT/FT.

C. SEE MNDOT STANDARD PLAN 5-297.250 FOR PEDESTRIAN RAMP DETAILS.

SPECIFIC NOTES:

(1) SEE SHEET XX FOR INTERSECTION POINT TABLE AND SIGNAL CONTROL POINT TABLE.

LEGEND

- (INXXX) — CONTROL POINT
- TRUNCATED DOMES (SEE STANDARD PLATE 7038)
- CONSTRUCT CONCRETE CURB & GUTTER
- X" — CURB HEIGHT
- LANDING AREA - 4' X 4' MIN. DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
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- PROPOSED/INPLACE SIGNAL POLE
- PEDESTRIAN PUSH BUTTON STATION / PEDESTRIAN PUSH BUTTON
- PEDESTAL BASE — EXISTING CATCH BASIN

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CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
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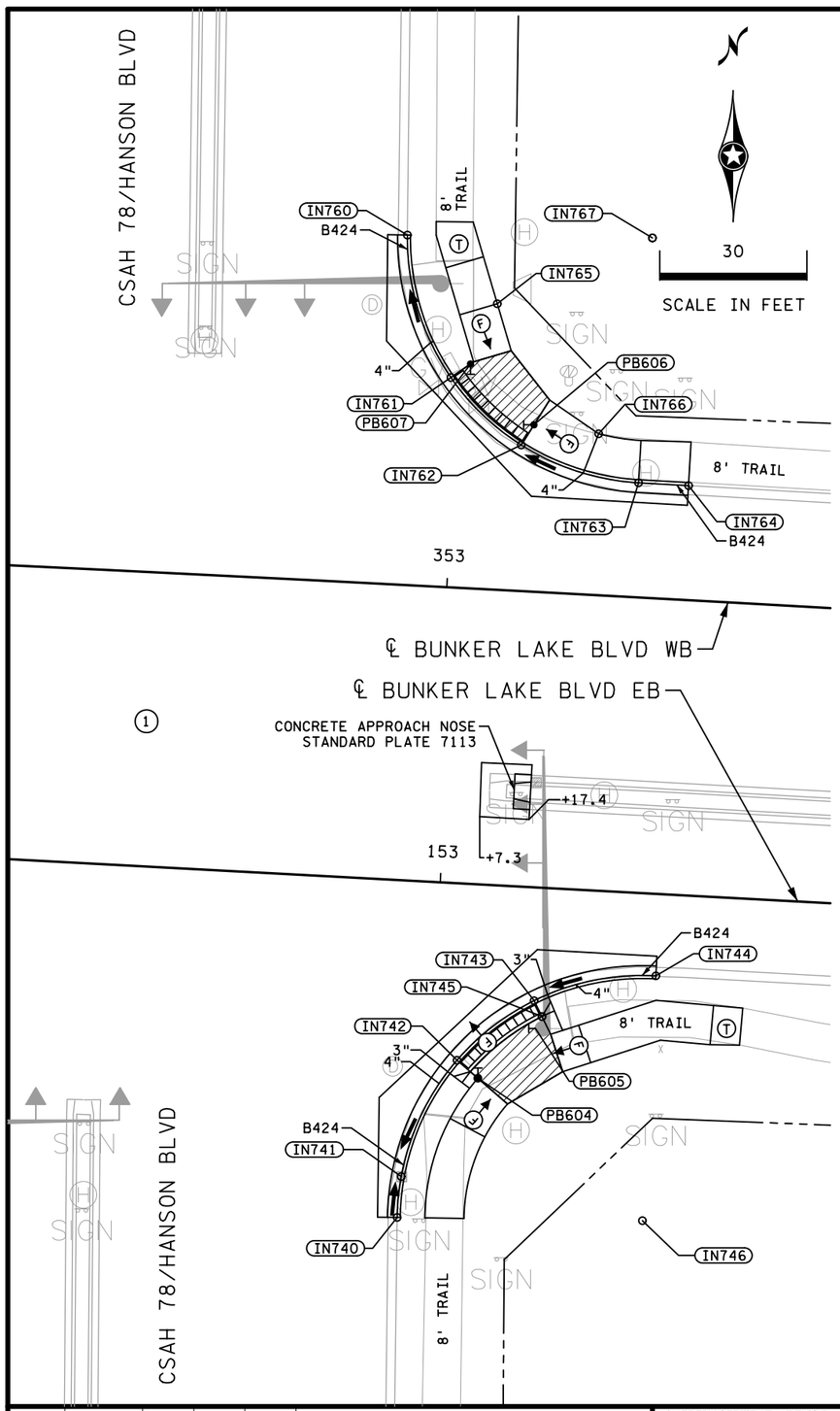
Sheet 70 of 174 Sheets



BUNKER LAKE BLVD/ CSAH 78/HANSON BLVD

CONTROL POINTS

POINT NO.	DESCRIPTION	X	Y	ELEVATION
	SOUTH EAST QUADRANT			
IN740	POC	489899.64	166976.99	896.72
IN741	POC - LOW POINT	489900.45	166985.32	896.64
IN742	POC - 0" CURB HEIGHT	489911.83	167009.06	896.77
IN743	POC - 0" CURB HEIGHT	489927.56	167021.20	896.87
IN744	POC	489952.37	167026.26	897.00
IN745	TOP OF RAMP	489929.16	167017.96	897.03
IN746	CC - R = 50'	489949.64	166976.34	-
	NORTH EAST QUADRANT			
IN760	POC	489901.70	167177.32	895.59
IN761	POC - 0" CURB HEIGHT	489910.59	167148.27	895.97
IN762	POC - 0" CURB HEIGHT	489924.91	167134.50	896.26
IN763	PT	489948.86	167126.80	896.68
IN764	POT	489959.06	167126.22	896.86
IN765	TOP OF RAMP	489920.04	167163.32	896.46
IN766	TOP OF RAMP	489940.74	167136.81	896.92
IN767	CC - R = 50'	489951.70	167176.72	-

SIGNAL CONTROL POINTS

POINT NO.	DESCRIPTION	X	Y	DISTANCE TO FRONT OF LANDING(FT)	DISTANCE TO BACK OF LANDING(FT)
PB604	PUSH BUTTON	489916.08	167005.39	2.0	8.0
PB605	ON POLE	-	-	1.5	10.4
PB606	PUSH BUTTON	489927.51	167138.61	4.0	6.0
PB607	PUSH BUTTON	489914.59	167151.03	4.3	8.8

GENERAL NOTES:

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C. SEE MNDOT STANDARD PLAN 5-297.250 FOR PEDESTRIAN RAMP DETAILS.

SPECIFIC NOTES:

(1) SEE SHEET XX FOR INTERSECTION POINT TABLE AND SIGNAL CONTROL POINT TABLE.

LEGEND

- (INXXX) — CONTROL POINT
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CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 71 of 174 Sheets

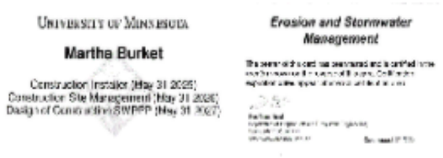
STORM WATER POLLUTION PREVENTION PLAN (SWPPP) NARRATIVE

PROJECT DESCRIPTION/LOCATION

SAP 002-716-024/SAP 198-020-040 IS LOCATED ON CSAH 116 FROM ROSE ST TO CSAH 78 (HANSON BLVD) IN THE CITY OF ANDOVER IN ANOKA COUNTY. THE PLANNED SCOPE OF THE PROJECT INCLUDES SIGNAL REPLACEMENT, ADA IMPROVEMENTS, RIGHT TURN LANE CONSTRUCTION, AND SIDEWALK CONSTRUCTION. NO PERMANENT STORMWATER FEATURES ARE PROPOSED.

SWPPP PERSONNEL AND TRAINING

THIS SWPPP WAS PREPARED BY MARTHA BURKET CERTIFIED IN THE DESIGN OF CONSTRUCTION SWPPPS. CERTIFICATION WAS THROUGH AN UMN ONLINE COURSE (OPENING 9/5/2023) WITH REBECCA FORMAN AS THE INSTRUCTOR.



THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AN EROSION CONTROL SUPERVISOR WITH VALID CERTIFICATION THAT IS RESPONSIBLE FOR OVERSEEING THE IMPLEMENTATION OF THE SWPPP. THE CONTRACTOR MUST PROVIDE PROOF OF CERTIFICATION AT THE PRECONSTRUCTION MEETING AND WILL NOT BE ALLOWED TO COMMENCE WORK UNTIL PROOF OF CERTIFICATION HAS BEEN PROVIDED TO THE PROJECT ENGINEER.

PROVIDE AT LEAST ONE CERTIFIED INSTALLER FOR EACH CONTRACTOR OR SUBCONTRACTOR THAT PLACES EROSION CONTROL MEASURES. WORK WILL NOT BE ALLOWED TO COMMENCE UNTIL PROOF OF CERTIFICATION HAS BEEN PROVIDED TO THE PROJECT ENGINEER.

CHAIN OF RESPONSIBILITY

ANOKA COUNTY AND THE CONTRACTOR ARE CO-PERMITEES FOR THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) CONSTRUCTION PERMIT. THE CONTRACTOR IS RESPONSIBLE TO COMPLY WITH ALL ASPECTS OF THE NPDES CONSTRUCTION PERMIT AT ALL TIMES UNTIL THE NOTICE OF TERMINATION (NOT) HAS BEEN FILED WITH THE MPCA. THE CONSTRUCTION PROJECT ENGINEER WILL ENSURE THAT THE CONTRACTOR'S EROSION AND SEDIMENT CONTROL SUPERVISOR FULFILLS THEIR DUTIES.

LAND FEATURE CHANGES

	COON CREEK WATERSHED DISTRICT	LOWER RUM RIVER WMO	PROJECT TOTAL
TOTAL DISTURBED AREA	0.96 ACRES	0.08 ACRES	1.04 ACRES
WITHIN THE DISTURBED AREA: TOTAL EXISTING IMPERVIOUS SURFACE AREA	0.53 ACRES	0.05 ACRES	0.58 ACRES
WITHIN THE DISTURBED AREA: TOTAL PROPOSED IMPERVIOUS SURFACE AREA	0.64 ACRES	0.06 ACRES	0.70 ACRES
TOTAL PROPOSED NET CHANGE IN IMPERVIOUS SURFACE AREA	0.11 ACRES	0.01 ACRES	0.12 ACRES

LOCATION OF SWPPP ELEMENTS

THE REQUIRED SWPPP ELEMENTS ARE LOCATED IN SEVERAL PLACES WITHIN THE PLAN SET AS WELL AS IN THE SPECIAL PROVISIONS AND MNDOT SPEC BOOK (2023 EDITION). THE NOTES AND TABLE BELOW ARE A QUICK REFERENCE FOR THE CONTRACTOR AND PROJECT ENGINEER TO USE IN THE FIELD. THERE MAY BE ADDITIONAL REQUIRED SWPPP ELEMENTS INCLUDED ON THE PROJECT THAT ARE NOT LISTED ON THIS SHEET.

SWPPP SHEET DESCRIPTIONS	LOCATION
TEMPORARY EROSION CONTROL MEASURES	SHEETS NO. 53-60
PERMANENT EROSION CONTROL MEASURES	SHEETS NO. 53-60
DIRECTION OF FLOW	SHEETS NO. 61-68
FINAL STABILIZATION	SHEETS NO. 53-60
TOPSOIL NOTES	SHEET NO. 5
DRAINAGE STRUCTURES	SHEETS NO. 53-60
EROSION CONTROL & TURF ESTABLISHMENT TABULATION	SHEET NO. 10
RECEIVING WATERS SITE MAP	SHEET NO. 71
TEMPORARY SEDIMENT CONTROL STANDARD PLANS	SHEETS NO. 36,37

STORMWATER CALCULATIONS AND ADDITIONAL HYDRAULIC DESIGN INFORMATION ARE LOCATED WITH PROJECT SUBMITTAL FILES AND ARE AVAILABLE UPON REQUEST.

SOIL TYPES

SOIL TYPES TYPICALLY FOUND ON THIS PROJECT ARE LOAMY SAND AND FINE SAND.

ENVIRONMENTAL REVIEW

THERE ARE NO STORMWATER MITIGATION MEASURES REQUIRED AS A RESULT OF AN ENVIRONMENTAL, ARCHEOLOGICAL OR AGENCY REVIEW. ALL MITIGATION MEASURES HAVE BEEN ADDRESSED IN THIS PLAN SET OR THE SPECIAL PROVISIONS.

THIS PROJECT IS NOT LOCATED IN A WELL HEAD PROTECTION AREA.

THIS PROJECT IS LOCATED IN A MINNEAPOLIS, ST PAUL, AND ST. CLOUD DRINKING WATER SUPPLY MANAGEMENT AREA (DWSMA).

THIS PROJECT IS NOT LOCATED IN A KARST AREA.

THIS PROJECT IS NOT LOCATED IN AN EMERGENCY RESPONSE AREA (ERA) PER DEPARTMENT OF HEALTH.

LONG TERM MAINTENANCE AND OPERATION

ANOKA COUNTY IS RESPONSIBLE FOR THE LONG TERM MAINTENANCE AND OPERATION OF THE PERMANENT STORMWATER SYSTEM.

SPECIAL AND IMPAIRED WATERS THAT ARE LOCATED WITHIN ONE MILE (AERIAL RADIUS) OF THE PROJECT LIMITS AND RECEIVE RUNOFF FROM THE PROJECT SITE.

WATERBODY NAME	IMPAIRMENT(S) OR SPECIAL STATUS
COON CREEK	IMPAIRED - BENTHIC MACROINVERTEBRATES BIOASSESSMENTS; ESCHERICHIA COLI (E. COLI); FISH BIOASSESSMENTS; TOTAL SUSPENDED SOLIDS (TSS).

THE IMPAIRED WATER (LISTED IN THE TABLE ABOVE) IS IMPAIRED WITH AT LEAST ONE CONSTRUCTION-RELATED IMPAIRMENT.

AREAS OF ENVIRONMENTAL SENSITIVITY (AES)

WETLANDS AND EXISTING STORMWATER FACILITIES WITHIN AND NEAR THE PROJECT BOUNDARY ARE SHOWN ON RECEIVING WATERS SITE MAP.

WORK IN WATER RESTRICTIONS

DNR PUBLIC WATERS ARE WITHIN 200' OF THE PROJECT. THE FOLLOWING TYPES OF WATERS HAVE WORK IN WATER EXCLUSION DATES DURING WHICH STABILIZATION MUST BE COMPLETED WITHIN 24 HOURS. SEE RECEIVING WATERS SITE MAP FOR PUBLIC WATER LOCATIONS.

WATERBODY	NO WORK DURING
LAKES	APRIL 1 - JUNE 30
NON-TROUT STREAMS	MARCH 15 - JUNE 15
TROUT STREAMS	SEPTEMBER 1 - APRIL 1

PROJECT CONTACTS

PROJECT ORGANIZATION CONTACTS	NAME	PHONE
CONTRACTOR'S EROSION AND SEDIMENT CONTROL SUPERVISOR		
CONTRACTOR'S EROSION AND SEDIMENT CONTROL INSTALLER		
PROJECT ENGINEER		
CONSTRUCTION ENGINEER	CHRIS OSTERHUS	763-324-3186
COON CREEK WATERSHED DISTRICT	ABBEY LEE	763-258-7928
LOWER RUM RIVER WMO	JASON LAW	763-767-5130
MINNESOTA POLLUTION CONTROL AGENCY	MATT HOSKINS	651-757-2864
MPCA DUTY OFFICER 24 HR EMERGENCY NOTIFICATION	651-649-5451 OR 1(800)-422-0798	

SITE INSPECTION AND MAINTENANCE

INSPECT THE ENTIRE CONSTRUCTION SITE A MINIMUM OF ONCE EVERY SEVEN DAYS DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS. INSPECT ALL TEMPORARY AND PERMANENT WATER QUALITY MANAGEMENT, EROSION PREVENTION AND SEDIMENT CONTROL BMPS UNTIL PERMANENT COVER IS ESTABLISHED AND THE NOT HAS BEEN SUBMITTED. INSPECT SURFACE WATER INCLUDING DRAINAGE DITCHES FOR SIGNS OF EROSION AND SEDIMENT DEPOSITION. INSPECT CONSTRUCTION SITE VEHICLE EXIT LOCATIONS FOR EVIDENCE OF TRACKING ONTO PAVED SURFACES. INSPECT SURROUNDING PROPERTIES FOR EVIDENCE OF OFF SITE SEDIMENT ACCUMULATION. INSPECT INFILTRATION AREAS FOR SIGNS OF SEDIMENT DEPOSITION AND COMPACTION (TO ENSURE THAT EQUIPMENT IS NOT BEING DRIVEN ACROSS THE AREA).

RECORD ALL INSPECTIONS AND MAINTENANCE ACTIVITIES IN WRITING WITHIN 24 HOURS. SUBMIT INSPECTION REPORTS IN A FORMAT THAT IS ACCEPTABLE TO THE PROJECT ENGINEER. INCLUDE THE FOLLOWING IN THE RECORDS OF EACH INSPECTION AND MAINTENANCE ACTIVITY:

A. DATE AND TIME OF INSPECTIONS
B. NAME OF PERSONS CONDUCTING INSPECTIONS
C. FINDINGS OF INSPECTIONS, INCLUDING RECOMMENDATIONS FOR CORRECTIVE ACTIONS
D. CORRECTIVE ACTIONS TAKEN, INCLUDING DATES, TIMES, AND PARTY COMPLETING MAINTENANCE ACTIVITIES
E. DATE AND AMOUNT OF ALL RAINFALL EVENTS GREATER THAN 0.5 INCH IN 24 HOURS
F. IF DISCHARGE OBSERVED, PHOTOGRAPHS AND DESCRIPTION OF DISCHARGE
G. DOCUMENTS AND CHANGES MADE TO SWPPP
H. PHOTOGRAPHS OF DEWATERING ACTIVITIES AND DOCUMENTATION OF NUISANCE CONDITIONS

REPLACE, REPAIR OR SUPPLEMENT ALL NONFUNCTIONAL BMPS BY THE END OF THE NEXT BUSINESS DAY FOLLOWING DISCOVERY UNLESS LISTED DIFFERENTLY BELOW:

A. REPAIR, REPLACE, OR SUPPLEMENT PERIMETER CONTROL DEVICES WHEN IT BECOMES NONFUNCTIONAL OR SEDIMENT REACHES 1/2 THE HEIGHT OF THE DEVICE. COMPLETE REPAIRS BY THE END OF THE NEXT BUSINESS DAY FOLLOWING DISCOVERY.
B. REPAIR OR REPLACE INLET PROTECTION DEVICES WHEN THEY BECOME NONFUNCTIONAL OR SEDIMENT REACHES 1/2 THE HEIGHT AND/OR DEPTH OF THE DEVICE.
C. DRAIN AND REMOVE SEDIMENT FROM TEMPORARY AND PERMANENT SEDIMENT BASINS ONCE THE SEDIMENT HAS REACHED 1/2 THE STORAGE VOLUME. COMPLETE WORK WITHIN 72 HOURS OF DISCOVERY.
D. REMOVE ALL DELTAS AND SEDIMENT DEPOSITED IN SURFACE WATERS INCLUDING DRAINAGE WAYS, CATCH BASINS, AND OTHER DRAINAGE SYSTEMS. RESTABILIZE ANY AREAS THAT ARE DISTURBED BY SEDIMENT REMOVAL OPERATIONS. SEDIMENT REMOVAL AND STABILIZATION MUST BE COMPLETED WITHIN 7 DAYS OF DISCOVERY. PREPARE AND SUBMIT A SITE MANAGEMENT PLAN FOR WORKING IN SURFACE WATERS. CONTACT ALL APPROPRIATE AUTHORITIES PRIOR TO WORKING IN SURFACE WATERS.
E. REMOVE TRACKED SEDIMENT FROM PAVED SURFACES BOTH ON AND OFF SITE WITHIN 24 HOURS OF DISCOVERY. STREET SWEEPING MAY HAVE TO OCCUR MORE OFTEN TO MINIMIZE OFF SITE IMPACTS. LIGHTLY WET THE PAVEMENT PRIOR TO SWEEPING.
F. MAINTAIN ALL BMPS UNTIL WORK HAS BEEN COMPLETED, SITE HAS UNDERGONE FINAL STABILIZATION, AND THE NOTICE OF TERMINATION (NOT) HAS BEEN SUBMITTED TO THE MPCA.

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_swp01.dgn 12/4/2024 10:56:34 AM

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: TANYA H GYTRI
SIGNATURE: Tanya H Gytri
DATE: 11/26/24 LICENSE NO. 43919

DRAWN BY MOB DATE 11/26/24
DESIGN BY MOB DATE 11/26/24
CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

STORM WATER POLLUTION PREVENTION PLAN
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS

Sheet 72 of 174 Sheets

STORMWATER POLLUTION PREVENTION PLAN (SWPPP) NARRATIVE (CONTINUED)

STABILIZATION TIME FRAMES

AREA	TIME FRAME	NOTES
LAST 200 LINEAL FEET OF DRAINAGE DITCH OR SWALE	WITHIN 24 HOURS OF CONNECTION TO SURFACE WATER OR PROPERTY EDGE	1, 2, 3
REMAINING PORTIONS OF DRAINAGE DITCH OR SWALE	7 DAYS	1, 3
PIPE AND CULVERT OUTLETS	24 HOURS	
EXPOSED SOILS AND STOCKPILES	7 DAYS	1
WITHIN 200 FEET OF A PUBLIC WATER	24 HOURS	7

1. INITIATE STABILIZATION IMMEDIATELY WHEN CONSTRUCTION HAS TEMPORARILY OR PERMANENTLY CEASED ON ANY PORTION OF THE SITE. COMPLETE STABILIZATION WITHIN THE TIME FRAME LISTED. IN MANY INSTANCES THIS WILL REQUIRE STABILIZATION TO OCCUR MORE THAN ONCE DURING THE COURSE OF THE PROJECT. TEMPORARY SOIL STOCKPILES WITHOUT SIGNIFICANT CLAY OR SILT AND STOCKPILED AND CONSTRUCTED ROAD BASE ARE EXEMPT FROM THE STABILIZATION REQUIREMENT.

2. STABILIZE WETTED PERIMETER OF DITCH (I.E. WHERE THE DITCH GETS WET).

3. APPLICATION OF MULCH, HYDROMULCH, TACKIFIER AND POLYACRYLAMIDE ARE NOT ACCEPTABLE STABILIZATION METHODS IN THESE AREAS.

4. STABILIZE ALL AREAS OF THE SITE PRIOR TO THE ONSET OF WINTER. ANY WORK STILL BEING PERFORMED WILL BE SNOW MULCHED, SEEDED, AND BLANKETED WITHIN THE TIME FRAMES IN THE NPDES PERMIT.

5. TOPSOIL BERMS MUST BE STABILIZED WITHIN 24 HOURS IN ORDER TO BE CONSIDERED PERIMETER CONTROL BMPS. USE RAPID STABILIZATION.

6. KEEP DITCHES AND EXPOSED SOILS IN AN EVEN ROUGH GRADED CONDITION IN ORDER TO BE ABLE TO APPLY EROSION CONTROL MULCHES, HYDROMULCHES AND BLANKETS.

7. SEE WORK IN WATER RESTRICTIONS NOTES FOR A LIST OF PUBLIC WATER EXCLUSION DATES. TWENTY FOUR HOUR STABILIZATION REQUIREMENT ONLY APPLIES DURING THE EXCLUSION DATES.

GENERAL SWPPP NOTES FOR CONSTRUCTION ACTIVITY

1. AMEND THE SWPPP AND DOCUMENT ANY AND ALL CHANGES TO THE SWPPP AND ASSOCIATED PLAN SHEETS WITHIN 7 DAYS. STORE THE SWPPP AND ALL AMENDMENTS ON SITE AT ALL TIMES.

2. PREPARE AND SUBMIT A SITE MANAGEMENT PLAN FOR THE ENGINEER'S ACCEPTANCE FOR CONCRETE MANAGEMENT, CONCRETE SLURRY APPLICATION AREAS, WORK IN AND NEAR AREAS OF ENVIRONMENTAL SENSITIVITY, AREAS IDENTIFIED IN THE PLANS AS "SITE MANAGEMENT PLAN AREA", ANY WORK THAT WILL REQUIRE DEWATERING, AND AS REQUESTED BY THE ENGINEER. SUBMIT ALL SITE MANAGEMENT PLANS TO THE ENGINEER IN WRITING. ALLOW A MINIMUM OF 7 DAYS FOR MNDOT TO REVIEW AND ACCEPT SITE MANAGEMENT PLAN SUBMITTALS. WORK WILL NOT BE ALLOWED TO COMMENCE IF A SITE MANAGEMENT PLAN IS REQUIRED UNTIL ACCEPTANCE HAS BEEN GRANTED BY THE ENGINEER. THERE WILL BE NO EXTRA TIME ADDED TO THE CONTRACT DUE TO THE UNTIMELY SUBMITTAL.

3. IT IS THE DESIGNER'S INTENT THAT THE CONTRACTOR BUILD PONDS AND INSTALL EROSION CONTROL BMPS BEFORE PUTTING THEM INTO ACTIVE SERVICE TO THE MAXIMUM EXTENT PRACTICABLE.

4. BURNING OF ANY MATERIAL IS NOT ALLOWED WITHIN PROJECT BOUNDARY.

5. DO NOT DISTURB AREAS OUTSIDE OF THE CONSTRUCTION LIMITS. DELINEATE AREAS NOT TO BE DISTURBED PRIOR TO STARTING GROUND DISTURBING ACTIVITIES. IF IT BECOMES NECESSARY TO DISTURB AREAS OUTSIDE OF THE CONSTRUCTION LIMITS OBTAIN WRITTEN PERMISSION FROM THE PROJECT ENGINEER PRIOR TO PROCEEDING. PRESERVE ALL NATURAL BUFFERS SHOWN ON THE PLANS.

6. ROUTE STORMWATER AROUND UNSTABILIZED AREAS OF THE SITE WHENEVER FEASIBLE. PROVIDE EROSION CONTROL AND VELOCITY DISSIPATION DEVICES AS NEEDED TO KEEP CHANNELS FROM ERODING AND TO PREVENT NUISANCE CONDITIONS AT THE OUTLET.

7. DIRECT DISCHARGES FROM BMPS TO VEGETATED AREAS WHENEVER FEASIBLE. PROVIDE VELOCITY DISSIPATION DEVICES AS NEEDED TO PREVENT EROSION.

8. THE EROSION PREVENTION AND SEDIMENT CONTROL BMPS SHALL BE PLACED AS NECESSARY TO MINIMIZE EROSION FROM DISTURBED SURFACES AND TO CAPTURE SEDIMENT ON SITE. ALL EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF ANY REMOVAL WORK AND/OR GROUND DISTURBING ACTIVITIES COMMENCE. SILT FENCE SHOULD FOLLOW, AS CLOSE AS POSSIBLE, TO A SINGLE CONTOUR LINE.

9. ESTABLISH SEDIMENT CONTROL DEVICES ON ALL DOWN GRADIENT PERIMETERS AND UPGRADIENT OF ANY BUFFER ZONES BEFORE ANY UP GRADIENT LAND DISTURBING ACTIVITIES BEGIN. MAINTAIN SEDIMENT CONTROL DEVICES UNTIL CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED.

10. LOCATE PERIMETER CONTROL ON THE CONTOUR TO CAPTURE OVERLAND, LOW- VELOCITY SHEET FLOWS DOWN GRADIENT OF ALL EXPOSED SOILS AND PRIOR TO DISCHARGING TO SURFACE WATERS. PLACE J-HOOKS AT A MAXIMUM OF 100 FOOT INTERVALS.

11. PROVIDE PERIMETER CONTROL AROUND ALL STOCKPILES. PLACE BMP A MINIMUM 5 FEET FROM THE TOE OF SLOPE WHERE FEASIBLE. DO NOT PLACE STOCKPILES IN NATURAL BUFFER AREAS, SURFACE WATERS OR STORMWATER CONVEYANCES.

12. FLOATING SILT CURTAIN IS ALLOWED AS PERIMETER CONTROL FOR IN WATER WORK ONLY. INSTALL THE FLOATING SILT CURTAIN AS CLOSE TO SHORE AS POSSIBLE. PLACE PERIMETER CONTROL BMP ON LAND IMMEDIATELY AFTER THE IN WATER WORK IS COMPLETED.

13. DITCH CHECKS WILL BE PLACED AS INDICATED ON THE PLANS DURING ALL PHASES OF CONSTRUCTION.

14. PROTECT STORM SEWER INLETS AT ALL TIMES WITH THE APPROPRIATE INLET PROTECTION FOR EACH SPECIFIC PHASE OF CONSTRUCTION. PROVIDE INLET PROTECTION DEVICES WITH EMERGENCY OVERFLOW CAPABILITIES. SILT FENCE PLACED IN THE INLET GRATE IS NOT AN ACCEPTABLE INLET PROTECTION BMP FOR GRADING OPERATIONS. SILT FENCE PLACED IN THE GRATE IS ONLY ALLOWED FOR SHORT INTERVALS DURING MILLING OR PAVING OPERATIONS. INLET PROTECTION DEVICES MAY NEED TO BE PLACED MULTIPLE TIMES IN THE SAME LOCATION OVER THE LIFE OF THE CONTRACT. INLET PROTECTION DEVICES WILL BE PAID FOR ONCE PER INLET REGARDLESS OF THE NUMBER OF TIMES THE BMP IS PLACED. KEEP ALL STORM SEWER INLET PROTECTION DEVICES IN GOOD FUNCTIONAL CONDITION AT ALL TIMES. REPLACE INLET PROTECTION DEVICE WITH A SUITABLE ALTERNATIVE IF THE PROJECT ENGINEER DEEMS AN INLET PROTECTION DEVICE TO BE NONFUNCTIONAL, IN POOR CONDITION, INEFFECTIVE, OR NOT APPROPRIATE FOR THE CURRENT CONSTRUCTION ACTIVITIES. THERE WILL BE NO COST TO MNDOT FOR REPLACEMENT OF INLET PROTECTION DEVICES.

15. PLACE CONSTRUCTION EXITS, AS NECESSARY, TO PREVENT TRACKING OF SEDIMENT ONTO PAVED SURFACES BOTH ON AND OFF THE PROJECT SITE. PROVIDE CONSTRUCTION EXITS OF SUFFICIENT SIZE TO PREVENT TRACK OUT. MAINTAIN CONSTRUCTION EXITS WHEN EVIDENCE OF TRACKING IS DISCOVERED. REGULAR STREET SWEEPING IS NOT AN ACCEPTABLE ALTERNATIVE TO PROPER CONSTRUCTION EXIT INSTALLATION AND MAINTENANCE.

16. DISCHARGE TURBID OR SEDIMENT LADEN WATER TO TEMPORARY SEDIMENT BASINS WHENEVER FEASIBLE. IN THE EVENT THAT IT IS NOT FEASIBLE TO DISCHARGE THE SEDIMENT LADEN WATER TO A TEMPORARY SEDIMENT BASIN, THE WATER MUST BE TREATED SO THAT IT DOES NOT CAUSE A NUISANCE CONDITION IN THE RECEIVING WATERS OR TO DOWNSTREAM LANDOWNERS. CLEAN OUT ALL PERMANENT STORMWATER BASINS REGARDLESS OF WHETHER USED AS TEMPORARY SEDIMENT BASINS OR TEMPORARY SEDIMENT TRAPS TO THE DESIGN CAPACITY AFTER ALL UPGRADIENT LAND DISTURBING ACTIVITY IS COMPLETED.

17. PROVIDE SCOUR PROTECTION AT ANY OUTFALL OF DEWATERING ACTIVITIES.

18. PROVIDE STABILIZATION IN ANY TRENCHES CUT FOR DEWATERING OR SITE DRAINING PURPOSES.

19. REMOVE SEDIMENT FROM STORMWATER SYSTEM AT END OF PROJECT.

20. PRESERVE A 50 FOOT NATURAL BUFFER OR (IF BUFFER IS INFEASIBLE) PROVIDE REDUNDANT SEDIMENT CONTROLS WHEN A SURFACE WATER IS LOCATED WITHIN 50 FEET OF LAND DISTURBANCE AND STORMWATER FLOWS TO THE SURUFACE WATER.

21. PERMITTEES MUST INSPECT AND PHOTOGRAPH DEWATERING DISCHARGES AT THE BEGINNING AND AT LEAST ONCE EVERY 24 HOURS DURING OPERATION. IF NUISANCE CONDITIONS RESULT FROM DISCHARGE, PERMITTEES MUST CEASE DEWATERING.

22. WHEN SUBMITTING THE NOT, PERMITTEES MUST INCLUDE GROUND OR AERIAL PHOTOGRAPHS SHOWING THAT PERMANENT COVER REQUIREMENTS HAVE BEEN MET.

POLLUTION PREVENTION

1. PROVIDE A SPILL KIT AT EACH WORK LOCATION ON THE SITE.

2. STORE ALL BUILDING MATERIALS THAT HAVE THE POTENTIAL TO LEACH POLLUTANTS, PESTICIDES, HERBICIDES, INSECTICIDES, FERTILIZERS, TREATMENT CHEMICALS, AND LANDSCAPE MATERIALS UNDER COVER AND WITH SECONDARY CONTAINMENT.

3. PROVIDE A SECURE STORAGE AREA WITH RESTRICTED ACCESS FOR ALL HAZARDOUS MATERIALS AND TOXIC WASTE. RETURN ALL HAZARDOUS MATERIALS AND TOXIC WASTE TO THE DESIGNATED STORAGE AREA AT THE END OF THE BUSINESS DAY UNLESS INFEASIBLE. STORE ALL HAZARDOUS MATERIALS AND TOXIC WASTE (INCLUDING BUT NOT LIMITED TO OIL, DIESEL FUEL, GASOLINE, HYDRAULIC FLUIDS, PAINT, PETROLEUM BASED PRODUCTS, WOOD PRESERVATIVES, ADDITIVES, CURING COMPOUNDS, AND ACIDS) IN SEALED CONTAINERS WITH SECONDARY CONTAINMENT. CLEAN UP SPILLS IMMEDIATELY.

4. STORE, COLLECT AND DISPOSE OF ALL SOLID WASTE.

5. POSITION ALL PORTABLE TOILETS SO THAT THEY ARE SECURE AND CANNOT BE TIPPED OR KNOCKED OVER. PROPERLY DISPOSE OF ALL SANITARY WASTE.

6. FUEL AND MAINTAIN VEHICLES IN A DESIGNATED CONTAINED AREA WHENEVER FEASIBLE. USE DRIP PANS OR ABSORBENT MATERIALS TO PREVENT SPILLS OR LEAKED CHEMICALS FROM DISCHARGING TO SURFACE WATER OR STORMWATER CONVEYANCES. PROVIDE A SPILL KIT AT EACH LOCATION THAT VEHICLES AND EQUIPMENT ARE FUELED OR MAINTAINED AT.

7. LIMIT VEHICLE AND EQUIPMENT WASHING TO A DEFINED AREA OF THE SITE. CONTAIN RUNOFF FROM THE WASHING AREA TO A TEMPORARY SEDIMENT BASIN OR OTHER EFFECTIVE CONTROL. PROPERLY DISPOSE OF ALL WASTE GENERATED BY VEHICLE AND EQUIPMENT WASHING. ENGINE DEGREASING IS NOT ALLOWED ON THE SITE.

8. PROVIDE EFFECTIVE CONTAINMENT FOR ALL LIQUID AND SOLID WASTES GENERATED BY WASHOUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS AND OTHER CONSTRUCTION MATERIALS. LIQUID AND SOLID WASHOUT WASTES MUST NOT CONTACT THE GROUND. DESIGN THE CONTAINMENT SO THAT IT DOES NOT RESULT IN RUNOFF FROM THE WASHOUT OPERATIONS OR CONTAINMENT AREA.

9. CREATE AND FOLLOW A WRITTEN DISPOSAL PLAN FOR ALL WASTE MATERIALS. INCLUDE IN THE PLAN HOW THE MATERIAL WILL BE DISPOSED OF AND THE LOCATION OF THE DISPOSAL SITE. SUBMIT PLAN TO THE ENGINEER.

10. USE METHODS AND OPERATIONAL PROCEDURES THAT PREVENT DISCHARGE OR PLACEMENT OF BITUMINOUS GRINDINGS, CUTTINGS, MILLINGS, AND OTHER BITUMINOUS WASTES FROM AREAS OF EXISTING OR FUTURE VEGETATED SOILS AND FROM ALL WATER CONVEYANCE SYSTEMS, INCLUDING INLETS, DITCHES AND CURB FLOW LINES.

11. USE METHODS AND OPERATIONAL PROCEDURES THAT PREVENT CONCRETE DUST, PARTICLES, CONCRETE WASH OUT, AND OTHER CONCRETE WASTES FROM LEAVING MNDOT RIGHT OF WAY, DEPOSITING IN EXISTING OR FUTURE VEGETATED AREAS, AND FROM ENTERING STORMWATER CONVEYANCE SYSTEMS, INCLUDING INLETS, DITCHES AND CURB FLOW LINES. USE METHODS AND OPERATIONAL PROCEDURES THAT PREVENT SAW CUT SLURRY AND PLANING WASTE FROM LEAVING MNDOT RIGHT OF WAY AND FROM ENTERING STORMWATER CONVEYANCE SYSTEMS INCLUDING DITCHES AND CULVERTS.

NO	DATE	BY	CKD	APPR	REVISION

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PRINT NAME: TANYA H GYTRI

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DESIGN BY MOB DATE 11/26/24

CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

STORM WATER POLLUTION PREVENTION PLAN

COUNTY PROJECT SAP 002-716-024

CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD) SIGNAL MODIFICATION & ADA IMPROVEMENTS

Sheet 73 of 174 Sheets

STORMWATER POLLUTION PREVENTION PLAN (SWPPP) NARRATIVE (CONTINUED)

WATER RESOURCE NOTES

THESE NOTES ALONG WITH THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) NARRATIVE ARE INTENDED TO GIVE INFORMATION ON CRITICAL DRAINAGE FEATURES, NATURAL RESOURCES AND CONTRACTOR OPERATIONS THAT MAY IMPACT DRAINAGE AND NATURAL RESOURCES.

1. THE SIZE AND ELEVATION OF CULVERTS, STORM SEWER PIPES, AND CATCH BASINS HAVE BEEN SPECIFICALLY DESIGNED TO CONFORM TO MNDOT DESIGN STANDARDS, MINNESOTA POLLUTION CONTROL AGENCY (MPCA) AND WATERSHED DISTRICT PERMIT REQUIREMENTS. CHANGING THESE ITEMS OR THE DIRECTION OF FLOW FROM WHAT IS SHOWN ON THE PLANS MAY CAUSE PROBLEMS OFF THE PROJECT AND COULD MEAN THE PROJECT IS OUT OF COMPLIANCE WITH APPROVED DRAINAGE PERMITS. ANY CHANGES TO THE SIZE, ELEVATION OR DIRECTION OF FLOW OF THE DRAINAGE SYSTEM MUST BE COORDINATED WITH PROJECT ENGINEER.

2. SUBSOIL ALL DISTURBED GREEN SPACES EXCEPT AS LISTED IN 2574.3 A.5.

3. ANY SUBSURFACE DRAINAGE TILES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED, REPLACED OR REROUTED, AND CONNECTED TO THE EXISTING TILE OR DRAINAGE SYSTEM TO ENSURE THAT EXISTING UPLAND DRAINAGE IS PERPETUATED. THIS SHOULD BE DONE TO THE APPROVAL AND SATISFACTION OF THE ENGINEER.

4. PERFORM POST INSTALLATION MANDREL TESTING OF ALL PLASTIC PIPE.

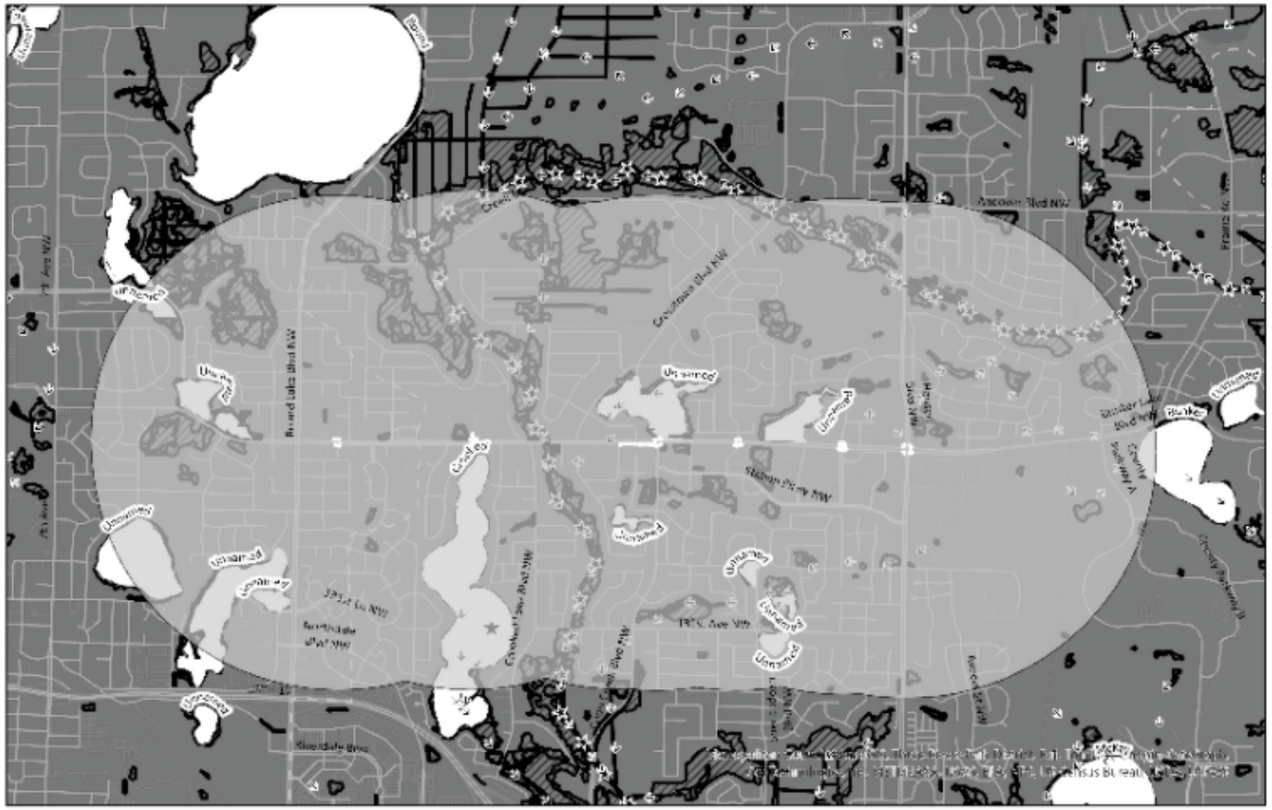
WATER RELATED PERMITS

AGENCY	TYPE OF PERMIT
MINNESOTA POLLUTION CONTROL AGENCY (MPCA)	NPDES CONSTRUCTION PERMIT

REVIEW ALL PERMITS FOR ANY SPECIAL CONDITIONS THAT WILL EFFECT CONSTRUCTION OF THE PROJECT.

TEMPORARY DEWATERING ACTIVITIES MAY BE REQUIRED FOR ROADWAY CONSTRUCTION AND UTILITY WORK. THEREFORE IT IS POSSIBLE THAT A PERMIT FOR THE TEMPORARY APPROPRIATION OF WATERS OF THE STATE, NON-IRRIGATION FROM MNDNR WILL BE REQUIRED FOR THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING THIS PERMIT PRIOR TO COMMENCING DEWATERING ACTIVITIES. ALL TEMPORARY DEWATERING SHALL BE DISCHARGED TO AN APPROVED LOCATION FOR TREATMENT PRIOR TO DISCHARGE TO THE RECEIVING WATER. SUBMIT A SITE MANAGEMENT PLAN TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCING WORK.

RECEIVING WATERS SITE MAP



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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

STORM WATER POLLUTION PREVENTION PLAN
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 74 of 174 Sheets

ABBREVIATIONS

3-1(EG)	SIGNAL HEAD PHASE "3" - NO "1"
BR. GR.	BARE GROUND
CH. SW.	CHECK SWITCH
CLR	CLEAR
D2-1(EG)	DETECTOR PHASE "2" - NO. "1"
DWK	DON'T WALK
EQG	EQUIPMENT GROUND
EVP	EMERGENCY VEHICLE PRE-EMPTION
F&I	FURNISH AND INSTALL
FL	FLASH/FLASHING
G	GREEN
GLTA	GREEN LEFT TURN ARROW
GRN	GREEN
GR. R	GROUND ROD
GRTA	GREEN RIGHT TURN ARROW
GTHA	GREEN THRU ARROW
HH	HANDHOLE
HPS	HIGH PRESSURE SODIUM
JB	JUNCTION BOX
LUM	LUMINAIRE
NEU	NEUTRAL
NMC	NONMETALLIC CONDUIT
P2-1(EG)	PED INDICATION PHASE "2" - NO. "1"
PB	PUSH BUTTON
PB2-1(EG)	PUSH BUTTON PHASE "2" - NO. "1"
PEC	PHOTOELECTRIC CELL
PED	PEDESTRIAN
R	RED
R&S	REMOVE AND SALVAGE
RLTA	RED LEFT TURN ARROW
RRTA	RED RIGHT TURN ARROW
RSC	RIGID STEEL CONDUIT
SOP	SOURCE OF POWER
SPR	SPARE
ST. LHT	STREET LIGHT
STA	STATION
SW	SWITCH
SWD	SWITCHED
S&R	SALVAGE AND REINSTALL
TDW	TELEPHONE DROP WIRE
WLK	WALK
YEL	YELLOW
YLTA	YELLOW LEFT TURN ARROW
YRTA	YELLOW RIGHT TURN ARROW
YTHA	YELLOW THRU ARROW

LEGEND OF SYMBOLS

- CONTROLLER AND SERVICE EQUIP. NO's (A)
- SIGNAL BASE NO. (1)
- SIGNAL FACE NO. (1-1)
- LUMINAIRE NO. (1)
- CONTROLLER AND CABINET
- CONTROLLER AND CABINET - IN PLACE
- HANDHOLE
- HANDHOLE - IN PLACE
- RIGID STEEL CONDUIT (RSC)
- RIGID STEEL CONDUIT (RSC) - IN PLACE
- SIGNAL FACE WITH BACKGROUND SHIELD
- SIGNAL FACE W/O BACKGROUND SHIELD
- SIGNAL FACE - IN PLACE
- PEDESTRIAN INDICATORS
- PEDESTRIAN INDICATORS - IN PLACE
- PEDESTRIAN PUSH BUTTONS ON PEDESTAL OR POLE
- PEDESTRIAN PUSH BUTTON STATION
- TRAFFIC SIGNAL PEDESTAL
- TRAFFIC SIGNAL PEDESTAL - INPLACE
- TRAFFIC SIGNAL POLE AND MAST ARM
- TRAFFIC SIGNAL POLE AND MAST ARM - IN PLACE
- STREET LIGHT POLE AND LUMINAIRE
- STREET LIGHT POLE AND LUMINAIRE - IN PLACE
- MAST ARM AND LUMINAIRE
- MAST ARM AND LUMINAIRE - INPLACE
- WOOD POLE
- WOOD POLE - IN PLACE
- SOURCE OF POWER
- RAILROAD SIGNAL - IN PLACE
- RIGHT OF WAY LINE
- CENTERLINE (3)
- EDGE OF ROADWAY
- SHOULDERLINE
- CURB LINE
- STOP BAR
- EMERGENCY VEHICLE PREEMPTION DETECTOR

SIGNAL SYSTEM & INTERCONNECT TABULATION — SS

ITEM NO.	DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITY	ESTIMATED QUANTITY SAP 002-716-024	ESTIMATED QUANTITY SAP 198-020-040
2565	REMOVE SIGNAL SYSTEM B	EACH	1	0.5	0.5
2565	REMOVE SIGNAL SYSTEM C	EACH	1	1	
2565	EMERGENCY VEHICLE PREEMPTION SYSTEM B	LUMP SUM	1		1
2565	EMERGENCY VEHICLE PREEMPTION SYSTEM C	LUMP SUM	1		1
2565	TRAFFIC CONTROL INTERCONNECT	LUMP SUM	1	1	
2565	TRAFFIC CONTROL SIGNAL SYSTEM B	SYSTEM	1	0.5	0.5
2565	TRAFFIC CONTROL SIGNAL SYSTEM C	SYSTEM	1	1	
2565	REVISE SIGNAL SYSTEM A	SYSTEM	1	0.5	0.5
2565	REVISE SIGNAL SYSTEM D	SYSTEM	1	0.5	0.5
2565	REVISE SIGNAL SYSTEM E	SYSTEM	1	0.5	0.5
2565	REVISE SIGNAL SYSTEM F	SYSTEM	1	1	
2565	TEMPORARY SIGNAL SYSTEM	SYSTEM	1	0.5	0.5
2565	ADJUST HANDHOLE	SYSTEM	9	9	

LIST OF COUNTY DETAILS AND PLATES

NO	DATE	BY	CKD	APPR	REVISION

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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.

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CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM DETAILS
LEGEND, TAB AND STANDARD PLANS
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

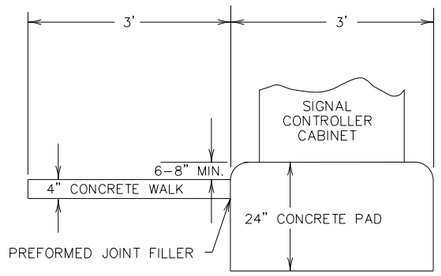
TYPICAL PAD WITH CONTROLLER CABINET AND SERVICE CABINET

SEE INTERSECTION LAYOUT FOR CABLE INFORMATION (NOT TO SCALE)

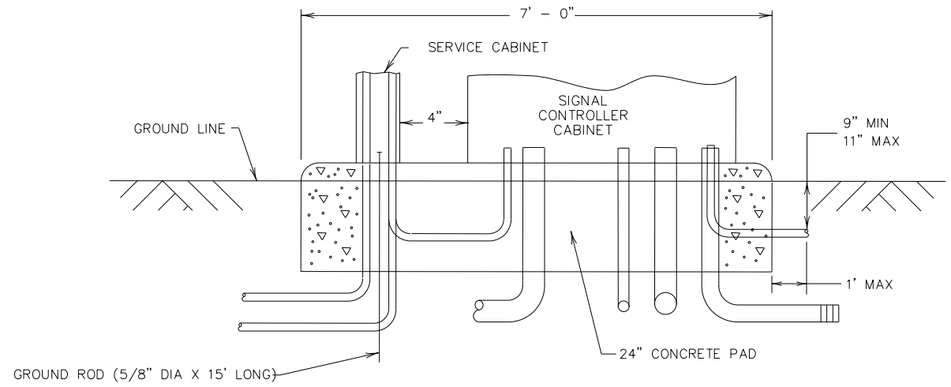
NOTES:

1. THE ANCHOR RODS, NUTS AND WASHERS FOR THE COUNTY FURNISHED CONTROLLER AND CABINET SHALL BE FURNISHED BY THE COUNTY AND INSTALLED BY THE CONTRACTOR.
2. THE UPPER PART OF THE NEW EQUIPMENT PAD SHALL BE BEVELLED OR CHAMFERED IN A NEAT MANNER AS DIRECTED BY THE ENGINEER.
3. THE TOP OF THE CONDUITS SHALL BE THREADED AND CAPPED AFTER INSTALLATION (UNTIL CABLES ARE INSTALLED).
4. CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE CONCRETE AND SHALL BE LOCATED INSIDE OF THE CABINET WHERE DIRECTED BY THE ENGINEER, BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.).
5. CONCRETE MIX 3F52 OR EQUAL SHALL BE USED FOR THE EQUIPMENT PAD AND SIDEWALK.
6. CONDUITS WITH BOTH ENDS TERMINATING WITHIN THE PAD SHALL NOT BE INSTALLED BELOW THE CONCRETE.
7. THE EXACT LOCATION OF CONDUITS WITHIN THE PAD SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
8. ANCHOR RODS SHALL PROJECT A MINIMUM OF 3" ABOVE THE CONCRETE BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.).
9. CONTRACTOR SHALL PROVIDE MINIMUM 4-INCH CLEARANCE BETWEEN CONTROLLER AND SERVICE CABINETS ON THE EQUIPMENT PAD FOUNDATION AS SHOWN.

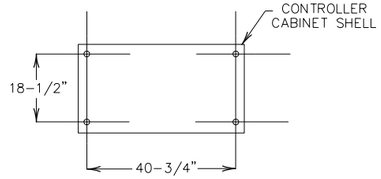
SIDE VIEW



FRONT VIEW

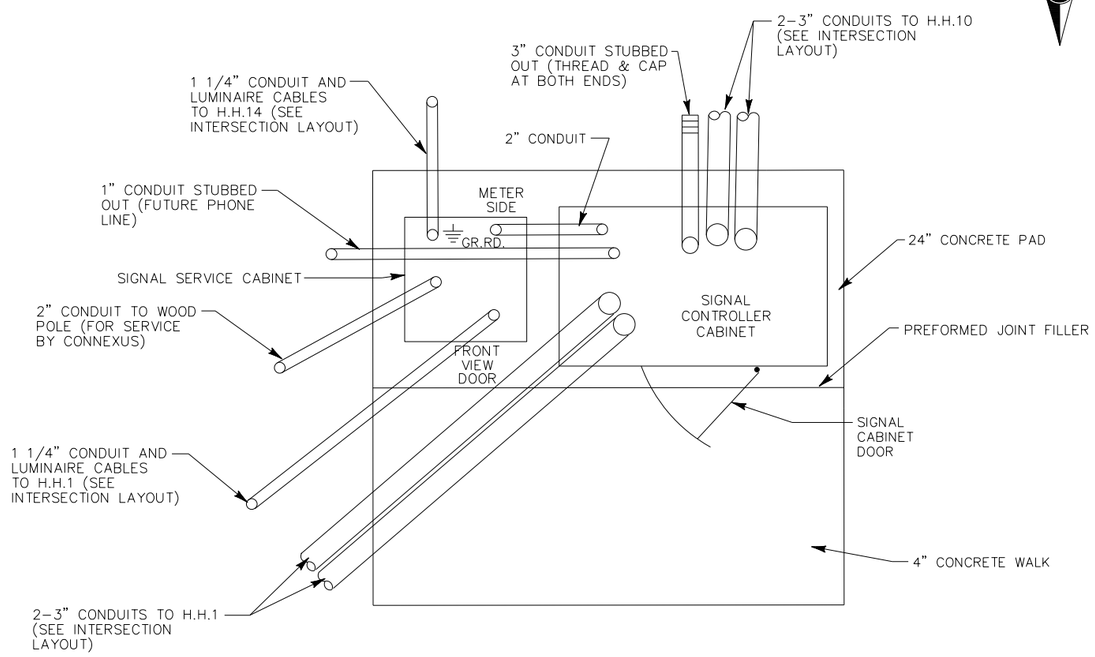


CONTROLLER CABINET TYPE "P" & "R" BOLT PATTERN



PLAN VIEW

LOCATION



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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: NICK VANGUNST

SIGNATURE: Nick VanGunst

DATE: 11/26/24 LICENSE NO. 44683

DRAWN BY KAS DATE 11/26/24

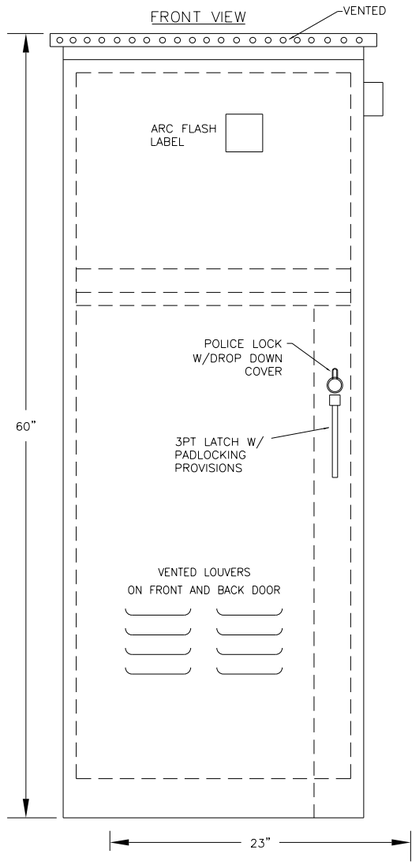
DESIGN BY KAS DATE 11/26/24

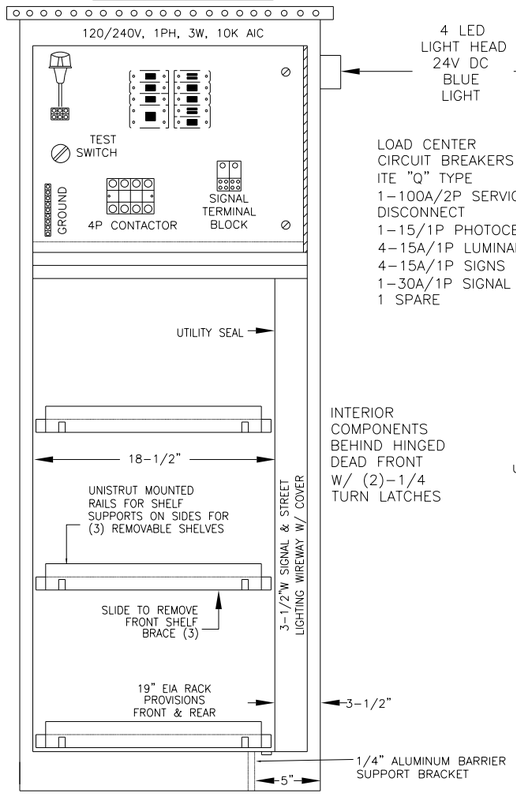
CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM DETAILS
TYPICAL CONTROLLER PAD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

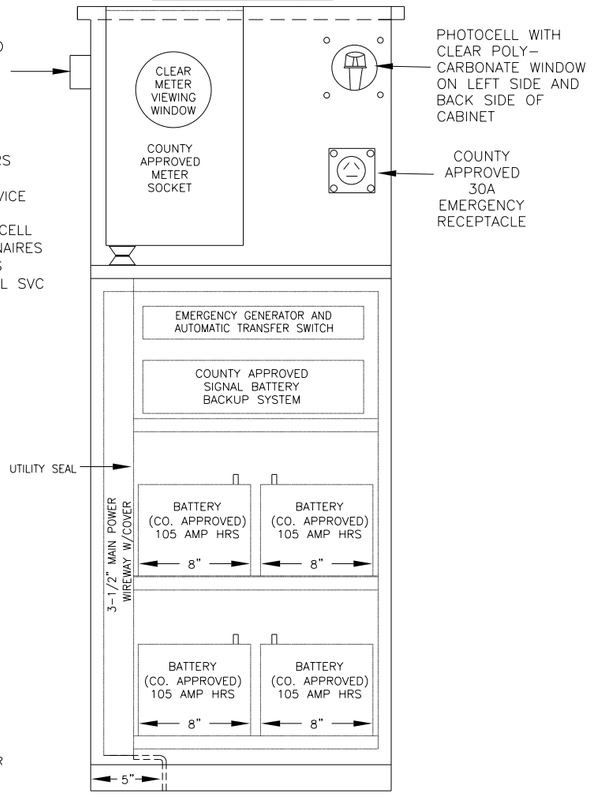


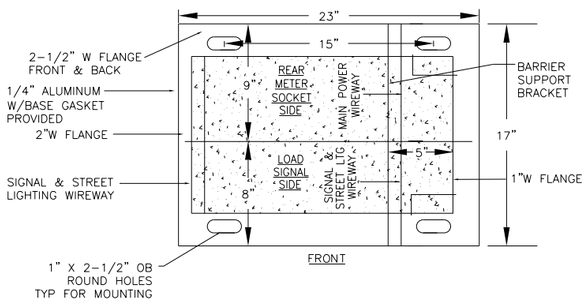


4 LED LIGHT HEAD 24V DC BLUE LIGHT

LOAD CENTER CIRCUIT BREAKERS ITE "Q" TYPE
1-100A/2P SERVICE DISCONNECT
1-15/1P PHOTOCELL
4-15A/1P LUMINAIRES
4-15A/1P SIGNS
1-30A/1P SIGNAL SVC
1 SPARE

INTERIOR COMPONENTS BEHIND HINGED DEAD FRONT W/ (2)-1/4 TURN LATCHES

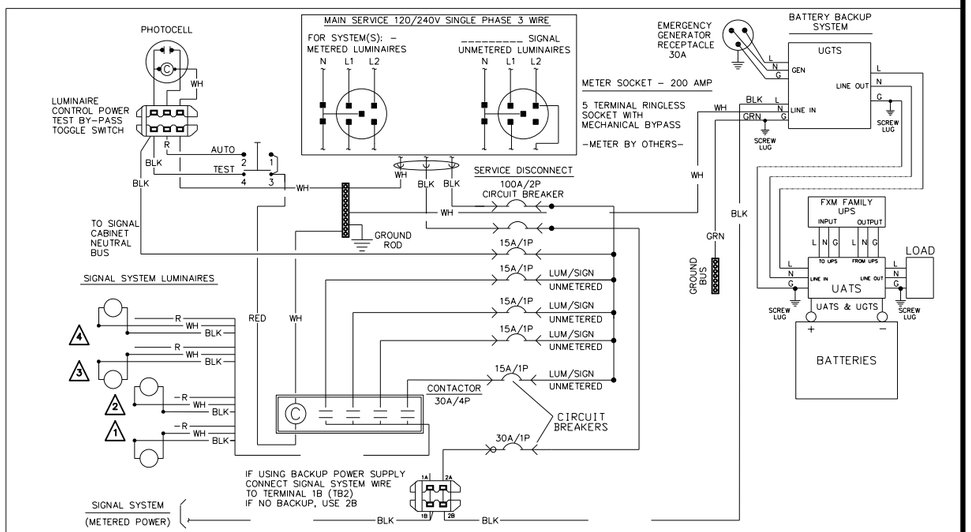




CABINET CONSTRUCTION

-NEMA 3R
-1/8" ALUMINUM 5052-H32
-ANODIZED 30 MINUTE CLEAR
-NEOPRENE GASKETED DOORS
-NON-CORRODING HARDWARE
-ETL LISTED IN ACCORDANCE W/UL508A

SEE SPECIAL PROVISIONS AND STATEMENT OF ESTIMATED QUANTITIES REGARDING SEPARATE PAY ITEM FOR FURNISHING & INSTALLING NEW BATTERY BACK-UP SIGNAL SERVICE CABINET.



FEED POINT WIRING DIAGRAM

NO	DATE	BY	CKD	APPR	REVISION

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ANOKA COUNTY

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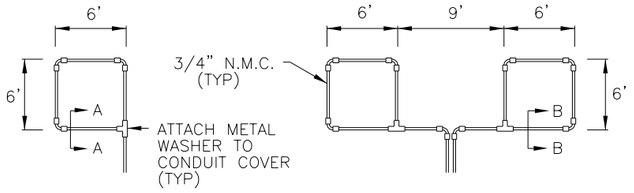
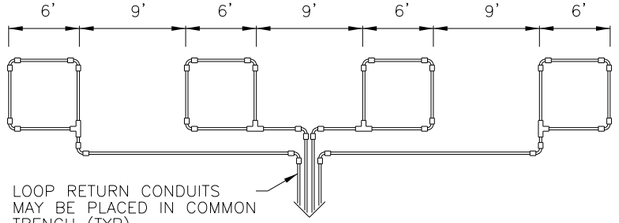
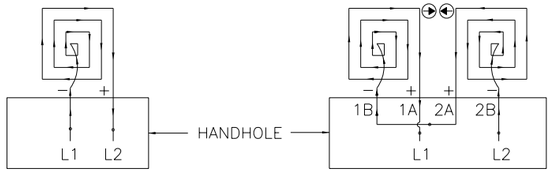
TRAFFIC SIGNAL SYSTEM DETAILS
TYPICAL CABINET DETAIL
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 77 of 174 Sheets







LOOP DETECTOR
DETAIL 'A'
(LOOP PHASING FOR
SINGLE CONNECTION)

LOOP CONNECTIONS SHALL BE
LABELED AND SPLICED IN THE
HANDHOLE AS FOLLOWS:

L1 TO 1A
1B TO 2A
2B TO L2

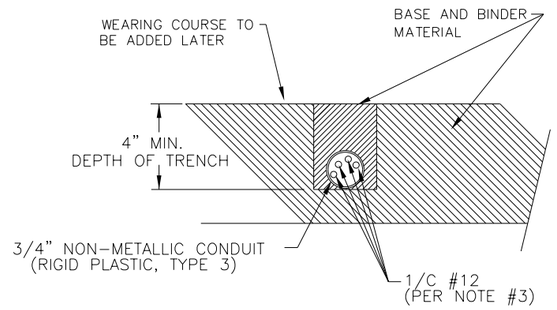
LOOP DETECTOR
DETAIL 'B'
(LOOP PHASING FOR
SERIES CONNECTION)

LOOP CONNECTIONS SHALL BE LABELED AND SPLICED
IN THE HANDHOLE AS FOLLOWS:

L1 TO 1A
1B TO 2A
2B TO 3A
3B TO 4A
4B TO L2

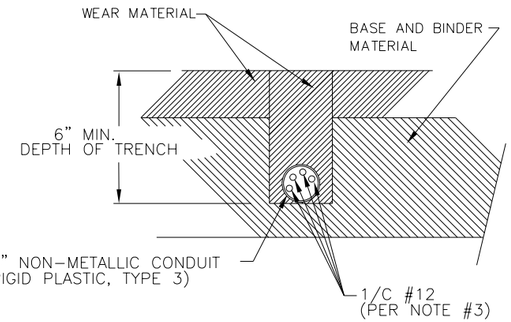
SPLICE CONTROL CABLE TO L1 & L2 IN HANDHOLE.
ALL CONDUCTORS SHALL BE TAGGED IN HANDHOLE
(1A, 1B, ECT)

LOOP DETECTOR
DETAIL 'C'
(LOOP PHASING FOR
SERIES CONNECTION)



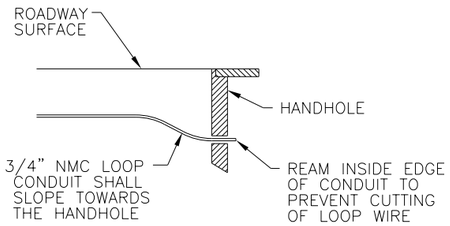
SECTION A–A

DETAIL FOR LOOP INSTALLATION
IN NEW ROADWAY



SECTION B–B

DETAIL FOR LOOP INSTALLATION
IN EXISTING ROADWAY



DRAINAGE DETAIL

LOOP DETECTOR WIRING

1) ALL CORNERS SHALL BE 90° CONDUIT BENDS.
2) CONNECT WIRES IN HANDHOLES USING SPLICE KIT METHOD DESCRIBED IN THE SPECIAL PROVISIONS.
3) LOOP DETECTOR WIRES SHALL BE #12 AWG CROSSED LINKED POLYETHYLENE (XLP). SEE SPECIAL PROVISIONS.
4) LOOP LEAD IN WIRES SHALL BE TWISTED A MIN. OF (5) TURNS PER FOOT THROUGH THE CONDUIT TO THE HANDHOLE.
5) NMC DESIGNATES NON–METALLIC CONDUIT (SPEC. 3803)
6) LOOPS 6' x 6' THRU 6' x 14' SHALL HAVE (4) TURNS.
7) LOOPS 6' x 15' AND LARGER SHALL HAVE (2) TURNS.

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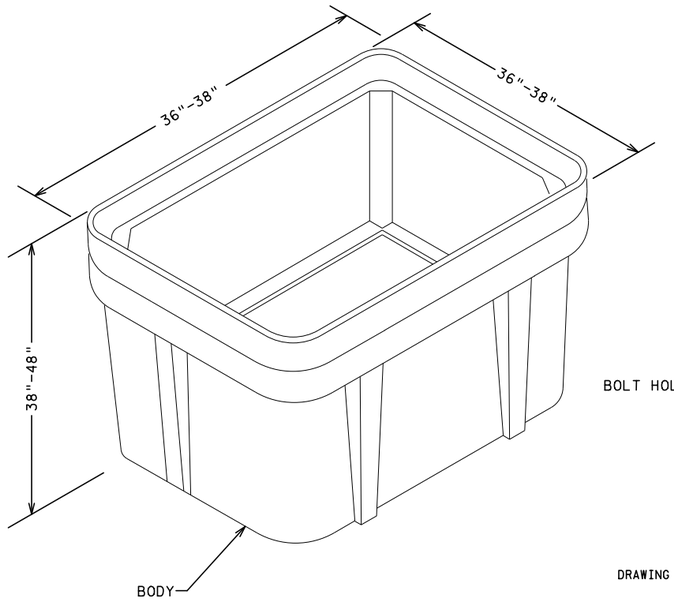
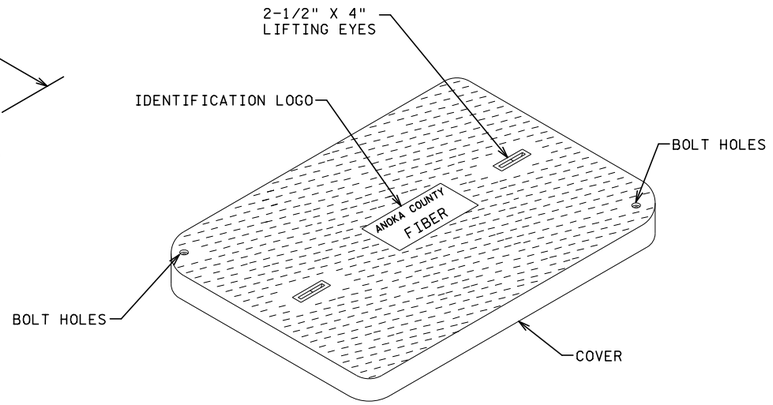
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM DETAILS
LOOP DETECTOR DETAIL
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS





DRAWING NOT TO SCALE

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM DETAILS
FIBER OPTIC PULL VAULT DETAIL
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
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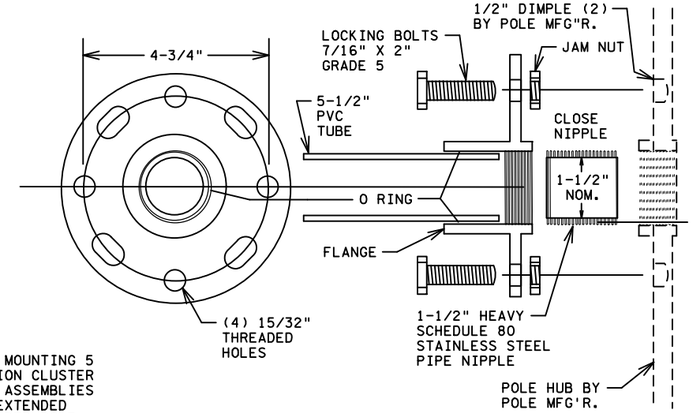
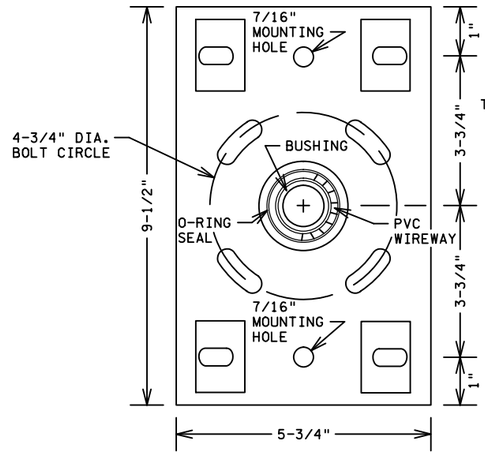
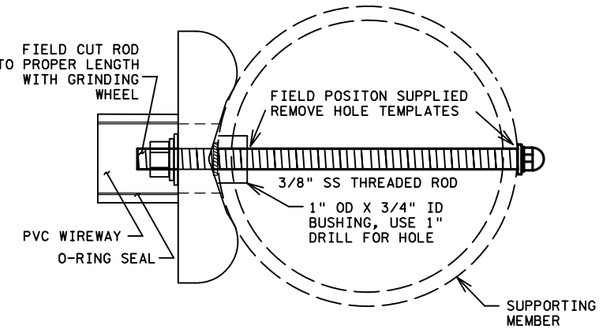


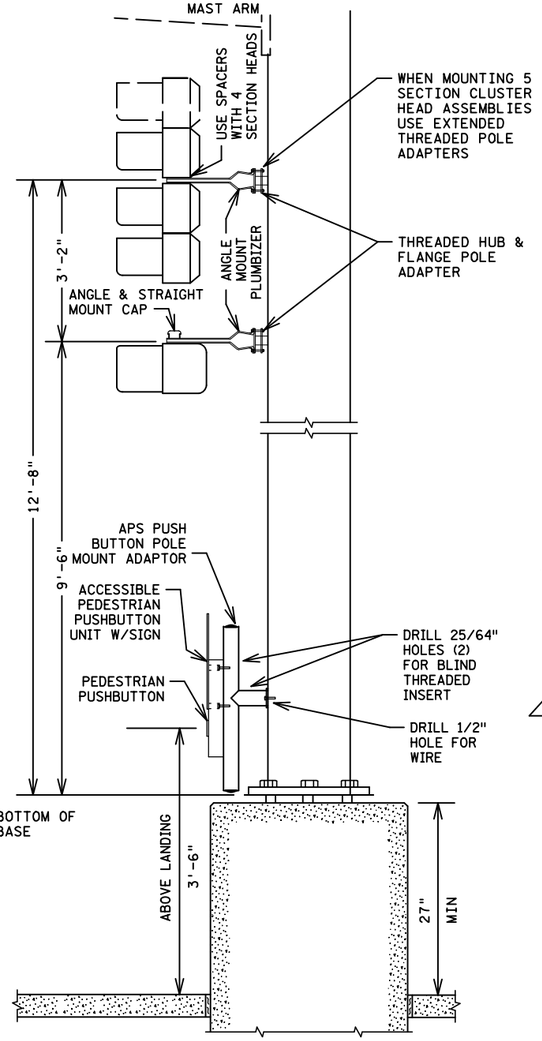
THREADED HUB AND FLANGE POLE ADAPTER



BOLT ON HUB & FLANGE

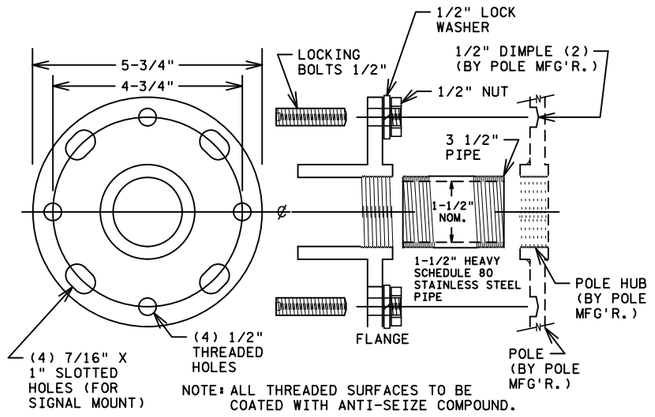


TOP VIEW



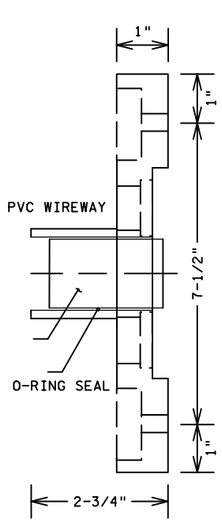
TYPICAL SIGNAL POLE MOUNTING

NOT TO SCALE

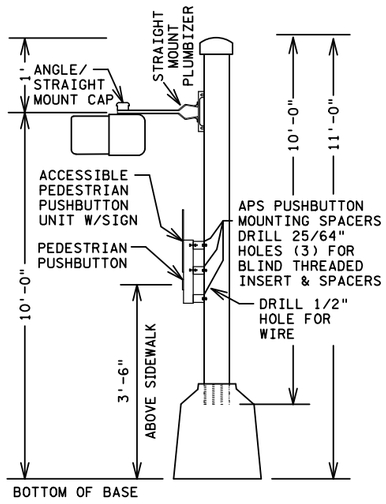


EXTENDED THREADED POLE ADAPTER

NOTES:
SEE STANDARD PLATE NUMBER 8124A FOR ADDITIONAL SIGNAL POLE DETAILS.

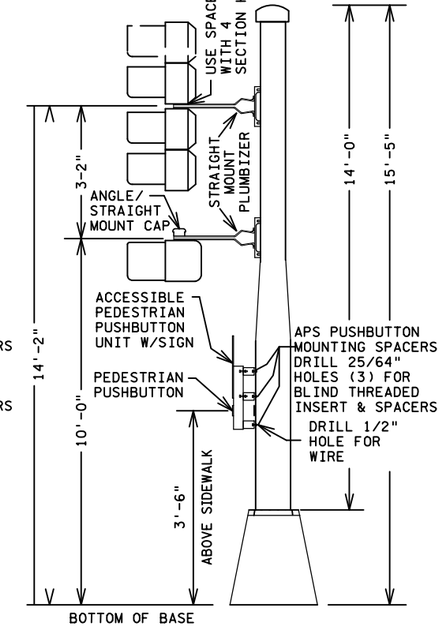


SIDE VIEW



10' PEDESTAL MOUNTING

NOT TO SCALE



14' PEDESTAL MOUNTING

NOT TO SCALE

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ANOKA COUNTY HIGHWAY DEPT.

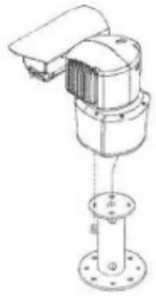
TRAFFIC SIGNAL SYSTEM DETAILS
POLE MOUNT DETAIL
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

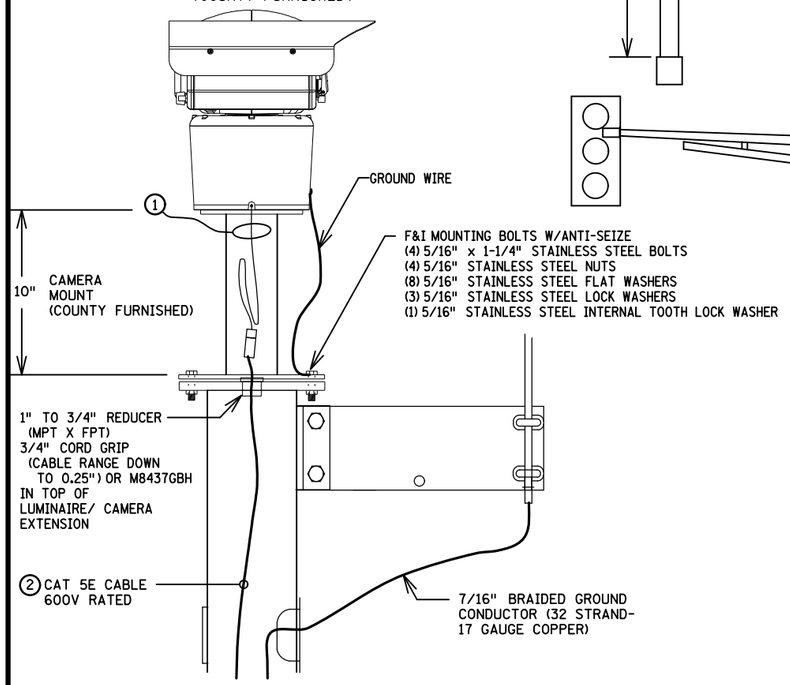
Sheet 80 of 174 Sheets

ISOMETRIC VIEW- CAMERA & MOUNT

(COUNTY FURNISHED)



CAMERA & MOUNT AT TOP OF EXTENSION

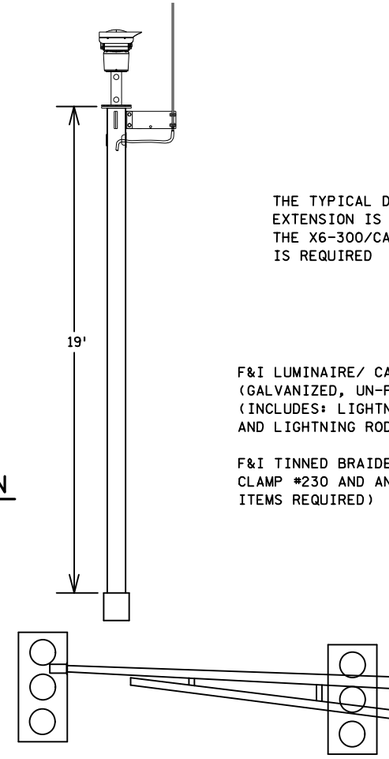


1 THE CAMERA IS SUPPLIED WITH 20" CABLE PIGTAIL. IT IS TERMINATED WITH A RJ45 PLUG AS INDICATED ON THE IP CAMERA CONNECTOR DETAIL SHEET.

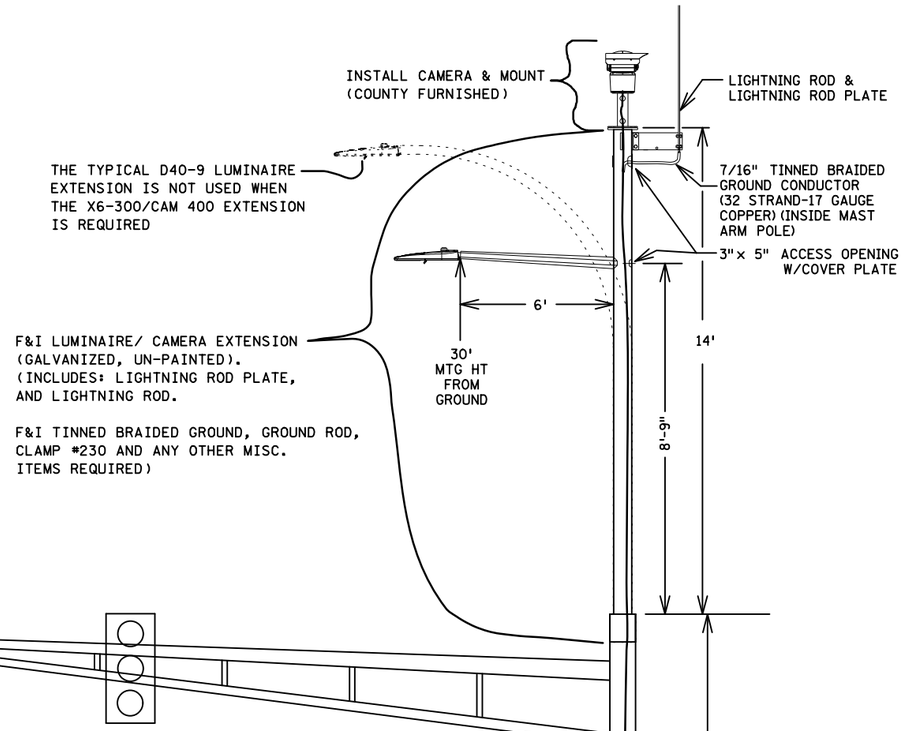
2 F&I ETHERNET CABLE IN ACCORDANCE WITH 3815.2C.6.d (CAT 5E -300V RATED), BETWEEN THE SIGNAL CONTROL CABINET AND THE TOP OF THE POLE. TERMINATE THE END OF THE CABLE WITH UNSHIELDED RJ-45 (T-568B) CONNECTORS. ALL FIELD TERMINATIONS/CONNECTORS SHALL BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER USING THE SPECIFIED INSTALLATION TOOL(S).

X-400 CAMERA EXTENSION

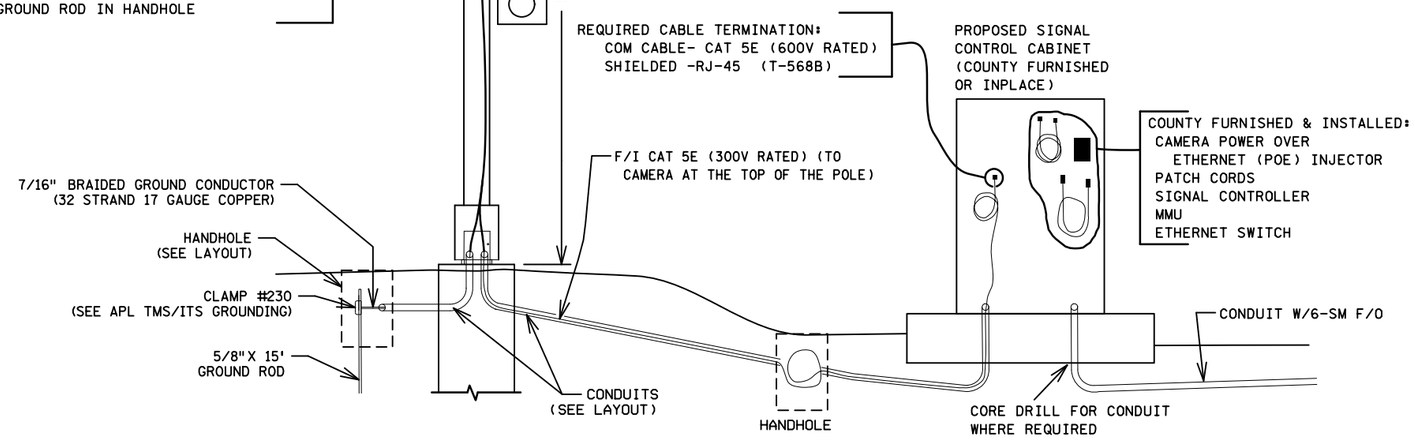
(USED WHEN A LUMINAIRE IS NOT REQUIRED)



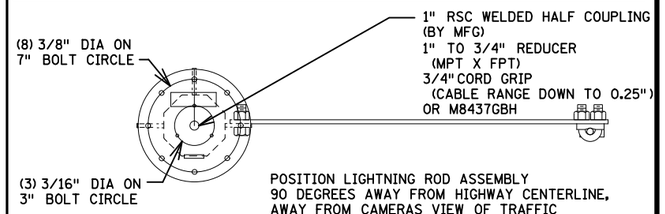
X6-300/CAM 400 EXTENSION

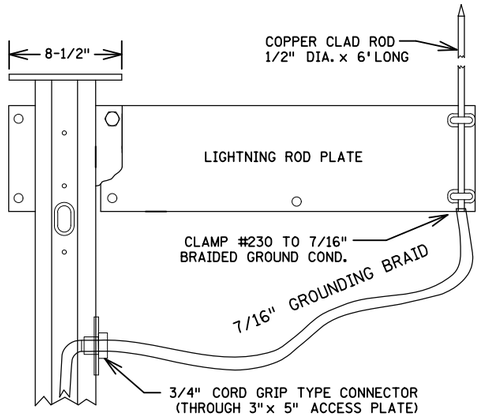


- F&I CAT 5E (600V RATED) (WITH THE PROPER TERMINATIONS) FROM THE TOP OF THE POLE TO THE SIGNAL CABINET. (NOT TO EXCEED 250' LENGTH)
- F&I 7/16" TINNED BRAIDED GROUND CONDUCTOR (32 STRAND 17 GAUGE COPPER) FROM LIGHTNING ROD TO THE GROUND ROD IN HANDHOLE



EXTENSION TOP & LIGHTNING PROTECTION DETAIL





NOTES:

1) FURNISH & INSTALL 7/16" TINNED BRAIDED GROUND CONDUCTOR INSIDE MAST ARM POLE AND THROUGH INPLACE CONDUIT TO CLOSEST HANDHOLE (SEE LAYOUT).
2) CONTRACTOR SHALL CLAMP #230 7/16" BRAIDED GROUND WIRE TO GROUND ROD IN HANDHOLE.
3) NO SPLICES ALLOWED IN 7/16" TINNED BRAIDED GROUND WIRE.
4) CONTRACTOR SHALL CUT A 3/4 INCH KNOCK OUT HOLE IN THE INSPECTION PLATE NEAR THE CAMERA AND PLACE A 3/4 INCH CORD GRIP TYPE FITTING TO RUN THE 7/16 INCH TINNED BRAIDED GROUND CONDUCTOR INTO THE POLE.

NO	DATE	BY	CKD	APPR	REVISION

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ANOKA COUNTY

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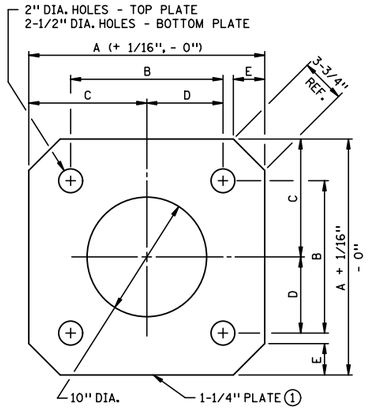
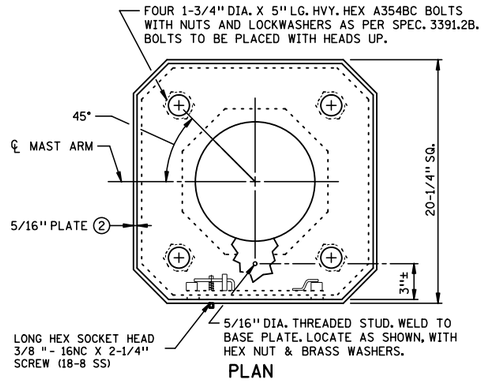
TRAFFIC SIGNAL SYSTEM DETAILS
POLE MOUNT DETAIL
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

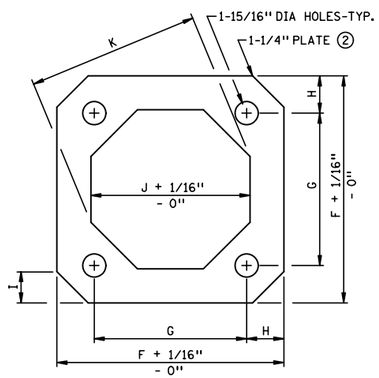
CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS



TOP & BASE PLATE DETAIL

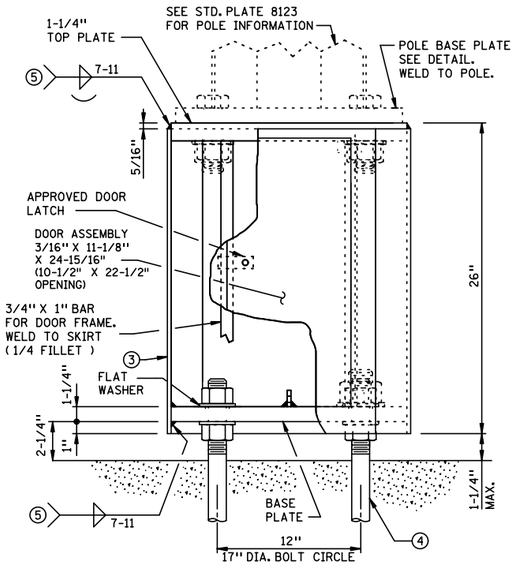


PLAN



POLE BASE PLATE DETAIL

DIMENSION	TOP (1) PLATE	BASE (1) PLATE	POLE (2) BASE PLATE
A	19-3/4"	19-3/4"	
B	12-3/4"	12"	
C	9-7/8"	9-7/8"	
D	6-3/8"	6"	
E	2-5/8"	2-5/8"	
F			19"
G			12-3/4"
H			3-1/8"
I			2-5/8"
J			13-3/16"
K			14-5/16"



ELEVATION

NOTES:

ANTI-SEIZE COMPOUND THAT MEETS MIL-PRF-907E SPEC. SHALL BE APPLIED WITH A BRUSH TO ALL THREADS.

FOR SUBSTITUTION OF MATERIALS, SEE SPEC. 1605.

(1) STRUCTURAL STEEL AS PER SPEC. 3306.

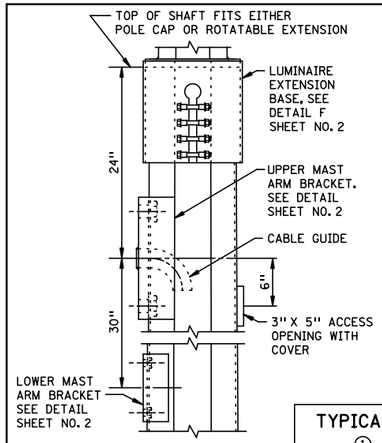
(2) STRUCTURAL STEEL AS PER SPEC. 3309.

(3) GALVANIZE TRANSFORMER BASE AS PER SPEC. 3394 AFTER FABRICATION. GALVANIZE ALL HARDWARE AS PER SPEC. 3392, EXCEPT STAINLESS STEEL AND BRASS.

(4) SEE STANDARD PLATE 8126 FOR POLE FOUNDATION DETAILS.

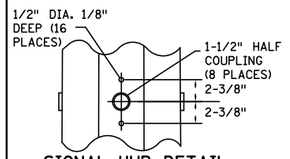
(5) FABRICATE STRUCTURAL METALS PER SPEC. 2471.

APPROVED APRIL 5, 2013 STATE DESIGN ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION TRANSFORMER BASE AND POLE BASE PLATE (PA90 AND PA100)	SPECIFICATION REFERENCE 2565	STANDARD PLATE NO. 8121H 2 OF 2

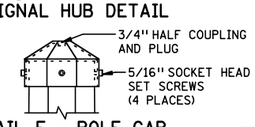


ENLARGED DETAIL A

COUNTERSINK DETAIL

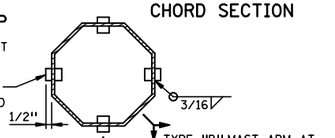


SIGNAL HUB DETAIL

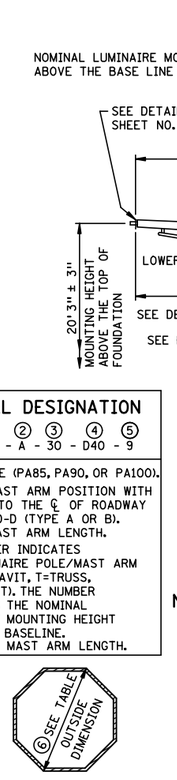


DETAIL E - POLE CAP

SIGNAL HUB COUPLINGS AT RIGHT ANGLE TO THE ℄ OF ROADWAY. PLUGS SHALL BE PROVIDED FOR ALL COUPLINGS FOUR (4) 1-1/2" DIA. COUPLINGS, INSIDE THREADED



SECTION D-D
POLE MOUNTED SIGNAL HUB (2)

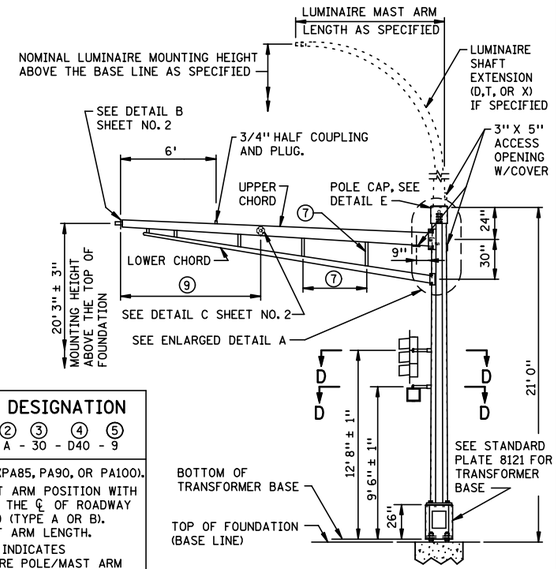


POLE-UPPER & LOWER CHORD SECTION

TYPICAL DESIGNATION

(1) (2) (3) (4) (5)
TYPE PA90 - A - 30 - D40 - 9

(1) POLE TYPE (PA85, PA90, OR PA100).
(2) SIGNAL MAST ARM POSITION WITH RESPECT TO THE ℄ OF ROADWAY SECTION D-D (TYPE A OR B).
(3) SIGNAL MAST ARM LENGTH.
(4) THE LETTER INDICATES THE LUMINAIRE POLE/MAST ARM TYPE (D=DAVIT, T=TRUSS, X=STRAIGHT). THE NUMBER INDICATES THE NOMINAL LUMINAIRE MOUNTING HEIGHT FROM THE BASELINE.
(5) LUMINAIRE MAST ARM LENGTH.



POLE AND MAST ARM

NOTES:

MATERIAL: HIGH STRENGTH LOW ALLOY STEEL SPEC. 3310 50,000 PSI MINIMUM YIELD.

GALVANIZED STRUCTURAL STEEL AS PER SPEC. 3394 AFTER FABRICATION. GALVANIZE ALL HARDWARE AS PER SPEC. 3392. PROVIDE VENT HOLES FOR GALVANIZING.

VERTICAL POST AND MAST ARM ELEMENTS SHALL BE OCTAGONAL TUBE, FABRICATED BY LONGITUDINAL SEAM WELDING WITH 60% PENETRATION.

EACH MAST ARM POLE STANDARD CONSTRUCTED IN ACCORDANCE WITH THIS SPECIFICATION SHALL BE IDENTIFIED BY THE MARKING "PA85, PA90 OR PA100" IMPRINTED INTO THE VERTICAL POST SHAFT APPROXIMATELY 6 FEET ABOVE THE BOTTOM OF THE TRANSFORMER BASE ON THE ZERO-DEGREE FACE WITH RESPECT TO THE TRAFFIC SIGNAL TRUSS-TYPE MAST ARM. THE IMPRINTED "PA85, PA90 OR PA100" SHALL BE CLEARLY LEGIBLE AFTER GALVANIZATION.

THE BASE LINE OR TOP OF FOUNDATION IS ESTABLISHED AT TOP OF THE FINISHED PAVEMENT BENEATH THE OUTER END OF THE MAST ARM.

SEE SPEC. 1605 FOR SUBSTITUTION OF MATERIALS.

SEE SPEC. 2471 FOR FABRICATION REQUIREMENTS.

THE MOUNTING HEIGHTS OF LUMINAIRES ARE MEASURED FROM THE BASELINE, WHICH PROVIDE MOUNTING HEIGHTS OF 30' TO 50'.

(6) DIMENSION MEASURED OUTSIDE POINT TO OUTSIDE POINT THROUGH OCTAGON CENTER. ADJUST POLE WITH LEVELING NUTS SO THAT THE POLE IS VERTICAL.

(7) VERTICAL BRACES SHALL BE SPACED AT 5' INTERVALS. MINIMUM SECTION FOR VERTICAL BRACE SHALL BE 1" SCHEDULE 40 PIPE WITH ALLOWABLE STRESS OF 42000 PSI. PIPE ENDS SHALL BE FLATTENED TO A MAXIMUM THICKNESS OF 1" PERPENDICULAR TO THE MAST ARM AXIS.

(8) ALL ARMS SHALL BE SUPPLIED IN FIVE-FOOT INCREMENTS OF LENGTH.

(9) ONE MID-MAST ARM MOUNT SHALL BE PLACED AT 11' FROM THE END FOR 30', 35' AND 40' LENGTH MAST ARMS. TWO MID MAST ARM MOUNTS SHALL BE PLACED AT 11' AND 23' FROM THE END FOR 45', 50' AND 55' LENGTH MAST ARMS. ALL MID-MAST ARMS SHALL BE CAPPED AND GALVANIZED. KEEP UNUSED MID-MAST ARM MOUNTS CAPPED AND GALVANIZED.

TAPERED OCTAGONAL MAST ARM TRUSS AND POLE DIMENSIONS

POLE TYPE	MAST ARM LENGTH (8)	VERTICAL POLE (6)			UPPER CHORD (6)			LOWER CHORD (6)		
		LARGE END	SMALL END	WALL THICK	LARGE END	SMALL END	WALL THICK	LARGE END	SMALL END	WALL THICK
PA85	15'-30'	13.0"	11.8"	0.179"	9.6"	4.0"	0.120"	5.6"	2.8"	0.120"
PA90	30'-40'	14.0"	11.8"	0.250"	10.9"	5.0"	0.179"	5.6"	2.8"	0.120"
PA100	40'-55'	14.0"	11.8"	0.312"	11.6"	5.0"	0.250"	5.6"	2.8"	0.120"

APPROVED DECEMBER 20, 2011 STATE DESIGN ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION POLE AND MAST ARM LUMINAIRES AND TRAFFIC LIGHTS ASSEMBLY (FOR ALL POLE TYPES)	SPECIFICATION REFERENCE 2565	STANDARD PLATE NO. 8123G 1 OF 2

NO	DATE	BY	CKD	APPR	REVISION

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PRINT NAME: NICK VANGUNST
SIGNATURE: Nick Van Gunst
DATE: 11/26/24 LICENSE NO. 44683

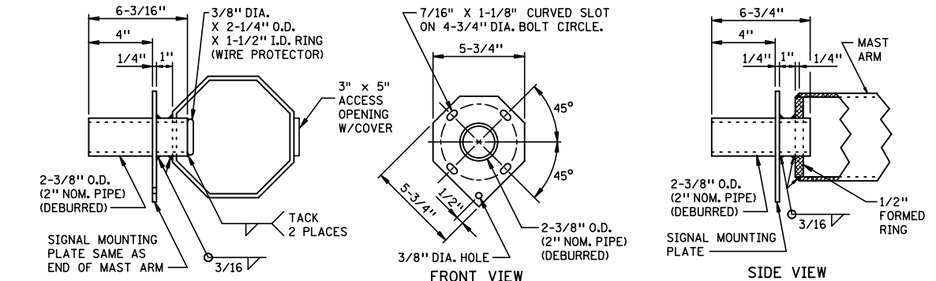
DRAWN BY KAS DATE 11/26/24
DESIGN BY KAS DATE 11/26/24
CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM DETAILS
STANDARD PLATES
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 82 of 174 Sheets

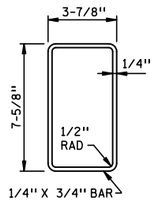


DETAIL C
MID MAST ARM

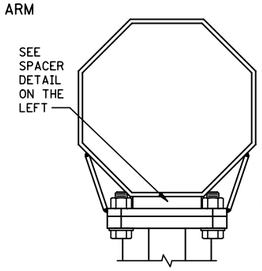
FRONT VIEW

SIDE VIEW

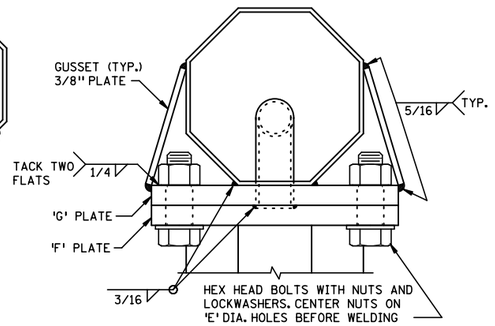
DETAIL B
SIGNAL MOUNTING PLATE



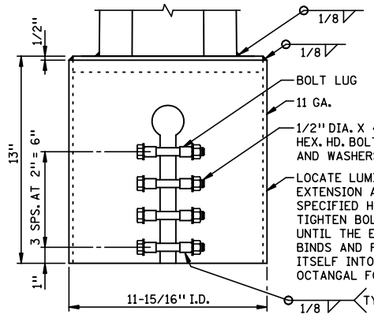
SPACER



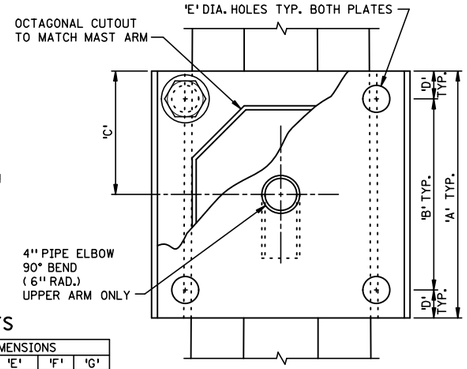
LOWER BRACKET WITH SPACER



TOP VIEW



DETAIL F
LUMINAIRE EXTENSION BASE



ELEVATION

UPPER & LOWER
MAST ARM BRACKET

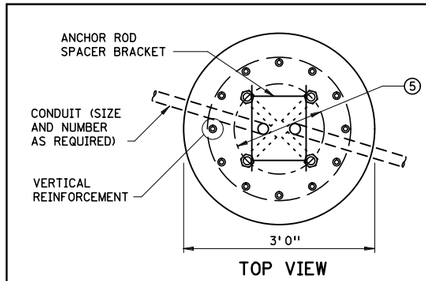
ARM AND POLE MOUNTING BRACKETS

ARM MEMBER	FOUR HEX HEAD BOLTS & NUTS EACH BRACKET	TABULATED BRACKET DIMENSIONS						
		'A'	'B'	'C'	'D'	'E'	'F'	'G'
UPPER	1-1/2"-6UNC X 4-1/2" LG.	15.50"	12.00"	7.75"	1.75"	1.688"	1.25"	1.25"
LOWER	3/4"-10UNC X 2-1/4" LG. (1)	(V) 8.50" (H) 7.75"	6.25" 5.75"	4.25" 3.87"	1.125" 1.0"	0.875" 0.875"	3/4" 3/4"	1/2" 1/2"

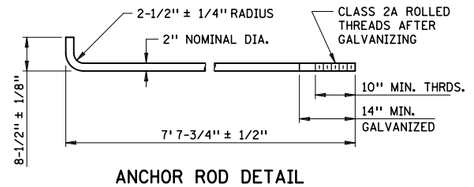
NOTES:

(1) THE (V) DIMENSIONS ARE MEASURED VERTICALLY AND THE (H) DIMENSIONS ARE MEASURED HORIZONTALLY, WHILE UNSPECIFIED ARE MEASURED BOTH VERTICALLY AND HORIZONTALLY.

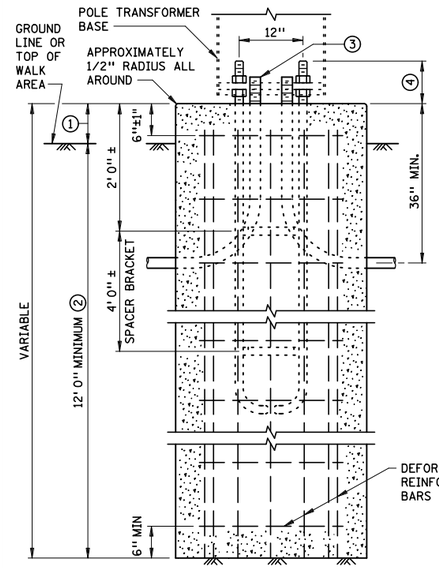
APPROVED DECEMBER 20, 2011 STATE DESIGN ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION POLE AND MAST ARM (DETAILS)	SPECIFICATION REFERENCE 2565	STANDARD PLATE NO. 8123G 2 OF 2



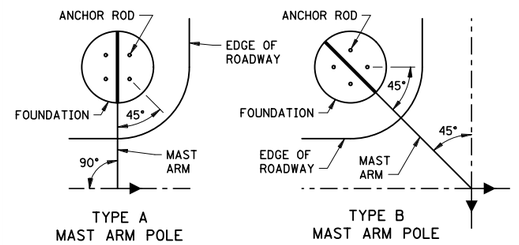
TOP VIEW



ANCHOR ROD DETAIL
(SPEC. 3385 TYPE C)



VERTICAL SECTION



ANCHOR ROD PLACEMENT
(WHEN USED WITH MAST ARM POLE)

NOTES:

REINFORCING BARS SHALL BE GRADE 60 AND MEET THE REQUIREMENTS OF ASTM A 706 (WELDABLE REBARS) AND ARE IDENTIFIED BY A DISTINGUISHING MARK OF "W" ROLLED ONTO THE SURFACE OF ONE SIDE OF THE BAR. WELDING SHALL BE PER ANSI/AWS D1.4. USE 12-NO. 7 BARS FOR VERTICAL REINFORCEMENT, SPACED ON A 28" DIA. CIRCLE. HORIZONTAL (CIRCULAR) BARS TO BE NO. 4 SPACED AT 1'-0" MAXIMUM VERTICAL SPACING, SECURELY TIE OR WELD (OR COMBINATION) ALL REINFORCEMENT TOGETHER.

ANCHOR RODS SHALL BE GALVANIZED IN ACCORDANCE WITH SPEC. 3392 AND SHALL BE 2" NOM. DIA. AND CUT LENGTH OF 96" BEFORE BENDING. (SEE ANCHOR ROD DETAIL). ANCHOR ROD CAGES SHALL BE DESIGNED WITHOUT WELDING.

ANTI-SIEZE COMPOUND THAT MEETS MIL-PRF-907E SPEC. SHALL BE APPLIED WITH A BRUSH TO ALL THREADS.

ALL BACKFILLING AROUND THE FOUNDATION MUST BE IN ACCORDANCE WITH 2451.

ALL EXCAVATION MUST BE PROPERLY COMPACTED IN ACCORDANCE WITH 2451.

CONCRETE MIX SHALL BE 3G52.

PREFORMED JOINT FILLER SHALL BE USED BETWEEN FOUNDATION AND SIDEWALK OR CONCRETE AREAS.

FIBER FORMING TUBE SHALL BE USED IN FORMING THE FOUNDATION, OR AS APPROVED BY THE ENGINEER.

OPEN ENDS OF ALL CONDUIT INTO FOUNDATION SHALL BE THREADED, POSITIONED INSIDE THE ANCHOR ROD BOLT CIRCLE, AND CAPPED UNTIL CABLES ARE PLACED.

MAST ARM POLE STANDARDS SHALL NOT BE PLACED ON FOUNDATIONS UNTIL AT LEAST SEVEN DAYS OF CURING PERIOD HAVE ELAPSED.

(1) THE ELEVATION OF THE TOP OF THE FOUNDATION SHALL ASSURE THAT THE VERTICAL CLEARANCE FROM THE BOTTOM OF ALL SIGNAL HEADS (INCLUDING BACKGROUND SHIELDS) TO THE PAVEMENT IS NOT LESS THAN 17 FEET NOR GREATER THAN 19 FEET. THE TOP OF THE FOUNDATION MUST BE A MINIMUM OF 6" ABOVE THE GROUND LINE OR TOP OF SIDEWALK.

(2) DEPTH OF FOUNDATION MAY VARY IN PLANS OR SPECIAL PROVISIONS. DEPTH OF FOUNDATION MAY BE REDUCED 2 FEET WHEN PLACED IN SIDEWALK OR CONCRETE RAISED MEDIAN. FOUNDATION DEPTHS ARE BASED ON A SOIL FRICTION ANGLE OF 30° AND A SOIL WEIGHT OF 120 LB/CF AND NO GROUNDWATER WITHIN THE GROUND SURFACE TO A DEPTH OF TWO TIMES THE WIDTH OR DIAMETER OF BOTTOM OF POLE FOUNDATION. A SOIL BORING OR CONE PENETRATION TEST (CPT) SOUNDING IS RECOMMENDED WHERE IN-SITU STRATIGRAPHY IS UNKNOWN OR QUESTIONABLE. ANY VARIATION IN THE DEPTH OF THE FOUNDATION REQUIRES AN APPROVAL BY THE SOILS ENGINEER.

(3) CONDUIT PER SPEC. 3801 OR 3803. SIZE AND NUMBER AS REQUIRED IN PLANS OR SPECIAL PROVISIONS. 4" MINIMUM AND 6" MAXIMUM PROJECTION ABOVE FOUNDATION, AND CAPPED UNTIL WIRING IS PLACED.

(4) 8" ANCHOR ROD PROJECTION (THREADED). SOME POLES (SUCH AS ROTATABLE T-BASE) REQUIRE GREATER PROJECTION.

(5) FOUR ANCHOR RODS EQUALLY SPACED ON 16.97" DIA. BOLT CIRCLE (12" C. TO C.). EACH ANCHORAGE ROD SHALL HAVE TWO (2) HEAVY HEX LEVELING NUTS, PER ASTM A563 GRADE DH.

APPROVED JULY 15, 2015 STATE DESIGN ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION POLE FOUNDATION (PA90 AND PA100)	SPECIFICATION REFERENCE 2565	STANDARD PLATE NO. 8126L

NO	DATE	BY	CKD	APPR	REVISION

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SIGNATURE:
DATE: 11/26/24 LICENSE NO. 44683

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TRAFFIC SIGNAL SYSTEM DETAILS
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CSAH 116 (BUNKER LAKE BLVD)
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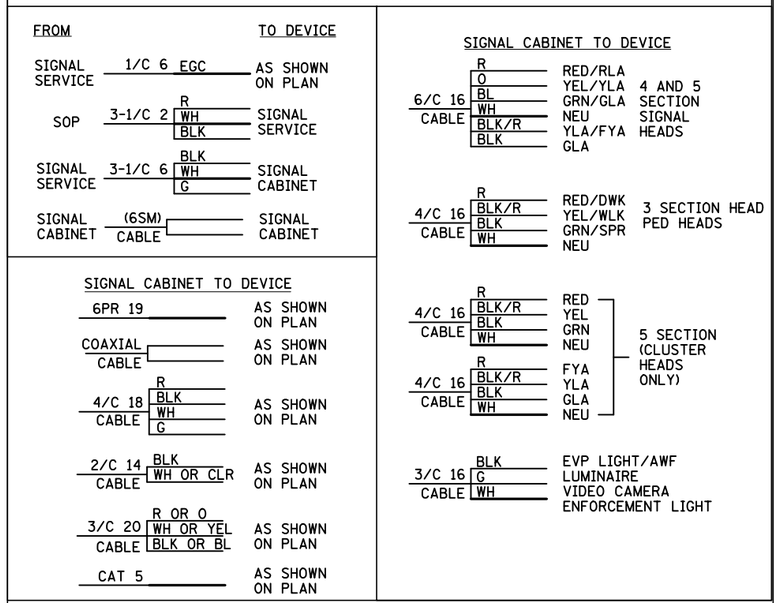
CONDUCTOR COLOR CODE



NOTES:
ARRANGE AND TERMINATE CONDUCTORS AND CABLES AS SHOWN WITHOUT SPLICE.
NUMBER ONLY MEANS AWG CONDUCTOR SIZE (e.g. 14=14AWG)
1/C MEANS AN INDIVIDUAL CONDUCTOR NOT PART OF A CABLE ASSEMBLY

CABLE LABELING ABBREVIATIONS

ABBREVIATION	LABEL REFERENCE DSISCRIPTION & EXAMPLE	COMPONENT
X-Y	INDICATION NUMBER 2-1	SIGNAL HEAD
X-Y	LOOP NUMBER D2-1	DETECTOR
X-Y	PUSH BUTTON NUMBER PB2-1	PUSH BUTTON
X-Y	PED INDICATION NUMBER P2-1	PED INDICATION
X-Y	LUMINAIRE NUMBER L1	LUMINAIRE
X-Y	EVP PHASE NUMBER EVP 2+5	EVP DETECTOR
X-Y	EVP LIGHT PHASE NUMBER EVPL 2+5	EVP CON. LIGHT
X-Y	VIDEO DETECTION PHASE V2-1	VIDEO DETECTION
X-Y	RADAR DETECTION PHASE RD2-1	RADAR DETECTION
SS	SIGNAL SERVICE	SERVICE WIRE
CC	CABINET COMMS	COMMS CABLE
FO	FIBER OPTIC	FIBER CABLE
SPARE Y	SPARE WIRE TO POLE NUMB. SPARE1	SPARE WIRE
ELYZ *	ENFORC. LIGHT POLE & DIRECTION	ENFORCEMENT LIGHT
PTZ1	PTZ CAMERA POLE NUMBER PTZ1	PTZ CAMERA
IC	INTERCONNECT CABLE	INTERCONNECT
EGC	EQUIPMENT GROUNDING CONDUCTOR	GROUND

X = SIGNAL SYSTEM PHASE NUMBER; REFER TO THE PLAN
Y = SIGNAL SYSTEM ASSIGNED COMPONENT NUMBER; REFER TO THE PLAN
Z * = DIRECTION
FURNISH AND INSTALL LABELS ON CABLES WITH ABBREVIATIONS SHOWN ON THIS TABLE AND IN ACCORDANCE WITH THE WIRING DIAGRAM.

WIRE COLOR CODE KEY

R	Red
O	Orange
BL	Blue
WH	White
BLK	Black
BRN	Brown
CL	Clear
G	Green
R/BLK	Red with Black Stripe
O/BLK	Orange with Black Stripe
BL/BLK	Blue with Black Stripe
WH/BLK	White with Black Stripe
WH/R	White with Red Stripe
BLK/WH	Black with White Stripe
BLK/R	Black with Red Stripe

CONDUCTOR AND CABLE SPECIFICATION CHART

NUMBER OF CONDUCTORS & AWG SIZE	TYPE	Specification Number
1/C 2	INDIVIDUAL SERVICE CONDUCTORS	3815.2B.1
1/C 6	FEEDER AND BRANCH CONDUCTORS	3815.2B.1
1/C 6 INS.GR.	Grounding Conductors	3815.2B.5
2/C 14	Loop Detector Lead-In Cable	3815.2C.4
3/C 16	Signal Control Cable	SPEC. PROV.
4/C 16	Signal Control Cable	SPEC. PROV.
6/C 16	Signal Control Cable	SPEC. PROV.
4PR 24	ETHERNET CABLE	3815.2C.6.d
6PR 19	Telephone Cables Outdoor	3815.2C.6.b
3/C 20	EVP Detector Cable	3815.2C.5

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ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM DETAILS
COLOR CODE CHART
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CSAH 116 (BUNKER LAKE BLVD)
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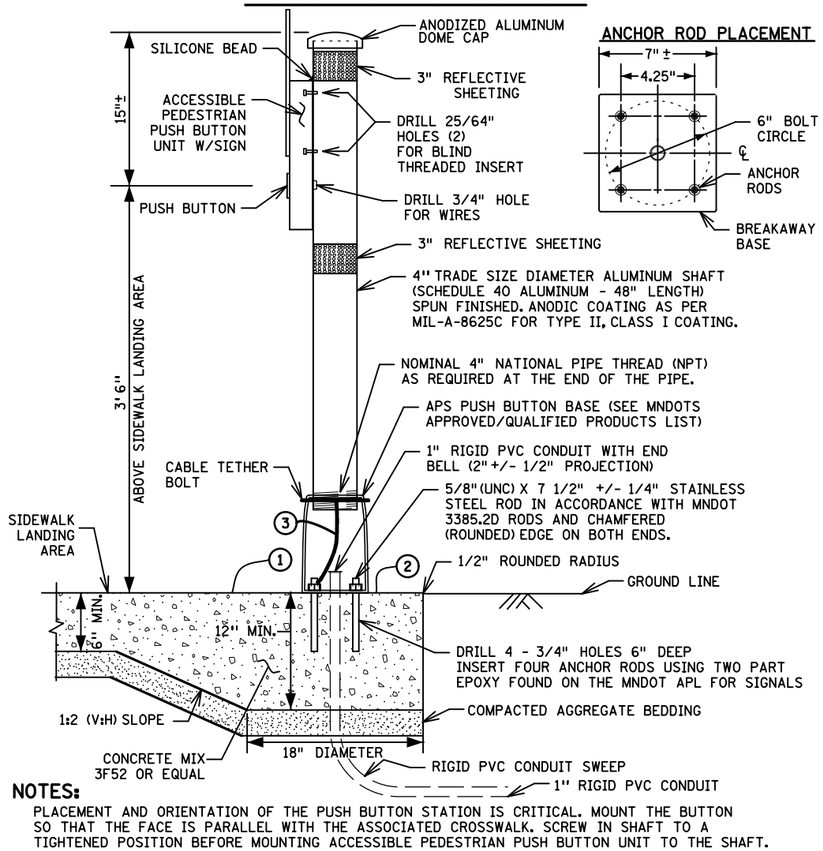
& ADA IMPROVEMENTS

APS PUSH BUTTON STATION



NOTES:

PLACEMENT AND ORIENTATION OF THE PUSH BUTTON STATION IS CRITICAL. MOUNT THE BUTTON SO THAT THE FACE IS PARALLEL WITH THE ASSOCIATED CROSSWALK. SCREW IN SHAFT TO A TIGHTENED POSITION BEFORE MOUNTING ACCESSIBLE PEDESTRIAN PUSH BUTTON UNIT TO THE SHAFT.

ORIENT ACCESS OPENING ON THE BREAKAWAY PEDESTAL DIRECTLY BELOW THE APS BUTTON.

PLUMB THE PUSH BUTTON STATION WITH LEVELING SHIMS IN ACCORDANCE WITH STANDARD PLATE 8129.

INSTALL BLIND THREADED INSERTS USING MANUFACTURER'S SPECIFIC INSERTION TOOL.

USE ZINC PLATED STEEL 1/4 - 20 UNC BLIND THREADED INSERTS SUITABLE FOR MOUNTING ON SURFACE WALL THICKNESS OF .337. APPROVED BLIND INSERTS ARE LISTED ON MNDOT'S APPROVED/QUALITY PRODUCTS LIST WEBSITE FOR TRAFFIC SIGNALS.

USE APS 1/4 - 20 STAINLESS STEEL MOUNTING BOLTS. APPLY BRUSH ON ANTI SEIZE COMPOUND TO BOLTS PRIOR TO ASSEMBLY.

APPLY A BEAD OF 100% SILICONE SEALANT ALONG THE TOP OF THE PUSH BUTTON UNIT WHERE IT COMES IN CONTACT WITH THE 4" SHAFT.

USE WHITE REFLECTIVE SHEETING AT INTERSECTION CORNERS AND YELLOW REFLECTIVE SHEETING IN CENTER MEDIANS. APPROVED TUBE DELINEATOR SHEETING IS LISTED ON MNDOT'S APPROVED/QUALIFIED PRODUCTS LIST WEBSITE FOR SIGNING.

AN 18" X 6" FIBER FORMING TUBE MAY BE USED FOR THE LOWER HALF OF THE FOUNDATION WHEN CONDITIONS DO NOT ALLOW FOR THE 18" X 6" HOLE TO STAND OPEN.

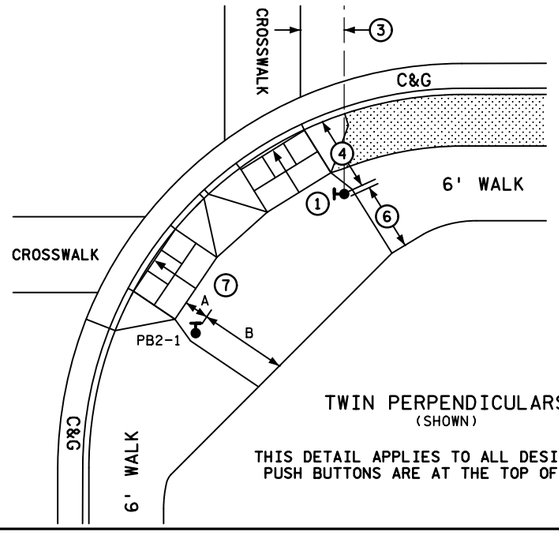
1. THE PUSH BUTTON STATION FOUNDATION IS MONOLITHIC (POURED AT ONE TIME) WITH THE SIDEWALK. PROVIDE A 1:2 (V:H) SLOPE GRADE WHERE THE 6" MIN SIDEWALK DEPTH TRANSITIONS TO THE 12" MIN FOUNDATION DEPTH. MAINTAIN THE COMPACTED AGGREGATE BEDDING AND THICKNESS USED FOR THE SIDEWALK THROUGHOUT THE SLOPE AND FOUNDATION GRADING. PROVIDE 1:2 (V:H) SLOPE GRADING 360 DEGREES FOR THE TRANSITION FROM THE SIDEWALK TO THE FOUNDATION WHEN THE FOUNDATION IS NOT LOCATED NEAR EDGE OF SIDEWALK AND IS SURROUNDED BY CONCRETE WALK.
2. ENSURE CONCRETE CONTROL JOINTS AND EDGE OF CONCRETE WALK ARE A MINIMUM 9" FROM THE CENTER OF THE PUSH BUTTON FOUNDATION.
3. INSTALL THE MANUFACTURER PROVIDED CABLE TETHER ASSEMBLY IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

TYPICAL APS PEDESTRIAN PUSH BUTTON LOCATION

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

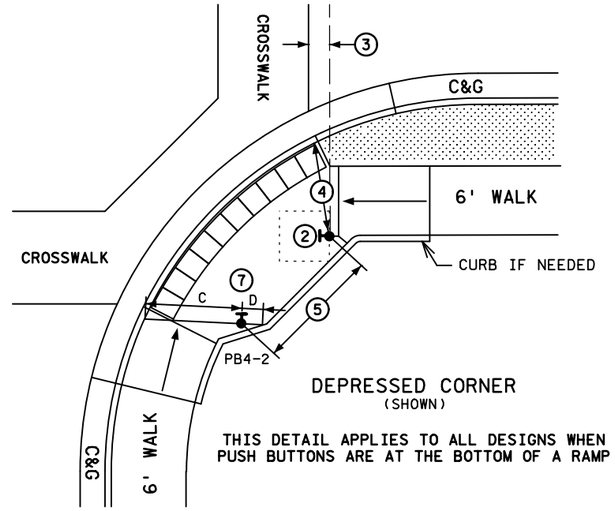
SUPPLEMENTAL GUIDANCE FOR CONSTRUCTING COMPLIANT APS PUSH BUTTONS:

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



TWIN PERPENDICULARS
(SHOWN)

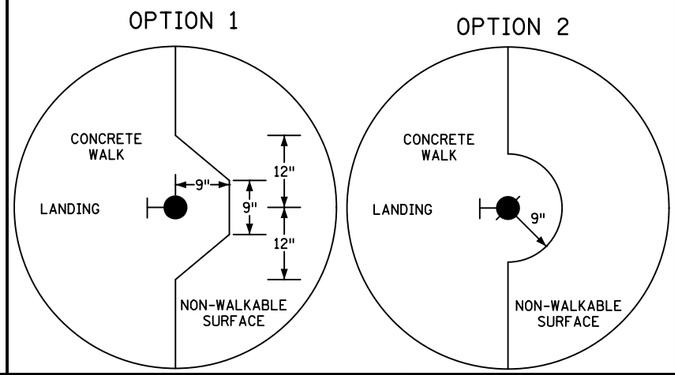
THIS DETAIL APPLIES TO ALL DESIGNS WHEN PUSH BUTTONS ARE AT THE TOP OF A RAMP



DEPRESSED CORNER
(SHOWN)

THIS DETAIL APPLIES TO ALL DESIGNS WHEN PUSH BUTTONS ARE AT THE BOTTOM OF A RAMP

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



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

A - DISTANCE MEASURED FROM THE PUSH BUTTON TO THE FRONT OF LANDING/TOP OF RAMP

B - CLEAR DISTANCE MEASURED FROM THE PUSH BUTTON TO THE BACK OF LANDING/EDGE OF WALK

C - CLEAR DISTANCE MEASURED FROM THE PUSH BUTTON TO THE OUTSIDE EDGE OF DOMES IN THE DIRECTION OF TRAVEL

D - CLEAR DISTANCE FROM THE PUSH BUTTON TO THE BACK OF LANDING MEASURED IN THE OPPOSITE DIRECTION OF TRAVEL

NO	DATE	BY	CKD	APPR	REVISION

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PRINT NAME: NICK VANGUNST

SIGNATURE: Nick Van Gunst

DATE: 11/26/24 LICENSE NO. 44683

DRAWN BY KAS DATE 11/26/24

DESIGN BY KAS DATE 11/26/24

CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM DETAILS
APS PEDESTRIAN PB STATION DETAIL
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 85 of 174 Sheets

SIGNAL HEAD CHART

FACE	R	Y	FYA	G
1-1, 1-2	←	←	←	←
2-1, 2-2, 2-3	●	●		●
3-1, 3-2	←	←	←	←
4-1, 4-2	●	●		●
5-1, 5-2	←	←	←	←
6-1, 6-2, 6-3	●	●		●
7-1, 7-2	←	←	←	←
8-1, 8-2	●	●		●

-ALL SIGNAL INDICATIONS SHALL BE 12" LED
-ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS
-FYA DENOTES FLASHING YELLOW ARROW

-ALL LOOP DETECTORS SHALL BE PVC UNLESS NOTED OTHERWISE
-LOCATION: DISTANCE FROM TEMPORARY CROSSWALK IN FEET

LOOP DETECTOR CHART

NUMBER	SIZE (FT)	LOCATION
D1-1, D5-1	3-6x6	25,40,55
D1-2, D5-2	6x6	10
D2-1, D2-2	6x6	EXISTING
D2-3, D2-4	6x6	10
D3-1	3-6x6	25,40,55
D3-2	6x6	10
D4-1	6x6	25
D4-2	6x6	10
D6-1, D6-2	6x6	EXISTING
D6-3, D6-4	6x6	10
D7-1	3-6x6	25,40,55
D7-2	6x6	10
D8-1	6x6	25
D8-2	6x6	10
ABANDON DC-1, DC-2, DC-3, DC-4	6x6	EXISTING

F&I: PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB6-2)
EXTEND INTO INP HH 1:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

F&I: PED PB STATION
1-APS PB AND SIGN
(LT ARROW) (PB4-1)
EXTEND INTO INP HH 16:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

INPLACE: 4" RSC
5-12/C 12
4-3/C 12
2-3/C 20
8-2/C 14
1-3/C 12 (LUM)
1-FO CABLE (12SM)
REMOVE: 3-12/C 12
2-3/C 12
1-3/C 20
1-3/C 12 (LUM)
F&I: 3-12/C 16
1-6/C 16
1-3/C 16
1-3/C 20
2-3/C 16 (LUM)
7-2/C 14
1-1/C 6 INS. GR.

F&I: PED PB STATION
1-APS PB AND SIGN
(LT ARROW) (PB6-1)
EXTEND INTO INP HH 3:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

F&I: PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB8-2)
EXTEND INTO INP HH 3:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

INPLACE: 3" RSC
3-12/C 12
2-3/C 12
1-3/C 20
6-2/C 14
1-3/C 12 (LUM)
F&I: 4-2/C 14
1-1/C 6 INS. GR.

INPLACE: 2" RSC
1-3/C 12 (LUM)
F&I: 1-3/C 16 (LUM)

INPLACE: 2" RSC
2-2/C 14
**REMOVE: 1-FO CABLE (12SM)
**F&I: 1.5" CONDUIT
1-FO ARMORED CABLE (12SM)

INPLACE: 4" RSC
2-12/C 12
2-3/C 12
1-3/C 20
6-2/C 14
F&I: 1-6/C 16
3-2/C 14
1-1/C 6 INS. GR.
1-3/C 16 (LUM)

INPLACE: 4" RSC
2-12/C 12
2-3/C 12
1-3/C 20
2-2/C 14
F&I: 1-6/C 16
1-3/C 16 (LUM)
3-2/C 14
1-1/C 6 INS. GR.

INPLACE: 1 1/4" RSC
2-2/C 14

INPLACE: 3" RSC
F&I: 1-2/C 14
1-1/C 6 INS. GR.

F&I: PED PB STATION
1-APS PB AND SIGN
(LT ARROW) (PB2-1)
EXTEND INTO INP HH 10:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

INPLACE: 3" RSC
3-12/C 12
2-3/C 12
1-3/C 20
2-2/C 14
1-3/C 12 (LUM)
F&I: 3-2/C 14
1-1/C 6 INS. GR.

F&I: PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB2-2)
EXTEND INTO INP HH 8:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

ROSE ST NW
(30 MPH)

CSAH 116
(BUNKER LAKE BLVD NW)
(45 MPH)

MATCHLINE A

MATCHLINE B

■ADJUST INPLACE HANDHOLE

ABANDON INPLACE

INP HH 1
INP HH 2
INP HH 3
INP HH 4
INP HH 7
INP HH 8
INP HH 10
INP HH 11
INP HH 15
INP HH 16
INP HH 17

6+1 EVP
8+3 EVP
2+5 EVP
4+7 EVP

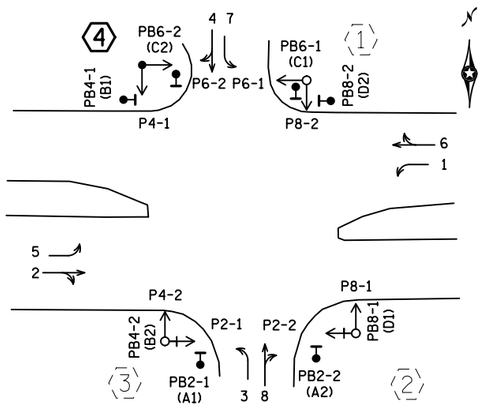
D1-1
D1-2
D2-1
D2-2
D2-3
D2-4
D3-1
D3-2
D4-1
D4-2
D5-1
D5-2
D6-3
D6-4
D7-1
D7-2
D8-1
D8-2

DC-1
DC-2
DC-3
DC-4

PV

SCALE 0 40 IN FEET

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS



PEDESTRIAN PUSH BUTTONS SHALL BE LOCATED AS SHOWN ABOVE

SIGNAL SYSTEM OPERATION

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

NOTES:

1. SEE THE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
2. THE EXACT LOCATION OF THE HANDHOLES, LOOP DETECTORS, UNDERGROUND CONDUIT, AND THE EQUIPMENT PAD ARE DETERMINED IN THE FIELD. VERIFY THE LOCATIONS OF ALL SIGNAL COMPONENTS WITH ANOKA COUNTY PERSONNEL. CONDUITS UNDER ROADWAYS TYPICALLY REQUIRE BORING.
3. ALL SIGNAL MOUNTED SIGNS ARE INCLUDED IN PAYMENT WITH THE LUMP SUM SIGNAL SYSTEM PAY ITEM. SEE SIGNING DETAIL SHEET FOR MAST ARM MOUNTED SIGNS.
4. SEE CONSTRUCTION PLANS FOR PAVEMENT MARKINGS.
5. CONSTRUCTION OF PEDESTRIAN CURB RAMPS, CONCRETE WALK AND MEDIAN WORK ARE INCLUDED WITH THE ADA PLAN AND ARE PAID FOR SEPARATELY.
6. USE PVC OR HDPE FOR NEW CONDUIT. CONDUIT SIZES ARE NOMINAL DIAMETER.
7. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
8. ALL ITEMS DENOTED WITH A ■ ARE TO BE PAID FOR AS INDIVIDUAL PAY ITEMS. SEE STATEMENT OF ESTIMATED QUANTITIES.
9. **SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) IN THE SPECIAL PROVISIONS FOR IMPORTANT TRAFFIC SIGNAL STAGING REQUIREMENTS.**

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SIGNATURE: Nick Van Gunst
DATE: 11/26/24 LICENSE NO. 44683

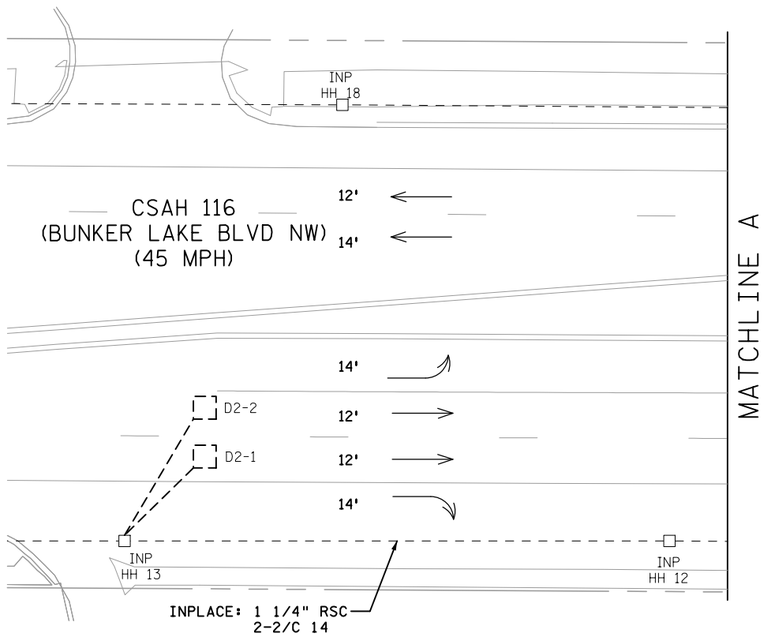
DRAWN BY KAS DATE 11/26/24
DESIGN BY KAS DATE 01/06/25
CHECKED BY NHV DATE 11/26/24

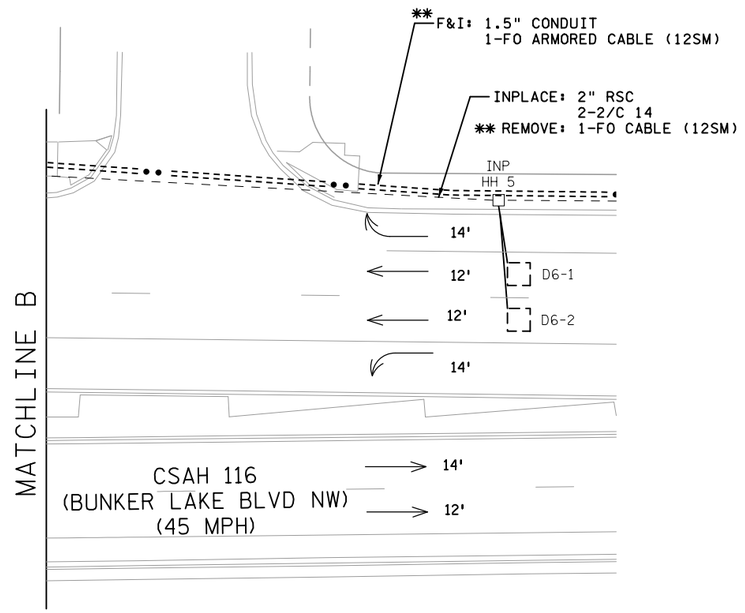
ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM A LAYOUT
BUNKER LAKE BLVD & ROSE ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 86 of 174 Sheets





(1)
INPLACE: PA85 POLE FOUNDATION
TYPE PA85-A-20
REMOVE: TYPE A-20 & 1-ONE WAY SIGNAL-OVERHEAD
F&I: TYPE A-20
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 11'
1-D30-9 LUMINAIRE EXTENSION
LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
REMOVE: 2-TYPE 10B-POLE MOUNTED AT 90° & 180°
F&I: 2-TYPE 10B-POLE MOUNTED AT 90° & 180°
REMOVE: 2-PEDESTRIAN PUSHBUTTONS & SIGNS & PLUG HOLES
SALVAGE AND REINSTALL: ONE WAY EVP DETECTOR AND LIGHT (PHASES 8+3)
F&I: 1-R10-X12 SIGN ADJACENT TO HEAD (3-1)
1-SIGN (BUNKER LAKE BLVD) (SEE SIGN DETAILS)
INPLACE: 3" RSC TO INP HH 3:
2-12/C 12
2-3/C 12
1-3/C 20
F&I: 1-6/C 16
1-3/C 16 (LUM)

(2)
INPLACE: PA100 POLE FOUNDATION
TYPE PA100-A-50-D40-9 (DAVIT AT 350°)
REMOVE: LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
F&I: LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
REMOVE: 3-ONE WAY SIGNALS-OVERHEAD (0', 11' & 23'
FROM END OF MAST ARM)
F&I: 1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNALS OVERHEAD AT 11' & 23'
REMOVE: 2-TYPE 10B-POLE MOUNTED AT 90° & 180°
F&I: 2-TYPE 10B-POLE MOUNTED AT 90° & 180°
REMOVE: 2-PEDESTRIAN PUSHBUTTONS & SIGNS & PLUG HOLE
F&I: 1-APS PB AND SIGN (LT ARROW) (PB8-1)
AND APS PB MOUNTING SPACERS
INPLACE: ONE WAY EVP DETECTOR AND LIGHT (PHASES 2+5)
F&I: 1-R10-X12 SIGN ADJACENT TO HEAD (5-1)
1-SIGN (ROSE ST) (SEE SIGN DETAILS)
INPLACE: 2-R6-1 SIGN PANELS-POLE MOUNTED AT 0° & 180°
3" RSC TO INP HH 8:
3-12/C 12
2-3/C 12
1-3/C 20
1-3/C 12 (LUM)

(3)
INPLACE: PA85 POLE FOUNDATION
TYPE PA85-A-25
REMOVE: TYPE A-25 & 1-ONE WAY SIGNAL-OVERHEAD
F&I: TYPE A-25
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 11'
1-D30-9 LUMINAIRE EXTENSION
LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
REMOVE: 2-TYPE 10B-POLE MOUNTED AT 90° & 180°
F&I: 2-TYPE 10B-POLE MOUNTED AT 90° & 180°
REMOVE: 2-PEDESTRIAN PUSHBUTTONS & SIGNS & PLUG HOLE
F&I: 1-APS PB AND SIGN (RT ARROW) (PB4-2)
AND APS PB MOUNTING SPACERS
SALVAGE AND REINSTALL: ONE WAY EVP DETECTOR AND LIGHT (PHASES 4+7)
F&I: 1-R10-X12 SIGN ADJACENT TO HEAD (7-1)
1-SIGN (BUNKER LAKE BLVD) (SEE SIGN DETAILS)
INPLACE: 3" RSC TO INP HH 11:
2-12/C 12
2-3/C 12
1-3/C 20
F&I: 1-6/C 16
1-3/C 16 (LUM)

(4)
X: 477419.5866
Y: 167262.2921
REMOVE: PA100 POLE FOUNDATION
TYPE PA100-A-50-D40-9 (DAVIT AT 350°)
LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
3-ONE WAY SIGNALS-OVERHEAD (0', 11' & 23'
FROM END OF MAST ARM)
2-TYPE 10B-POLE MOUNTED AT 90° & 180°
2-PEDESTRIAN PUSHBUTTONS & SIGNS & PLUG HOLES
F&I: PA100 POLE FOUNDATION
TYPE PA100-A-55-D30-9
LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNALS OVERHEAD AT 12' & 24'
2-ANGLE MOUNT SIGNALS AT 90° & 180°
2-ANGLE MOUNT C.D. PED HEADS AT 90° & 180°
1-R10-X12 SIGN ADJACENT TO HEAD (1-1)
1-SIGN (ROSE ST) (SEE SIGN DETAILS)
SALVAGE & REINSTALL: ONE WAY EVP DETECTOR AND LIGHT (PHASES 6+1)
2-R6-1 SIGN PANELS-POLE MOUNTED AT 0° & 180°
REMOVE: 3" RSC TO INP HH 1:
3-12/C 12
2-3/C 12
1-3/C 20
1-3/C 12 (LUM)
F&I: 3" CONDUIT TO INP HH 16:
3-12/C 16
1-3/C 16
1-3/C 20
1-3/C 16 (LUM)

(A)
INPLACE: CONTROLLER AND CABINET
CABINET FOUNDATION
1 1/4" RSC TO HH 16:
3-1/C 6
REMOVE: CONTROLLER AND CABINET
INSTALL: TS2 CABINET AND CONTROLLER (COUNTY PROVIDED)
INPLACE: 4" RSC TO INP HH 2:
5-12/C 12
4-3/C 12
2-3/C 20
8-2/C 14
1-FO CABLE (12SM)
REMOVE: 3-12/C 12
2-3/C 12
1-3/C 20
F&I: 3-12/C 16
1-6/C 16
1-3/C 16
1-3/C 20
7-2/C 14

INPLACE: 4" RSC TO INP HH 3:
5-12/C 12
4-3/C 12
2-3/C 20
8-2/C 14
**REMOVE: 1-FO CABLE (12SM)
F&I: 1-6/C 16
6-2/C 14

**F&I: 1.5" CONDUIT TO PULL VAULT
1-FO ARMORED CABLE (12SM)

(B)
INPLACE: SERVICE CABINET
CABINET FOUNDATION
REMOVE: SERVICE CABINET
F&I: BATTERY BACKUP SERVICE
CABINET (SEE DETAIL SHEET)
INPLACE: 1 1/4" RSC TO INP HH 17:
3-1/C 6
1 1/4" RSC TO INP HH 2:
2-3/C 12 (LUM)
STUB OUT 2" RSC
REMOVE: 1-3/C 12 (LUM)
F&I: 3-3/C 16 (LUM)

NOTES:

1. SEE THE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
2. ALL SIGNAL MOUNTED SIGNS ARE INCLUDED IN PAYMENT WITH THE LUMP SUM SIGNAL SYTSTEM PAY ITEM. SEE SIGNING DETAIL SHEET FOR MAST ARM MOUNTED SIGNS.
3. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
4. **SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) IN THE SPECIAL PROVISIONS FOR IMPORTANT TRAFFIC SIGNAL STAGING REQUIREMENTS.**

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PRINT NAME: NICK VANGUNST
SIGNATURE: Nick VanGunst
DATE: 11/26/24 LICENSE NO. 44683

DRAWN BY KAS DATE 11/26/24
DESIGN BY KAS DATE 11/26/24
CHECKED BY NHV DATE 11/26/24

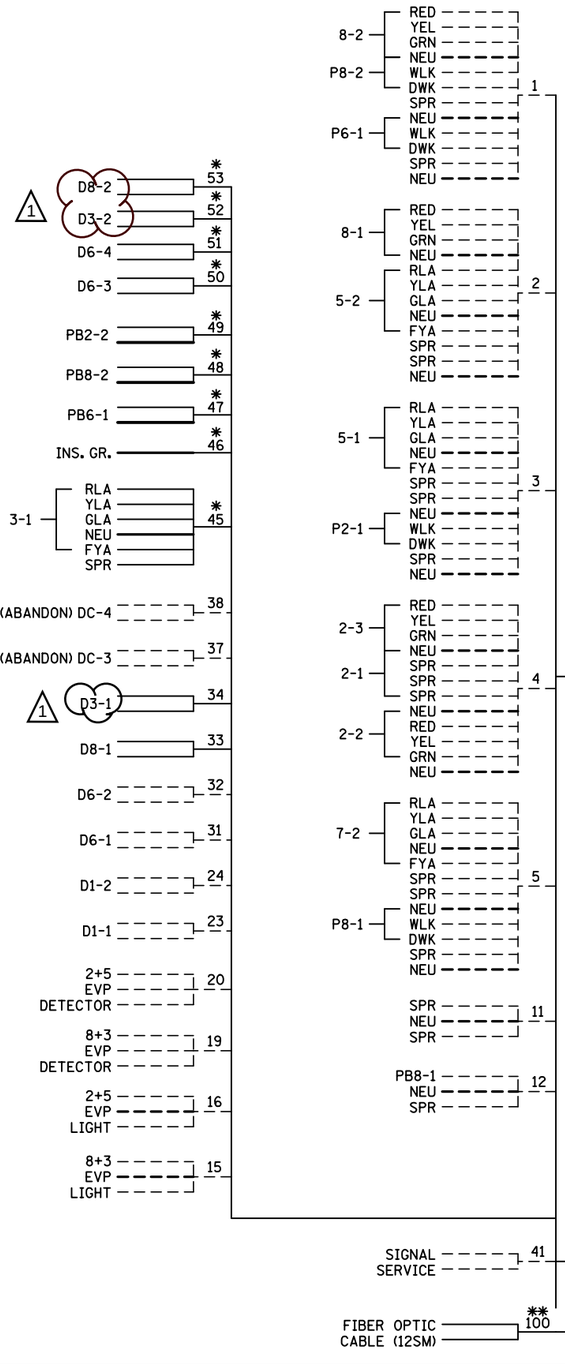
ANOKA COUNTY
HIGHWAY DEPT.

REVISE SIGNAL SYSTEM A NOTES
BUNKER LAKE BLVD & ROSE ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 87 of 174 Sheets

CONTROLLER CABINET



NOTES:

1. SPLICES ONLY ALLOWED IN LOOP DETECTOR CIRCUITS.
2. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL COLOR CODE DETAIL.
3. ITEMS DENOTED WITH AN * IS INCLUDED IN THE REVISE SIGNAL SYSTEM. THESE ITEMS SHALL BE PAID FOR AS PART OF THE REVISE SIGNAL SYSTEM.
4. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.

NO	DATE	BY	CKD	APPR	REVISION
1	1/6/2025	NHV	NHV	NHV	UPDATE DETECTION ASSIGNMENT

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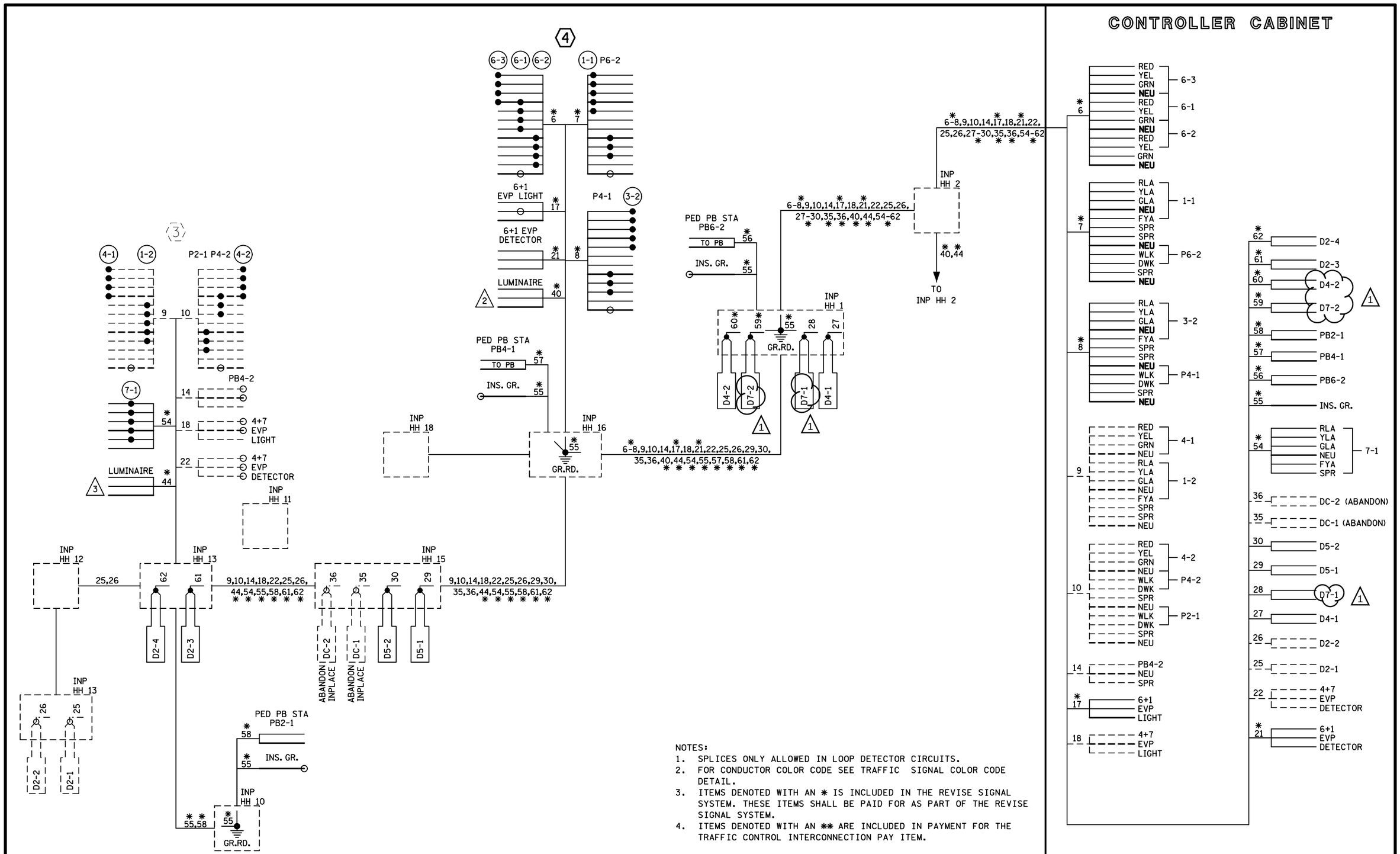
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM A WIRING
BUNKER LAKE BLVD & ROSE ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 88 of 174 Sheets



NOTES:

1. SPLICES ONLY ALLOWED IN LOOP DETECTOR CIRCUITS.
2. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL COLOR CODE DETAIL.
3. ITEMS DENOTED WITH AN * IS INCLUDED IN THE REVISE SIGNAL SYSTEM. THESE ITEMS SHALL BE PAID FOR AS PART OF THE REVISE SIGNAL SYSTEM.
4. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.

NO	DATE	BY	CKD	APPR	REVISION
1	1/6/2025	NHV	NHV	NHV	UPDATE DETECTION ASSIGNMENT

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_sgl13.dgn 1/6/2025 4:15:35 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: NICK VANGUNST

SIGNATURE: Nick VanGunst

DATE: 11/26/24 LICENSE NO. 44683

DRAWN BY KAS DATE 11/26/24

DESIGN BY KAS DATE 01/06/25

CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM A WIRING
BUNKER LAKE BLVD & ROSE ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 89 of 174 Sheets

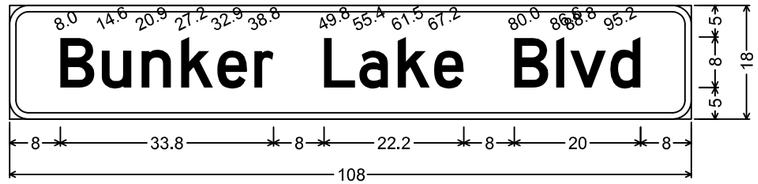
SIGN PANEL DETAILS

SIGN PANELS ON SIGNALS

POLE NUMBER	"A" DISTANCE (FEET) OR POLE	PANEL				
		QTY	CODE NUMBER	LEGEND	SIZE (INCHES)	AREA (SQ FT)
1	6	1	D-1	BUNKER LAKE BLVD	108 x 18	13.50
1	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50
2	40	1	D-2	ROSE ST	54 x 18	6.75
2	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50
3	8	1	D-1	BUNKER LAKE BLVD	108 x 18	13.50
3	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50
4	42	1	D-2	ROSE ST	54 x 18	6.75
4	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50

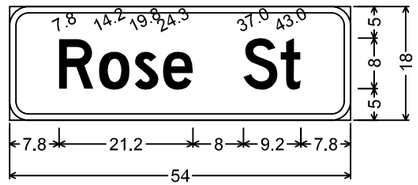
GENERAL NOTES:
1. SEE MnDOT STANDARD SIGNS AND MARKINGS MANUAL FOR STANDARD SIGN DESIGNS, ARROW DETAILS, AND SPLICE PLATE DETAILS.
2. FOR NON STANDARD SIGN DESIGNS, LAYOUTS ARE INCLUDED. SIGN PANEL DIMENSIONS ARE IN INCHES.
3. SEE STANDARD PLAN 5-297.731 FOR SIGN MOUNTING TO MAST ARM.
4. MOUNTING HEIGHT OF POLE MOUNTED SIGN PANELS MUST BE 7 FOOT MINIMUM. MOUNTING HEIGHT IS MEASURED FROM BOTTOM OF SIGN PANEL TO SURFACE IMMEDIATELY BELOW THE SIGN PANEL.
5. "A" DISTANCE = DISTANCE FROM THE END OF THE MAST ARM TO THE EDGE OF EACH SIGN PANEL.
6. THE SIGNS ON THIS DETAIL SHEET ARE SIGNS THAT ARE MOUNTED ON THE SIGNAL MAST ARM OR SIGNAL POLES. THESE SIGNS ARE INCLUDED IN THE LUMP SUM PAYMENT FOR THE REVISE SIGNAL SYSTEM.

D-1



3.0" Radius, 1.0" Border, White on Green;
"Bunker Lake Blvd", D 2K;

D-2



3.0" Radius, 1.0" Border, White on, Green;
"Rose St", D 2K;

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM A DETAILS
BUNKER LAKE BLVD & ROSE ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

INTERCONNECT NOTES:

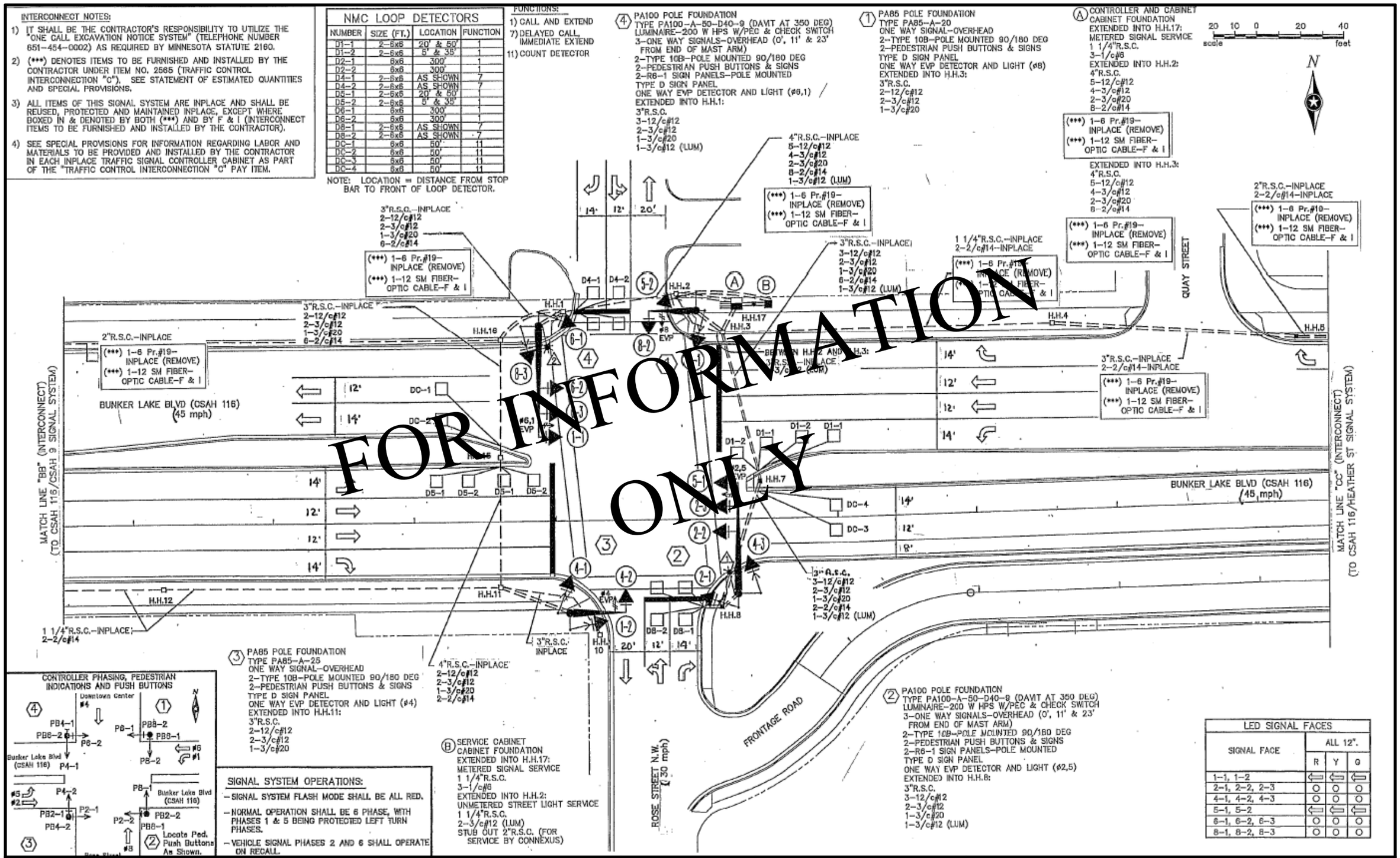
1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651-454-0002) AS REQUIRED BY MINNESOTA STATUTE 216D.
2) (***) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION "C"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
3) ALL ITEMS OF THIS SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED, PROTECTED AND MAINTAINED INPLACE, EXCEPT WHERE BOXED IN & DENOTED BY BOTH (***) AND BY F & I (INTERCONNECT ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR).
4) SEE SPECIAL PROVISIONS FOR INFORMATION REGARDING LABOR AND MATERIALS TO BE PROVIDED AND INSTALLED BY THE CONTRACTOR IN EACH INPLACE TRAFFIC SIGNAL CONTROLLER CABINET AS PART OF THE "TRAFFIC CONTROL INTERCONNECTION "C" PAY ITEM.

NMC LOOP DETECTORS

NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	2-6x6	20' & 50'	1
D1-2	2-6x6	5' & 35'	1
D2-1	6x6	300'	1
D2-2	6x6	300'	1
D4-1	2-6x6	AS SHOWN	7
D4-2	2-6x6	AS SHOWN	7
D5-1	2-6x6	20' & 50'	1
D5-2	2-6x6	5' & 35'	1
D6-1	6x6	300'	1
D6-2	6x6	300'	1
D8-1	2-6x6	AS SHOWN	7
D8-2	2-6x6	AS SHOWN	7
DC-1	6x6	50'	11
DC-2	6x6	50'	11
DC-3	6x6	50'	11
DC-4	6x6	50'	11

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

FUNCTIONS:
1) CALL AND EXTEND
7) DELAYED CALL, IMMEDIATE EXTEND
11) COUNT DETECTOR



(4) PA100 POLE FOUNDATION
TYPE PA100-A-50-D40-9 (DAVIT AT 350 DEG)
LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
3-ONE WAY SIGNALS-OVERHEAD (0', 11' & 23' FROM END OF MAST ARM)
2-TYPE 10B-POLE MOUNTED 90/180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS
2-R6-1 SIGN PANELS-POLE MOUNTED
TYPE D SIGN PANEL
ONE WAY EVP DETECTOR AND LIGHT (#8,1)
EXTENDED INTO H.H.1:
3"R.S.C.
3-12/c#12
2-3/c#12
1-3/c#20
1-3/c#12 (LUM)

(1) PA85 POLE FOUNDATION
TYPE PA85-A-20
ONE WAY SIGNAL-OVERHEAD
2-TYPE 10B-POLE MOUNTED 90/180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS
TYPE D SIGN PANEL
ONE WAY EVP DETECTOR AND LIGHT (#8)
EXTENDED INTO H.H.3:
3"R.S.C.
2-12/c#12
2-3/c#12
1-3/c#20

(A) CONTROLLER AND CABINET
CABINET FOUNDATION
EXTENDED INTO H.H.17:
METERED SIGNAL SERVICE
1 1/4"R.S.C.
3-1/c#6
EXTENDED INTO H.H.2:
4"R.S.C.
5-12/c#12
4-3/c#12
2-3/c#20
8-2/c#14
(***) 1-6 Pr.#19-INPLACE (REMOVE)
(***) 1-12 SM FIBER-OPTIC CABLE-F & I
EXTENDED INTO H.H.3:
4"R.S.C.
5-12/c#12
4-3/c#12
2-3/c#20
8-2/c#14
(***) 1-6 Pr.#19-INPLACE (REMOVE)
(***) 1-12 SM FIBER-OPTIC CABLE-F & I

(3) PA85 POLE FOUNDATION
TYPE PA85-A-25
ONE WAY SIGNAL-OVERHEAD
2-TYPE 10B-POLE MOUNTED 90/180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS
TYPE D SIGN PANEL
ONE WAY EVP DETECTOR AND LIGHT (#4)
EXTENDED INTO H.H.11:
3"R.S.C.
2-12/c#12
2-3/c#12
1-3/c#20

(B) SERVICE CABINET
CABINET FOUNDATION
EXTENDED INTO H.H.17:
METERED SIGNAL SERVICE
1 1/4"R.S.C.
3-1/c#6
EXTENDED INTO H.H.2:
UNMETERED STREET LIGHT SERVICE
1 1/4"R.S.C.
2-3/c#12 (LUM)
STUB OUT 2"R.S.C. (FOR SERVICE BY CONNEXUS)

(2) PA100 POLE FOUNDATION
TYPE PA100-A-50-D40-9 (DAVIT AT 350 DEG)
LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
3-ONE WAY SIGNALS-OVERHEAD (0', 11' & 23' FROM END OF MAST ARM)
2-TYPE 10B-POLE MOUNTED 90/180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS
2-R6-1 SIGN PANELS-POLE MOUNTED
TYPE D SIGN PANEL
ONE WAY EVP DETECTOR AND LIGHT (#2,5)
EXTENDED INTO H.H.8:
3"R.S.C.
3-12/c#12
2-3/c#12
1-3/c#20
1-3/c#12 (LUM)

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS

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

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	○	○	○

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PRINT NAME: NICK VANGUNST
SIGNATURE: Nick Van Gunst
DATE: 11/26/24 LICENSE NO. 44683

DRAWN BY KAS DATE 11/26/24
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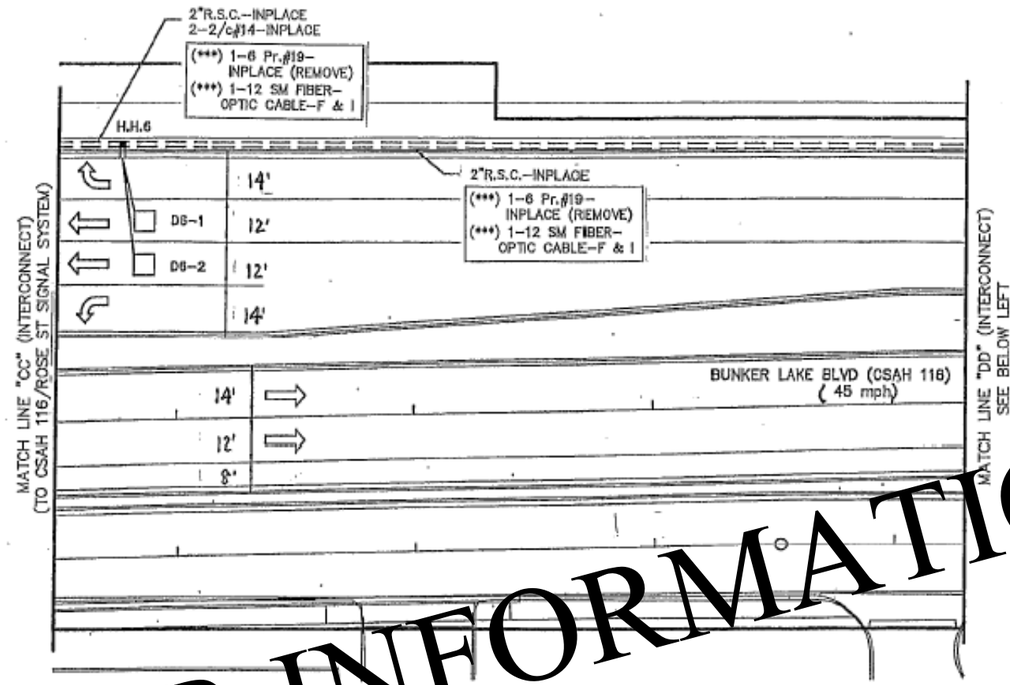
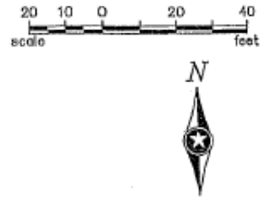
CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM A AS BUILT
BUNKER LAKE BLVD & ROSE ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

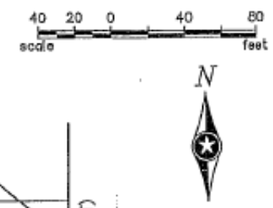


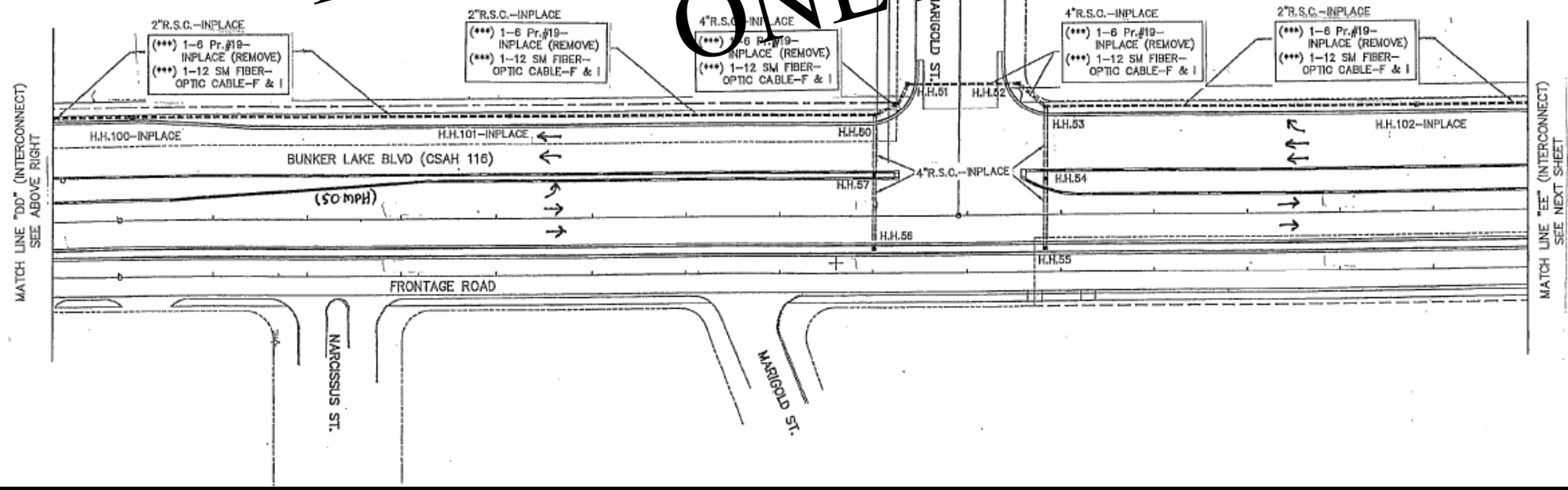


INTERCONNECT NOTES:

1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651–454–0002) AS REQUIRED BY MINNESOTA STATUTE 216D.
2) (***) DENOTES ITEMS TO BE FURNISHED AND INSTALLED (OR REMOVED) BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION "C"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
3) ALL HANDHOLES AND CONDUIT ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE AS PART OF TRAFFIC CONTROL INTERCONNECTION "C" PAY ITEM.

NOTE SCALE CHANGE BETWEEN LAYOUTS ON THIS PLAN SHEET.





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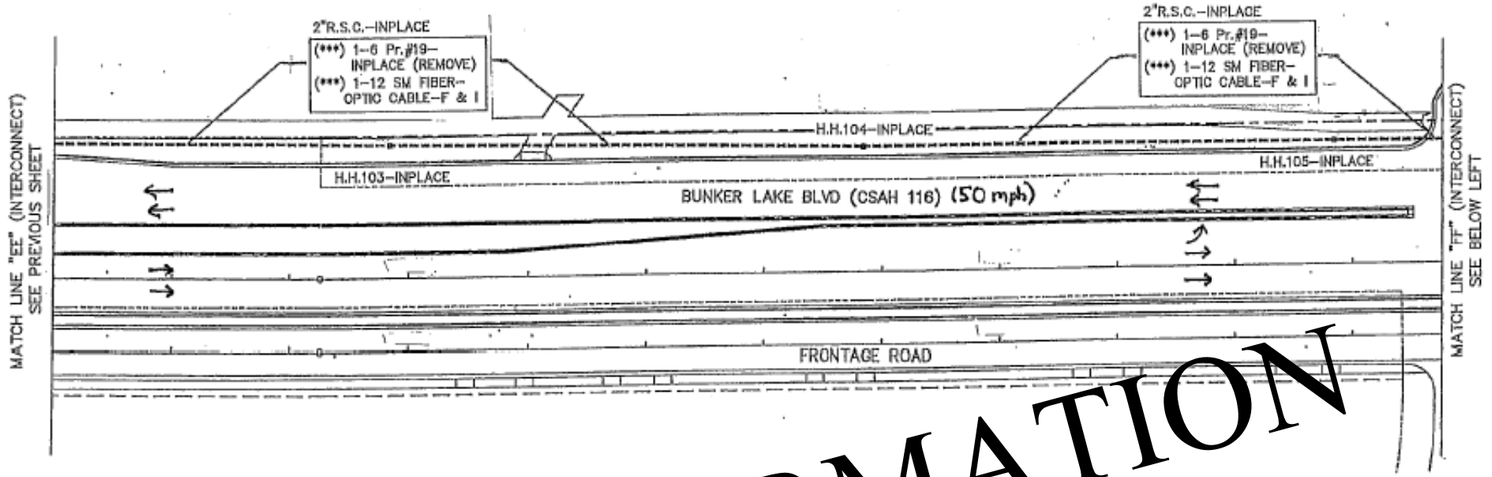
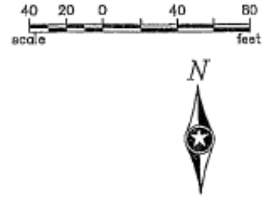
ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM A AS BUILT
BUNKER LAKE BLVD & ROSE ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 92 of 174 Sheets





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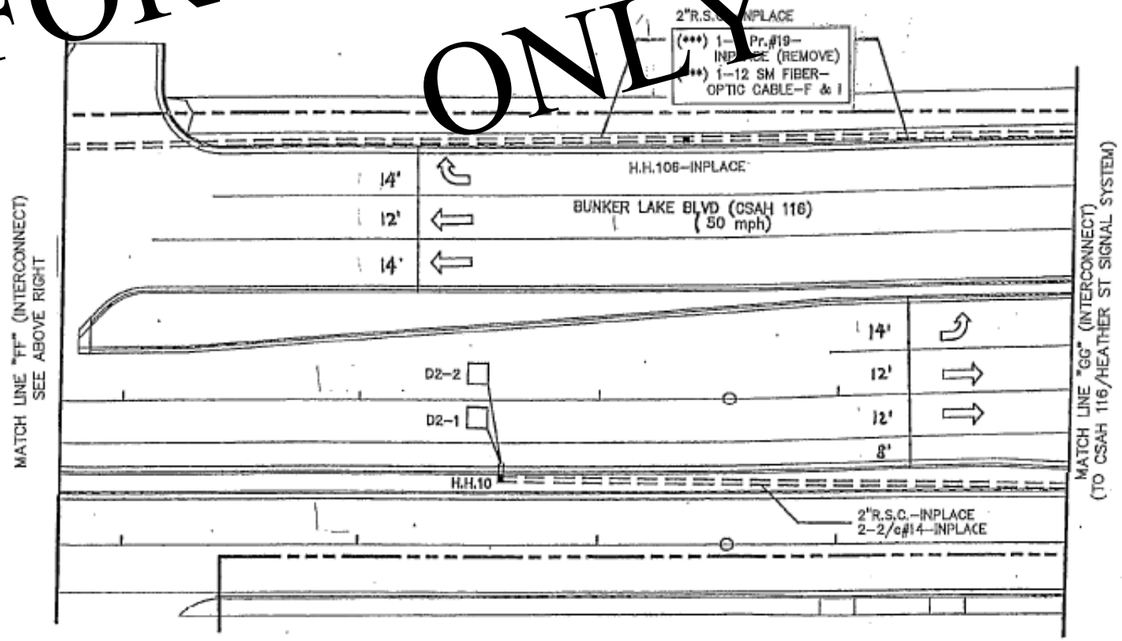

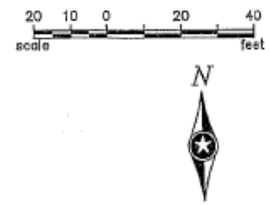

INTERCONNECT NOTES:

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2) (***) DENOTES ITEMS TO BE FURNISHED AND INSTALLED (OR REMOVED) BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION "C"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
3) ALL HANDHOLES AND CONDUIT ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE AS PART OF TRAFFIC CONTROL INTERCONNECTION "C" PAY ITEM.

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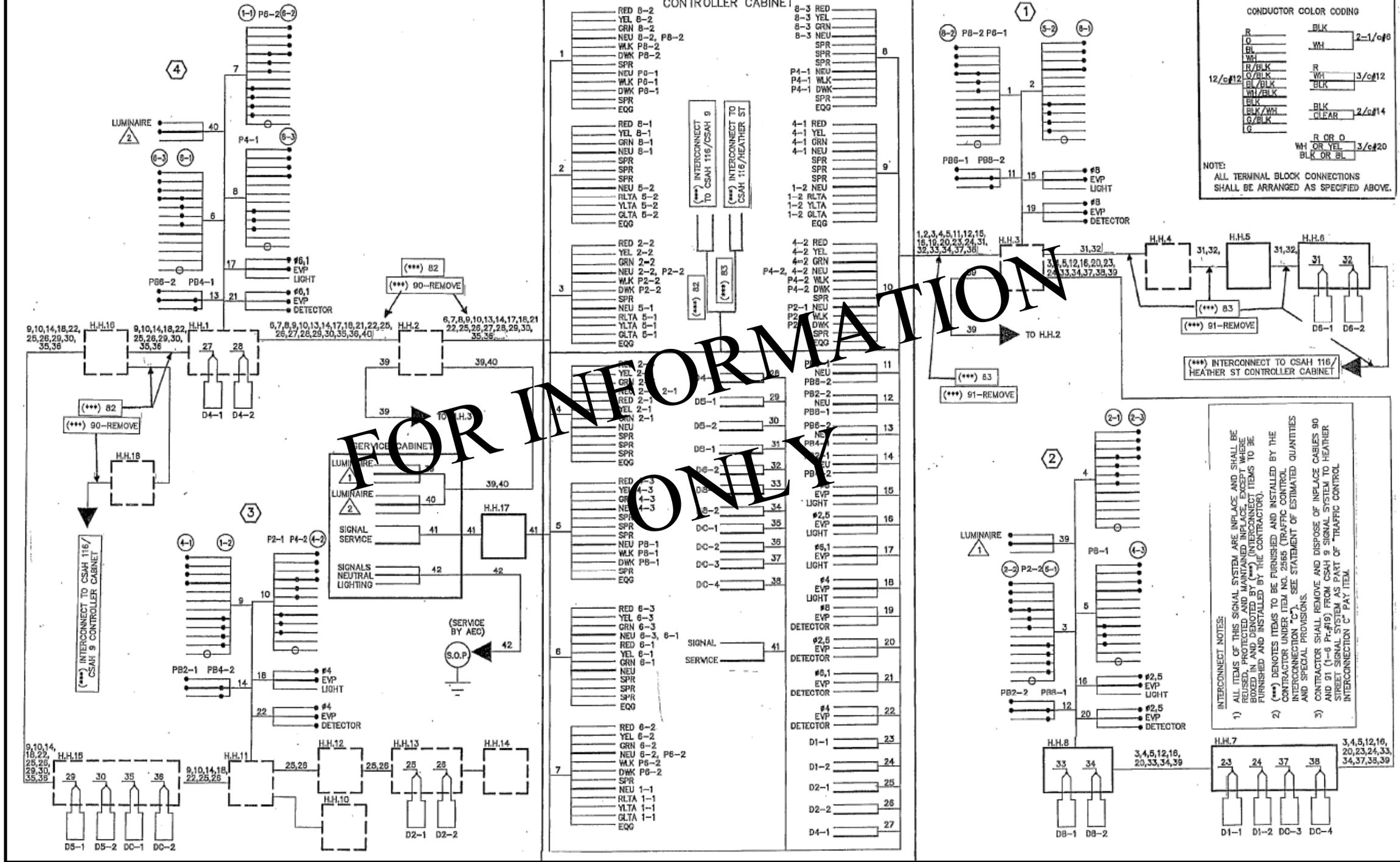
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM A AS BUILT
BUNKER LAKE BLVD & ROSE ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS



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ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM A AS BUILT
BUNKER LAKE BLVD & ROSE ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 94 of 174 Sheets

SIGNAL HEAD CHART

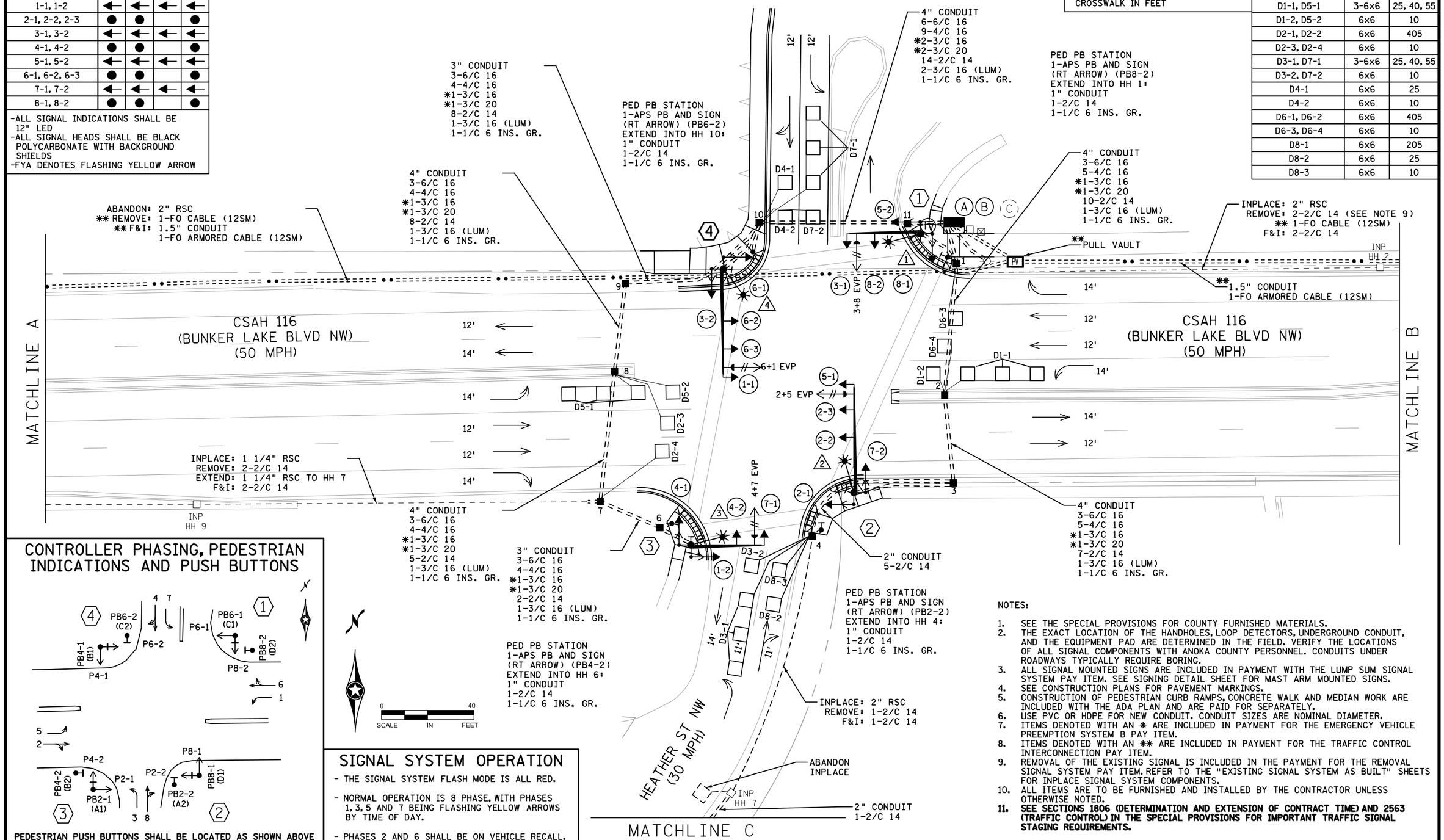
FACE	R	Y	FYA	G
1-1, 1-2	←	←	←	←
2-1, 2-2, 2-3	●	●		●
3-1, 3-2	←	←	←	←
4-1, 4-2	●	●		●
5-1, 5-2	←	←	←	←
6-1, 6-2, 6-3	●	●		●
7-1, 7-2	←	←	←	←
8-1, 8-2	●	●		●

-ALL SIGNAL INDICATIONS SHALL BE 12" LED
-ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS
-FYA DENOTES FLASHING YELLOW ARROW

-ALL LOOP DETECTORS SHALL BE PVC UNLESS NOTED OTHERWISE
-LOCATION: DISTANCE FROM TEMPORARY CROSSWALK IN FEET

LOOP DETECTOR CHART

NUMBER	SIZE (FT)	LOCATION
D1-1, D5-1	3-6x6	25, 40, 55
D1-2, D5-2	6x6	10
D2-1, D2-2	6x6	405
D2-3, D2-4	6x6	10
D3-1, D7-1	3-6x6	25, 40, 55
D3-2, D7-2	6x6	10
D4-1	6x6	25
D4-2	6x6	10
D6-1, D6-2	6x6	405
D6-3, D6-4	6x6	10
D8-1	6x6	205
D8-2	6x6	25
D8-3	6x6	10



CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS

PEDESTRIAN PUSH BUTTONS SHALL BE LOCATED AS SHOWN ABOVE

SIGNAL SYSTEM OPERATION

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

NOTES:

1. SEE THE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
2. THE EXACT LOCATION OF THE HANDHOLES, LOOP DETECTORS, UNDERGROUND CONDUIT, AND THE EQUIPMENT PAD ARE DETERMINED IN THE FIELD. VERIFY THE LOCATIONS OF ALL SIGNAL COMPONENTS WITH ANOKA COUNTY PERSONNEL. CONDUITS UNDER ROADWAYS TYPICALLY REQUIRE BORING.
3. ALL SIGNAL MOUNTED SIGNS ARE INCLUDED IN PAYMENT WITH THE LUMP SUM SIGNAL SYSTEM PAY ITEM. SEE SIGNING DETAIL SHEET FOR MAST ARM MOUNTED SIGNS.
4. SEE CONSTRUCTION PLANS FOR PAVEMENT MARKINGS.
5. CONSTRUCTION OF PEDESTRIAN CURB RAMPS, CONCRETE WALK AND MEDIAN WORK ARE INCLUDED WITH THE ADA PLAN AND ARE PAID FOR SEPARATELY.
6. USE PVC OR HDPE FOR NEW CONDUIT. CONDUIT SIZES ARE NOMINAL DIAMETER.
7. ITEMS DENOTED WITH AN * ARE INCLUDED IN PAYMENT FOR THE EMERGENCY VEHICLE PREEMPTION SYSTEM B PAY ITEM.
8. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
9. REMOVAL OF THE EXISTING SIGNAL IS INCLUDED IN THE PAYMENT FOR THE REMOVAL SIGNAL SYSTEM PAY ITEM. REFER TO THE "EXISTING SIGNAL SYSTEM AS BUILT" SHEETS FOR INPLACE SIGNAL SYSTEM COMPONENTS.
10. ALL ITEMS ARE TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
11. **SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) IN THE SPECIAL PROVISIONS FOR IMPORTANT TRAFFIC SIGNAL STAGING REQUIREMENTS.**

NO	DATE	BY	CKD	APPR	REVISION

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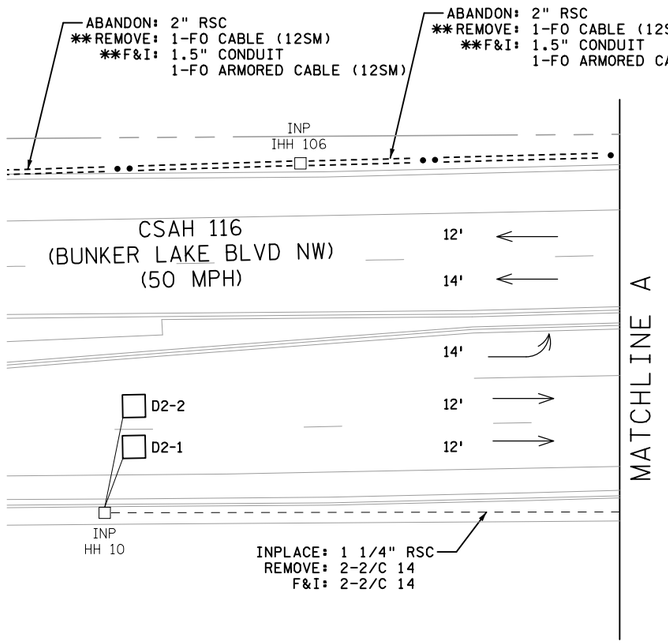
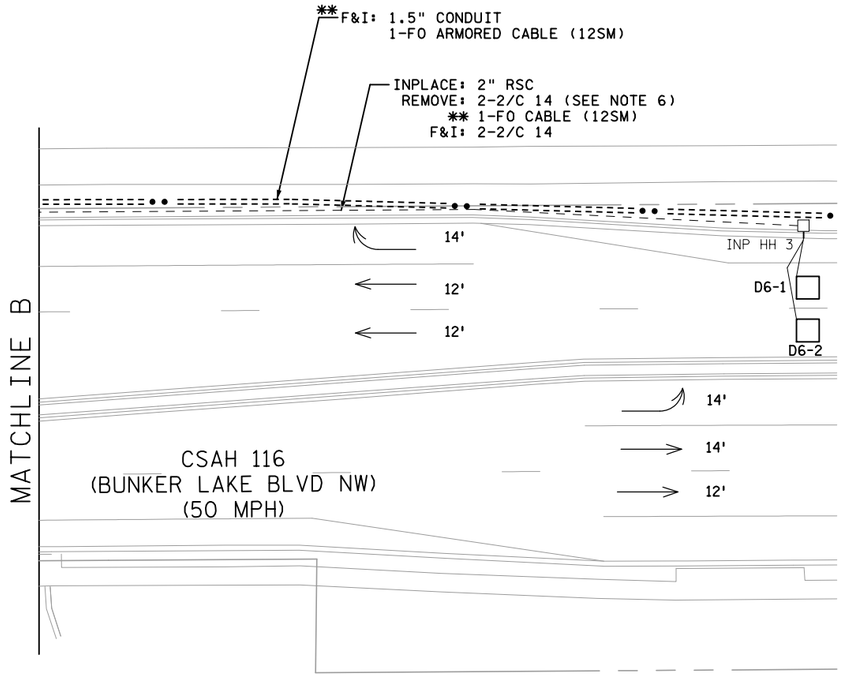
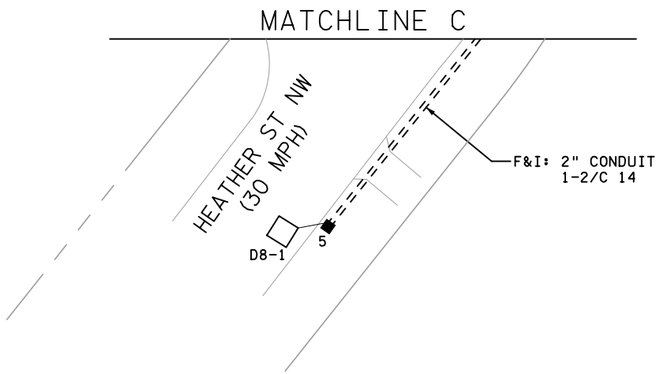
ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM B LAYOUT
BUNKER LAKE BLVD & HEATHER ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS







(1) X:480474.2326
Y:167268.1927
PA90 POLE FOUNDATION
TYPE PA90-A-30-X6-300/CAM 350 EXTENSION
(DAVIT AT 350°)
(INCLUDES LIGHTING ROD, 7/16" GROUND BRAID
AND GROUND ROD)
LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
1-TRAFFIC MANAGEMENT CAMERA WITH MOUNT
(COUNTY PROVIDED)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 12'
2-ANGLE MOUNT SIGNALS AT 90 DEG AND 180 DEG
2-ANGLE MOUNT C.D. PED HEADS AT 90 DEG AND 180 DEG
1-ONE WAY EVP DETECTOR AND CONFIRMATORY
LIGHT (PHASES 8+3) (COUNTY PROVIDED)
1-APS PB AND SIGN (LT ARROW) (PB6-1)
AND APS PB POLE MOUNT ADAPTOR
1-R10-X12 SIGN ADJACENT TO HEAD (3-1)
1-SIGN (BURNKER LAKE BLVD) (SEE SIGN DETAILS)
1-R6-1L (36"X12") MOUNTED AT 0°
1-R6-1R (36"X12") MOUNTED AT 180°
3" CONDUIT TO HH 1:
3-6/C 16
4-4/C 16
*1-3/C 16
*1-3/C 20
1-2/C 14
1-CAT 5E (CCTV)
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

(2) X:480445.4041
Y:167156.2966
PA100 POLE FOUNDATION
TYPE PA100-A-45-D30-9 (DAVIT AT 350°)
LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNALS OVERHEAD AT 12' & 24'
2-ANGLE MOUNT SIGNALS AT 90 DEG AND 180 DEG
2-ANGLE MOUNT C.D. PED HEADS AT 90 DEG AND 180 DEG
1-ONE WAY EVP DETECTOR AND CONFIRMATORY
LIGHT (PHASES 2+5) (COUNTY PROVIDED)
1-APS PB AND SIGN (LT ARROW) (PB8-1)
AND APS PB POLE MOUNT ADAPTOR
1-R10-X12 SIGN ADJACENT TO HEAD (5-1)
1-SIGN (HEATHER ST) (SEE SIGN DETAILS)
1-R6-1L (36"X12") MOUNTED AT 0°
1-R6-1R (36"X12") MOUNTED AT 180°
3" CONDUIT TO HH 3:
3-6/C 16
5-4/C 16
*1-3/C 16
*1-3/C 20
1-2/C 14
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

(3) X:480374.9336
Y:167133.5932
PA90 POLE FOUNDATION
TYPE PA90-A-30-D30-9 (DAVIT AT 350°)
LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 12'
2-ANGLE MOUNT SIGNALS AT 90 DEG AND 180 DEG
2-ANGLE MOUNT C.D. PED HEADS AT 90 DEG AND 180 DEG
1-ONE WAY EVP DETECTOR AND CONFIRMATORY
LIGHT (PHASES 4+7) (COUNTY PROVIDED)
1-APS PB AND SIGN (LT ARROW) (PB2-1)
AND APS PB POLE MOUNT ADAPTOR
1-R10-X12 SIGN ADJACENT TO HEAD (7-1)
1-SIGN (BUNKER LAKE BLVD) (SEE SIGN DETAILS)
3" CONDUIT TO HH 6:
3-6/C 16
4-4/C 16
*1-3/C 16
*1-3/C 20
1-2/C 14
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

(4) X:480389.0326
Y:167252.9714
PA100 POLE FOUNDATION
TYPE PA100-A-45-D30-9 (DAVIT AT 350°)
LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNALS OVERHEAD AT 12' & 24'
2-ANGLE MOUNT SIGNALS AT 90 DEG AND 180 DEG
2-ANGLE MOUNT C.D. PED HEADS AT 90 DEG AND 180 DEG
1-ONE WAY EVP DETECTOR AND CONFIRMATORY
LIGHT (PHASES 6+1) (COUNTY PROVIDED)
1-APS PB AND SIGN (LT ARROW) (PB4-1)
AND APS PB POLE MOUNT ADAPTOR
1-R10-X12 SIGN ADJACENT TO HEAD (1-1)
1-SIGN (HEATHER ST) (SEE SIGN DETAILS)
1-R6-1L (36"X12") MOUNTED AT 0°
1-R6-1R (36"X12") MOUNTED AT 180°
3" CONDUIT TO HH 10:
3-6/C 16
5-4/C 16
*1-3/C 16
*1-3/C 20
1-2/C 14
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

(A)(B) EQUIPMENT PAD (SEE DETAIL SHEET)
SERVICE CABINET WITH BATTERY BACKUP (SEE DETAIL SHEET)
TS2 CABINET AND CONTROLLER (COUNTY PROVIDED)

1-4" NMC TO HH 1:	1-4" NMC TO HH 11:
3-6/C 16	3-6/C 16
4-4/C 16	4-4/C 16
*1-3/C 16	*1-3/C 16
*1-3/C 20	*1-3/C 20
5-2/C 14	8-2/C 14
1-CAT 5E (CCTV)	
	1-4" NMC TO HH 11:
1-4" NMC TO HH 1:	3-6/C 16
3-6/C 16	5-4/C 16
5-4/C 16	*1-3/C 16
*1-3/C 16	*1-3/C 20
*1-3/C 20	6-2/C 14
10-2/C 14	1-1/C 6 INS. GR.
1-1/C 6 INS. GR.	

GROUND WIRE AND GROUND ROD - MIN 8' STUBBED OUT FROM PAD
2-2" AND 1-3" CONDUIT STUBBED OUT (CAPPED BOTH ENDS)
**1.5" CONDUIT TO TMS VAULT:
**2-FO ARMORED CABLES (12SM)
CONTROLLER CABINET TO SERVICE CABINET:
2" CONDUIT
3-1/C 6
CONTROLLER CABINET TO SERVICE CABINET (COMMS):
2" CONDUIT
1-6PR 19
SERVICE CABINET TO POLE MOUNTED TRANSFORMER:
2" CONDUIT
3-1/C 2

SERVICE CABINET TO HH 1:
2" CONDUIT
2-3/C 16 (LUM)
SERVICE CABINET TO HH 11:
2" CONDUIT
2-3/C 16 (LUM)
SERVICE CABINET TO EXTERNAL GR. RD.:
1" CONDUIT
1-1/C 6 INS. GR.
(SEE EQUIPMENT PAD LAYOUT)

(C) INPLACE: POLE MOUNTED SOP
F&I: 1-2" CONDUIT TO SERVICE CABINET
3-1/C 2

NOTES:

1. SEE THE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
2. ALL SIGNAL MOUNTED SIGNS ARE INCLUDED IN PAYMENT WITH THE LUMP SUM SIGNAL SYSTEM PAY ITEM. SEE SIGNING DETAIL SHEET FOR MAST ARM MOUNTED SIGNS.
3. USE PVC OR HDPE FOR NEW CONDUIT. CONDUIT SIZES ARE NOMINAL DIAMETER.
4. ITEMS DENOTED WITH AN * ARE INCLUDED IN PAYMENT FOR THE EMERGENCY VEHICLE PREEMPTION SYSTEM C PAY ITEM.
5. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
6. REMOVAL OF THE EXISTING SIGNAL IS INCLUDED IN THE PAYMENT FOR THE REMOVAL SIGNAL SYSTEM PAY ITEM. REFER TO THE "EXISTING SIGNAL SYSTEM AS BUILT" SHEETS FOR INPLACE SIGNAL SYSTEM COMPONENTS.
7. ALL ITEMS ARE TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
8. **SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) IN THE SPECIAL PROVISIONS FOR IMPORTANT TRAFFIC SIGNAL STAGING REQUIREMENTS.**

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_sgl21.dgn 12/13/2024 8:29:04 AM

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: NICK VANGUNST
SIGNATURE: Nick Van Gunst
DATE: 11/26/24 LICENSE NO. 44683

DRAWN BY KAS DATE 11/26/24
DESIGN BY KAS DATE 11/26/24
CHECKED BY NHV DATE 11/26/24

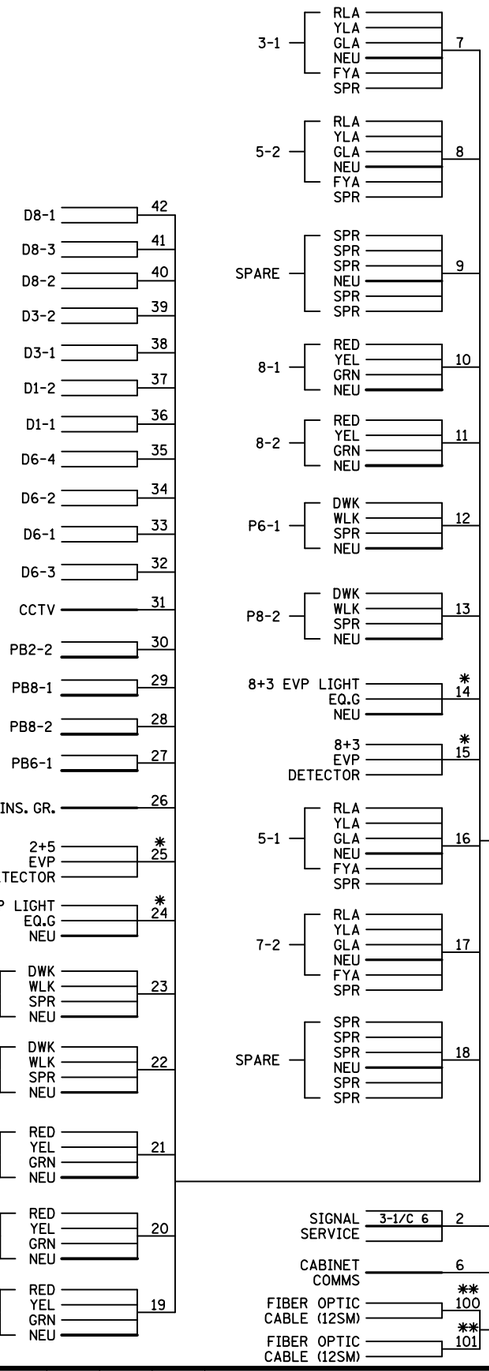
ANOKA COUNTY
HIGHWAY DEPT.

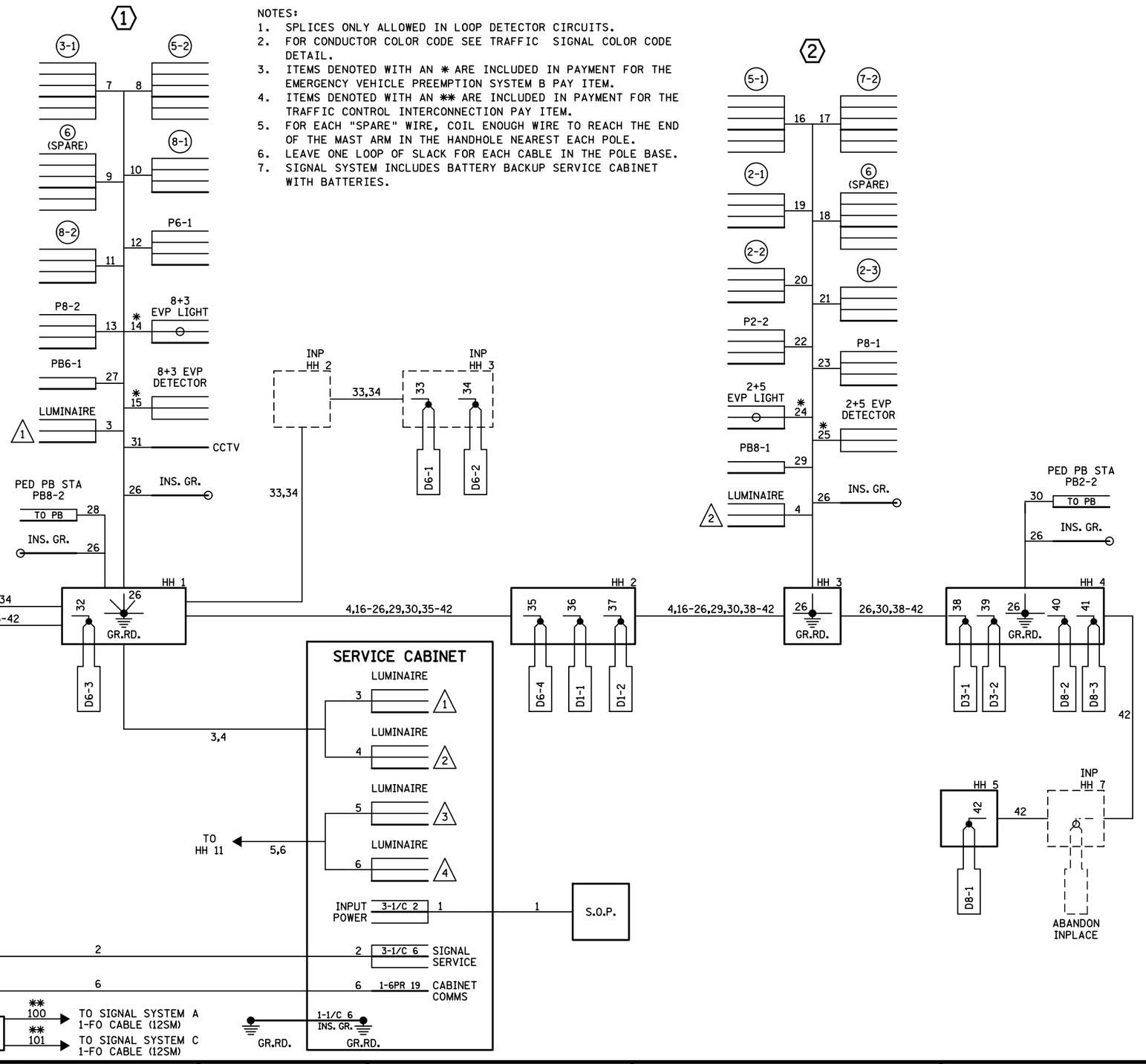
TRAFFIC SIGNAL SYSTEM B NOTES
BUNKER LAKE BLVD & HEATHER ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 96 of 174 Sheets

CONTROLLER CABINET





NOTES:
1. SPLICES ONLY ALLOWED IN LOOP DETECTOR CIRCUITS.
2. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL COLOR CODE DETAIL.
3. ITEMS DENOTED WITH AN * ARE INCLUDED IN PAYMENT FOR THE EMERGENCY VEHICLE PREEMPTION SYSTEM B PAY ITEM.
4. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
5. FOR EACH "SPARE" WIRE, COIL ENOUGH WIRE TO REACH THE END OF THE MAST ARM IN THE HANDHOLE NEAREST EACH POLE.
6. LEAVE ONE LOOP OF SLACK FOR EACH CABLE IN THE POLE BASE.
7. SIGNAL SYSTEM INCLUDES BATTERY BACKUP SERVICE CABINET WITH BATTERIES.

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ANOKA COUNTY

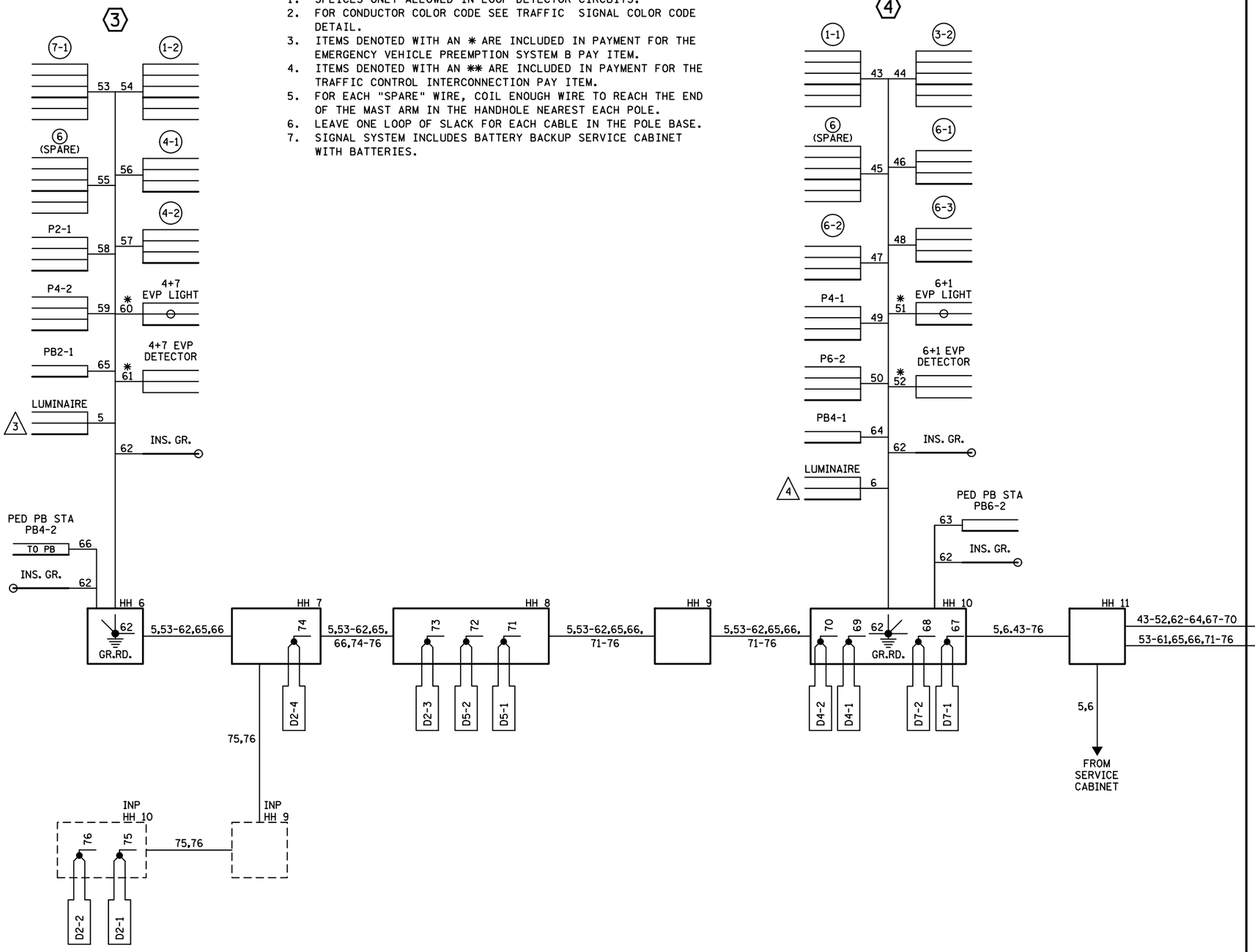
ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM B WIRING
BUNKER LAKE BLVD & HEATHER ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

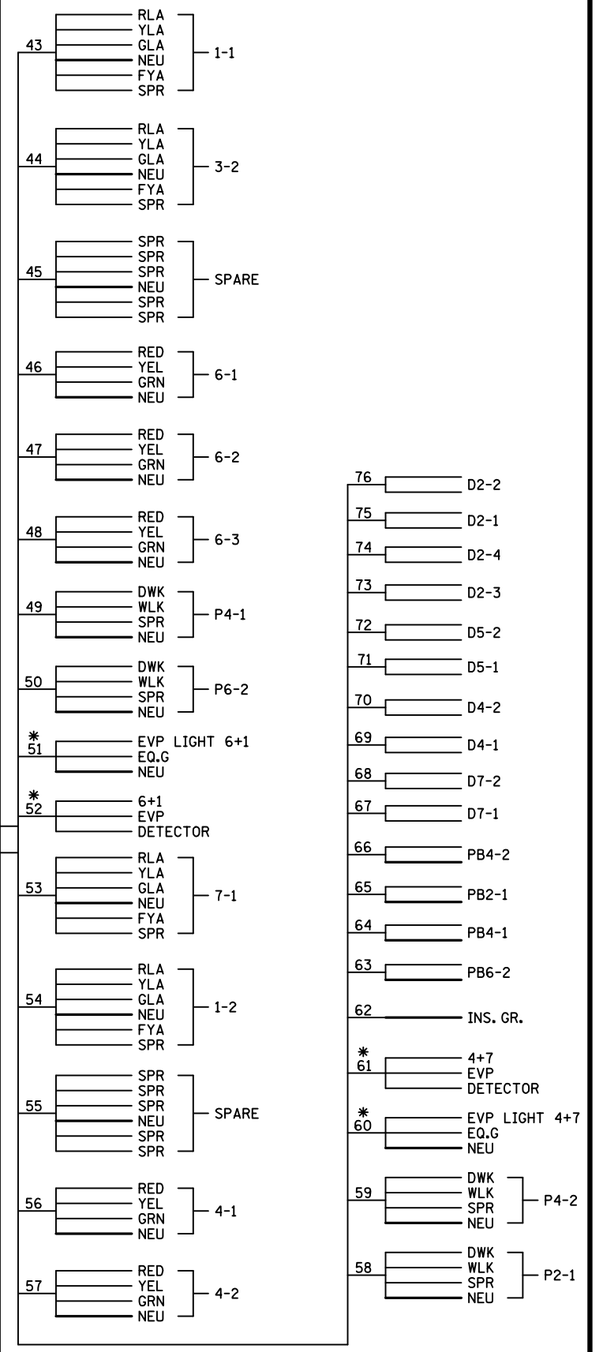
CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 97 of 174 Sheets

NOTES:
1. SPLICES ONLY ALLOWED IN LOOP DETECTOR CIRCUITS.
2. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL COLOR CODE DETAIL.
3. ITEMS DENOTED WITH AN * ARE INCLUDED IN PAYMENT FOR THE EMERGENCY VEHICLE PREEMPTION SYSTEM B PAY ITEM.
4. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
5. FOR EACH "SPARE" WIRE, COIL ENOUGH WIRE TO REACH THE END OF THE MAST ARM IN THE HANDHOLE NEAREST EACH POLE.
6. LEAVE ONE LOOP OF SLACK FOR EACH CABLE IN THE POLE BASE.
7. SIGNAL SYSTEM INCLUDES BATTERY BACKUP SERVICE CABINET WITH BATTERIES.



CONTROLLER CABINET



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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM B WIRING
BUNKER LAKE BLVD & HEATHER ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

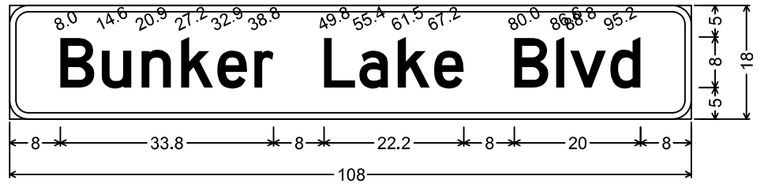
Sheet 98 of 174 Sheets

SIGN PANEL DETAILS

SIGN PANELS ON SIGNALS						
POLE NUMBER	"A" DISTANCE (FEET) OR POLE	PANEL				
		QTY	CODE NUMBER	LEGEND	SIZE (INCHES)	AREA (SQ FT)
1	25	1	D-1	BUNKER LAKE BLVD	108 x 18	13.50
1	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50
2	32	1	D-3	HEATHER ST	66 x 18	8.25
2	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50
3	16	1	D-1	BUNKER LAKE BLVD	108 x 18	13.50
3	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50
4	32	1	D-3	HEATHER ST	66 x 18	8.25
4	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50

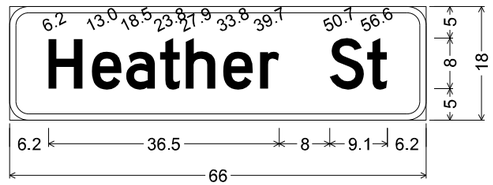
GENERAL NOTES:
1. SEE MnDOT STANDARD SIGNS AND MARKINGS MANUAL FOR STANDARD SIGN DESIGNS, ARROW DETAILS, AND SPLICE PLATE DETAILS.
2. FOR NON STANDARD SIGN DESIGNS, LAYOUTS ARE INCLUDED. SIGN PANEL DIMENSIONS ARE IN INCHES.
3. SEE STANDARD PLAN 5-297.731 FOR SIGN MOUNTING TO MAST ARM.
4. MOUNTING HEIGHT OF POLE MOUNTED SIGN PANELS MUST BE 7 FOOT MINIMUM. MOUNTING HEIGHT IS MEASURED FROM BOTTOM OF SIGN PANEL TO SURFACE IMMEDIATELY BELOW THE SIGN PANEL.
5. "A" DISTANCE = DISTANCE FROM THE END OF THE MAST ARM TO THE EDGE OF EACH SIGN PANEL.
6. THE SIGNS ON THIS DETAIL SHEET ARE SIGNS THAT ARE MOUNTED ON THE SIGNAL MAST ARM OR SIGNAL POLES. THESE SIGNS ARE INCLUDED IN THE LUMP SUM PAYMENT FOR THE TRAFFIC CONTROL SIGNAL SYSTEM.

D-1



3.0" Radius, 1.0" Border, White on Green;
"Bunker Lake Blvd", D 2K;

D-3



3.0" Radius, 1.0" Border, White on, Green;
"Heather St", D 2K;

NO	DATE	BY	CKD	APPR	REVISION

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SIGNATURE: Nick VanGunst

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DRAWN BY KAS DATE 11/26/24

DESIGN BY KAS DATE 11/26/24

CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM B DETAILS
BUNKER LAKE BLVD & HEATHER ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

INTERCONNECT NOTES:

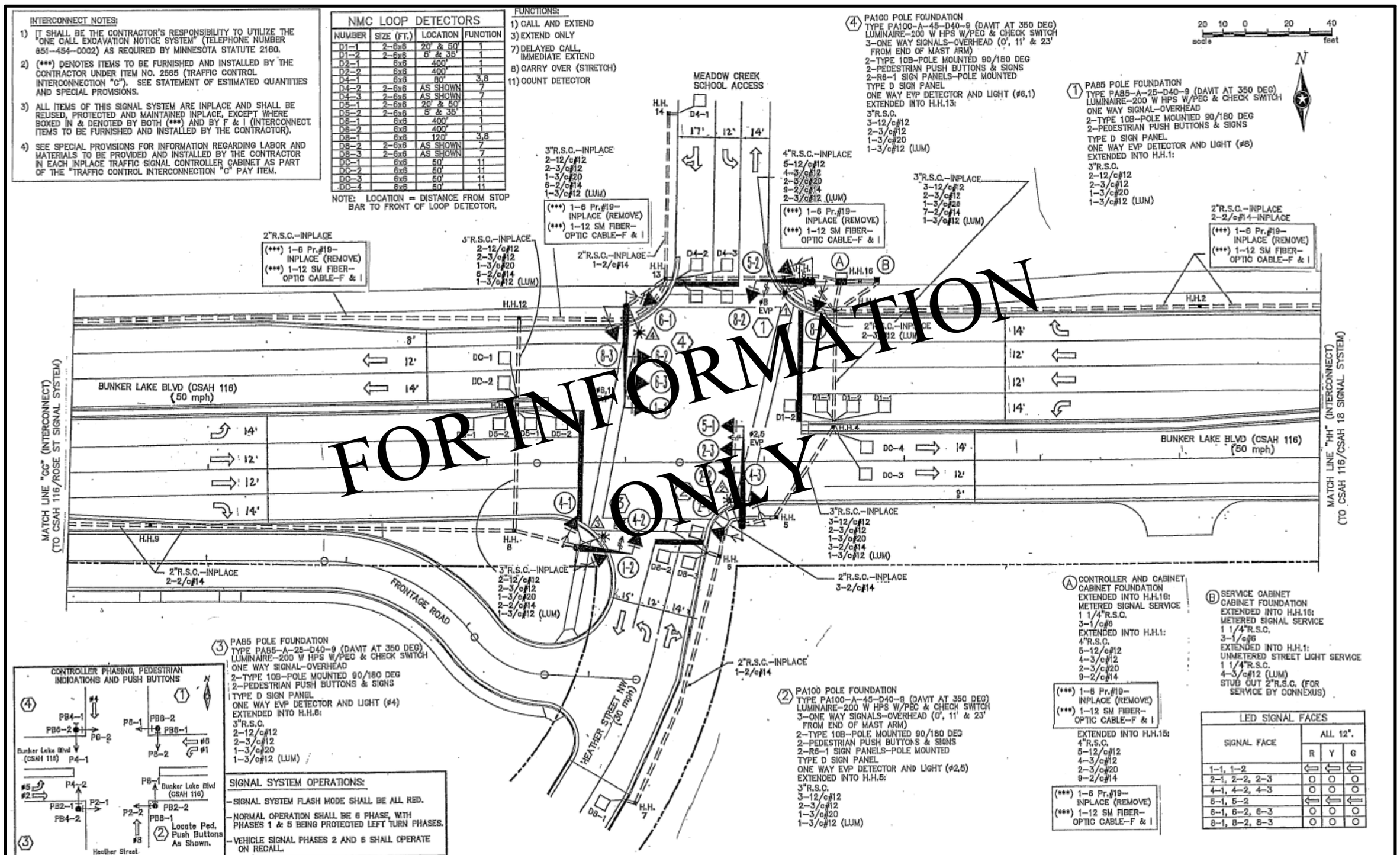
1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651-454-0002) AS REQUIRED BY MINNESOTA STATUTE 216D.
2) (***) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION "C"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
3) ALL ITEMS OF THIS SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED, PROTECTED AND MAINTAINED INPLACE, EXCEPT WHERE BOXED IN & DENOTED BY BOTH (***) AND BY F & I (INTERCONNECT ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR).
4) SEE SPECIAL PROVISIONS FOR INFORMATION REGARDING LABOR AND MATERIALS TO BE PROVIDED AND INSTALLED BY THE CONTRACTOR IN EACH INPLACE TRAFFIC SIGNAL CONTROLLER CABINET AS PART OF THE "TRAFFIC CONTROL INTERCONNECTION "C" PAY ITEM.

NMC LOOP DETECTORS

NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	2-6x6	20' & 50'	1
D1-2	2-6x6	6' & 35'	1
D2-1	6x6	400'	1
D2-2	6x6	400'	1
D4-1	6x6	80'	3,8
D4-2	2-6x6	AS SHOWN	7
D4-3	2-6x6	AS SHOWN	7
D5-1	2-6x6	20' & 50'	1
D5-2	2-6x6	6' & 35'	1
D8-1	6x6	400'	1
D8-2	6x6	400'	1
D8-3	6x6	120'	3,8
D8-2	2-6x6	AS SHOWN	7
D8-3	2-6x6	AS SHOWN	7
DC-1	6x6	50'	11
DC-2	6x6	50'	11
DC-3	6x6	50'	11
DC-4	6x6	50'	11

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

FUNCTIONS:
1) CALL AND EXTEND
3) EXTEND ONLY
7) DELAYED CALL, IMMEDIATE EXTEND
8) CARRY OVER (STRETCH)
11) COUNT DETECTOR



(1) PA85 POLE FOUNDATION
TYPE PA85-A-25-D40-9 (DAVIT AT 350 DEG)
LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
ONE WAY SIGNAL-OVERHEAD
2-TYPE 10B-POLE MOUNTED 90/180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS
TYPE D SIGN PANEL
ONE WAY EVP DETECTOR AND LIGHT (#8)
EXTENDED INTO H.H.1:
3"R.S.C.
2-12/c#12
2-3/c#12
1-3/c#20
1-3/c#12 (LUM)

(2) PA100 POLE FOUNDATION
TYPE PA100-A-45-D40-9 (DAVIT AT 350 DEG)
LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
3-ONE WAY SIGNALS-OVERHEAD (0', 11' & 23' FROM END OF MAST ARM)
2-TYPE 10B-POLE MOUNTED 90/180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS
2-R8-1 SIGN PANELS-POLE MOUNTED
TYPE D SIGN PANEL
ONE WAY EVP DETECTOR AND LIGHT (#2,5)
EXTENDED INTO H.H.5:
3"R.S.C.
3-12/c#12
2-3/c#12
1-3/c#20
1-3/c#12 (LUM)

(3) PA85 POLE FOUNDATION
TYPE PA85-A-25-D40-9 (DAVIT AT 350 DEG)
LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
ONE WAY SIGNAL-OVERHEAD
2-TYPE 10B-POLE MOUNTED 90/180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS
TYPE D SIGN PANEL
ONE WAY EVP DETECTOR AND LIGHT (#4)
EXTENDED INTO H.H.8:
3"R.S.C.
2-12/c#12
2-3/c#12
1-3/c#20
1-3/c#12 (LUM)

(4) PA100 POLE FOUNDATION
TYPE PA100-A-45-D40-9 (DAVIT AT 350 DEG)
LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
3-ONE WAY SIGNALS-OVERHEAD (0', 11' & 23' FROM END OF MAST ARM)
2-TYPE 10B-POLE MOUNTED 90/180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS
2-R8-1 SIGN PANELS-POLE MOUNTED
TYPE D SIGN PANEL
ONE WAY EVP DETECTOR AND LIGHT (#6,1)
EXTENDED INTO H.H.13:
3"R.S.C.
3-12/c#12
2-3/c#12
1-3/c#20
1-3/c#12 (LUM)

(A) CONTROLLER AND CABINET CABINET FOUNDATION
EXTENDED INTO H.H.16:
METERED SIGNAL SERVICE
1 1/4"R.S.C.
3-1/c#6
EXTENDED INTO H.H.1:
4"R.S.C.
5-12/c#12
4-3/c#12
2-3/c#20
9-2/c#14
(***) 1-6 Pr.#19-INPLACE (REMOVE)
(***) 1-12 SM FIBER-OPTIC CABLE-F & I
EXTENDED INTO H.H.15:
4"R.S.C.
5-12/c#12
4-3/c#12
2-3/c#20
9-2/c#14
(***) 1-6 Pr.#19-INPLACE (REMOVE)
(***) 1-12 SM FIBER-OPTIC CABLE-F & I

(B) SERVICE CABINET CABINET FOUNDATION
EXTENDED INTO H.H.16:
METERED SIGNAL SERVICE
1 1/4"R.S.C.
3-1/c#6
EXTENDED INTO H.H.1:
UNMETERED STREET LIGHT SERVICE
1 1/4"R.S.C.
4-3/c#12 (LUM)
STUB OUT 2"R.S.C. (FOR SERVICE BY CONNEXUS)

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS

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

LED SIGNAL FACES

SIGNAL FACE	ALL 12".		
	R	Y	G
1-1, 1-2	⇦	⇦	⇦
2-1, 2-2, 2-3	O	O	O
4-1, 4-2, 4-3	O	O	O
5-1, 5-2	⇦	⇦	⇦
6-1, 6-2, 6-3	O	O	O
8-1, 8-2, 8-3	O	O	O

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_sgl25.dgn 11/26/2024 2:56:51 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: NICK VANGUNST
SIGNATURE: Nick VanGunst
DATE: 11/26/24 LICENSE NO. 44683

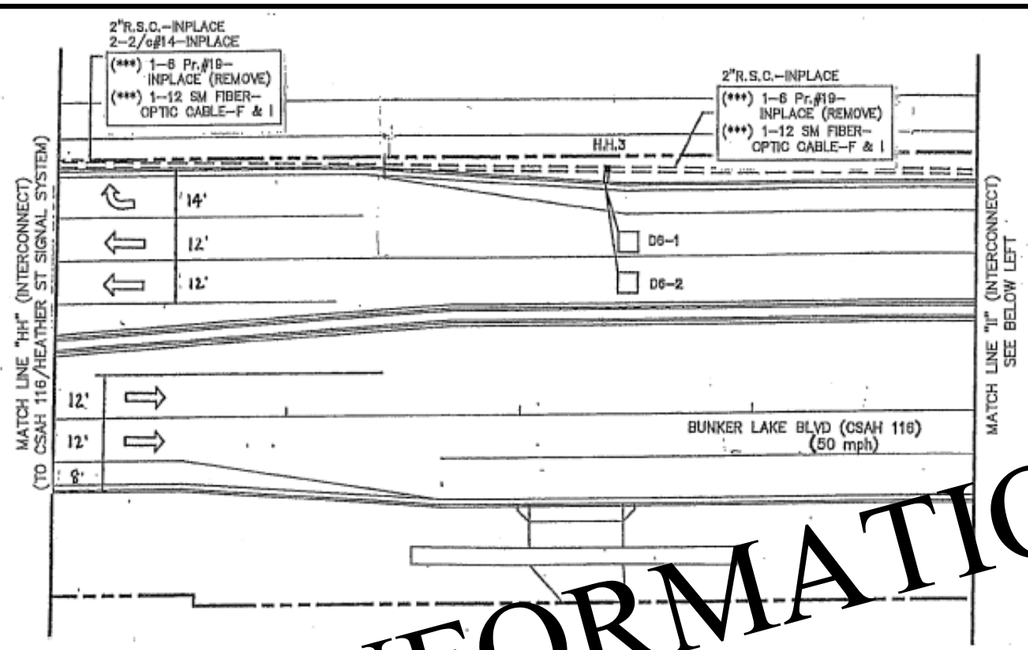
DRAWN BY KAS DATE 11/26/24
DESIGN BY KAS DATE 11/26/24
CHECKED BY NHV DATE 11/26/24

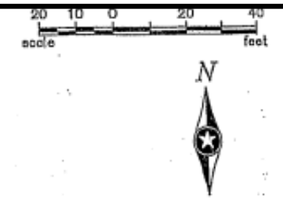
ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM B AS BUILT
BUNKER LAKE BLVD & HEATHER ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 100 of 174 Sheets

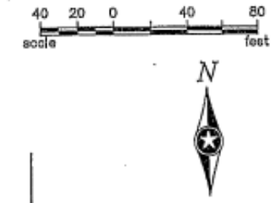


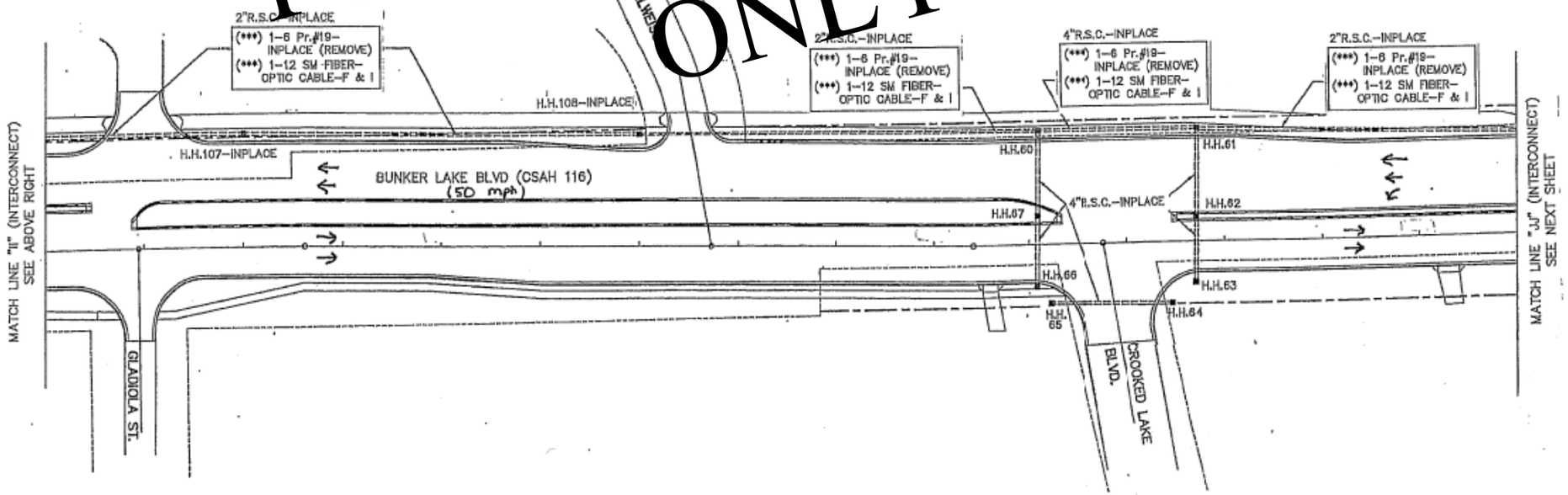


INTERCONNECT NOTES:

1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651-454-0002) AS REQUIRED BY MINNESOTA STATUTE 216D.
2) (***) DENOTES ITEMS TO BE FURNISHED AND INSTALLED (OR REMOVED) BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION "C"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
3) ALL HANDHOLES AND CONDUIT ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE AS PART OF TRAFFIC CONTROL INTERCONNECTION "C" PAY ITEM.

NOTE SCALE CHANGE BETWEEN LAYOUTS ON THIS PLAN SHEET.





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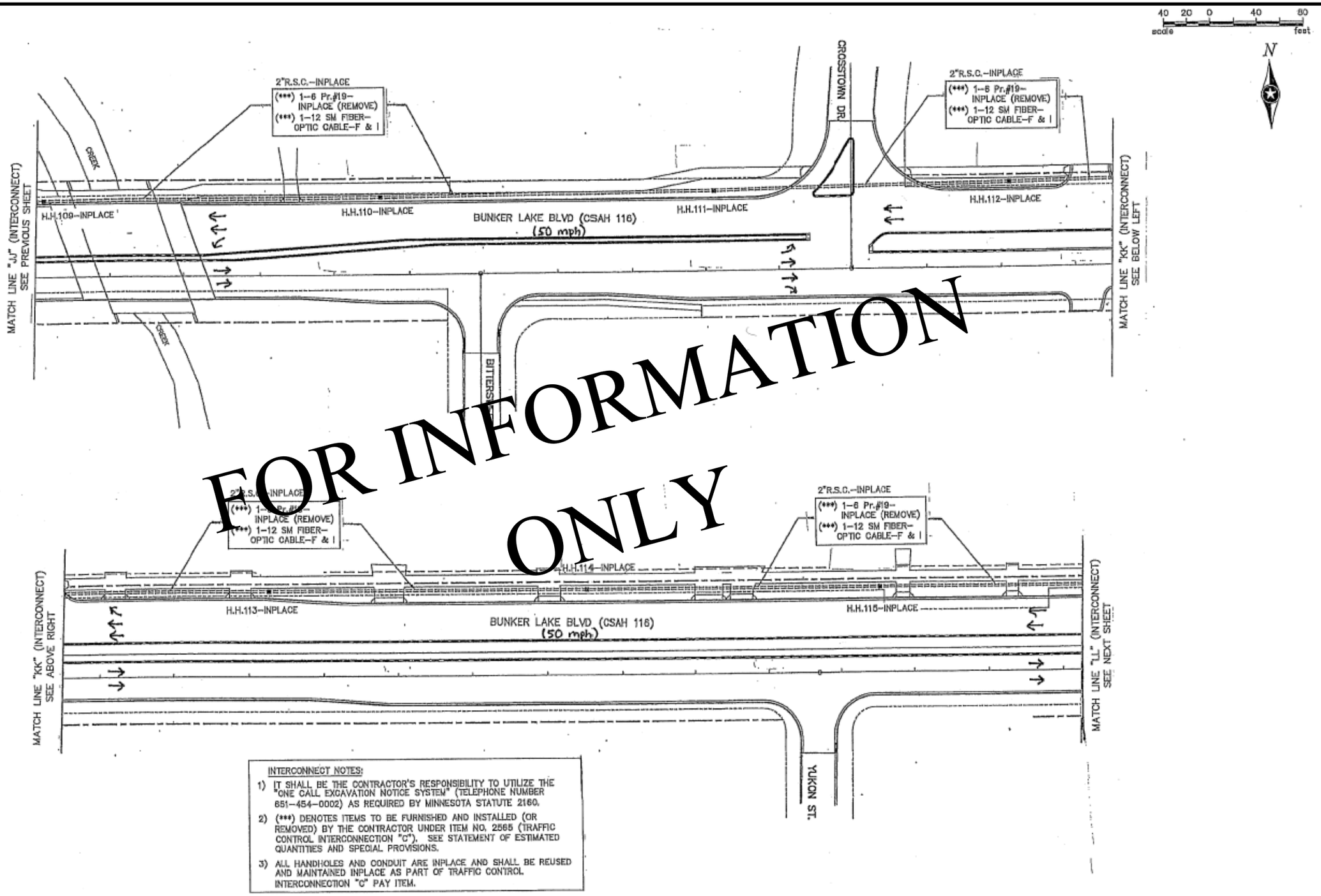
ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM B AS BUILT
BUNKER LAKE BLVD & HEATHER ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 101 of 174 Sheets



FOR INFORMATION ONLY

INTERCONNECT NOTES:

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

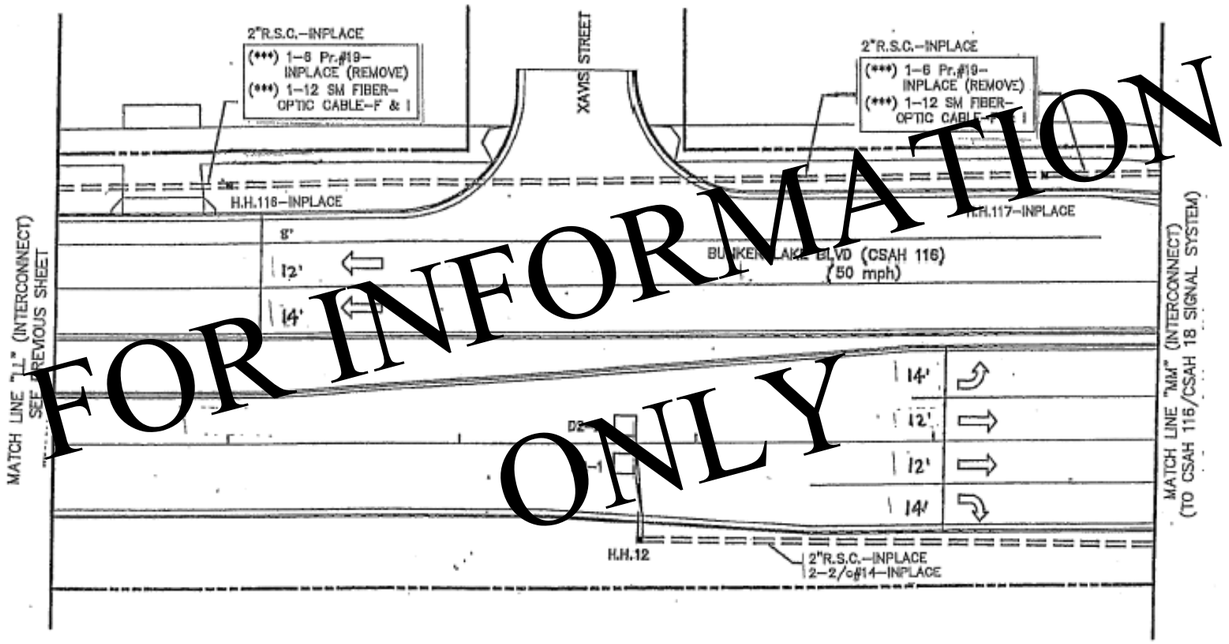
TRAFFIC SIGNAL SYSTEM B AS BUILT
BUNKER LAKE BLVD & HEATHER ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 102 of 174 Sheets

20 10 0 20 40
scale feet

N



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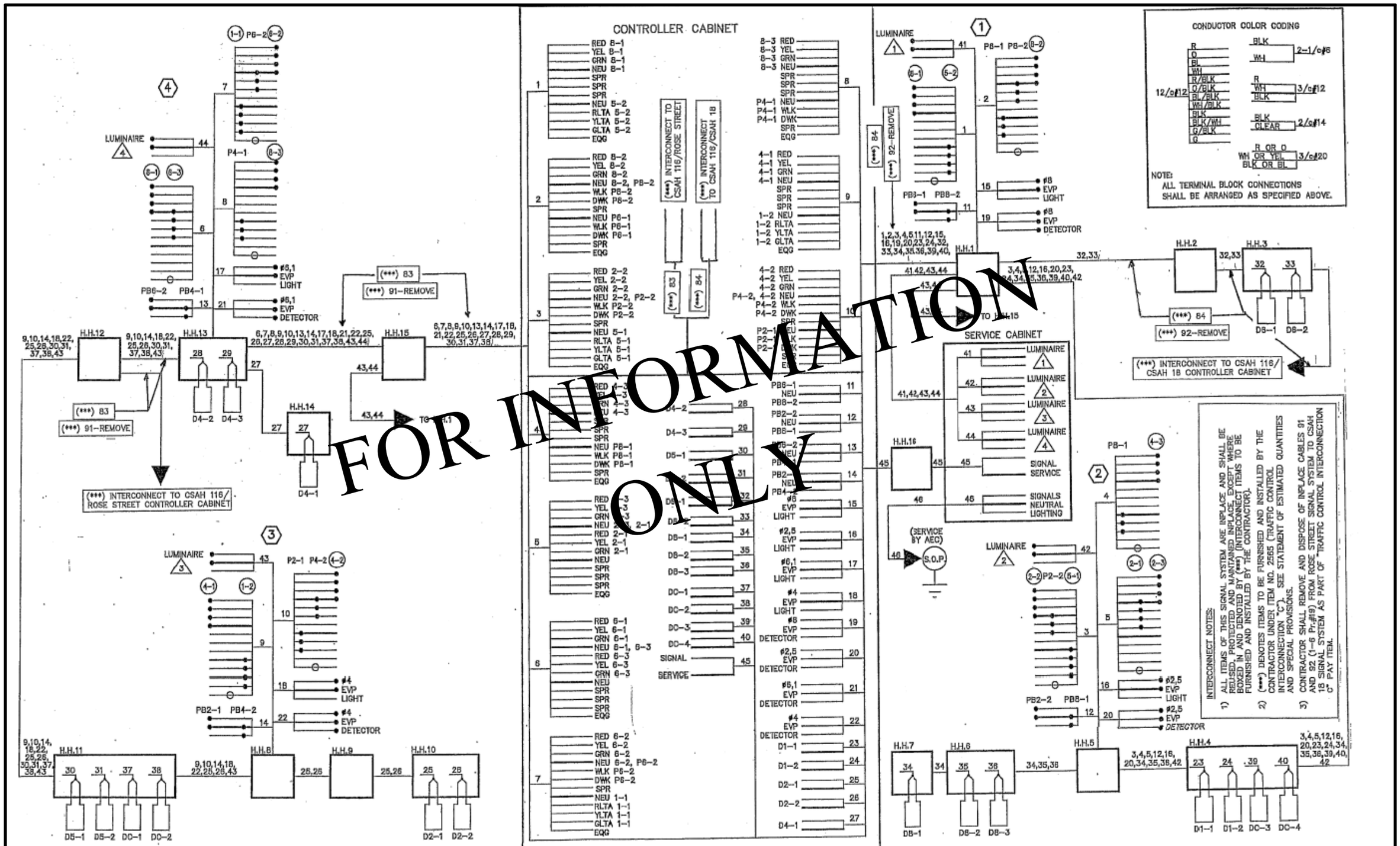
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM B AS BUILT
BUNKER LAKE BLVD & HEATHER ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 103 of 174 Sheets



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DRAWN BY KAS DATE 11/26/24

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ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM B AS BUILT
BUNKER LAKE BLVD & HEATHER ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 104 of 174 Sheets

SIGNAL HEAD CHART

FACE	R	Y	FYA	G
1-1, 1-2	←	←	←	←
2-1, 2-2, 2-3	●	●		●
3-1, 3-2	←	←	←	←
4-1, 4-2	●	●		●
5-1, 5-2	←	←	←	←
6-1, 6-2, 6-3	●	●		●
7-1, 7-2	←	←	←	←
8-1, 8-2	●	●		●

-ALL SIGNAL INDICATIONS SHALL BE 12" LED
-ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS
-FYA DENOTES FLASHING YELLOW ARROW

-ALL LOOP DETECTORS SHALL BE PVC UNLESS NOTED OTHERWISE
-LOCATION: DISTANCE FROM TEMPORARY CROSSWALK IN FEET

LOOP DETECTOR CHART

NUMBER	SIZE (FT)	LOCATION
D1-1, D5-1	3-6x6	25, 40, 55
D1-2, D5-2	6x6	10
D2-1, D2-2	6x6	405
D2-3, D2-4	6x6	25
D2-6, D2-7	6x6	10
D3-1, D7-1	3-6x6	25, 40, 55
D3-2, D7-2	6x6	10
D4-1	6x6	380
D4-2	6x6	25
D4-3, D4-4	6x6	10
D6-1, D6-2	6x6	405
D6-3, D6-4	6x6	10
D8-1	6x6	405
D8-2	6x6	25
D8-3, D8-4	6x6	10

MATCHLINE A

MATCHLINE B

MATCHLINE C

MATCHLINE D

CSAH 18 (CROSSTOWN BLVD) (40 MPH)

CSAH 18 (CROSSTOWN BLVD) (45 MPH)

CSAH 116 (BUNKER LAKE BLVD NW) (50 MPH)

INP HH 16

INP HH 15

INP HH 10

INP HH 11

INP IHH 117

INP HH 3

PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB6-2)
EXTEND INTO HH 26:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

INPLACE: 1 1/4" RSC
REMOVE: 1-2/C 14
EXTEND: 1 1/4" RSC TO 26
F&I: 1-2/C 14

4" CONDUIT
6-6/C 16
9-4/C 16
*2-3/C 16
*2-3/C 20
10-2/C 14
2-3/C 16 (LUM)
1-1/C 6 INS. GR.

PED PB STATION
1-APS PB AND SIGN
(LT ARROW) (PB4-1)
EXTEND INTO HH 14:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

INPLACE: 1 1/2" CONDUIT
1-FO CABLE (12SM)

4" CONDUIT
3-6/C 16
4-4/C 16
*1-3/C 16
*1-3/C 20
8-2/C 14
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

ABANDON: 2" RSC
**REMOVE: 1-FO CABLE (12SM)
**F&I: 1.5" CONDUIT
1-FO ARMORED CABLE (12SM)

4" CONDUIT
6-6/C 16
9-4/C 16
*2-3/C 16
*2-3/C 20
16-2/C 14
2-3/C 16 (LUM)
1-CAT 5E (CCTV)
1-1/C 6 INS. GR.

INPLACE: 2" RSC
REMOVE: 1-3/C 20
EXTEND: 2" RSC TO HH 1
F&I: 1-3/C 20

**F&I: 1.5" CONDUIT
1-FO ARMORED CABLE
(12SM)

**REINSTALL: 1-FO CABLE (12SM)

PED PB STATION
1-APS PB AND SIGN
(LT ARROW) (PB6-1)
EXTEND INTO HH 1:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB8-2)
EXTEND INTO HH 2:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

**PULL VAULT

4" CONDUIT
3-6/C 16
5-4/C 16
*1-3/C 16
*1-3/C 20
11-2/C 14
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

INPLACE: 2" RSC
REMOVE: 2-2/C 14 (SEE NOTE 9)
** 1-FO CABLE (12SM)
EXTEND: 2" RSC TO HH 2
F&I: 2-2/C 14

**1.5" CONDUIT
1-FO ARMORED CABLE (12SM)

ADJUST INPLACE HANDHOLE

ADJUST INPLACE HANDHOLE

6+1 EVP

8+3 EVP

2+5 EVP

4+7 EVP

INPLACE: 1 1/4" RSC
REMOVE: 2-2/C 14
F&I: 2-2/C 14

INPLACE: 1 1/4" RSC
REMOVE: 2-2/C 14
EXTEND: 1 1/4" RSC TO HH 8
F&I: 2-2/C 14

PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB4-2)
EXTEND INTO HH 25:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

4" CONDUIT
3-6/C 16
4-4/C 16
*1-3/C 16
*1-3/C 20
5-2/C 14
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

PED PB STATION
1-APS PB AND SIGN
(LT ARROW) (PB2-1)
EXTEND INTO HH 25:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

INPLACE: 1 1/2" CONDUIT
1-FO CABLE (12SM)

4" CONDUIT
3-6/C 16
5-4/C 16
*1-3/C 16
*1-3/C 20
8-2/C 14
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

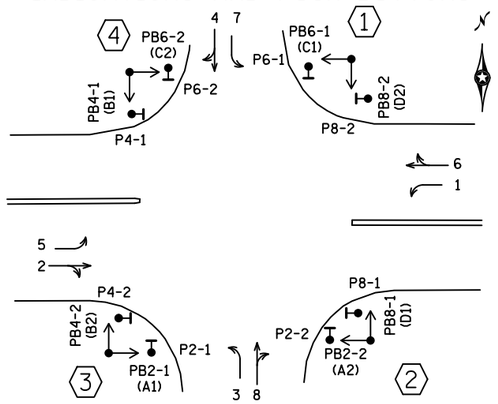
2" CONDUIT
7-2/C 14

INPLACE: 1 1/4" RSC
REMOVE: 1-2/C 14
EXTEND: 1 1/4" RSC TO HH 6
F&I: 1-2/C 14

PED PB STATION
1-APS PB AND SIGN
(LT ARROW) (PB8-1)
EXTEND INTO HH 6:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB2-2)
EXTEND INTO INP HH 7:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS



PEDESTRIAN PUSH BUTTONS SHALL BE LOCATED AS SHOWN ABOVE

SCALE 0 40 IN FEET

SIGNAL SYSTEM OPERATION

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

NOTES:

1. SEE THE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
2. THE EXACT LOCATION OF THE HANDHOLES, LOOP DETECTORS, UNDERGROUND CONDUIT, AND THE EQUIPMENT PAD ARE DETERMINED IN THE FIELD. VERIFY THE LOCATIONS OF ALL SIGNAL COMPONENTS WITH ANOKA COUNTY PERSONNEL. CONDUITS UNDER ROADWAYS TYPICALLY REQUIRE BORING.
3. ALL SIGNAL MOUNTED SIGNS ARE INCLUDED IN PAYMENT WITH THE LUMP SUM SIGNAL SYSTEM PAY ITEM. SEE SIGNING DETAIL SHEET FOR MAST ARM MOUNTED SIGNS.
4. SEE CONSTRUCTION PLANS FOR PAVEMENT MARKINGS.
5. CONSTRUCTION OF PEDESTRIAN CURB RAMPS, CONCRETE WALK AND MEDIAN WORK ARE INCLUDED WITH THE ADA PLAN AND ARE PAID FOR SEPARATELY.
6. USE PVC OR HDPE FOR NEW CONDUIT. CONDUIT SIZES ARE NOMINAL DIAMETER.
7. ITEMS DENOTED WITH AN * ARE INCLUDED IN PAYMENT FOR THE EMERGENCY VEHICLE PREEMPTION SYSTEM C PAY ITEM.
8. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
9. REMOVAL OF THE EXISTING SIGNAL IS INCLUDED IN THE PAYMENT FOR THE REMOVAL SIGNAL SYSTEM PAY ITEM. REFER TO THE "EXISTING SIGNAL SYSTEM AS BUILT" SHEETS FOR INPLACE SIGNAL SYSTEM COMPONENTS.
10. ALL ITEMS ARE TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
11. ALL ITEMS DENOTED WITH A ■ ARE TO BE PAID FOR AS INDIVIDUAL PAY ITEMS. SEE STATEMENT OF ESTIMATED QUANTITIES.
12. **SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) IN THE SPECIAL PROVISIONS FOR IMPORTANT TRAFFIC SIGNAL STAGING REQUIREMENTS.**

NO	DATE	BY	CKD	APPR	REVISION

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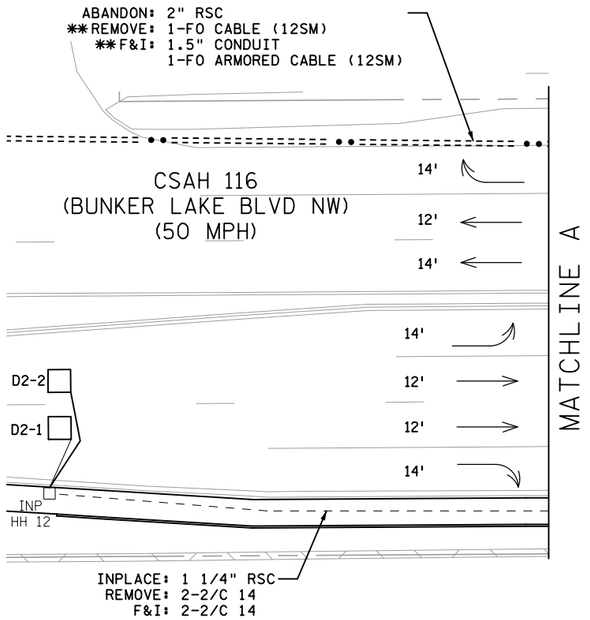
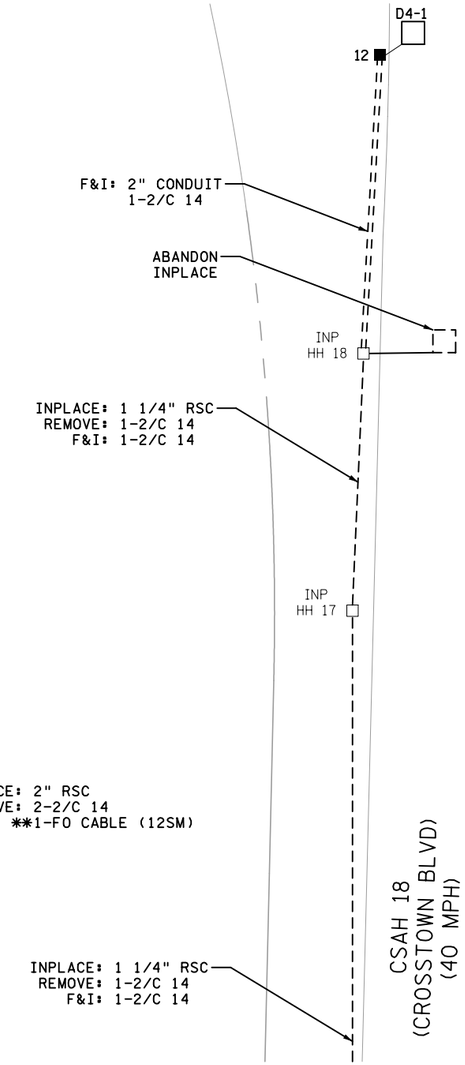
ANOKA COUNTY HIGHWAY DEPT.

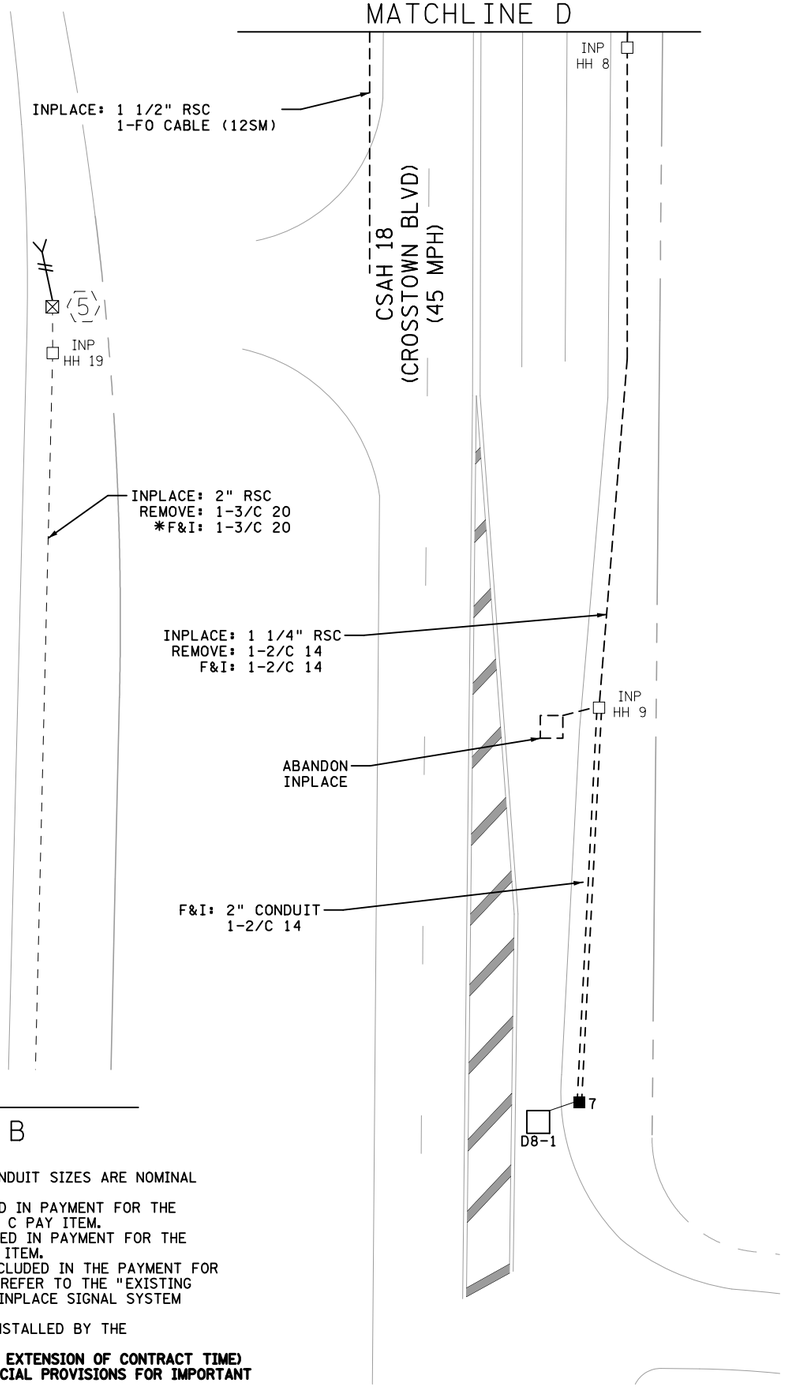
TRAFFIC SIGNAL SYSTEM C LAYOUT
BUNKER LAKE BLVD & CROSSTOWN BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

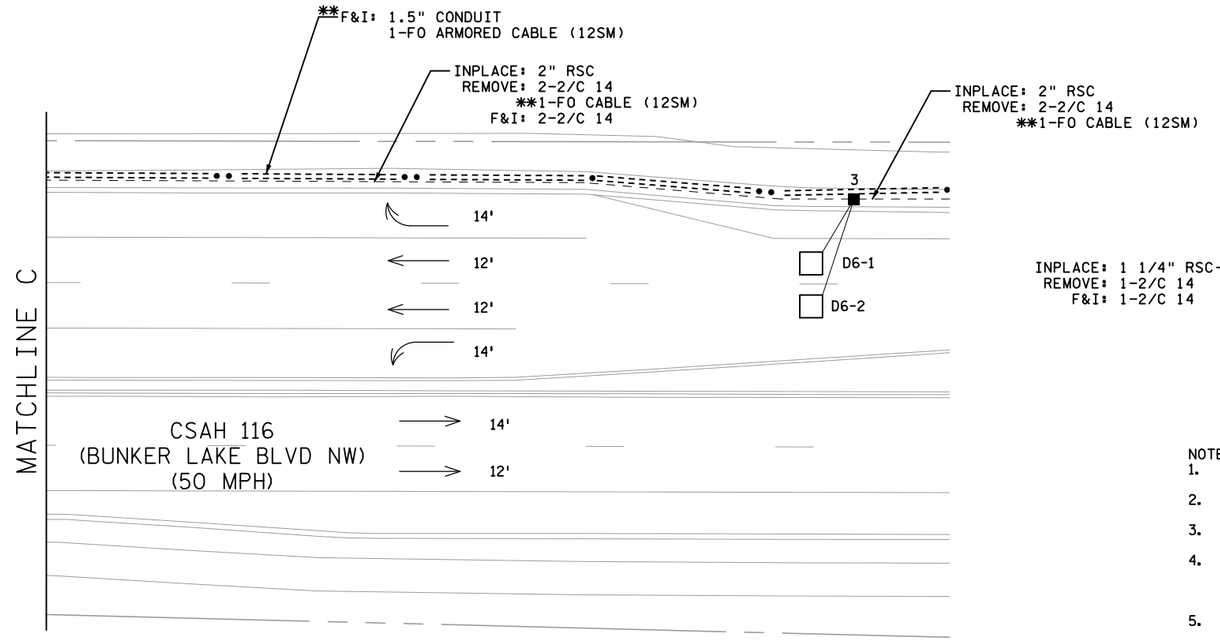
CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 105 of 174 Sheets









NOTES:
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2. ITEMS DENOTED WITH AN * ARE INCLUDED IN PAYMENT FOR THE EMERGENCY VEHICLE PREEMPTION SYSTEM C PAY ITEM.
3. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
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ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM C MATCHLINES
BUNKER LAKE BLVD & CROSSTOWN BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 106 of 174 Sheets

(1) X:484499.8670
Y:167292.6043
PA100 POLE FOUNDATION
TYPE PA100-A-50-X6-300/CAM 350 EXTENSION (DAVIT AT 350°)
(INCLUDES LIGHTING ROD, 7/16" GROUND BRAID AND GROUND ROD)
LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
1-TRAFFIC MANAGEMENT CAMERA WITH MOUNT (COUNTY PROVIDED)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 10'
2-ANGLE MOUNT SIGNALS AT 90 AND 180 DEG
2-ANGLE MOUNT C.D. PED HEADS AT 90 AND 180 DEG
1-R10-X12 SIGN ADJACENT TO HEAD (3-1)
1-SIGN (BUNKER LAKE BLVD) (SEE SIGN DETAILS)
ONE WAY EVP DETECTOR AND LIGHT (PHASES 8+3) (COUNTY PROVIDED)
3" NMC TO HH 2:
3-6/C 16
4-4/C 16
*1-3/C 16
*1-3/C 20
1-CAT 5E (CCTV)
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

(2) X:484508.0041
Y:167161.7616
PA100 POLE FOUNDATION
TYPE PA100-A-55-D30-9 (DAVIT AT 350°)
LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNAL OVERHEAD AT 11' & 23'
2-ANGLE MOUNT SIGNAL AT 90 AND 180 DEG
2-ANGLE MOUNT C.D. PED HEAD AT 90 AND 180 DEG
1-R10-X12 SIGN ADJACENT TO HEAD (5-1)
1-SIGN (CROSSTOWN BLVD) (SEE SIGN DETAILS)
1-R6-1L (36"X12") MOUNTED AT 0°
1-R6-1R (36"X12") MOUNTED AT 180°
ONE WAY EVP DETECTOR AND LIGHT (PHASES 2+5)(COUNTY PROVIDED)
3" NMC TO HH 6:
3-6/C 16
5-4/C 16
*1-3/C 16
*1-3/C 20
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

(3) X:484384.7429
Y:167140.8616
PA100 POLE FOUNDATION
TYPE PA100-A-55-D30-9 (DAVIT AT 350°)
LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 14'
2-ANGLE MOUNT SIGNAL AT 90 AND 180 DEG
2-ANGLE MOUNT C.D. PED HEAD AT 90 AND 180 DEG
1-R10-X12 SIGN ADJACENT TO HEAD (7-1)
1-SIGN (BUNKER LAKE BLVD) (SEE SIGN DETAILS)
ONE WAY EVP DETECTOR AND LIGHT (PHASES 4+7) (COUNTY PROVIDED)
3" NMC TO HH 25:
3-6/C 16
4-4/C 16
*1-3/C 16
*1-3/C 20
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

(4) X:484368.6399
Y:167276.2944
PA100 POLE FOUNDATION
TYPE PA100-A-50-D30-9 (DAVIT AT 350°)
LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNAL OVERHEAD AT 11' & 23'
2-ANGLE MOUNT SIGNAL AT 90 AND 180 DEG
2-ANGLE MOUNT C.D. PED HEAD AT 90 AND 180 DEG
1-R10-X12 SIGN ADJACENT TO HEAD (1-1)
1-SIGN (CROSSTOWN BLVD) (SEE SIGN DETAILS)
1-R6-1L (36"X12") MOUNTED AT 0°
1-R6-1R (36"X12") MOUNTED AT 180°
ONE WAY EVP DETECTOR AND LIGHT (PHASES 2+5) (COUNTY PROVIDED)
3" NMC TO HH 14:
3-6/C 16
5-4/C 16
*1-3/C 16
*1-3/C 20
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

(5) INPLACE: PEDESTAL FOUNDATION (EVP)
10' PEDESTAL POLE AND BASE
ONE WAY EVP DETECTOR-MOUNT ON TOP OF PEDESTAL POLE (PHASE 4)
2" NMC TO INP HH 19:
REMOVE: 1-3/C 20
*F&I: 1-3/C 20

(A)(B) EQUIPMENT PAD (SEE DETAIL SHEET)
SERVICE CABINET WITH BATTERY BACKUP (SEE DETAIL SHEET)
TS2 CABINET AND CONTROLLER (COUNTY PROVIDED)

1-4" NMC TO HH 1:	1-4" NMC TO HH 2:
3-6/C 16	3-6/C 16
5-4/C 16	4-4/C 16
*1-3/C 16	*1-3/C 16
*1-3/C 20	*1-3/C 20
5-2/C 14	5-2/C 14

1-4" NMC TO HH 1:	1-4" NMC TO HH 2:
3-6/C 16	3-6/C 16
4-4/C 16	5-4/C 16
*1-3/C 16	*1-3/C 16
*1-3/C 20	*1-3/C 20
12-2/C 14	10-2/C 14
1-1/C 6 INS. GR.	1-1/C 6. INS. GR.

GROUND WIRE AND GROUND ROD - MIN 8' STUBBED OUT FROM PAD
2-2" AND 1-3" CONDUIT STUBBED OUT (CAPPED BOTH ENDS)
**1.5" CONDUIT TO TMS VAULT:
**2-FO ARMORED CABLES (12SM)
**PULLBACK AND REINSTALL: 1-FO CABLE (12SM) (TO SOUTH)
CONTROLLER CABINET TO SERVICE CABINET:
2" CONDUIT
3-1/C 6
CONTROLLER CABINET TO SERVICE CABINET (COMMS):
2" CONDUIT
1-6PR 19
SERVICE CABINET TO GROUND MOUNTED TRANSFORMER:
2" CONDUIT
3-1/C 2

SERVICE CABINET TO HH 1:
2" CONDUIT
2-3/C 16 (LUM)
SERVICE CABINET TO HH 2:
2" CONDUIT
2-3/C 16 (LUM)
SERVICE CABINET TO EXTERNAL GR. RD.:
1" CONDUIT
1-1/C 6 INS. GR.
(SEE EQUIPMENT PAD LAYOUT)

(C) INPLACE: GROUND MOUNTED SOP
F&I: 1-2" CONDUIT TO SERVICE CABINET
3-1/C 2

NOTES:

1. SEE THE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
2. ALL SIGNAL MOUNTED SIGNS ARE INCLUDED IN PAYMENT WITH THE LUMP SUM SIGNAL SYSTEM PAY ITEM. SEE SIGNING DETAIL SHEET FOR MAST ARM MOUNTED SIGNS.
3. USE PVC OR HDPE FOR NEW CONDUIT. CONDUIT SIZES ARE NOMINAL DIAMETER.
4. ITEMS DENOTED WITH AN * ARE INCLUDED IN PAYMENT FOR THE EMERGENCY VEHICLE PREEMPTION SYSTEM C PAY ITEM.
5. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
6. REMOVAL OF THE EXISTING SIGNAL IS INCLUDED IN THE PAYMENT FOR THE REMOVAL SIGNAL SYSTEM PAY ITEM. REFER TO THE "EXISTING SIGNAL SYSTEM AS BUILT" SHEETS FOR INPLACE SIGNAL SYSTEM COMPONENTS.
7. ALL ITEMS ARE TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
8. **SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) IN THE SPECIAL PROVISIONS FOR IMPORTANT TRAFFIC SIGNAL STAGING REQUIREMENTS.**

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PRINT NAME: NICK VANGUNST
SIGNATURE: Nick Van Gunst
DATE: 11/26/24 LICENSE NO. 44683

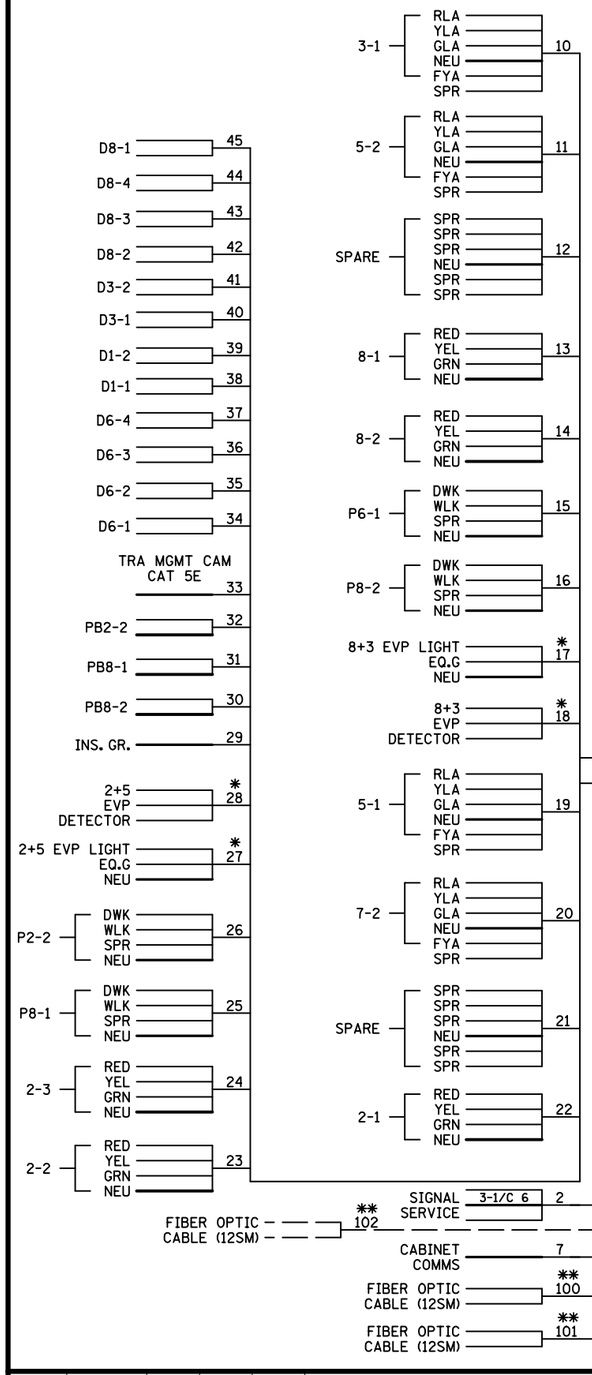
DRAWN BY KAS DATE 11/26/24
DESIGN BY KAS DATE 11/26/24
CHECKED BY NHV DATE 11/26/24

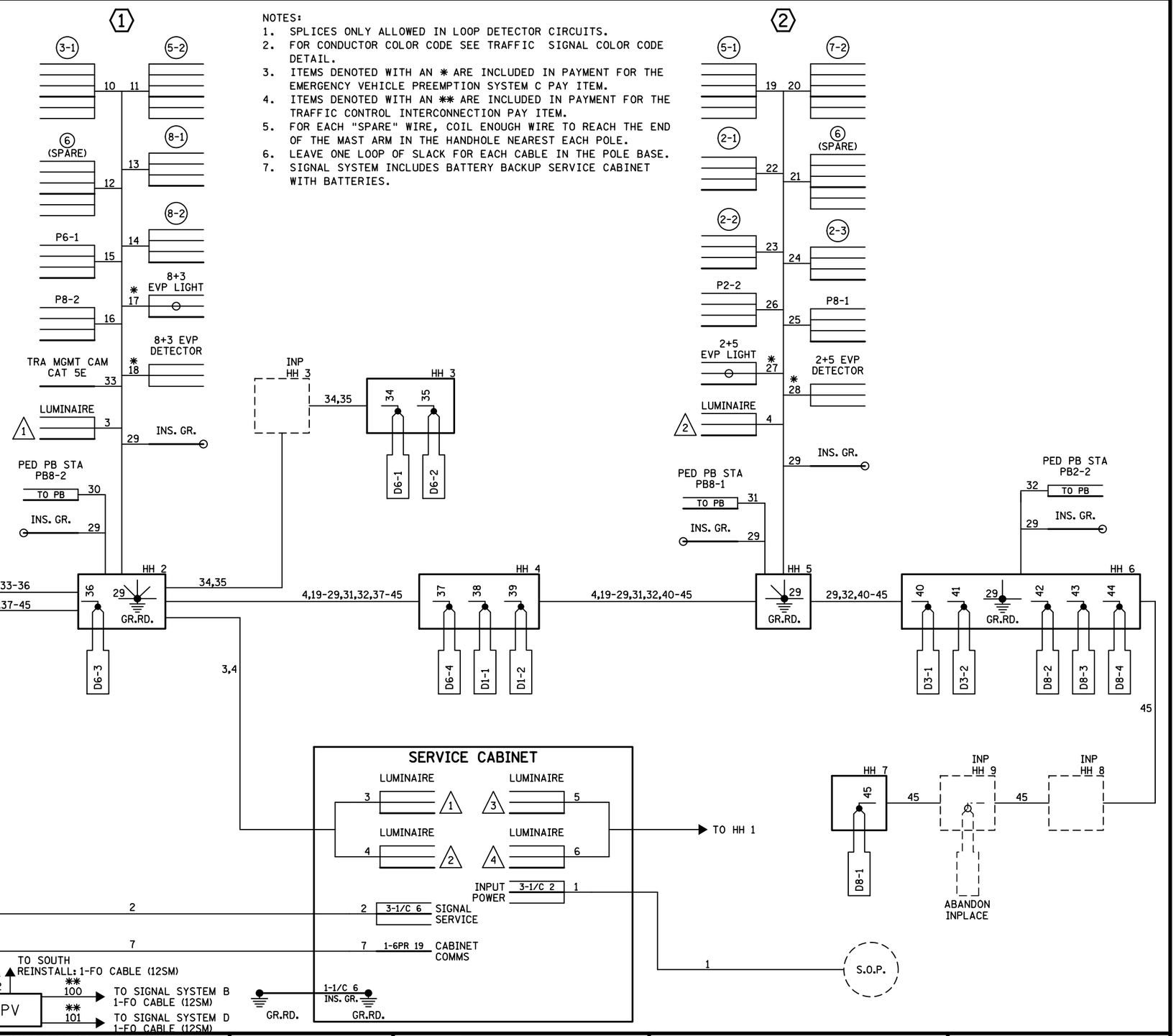
ANOKA COUNTY
HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM C NOTES
BUNKER LAKE BLVD & CROSSTOWN BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

CONTROLLER CABINET





NOTES:
1. SPLICES ONLY ALLOWED IN LOOP DETECTOR CIRCUITS.
2. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL COLOR CODE DETAIL.
3. ITEMS DENOTED WITH AN * ARE INCLUDED IN PAYMENT FOR THE EMERGENCY VEHICLE PREEMPTION SYSTEM C PAY ITEM.
4. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
5. FOR EACH "SPARE" WIRE, COIL ENOUGH WIRE TO REACH THE END OF THE MAST ARM IN THE HANDHOLE NEAREST EACH POLE.
6. LEAVE ONE LOOP OF SLACK FOR EACH CABLE IN THE POLE BASE.
7. SIGNAL SYSTEM INCLUDES BATTERY BACKUP SERVICE CABINET WITH BATTERIES.

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ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM C WIRING
BUNKER LAKE BLVD & CROSSTOWN BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 108 of 174 Sheets

NOTES:
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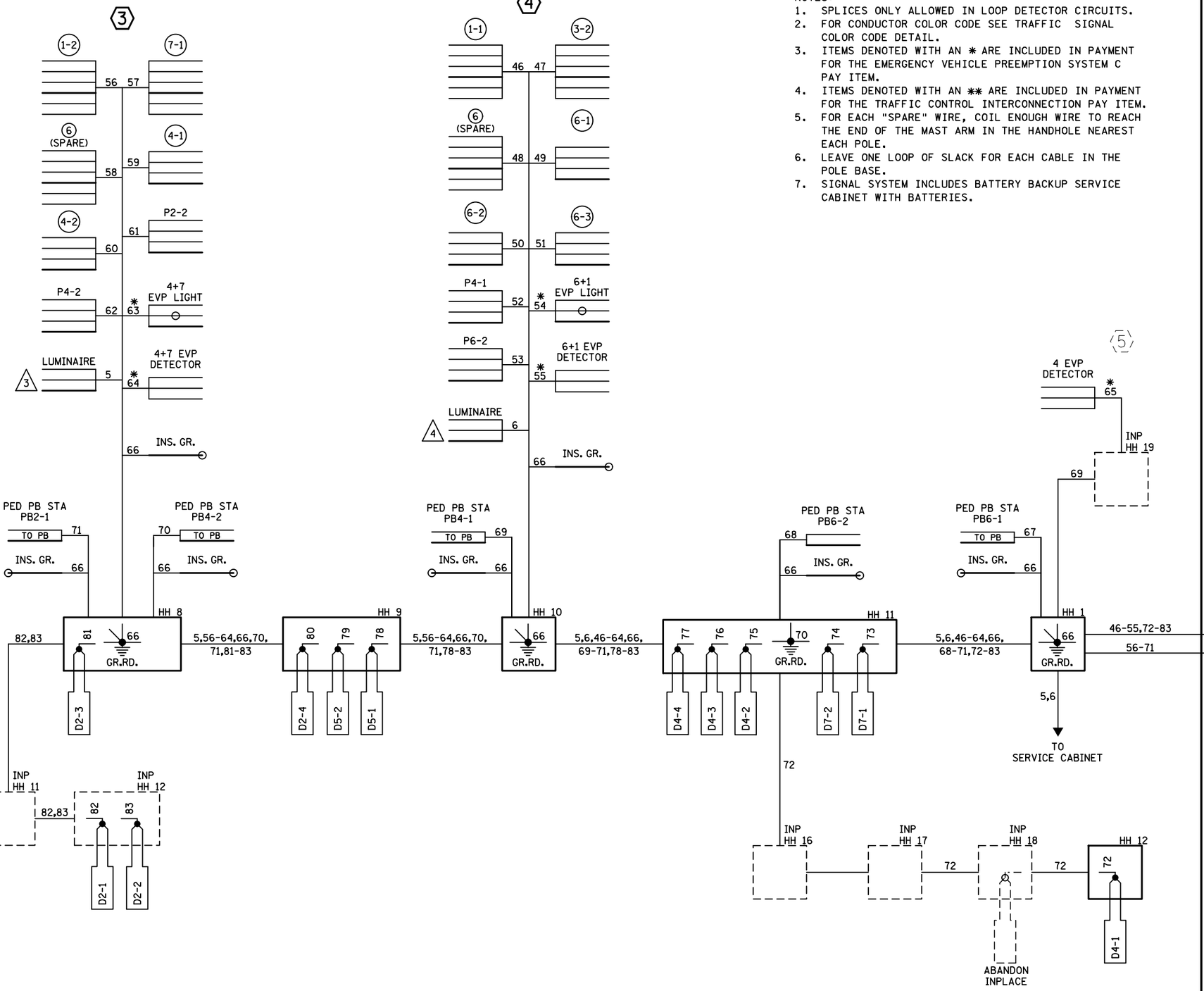
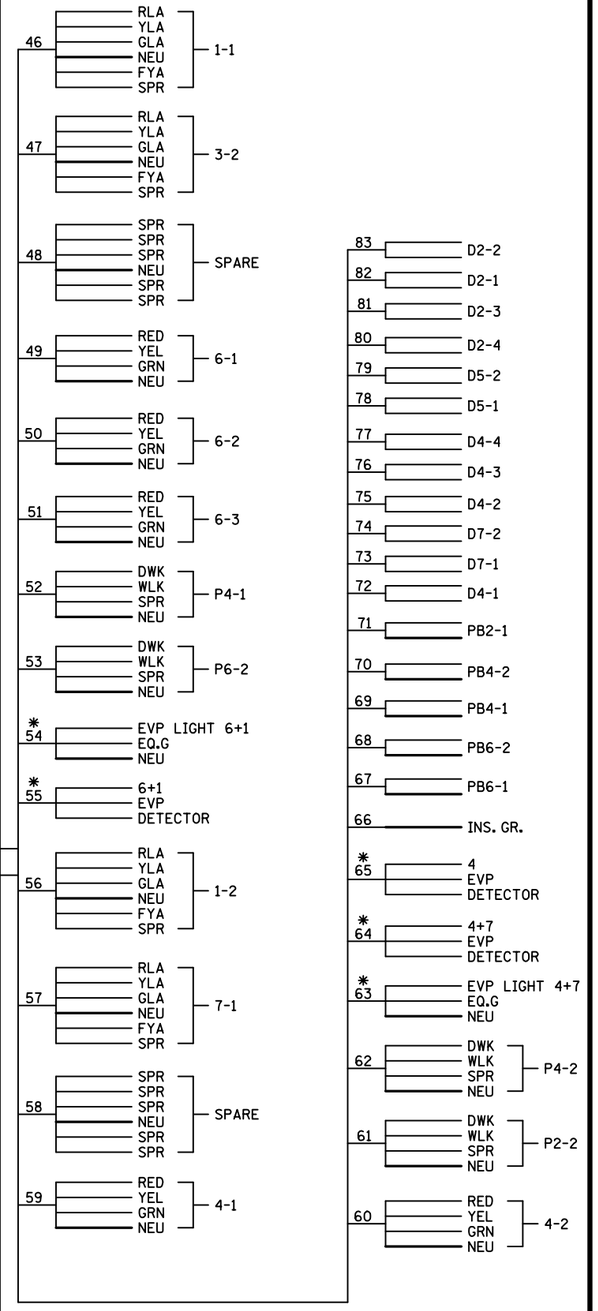
2. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL COLOR CODE DETAIL.
3. ITEMS DENOTED WITH AN * ARE INCLUDED IN PAYMENT FOR THE EMERGENCY VEHICLE PREEMPTION SYSTEM C PAY ITEM.
4. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
5. FOR EACH "SPARE" WIRE, COIL ENOUGH WIRE TO REACH THE END OF THE MAST ARM IN THE HANDHOLE NEAREST EACH POLE.
6. LEAVE ONE LOOP OF SLACK FOR EACH CABLE IN THE POLE BASE.
7. SIGNAL SYSTEM INCLUDES BATTERY BACKUP SERVICE CABINET WITH BATTERIES.



CONTROLLER CABINET



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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM C WIRING
BUNKER LAKE BLVD & CROSSTOWN BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 109 of 174 Sheets

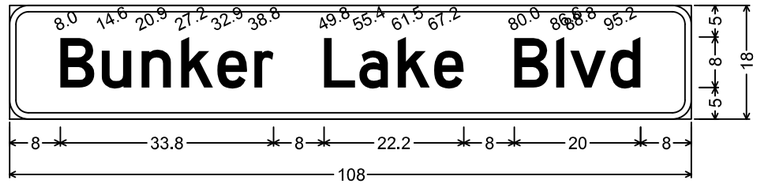
SIGN PANEL DETAILS

SIGN PANELS ON SIGNALS

POLE NUMBER	"A" DISTANCE (FEET) OR POLE	PANEL				
		QTY	CODE NUMBER	LEGEND	SIZE (INCHES)	AREA (SQ FT)
1	18	1	D-1	BUNKER LAKE BLVD	108 x 18	13.50
1	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50
2	28	1	D-4	CROSSTOWN BLVD	90 x 18	11.25
2	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50
3	28	1	D-1	BUNKER LAKE BLVD	108 x 18	13.50
3	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50
4	33	1	D-4	CROSSTOWN BLVD	90 x 18	11.25
4	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50

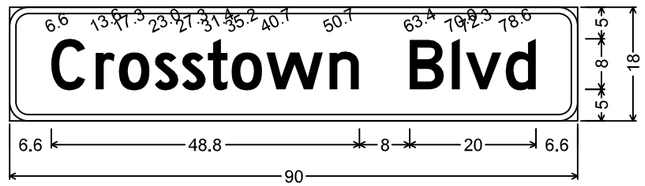
GENERAL NOTES:
1. SEE MnDOT STANDARD SIGNS AND MARKINGS MANUAL FOR STANDARD SIGN DESIGNS, ARROW DETAILS, AND SPLICE PLATE DETAILS.
2. FOR NON STANDARD SIGN DESIGNS, LAYOUTS ARE INCLUDED. SIGN PANEL DIMENSIONS ARE IN INCHES.
3. SEE STANDARD PLAN 5-297.731 FOR SIGN MOUNTING TO MAST ARM.
4. MOUNTING HEIGHT OF POLE MOUNTED SIGN PANELS MUST BE 7 FOOT MINIMUM. MOUNTING HEIGHT IS MEASURED FROM BOTTOM OF SIGN PANEL TO SURFACE IMMEDIATELY BELOW THE SIGN PANEL.
5. "A" DISTANCE = DISTANCE FROM THE END OF THE MAST ARM TO THE EDGE OF EACH SIGN PANEL.
6. THE SIGNS ON THIS DETAIL SHEET ARE SIGNS THAT ARE MOUNTED ON THE SIGNAL MAST ARM OR SIGNAL POLES. THESE SIGNS ARE INCLUDED IN THE LUMP SUM PAYMENT FOR THE REVISE TRAFFIC CONTROL SIGNAL SYSTEM.

D-1



3.0" Radius, 1.0" Border, White on Green;
"Bunker Lake Blvd", D 2K;

D-4



3.0" Radius, 1.0" Border, White on Green;
"Crosstown Blvd", D 2K;

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ANOKA COUNTY
HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM C DETAILS
BUNKER LAKE BLVD & CROSSTOWN BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

INTERCONNECT NOTES:

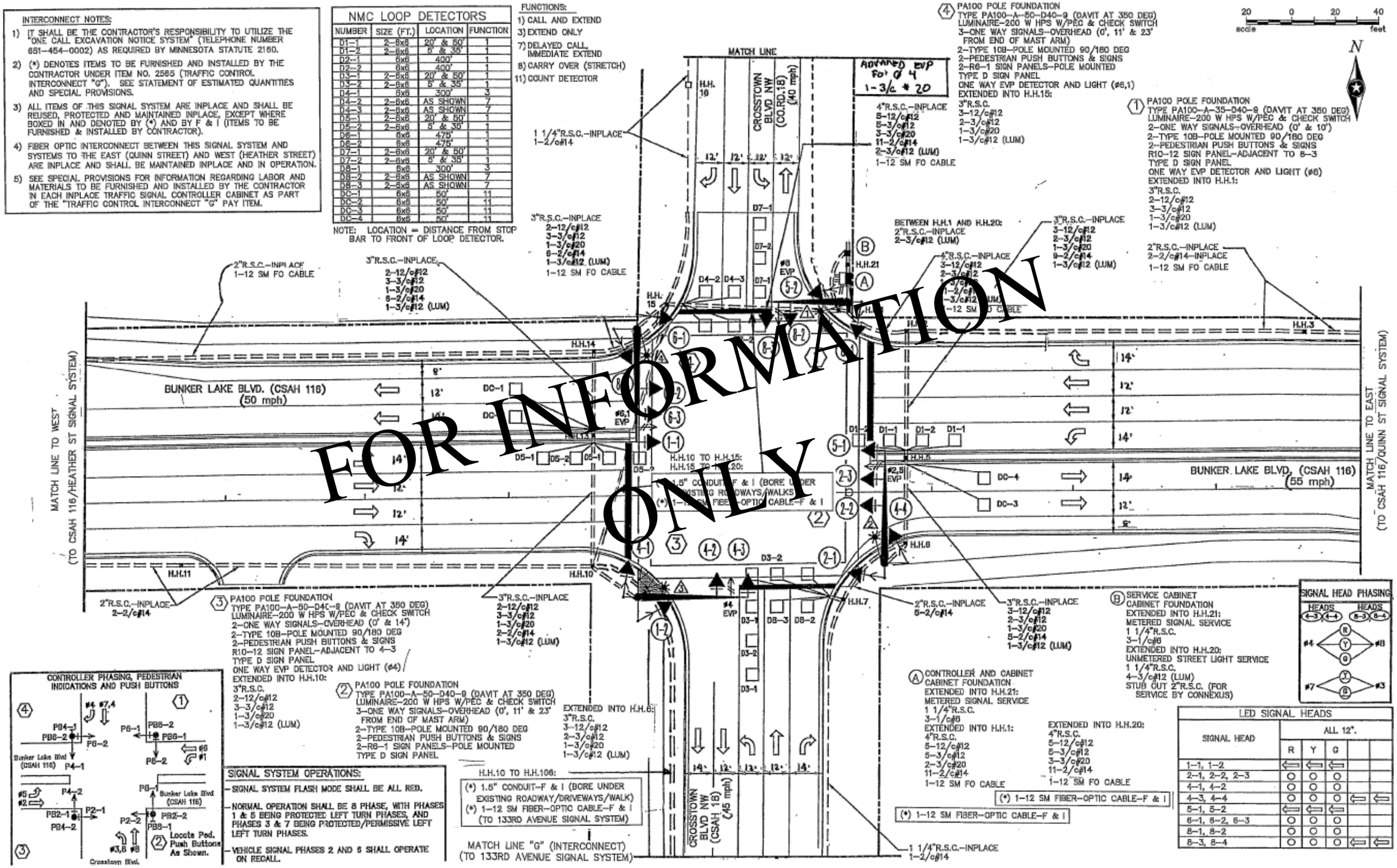
1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651-454-0002) AS REQUIRED BY MINNESOTA STATUTE 216D.
2) (*) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT "G"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
3) ALL ITEMS OF THIS SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED, PROTECTED AND MAINTAINED INPLACE, EXCEPT WHERE BOXED IN AND DENOTED BY (*) AND BY F & I (ITEMS TO BE FURNISHED & INSTALLED BY CONTRACTOR).
4) FIBER OPTIC INTERCONNECT BETWEEN THIS SIGNAL SYSTEM AND SYSTEMS TO THE EAST (QUINN STREET) AND WEST (HEATHER STREET) ARE INPLACE AND SHALL BE MAINTAINED INPLACE AND IN OPERATION.
5) SEE SPECIAL PROVISIONS FOR INFORMATION REGARDING LABOR AND MATERIALS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR IN EACH INPLACE TRAFFIC SIGNAL CONTROLLER CABINET AS PART OF THE "TRAFFIC CONTROL INTERCONNECT "G" PAY ITEM.

NMC LOOP DETECTORS

NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	2-6x6	20' & 50'	1
D1-2	2-6x6	5' & 35'	1
D2-1	6x6	400'	1
D2-2	6x6	400'	1
D3-1	2-6x6	20' & 50'	1
D3-2	2-6x6	5' & 35'	1
D4-1	6x6	300'	3
D4-2	2-6x6	AS SHOWN	7
D4-3	2-6x6	AS SHOWN	7
D5-1	2-6x6	20' & 50'	1
D5-2	2-6x6	5' & 35'	1
D6-1	6x6	475'	1
D6-2	6x6	475'	1
D7-1	2-6x6	20' & 50'	1
D7-2	2-6x6	5' & 35'	1
D8-1	6x6	300'	3
D8-2	2-6x6	AS SHOWN	7
D8-3	2-6x6	AS SHOWN	7
DC-1	6x6	50'	11
DC-2	6x6	50'	11
DC-3	6x6	50'	11
DC-4	6x6	50'	11

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

FUNCTIONS:
1) CALL AND EXTEND
3) EXTEND ONLY
7) DELAYED CALL, IMMEDIATE EXTEND
8) CARRY OVER (STRETCH)
11) COUNT DETECTOR



(4) PA100 POLE FOUNDATION
TYPE PA100-A-50-D40-9 (DAVIT AT 350 DEG)
LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
3-ONE WAY SIGNALS-OVERHEAD (0', 11' & 23' FROM END OF MAST ARM)
2-TYPE 10B-POLE MOUNTED 90/180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS
2-R6-1 SIGN PANELS-POLE MOUNTED TYPE D SIGN PANEL
ONE WAY EVP DETECTOR AND LIGHT (#6,1)
EXTENDED INTO H.H.15:
3"R.S.C.
3-12/c#12
2-3/c#12
1-3/c#20
1-3/c#12 (LUM)

(1) PA100 POLE FOUNDATION
TYPE PA100-A-35-D40-9 (DAVIT AT 350 DEG)
LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
2-ONE WAY SIGNALS-OVERHEAD (0' & 10')
2-TYPE 10B-POLE MOUNTED 90/180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS
R10-12 SIGN PANEL-ADJACENT TO 8-3 TYPE D SIGN PANEL
ONE WAY EVP DETECTOR AND LIGHT (#8)
EXTENDED INTO H.H.1:
3"R.S.C.
2-12/c#12
3-3/c#12
1-3/c#20
1-3/c#12 (LUM)

(3) PA100 POLE FOUNDATION
TYPE PA100-A-50-D4C-9 (DAVIT AT 350 DEG)
LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
2-ONE WAY SIGNALS-OVERHEAD (0' & 14')
2-TYPE 10B-POLE MOUNTED 90/180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS
R10-12 SIGN PANEL-ADJACENT TO 4-3 TYPE D SIGN PANEL
ONE WAY EVP DETECTOR AND LIGHT (#4)
EXTENDED INTO H.H.10:
3"R.S.C.
2-12/c#12
3-3/c#12
1-3/c#20
1-3/c#12 (LUM)

(2) PA100 POLE FOUNDATION
TYPE PA100-A-50-D40-9 (DAVIT AT 350 DEG)
LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
3-ONE WAY SIGNALS-OVERHEAD (0', 11' & 23' FROM END OF MAST ARM)
2-TYPE 10B-POLE MOUNTED 90/180 DEG
2-PEDESTRIAN PUSH BUTTONS & SIGNS
2-R6-1 SIGN PANELS-POLE MOUNTED TYPE D SIGN PANEL

(A) CONTROLLER AND CABINET FOUNDATION
EXTENDED INTO H.H.21:
METERED SIGNAL SERVICE
1 1/4"R.S.C.
3-1/c#6
EXTENDED INTO H.H.1:
4"R.S.C.
5-12/c#12
5-3/c#12
2-3/c#20
11-2/c#14
1-12 SM FO CABLE
EXTENDED INTO H.H.20:
4"R.S.C.
5-12/c#12
5-3/c#12
3-3/c#20
11-2/c#14
1-12 SM FO CABLE

(B) SERVICE CABINET CABINET FOUNDATION
EXTENDED INTO H.H.21:
METERED SIGNAL SERVICE
1 1/4"R.S.C.
3-1/c#6
EXTENDED INTO H.H.20:
UNMETERED STREET LIGHT SERVICE
1 1/4"R.S.C.
4-3/c#12 (LUM)
STUB OUT 2"R.S.C. (FOR SERVICE BY CONNEXUS)

SIGNAL HEAD PHASING
HEADS 4-3 4-4 | HEADS 8-3 8-4
#4 R Y G #8
#7 Y R #3

LED SIGNAL HEADS

SIGNAL HEAD	ALL 12". R	Y	G		
1-1, 1-2	⇦	⇦	⇦		
2-1, 2-2, 2-3	○	○	○		
4-1, 4-2	○	○	○		
4-3, 4-4	○	○	○	⇦	⇦
5-1, 5-2	⇦	⇦	⇦		
6-1, 6-2, 6-3	○	○	○		
8-1, 8-2	○	○	○		
8-3, 8-4	○	○	○	⇦	⇦

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS

SIGNAL SYSTEM OPERATIONS:
- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 8 PHASE, WITH PHASES 1 & 5 BEING PROTECTED LEFT TURN PHASES, AND PHASES 3 & 7 BEING PROTECTED/PERMISSIVE LEFT LEFT TURN PHASES.
- VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.

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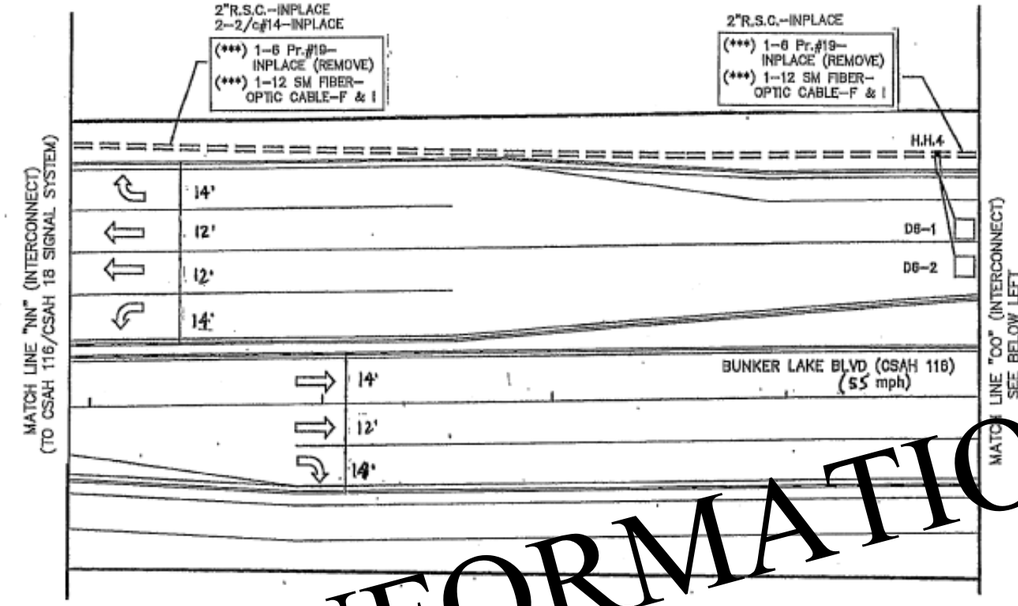
ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM C AS BUILT
BUNKER LAKE BLVD & CROSSTOWN BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 111 of 174 Sheets



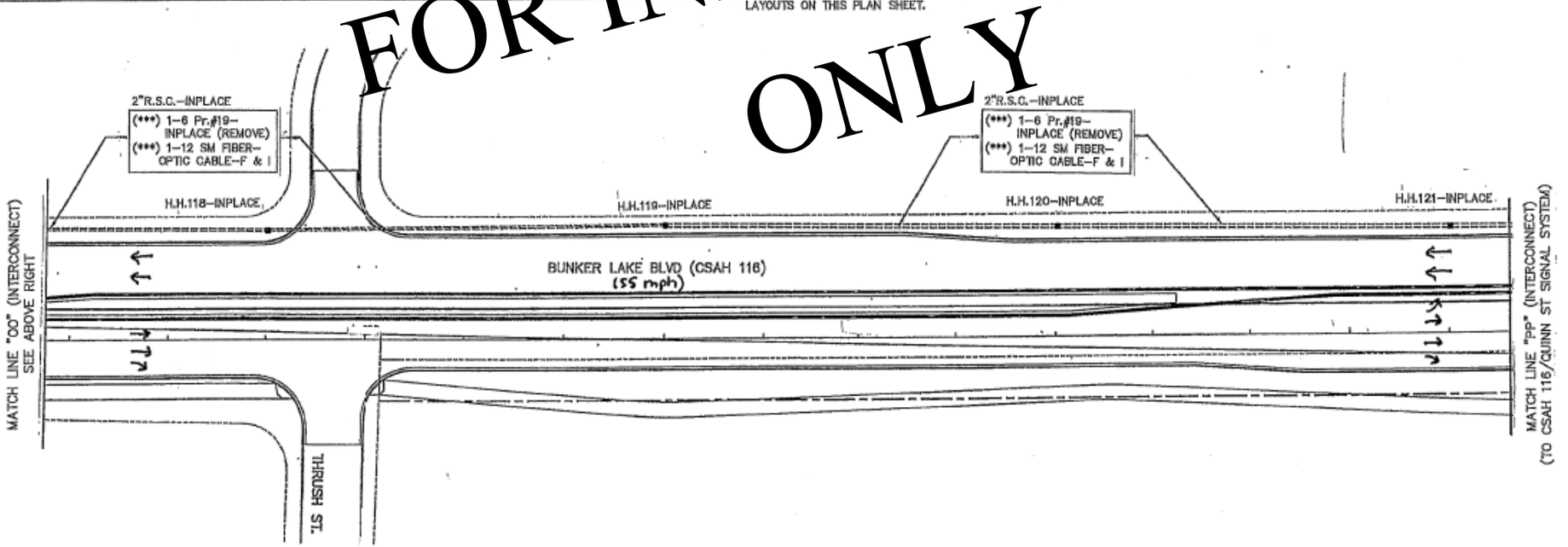
20 10 0 20 40
scale feet

N

INTERCONNECT NOTES:

1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651-454-0002) AS REQUIRED BY MINNESOTA STATUTE 216D.
2) (***) DENOTES ITEMS TO BE FURNISHED AND INSTALLED (OR REMOVED) BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION "C"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
3) ALL HANDHOLES AND CONDUIT ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE AS PART OF TRAFFIC CONTROL INTERCONNECTION "C" PAY ITEM.

NOTE SCALE CHANGE BETWEEN LAYOUTS ON THIS PLAN SHEET.



40 20 0 40 80
scale feet

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ANOKA COUNTY

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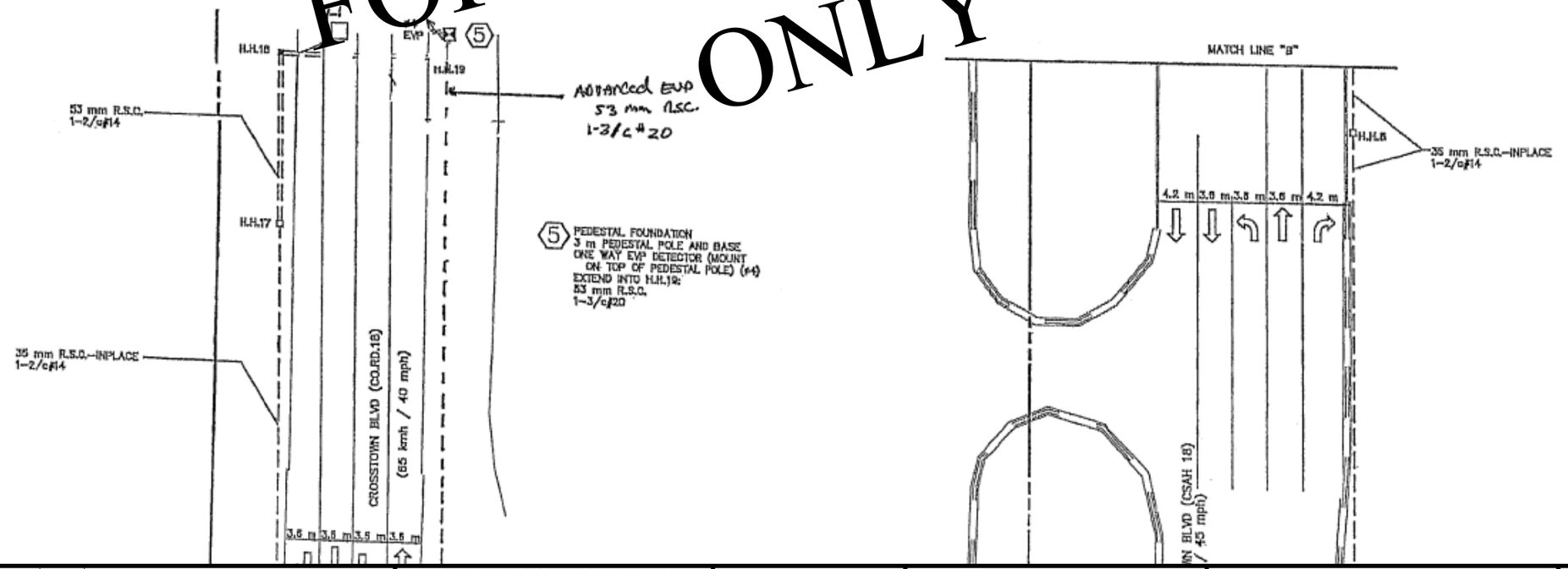
TRAFFIC SIGNAL SYSTEM C AS BUILT
BUNKER LAKE BLVD & CROSSTOWN BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 112 of 174 Sheets



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PRINT NAME: NICK VANGUNST

SIGNATURE: Nick VanGunst

DATE: 11/26/24 LICENSE NO. 44683

DRAWN BY KAS DATE 11/26/24

DESIGN BY KAS DATE 11/26/24

CHECKED BY NHV DATE 11/26/24

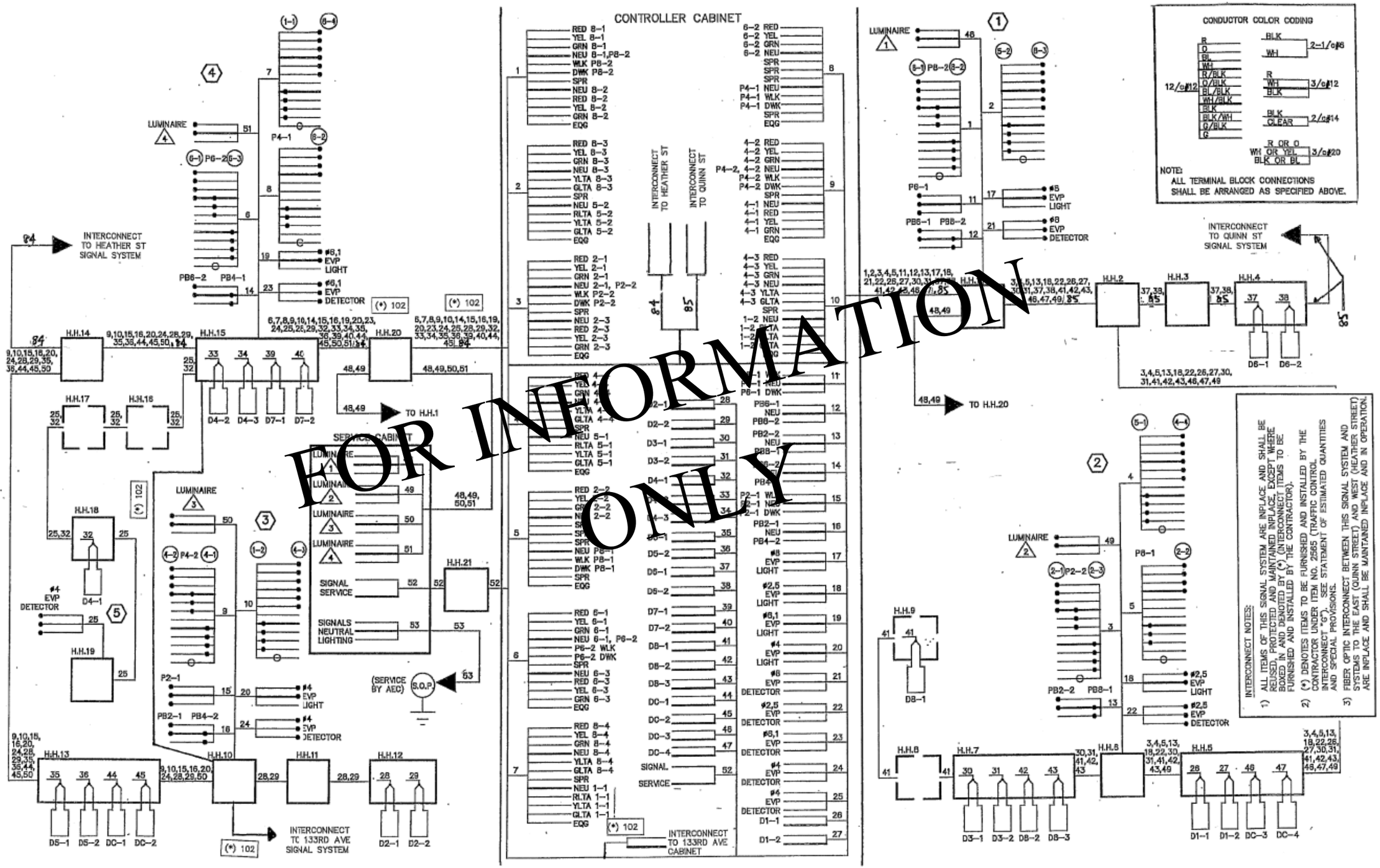
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM C AS BUILT
BUNKER LAKE BLVD & CROSSTOWN BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 113 of 174 Sheets



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ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM C AS BUILT
BUNKER LAKE BLVD & CROSSTOWN BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 114 of 174 Sheets

SIGNAL HEAD CHART

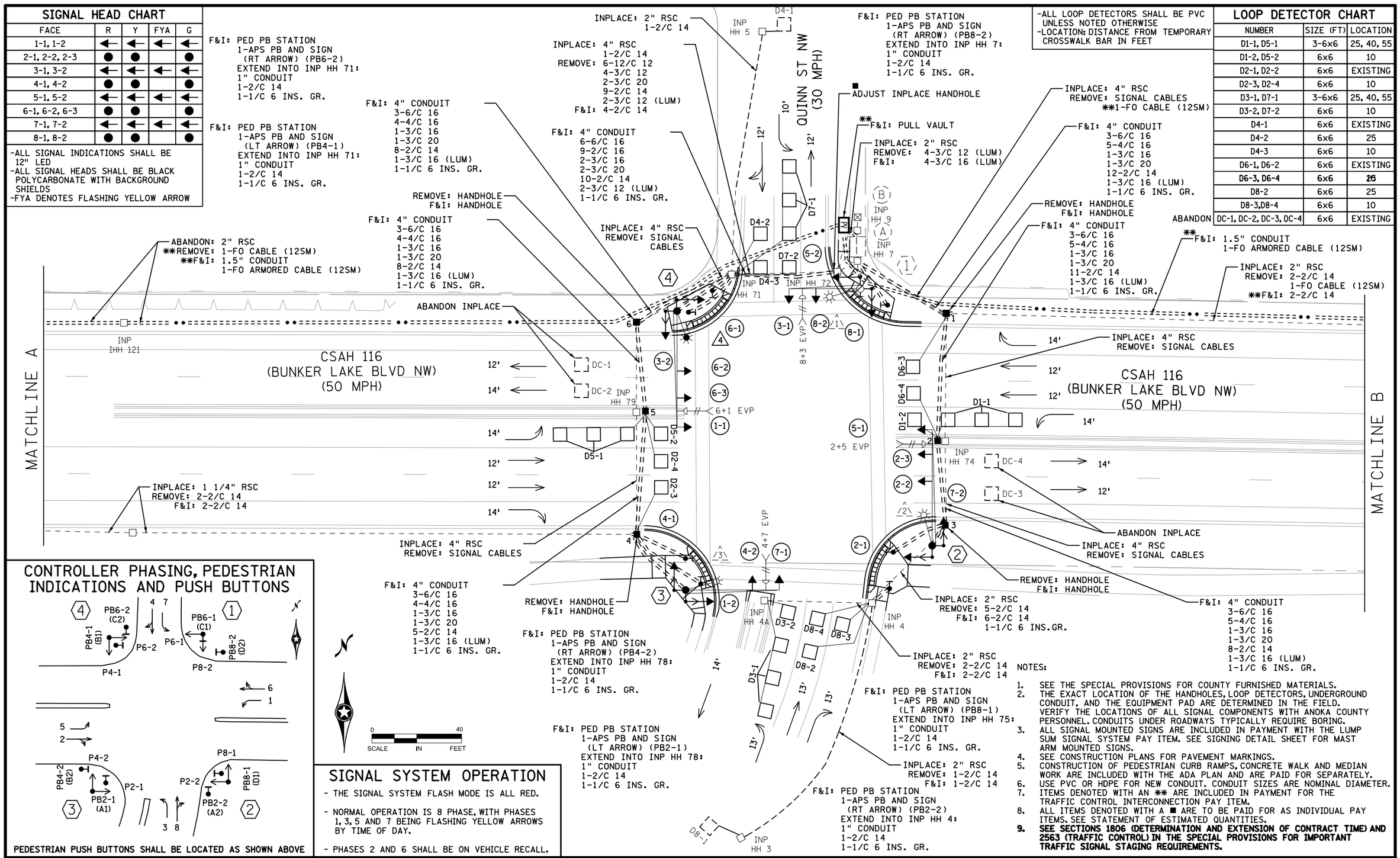
FACE	R	Y	FYA	G
1-1, 1-2	←	←	←	←
2-1, 2-2, 2-3	●	●		●
3-1, 3-2	←	←	←	←
4-1, 4-2	●	●		●
5-1, 5-2	←	←	←	←
6-1, 6-2, 6-3	●	●		●
7-1, 7-2	←	←	←	←
8-1, 8-2	●	●		●

-ALL SIGNAL INDICATIONS SHALL BE 12" LED
-ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS
-FYA DENOTES FLASHING YELLOW ARROW

-ALL LOOP DETECTORS SHALL BE PVC UNLESS NOTED OTHERWISE
-LOCATION: DISTANCE FROM TEMPORARY CROSSWALK BAR IN FEET

LOOP DETECTOR CHART

NUMBER	SIZE (FT)	LOCATION
D1-1, D5-1	3-6x6	25, 40, 55
D1-2, D5-2	6x6	10
D2-1, D2-2	6x6	EXISTING
D2-3, D2-4	6x6	10
D3-1, D7-1	3-6x6	25, 40, 55
D3-2, D7-2	6x6	10
D4-1	6x6	EXISTING
D4-2	6x6	25
D4-3	6x6	10
D6-1, D6-2	6x6	EXISTING
D6-3, D6-4	6x6	25
D8-2	6x6	25
D8-3,D8-4	6x6	10
DC-1, DC-2, DC-3, DC-4	6x6	EXISTING



CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS

PEDESTRIAN PUSH BUTTONS SHALL BE LOCATED AS SHOWN ABOVE

SIGNAL SYSTEM OPERATION

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

NOTES:

1. SEE THE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
2. THE EXACT LOCATION OF THE HANDHOLES, LOOP DETECTORS, UNDERGROUND CONDUIT, AND THE EQUIPMENT PAD ARE DETERMINED IN THE FIELD. VERIFY THE LOCATIONS OF ALL SIGNAL COMPONENTS WITH ANOKA COUNTY PERSONNEL. CONDUITS UNDER ROADWAYS TYPICALLY REQUIRE BORING.
3. ALL SIGNAL MOUNTED SIGNS ARE INCLUDED IN PAYMENT WITH THE LUMP SUM SIGNAL SYSTEM PAY ITEM. SEE SIGNING DETAIL SHEET FOR MAST ARM MOUNTED SIGNS.
4. SEE CONSTRUCTION PLANS FOR PAVEMENT MARKINGS.
5. CONSTRUCTION OF PEDESTRIAN CURB RAMPS, CONCRETE WALK AND MEDIAN WORK ARE INCLUDED WITH THE ADA PLAN AND ARE PAID FOR SEPARATELY.
6. USE PVC OR HDPE FOR NEW CONDUIT. CONDUIT SIZES ARE NOMINAL DIAMETER.
7. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
8. ALL ITEMS DENOTED WITH A ■ ARE TO BE PAID FOR AS INDIVIDUAL PAY ITEMS. SEE STATEMENT OF ESTIMATED QUANTITIES.
9. **SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) IN THE SPECIAL PROVISIONS FOR IMPORTANT TRAFFIC SIGNAL STAGING REQUIREMENTS.**

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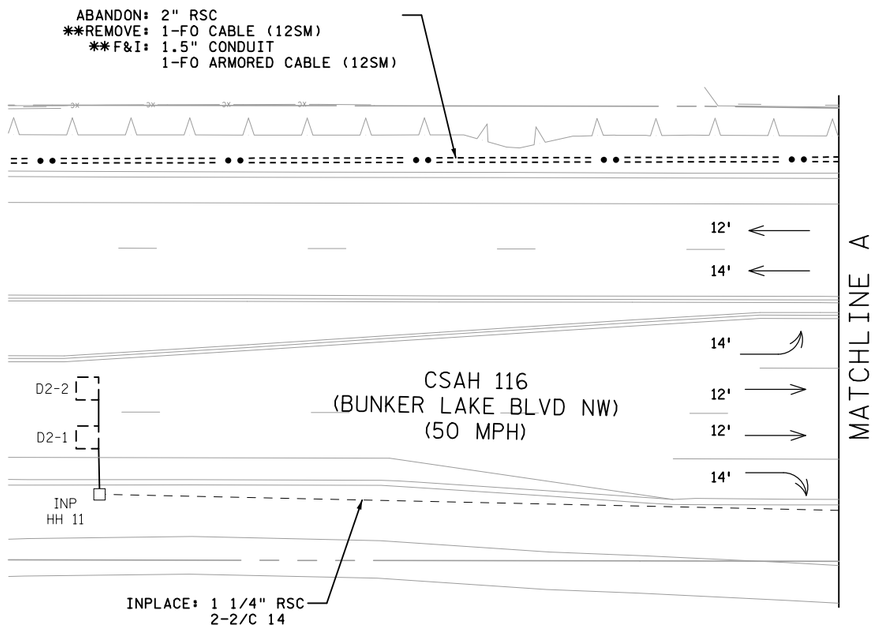
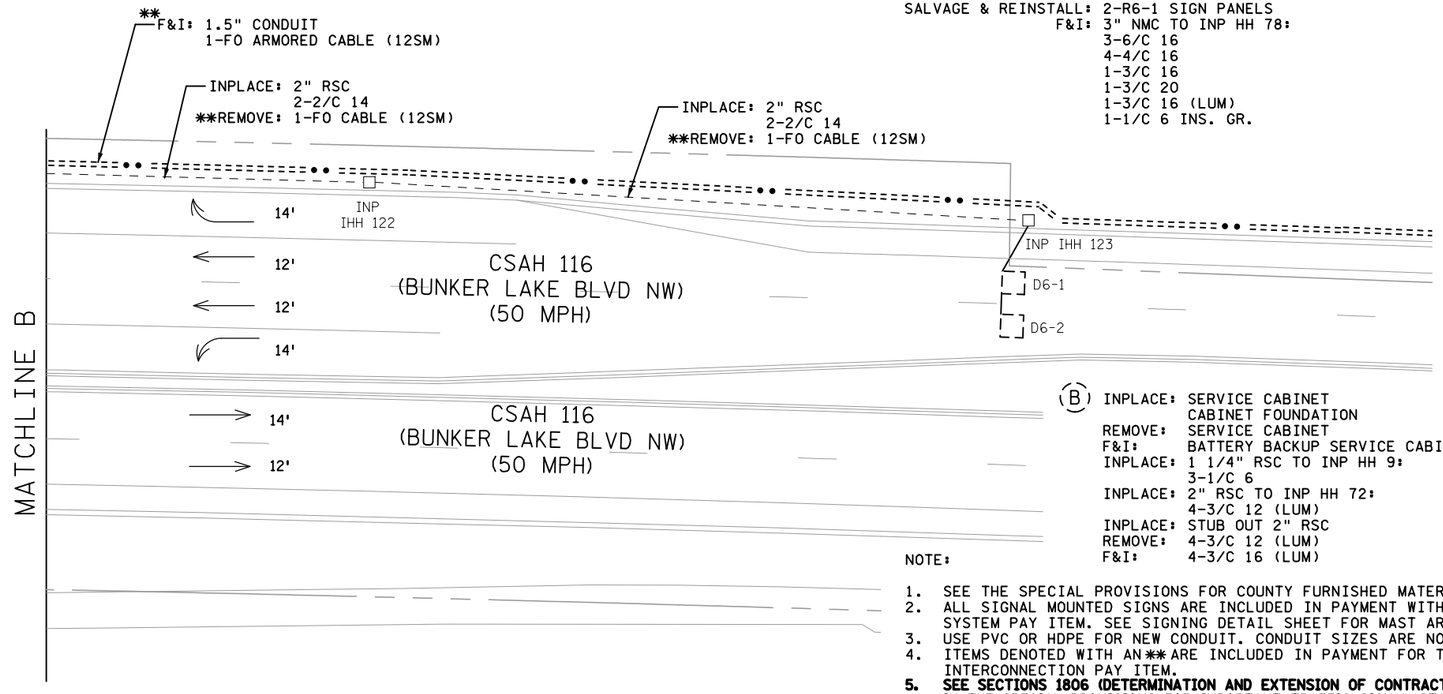
ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM D LAYOUT
BUNKER LAKE BLVD & QUINN ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 115 of 174 Sheets





(1) INPLACE: PA100 POLE FOUNDATION
TYPE PA100-A-30-D40-9 (DAVIT AT 350°)
LUMINAIRE-LED
REMOVE: 2-ONE WAY SIGNALS-OVERHEAD (0' & 12'
FROM END OF MAST ARM)
F&I: 1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 12'
REMOVE: 2-TYPE 10B-POLE MOUNTED AT 90° & 180°
F&I: 2-TYPE 10B-POLE MOUNTED AT 90° & 180°
REMOVE: 2-PEDESTRIAN PUSHBUTTONS & SIGNS & PLUG HOLE
F&I: 1-APS PB AND SIGN (LT ARROW) (PB6-1)
AND APB PB POLE MOUNTED ADAPTOR
INPLACE: ONE WAY EVP DETECTOR AND LIGHT (PHASES 3+8)
REMOVE: R10-12 SIGN PANEL-ADJACENT TO 8-3
TYPE D SIGN PANEL-OVERHEAD
F&I: 1-R10-X12 SIGN ADJACENT TO HEAD (3-1)
1-SIGN (BUNKER LAKE BLVD) (SEE SIGN DETAILS)
INPLACE: 3" RSC TO INP HH 7:
REMOVE: SIGNAL CABLES
F&I: 3-6/C 16
4-3/C 16
1-3/C 16
1-3/C 20
1-2/C 14
1-2/C 16 (LUM)

(2) X:486244.9600
Y:167163.8332
REMOVE: PA100 POLE FOUNDATION
F&I: PA100 FOUNDATION
SALVAGE & REINSTALL: TYPE PA100-A-50-D40-9 (DAVIT AT 350°)
INPLACE: LUMINAIRE-LED
REMOVE: 3-ONE WAY SIGNALS-OVERHEAD (0', 12' & 23'
FROM END OF MAST ARM)
F&I: 1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNALS OVERHEAD AT 12' & 23'
REMOVE: 2-TYPE 10B-POLE MOUNTED AT 90° & 180 °
F&I: 2-TYPE 10B-POLE MOUNTED AT 90° & 180°
REMOVE: 2-PEDESTRIAN PUSHBUTTONS & SIGNS & PLUG HOLES
TYPE D SIGN PANEL-OVERHEAD
SALVAGE & REINSTALL: ONE WAY EVP DETECTOR AND LIGHT (PHASES 2+5)
F&I: 1-R10-X12 SIGN ADJACENT TO HEAD (5-1)
1-SIGN (QUINN ST) (SEE SIGN DETAILS)
INPLACE: 2-R6-1 SIGN PANELS-POLE MOUNTED AT 0° & 180°
F&I: 3" NMC TO INP HH 75:
3-6/C 16
5-3/C 16
1-3/C 16
1-3/C 20
1-2/C 16 (LUM)
1-1/C 6 INS. GR.

(3) X:486134.9955
Y:167144.0514
REMOVE: PA100 POLE FOUNDATION
F&I: PA100 POLE FOUNDATION
SALVAGE & REINSTALL: TYPE PA100-A-40-D40-9 (DAVIT AT 350°)
INPLACE: LUMINAIRE-LED
REMOVE: 2-ONE WAY SIGNALS-OVERHEAD (0' & 12'
FROM END OF MAST ARM)
F&I: 1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 12'
REMOVE: 2-TYPE 10B-POLE MOUNTED AT 90° & 180°
F&I: 2-TYPE 10B-POLE MOUNTED AT 90° & 180°
REMOVE: 2-PEDESTRIAN PUSHBUTTONS & SIGNS & PLUG HOLES
SALVAGE & REINSTALL: ONE WAY EVP DETECTOR AND LIGHT (PHASES 3+7)
REMOVE: R10-12 SIGN PANEL-ADJACENT TO 4-3
TYPE D SIGN PANEL-OVERHEAD
F&I: 1-R10-X12 SIGN ADJACENT TO HEAD (7-1)
1-SIGN((BUNKER LAKE BLVD) (SEE SIGN DETAILS)
SALVAGE & REINSTALL: 2-R6-1 SIGN PANELS
F&I: 3" NMC TO INP HH 78:
3-6/C 16
4-4/C 16
1-3/C 16
1-3/C 20
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

(4) X:486131.1275
Y:167268.4472
REMOVE: PA100 POLE FOUNDATION
F&I: PA100 FOUNDATION
SALVAGE & REINSTALL: TYPE PA100-A-50-D40-9 (DAVIT AT 350°)
REMOVE: LUMINAIRE-200 W HPS
F&I: LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
REMOVE: 3-ONE WAY SIGNALS-OVERHEAD (0', 11' & 23'
FROM END OF MAST ARM)
F&I: 1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNALS OVERHEAD AT 11' & 23'
REMOVE: 2-TYPE 10B-POLE MOUNTED AT 90° & 180°
F&I: 2-TYPE 10B-POLE MOUNTED AT 90° & 180°
REMOVE: 2-PEDESTRIAN PUSHBUTTONS & SIGNS & PLUG HOLES
SALVAGE & REINSTALL: ONE WAY EVP DETECTOR AND LIGHT (PHASES 6+1)
2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°
1-SIGN (QUINN ST) (SEE SIGN DETAILS)
F&I: 1-R10-X12 SIGN ADJACENT TO HEAD (1-1)
F&I: 3" NMC TO INP HH 71:
3-6/C 16
5-4/C 16
3-3/C 16
1-3/C 20
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

(A) INPLACE: CONTROLLER AND CABINET
CABINET FOUNDATION
1 1/4" RSC TO INP HH 9:
3-1/C #6
REMOVE: CONTROLLER AND CABINET
INSTALL: TS2 CABINET AND CONTROLLER (COUNTY PROVIDED)

INPLACE: 4" RSC TO INP HH 7:
3-2/C 14
REMOVE: 6-12/C 12
4-3/C 12
2-3/C 20
8-2/C 14
** 1-FO CABLE (12SM)
F&I: 6-6/C 16
8-4/C 16
2-3/C 16
3-3/C 20
9-2/C 14
1-1/C 6 INS. GR.
INPLACE: 4" RSC TO INP HH 72:
3-2/C 14
REMOVE: 6-12/C 12
4-3/C 12
2-3/C 20
7-2/C 14
** 1-FO CABLE (12SM)
F&I: 6-6/C 16
9-4/C 16
2-3/C 16
2-3/C 20
12-2/C 14
1-1/C 6 INS. GR.

(B) INPLACE: SERVICE CABINET
CABINET FOUNDATION
REMOVE: SERVICE CABINET
F&I: BATTERY BACKUP SERVICE CABINET (SEE DETAIL SHEET)
INPLACE: 1 1/4" RSC TO INP HH 9:
3-1/C 6
INPLACE: 2" RSC TO INP HH 72:
4-3/C 12 (LUM)
INPLACE: STUB OUT 2" RSC
REMOVE: 4-3/C 12 (LUM)
F&I: 4-3/C 16 (LUM)

**F&I: 1.5" CONDUIT TO TMS VAULT:
2-FO ARMORED CABLES (12SM)

NOTE:

1. SEE THE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
2. ALL SIGNAL MOUNTED SIGNS ARE INCLUDED IN PAYMENT WITH THE LUMP SUM SIGNAL SYSTEM PAY ITEM. SEE SIGNING DETAIL SHEET FOR MAST ARM MOUNTED SIGNS.
3. USE PVC OR HDPE FOR NEW CONDUIT. CONDUIT SIZES ARE NOMINAL DIAMETER.
4. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
5. **SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) IN THE SPECIAL PROVISIONS FOR IMPORTANT TRAFFIC SIGNAL STAGING REQUIREMENTS.**

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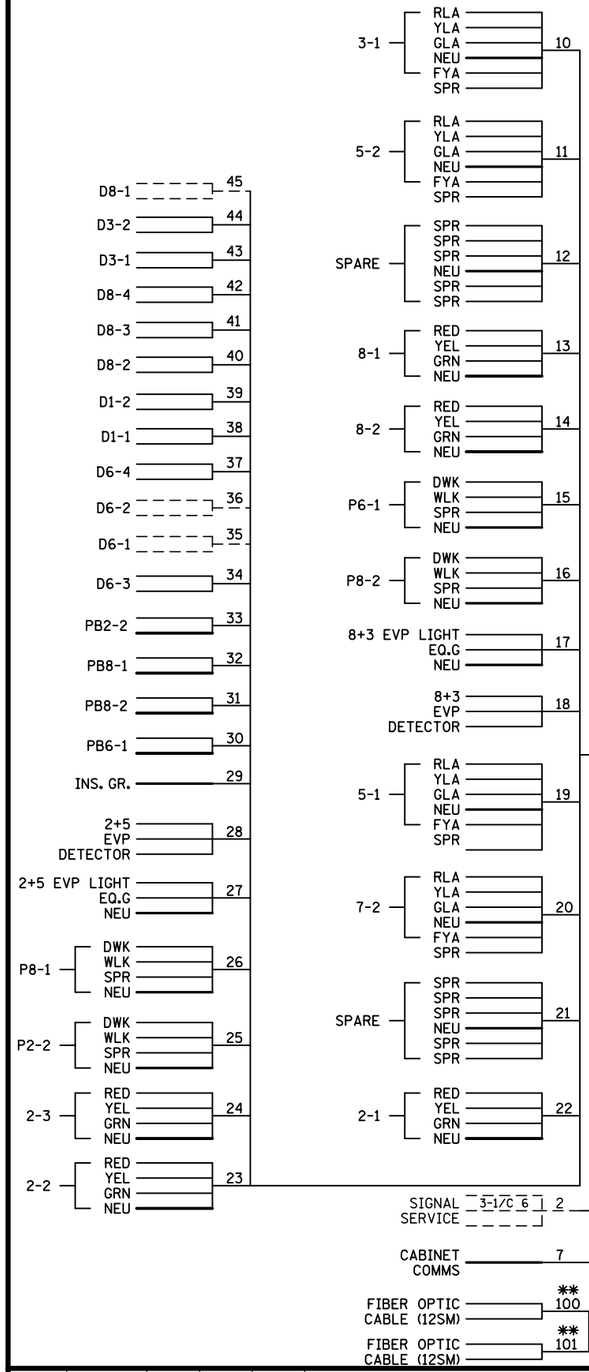
ANOKA COUNTY HIGHWAY DEPT.

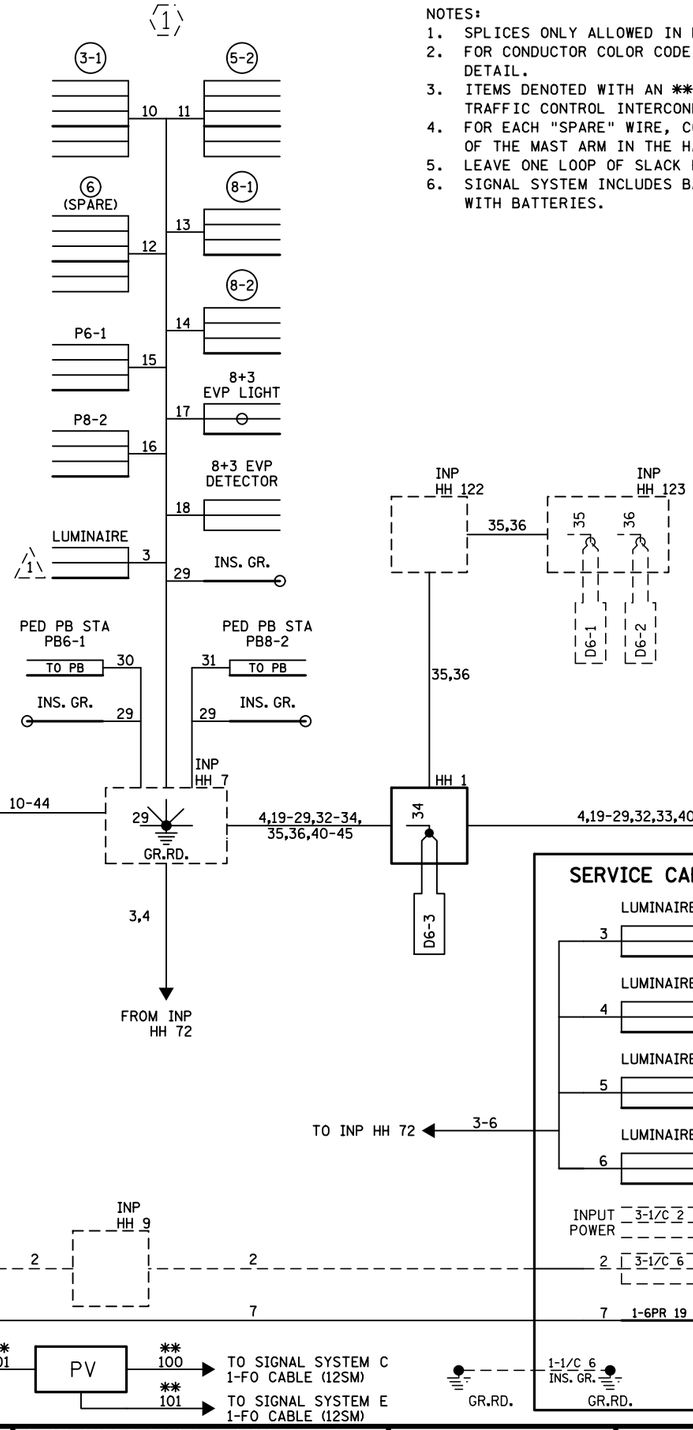
REVISE SIGNAL SYSTEM D NOTES
BUNKER LAKE BLVD & QUINN ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

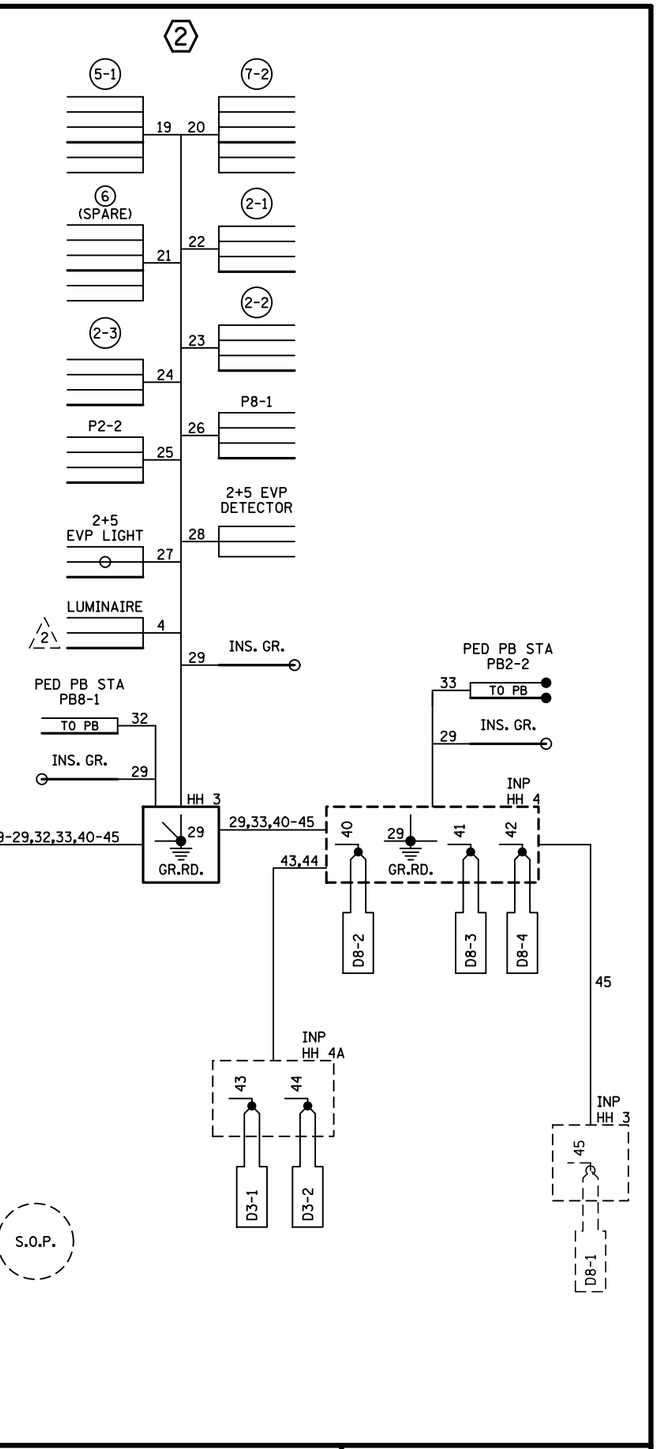
Sheet 116 of 174 Sheets

CONTROLLER CABINET





NOTES:
1. SPLICES ONLY ALLOWED IN LOOP DETECTOR CIRCUITS.
2. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL COLOR CODE DETAIL.
3. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
4. FOR EACH "SPARE" WIRE, COIL ENOUGH WIRE TO REACH THE END OF THE MAST ARM IN THE HANDHOLE NEAREST EACH POLE.
5. LEAVE ONE LOOP OF SLACK FOR EACH CABLE IN THE POLE BASE.
6. SIGNAL SYSTEM INCLUDES BATTERY BACKUP SERVICE CABINET WITH BATTERIES.



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ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM D WIRING
BUNKER LAKE BLVD & QUINN ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 117 of 174 Sheets

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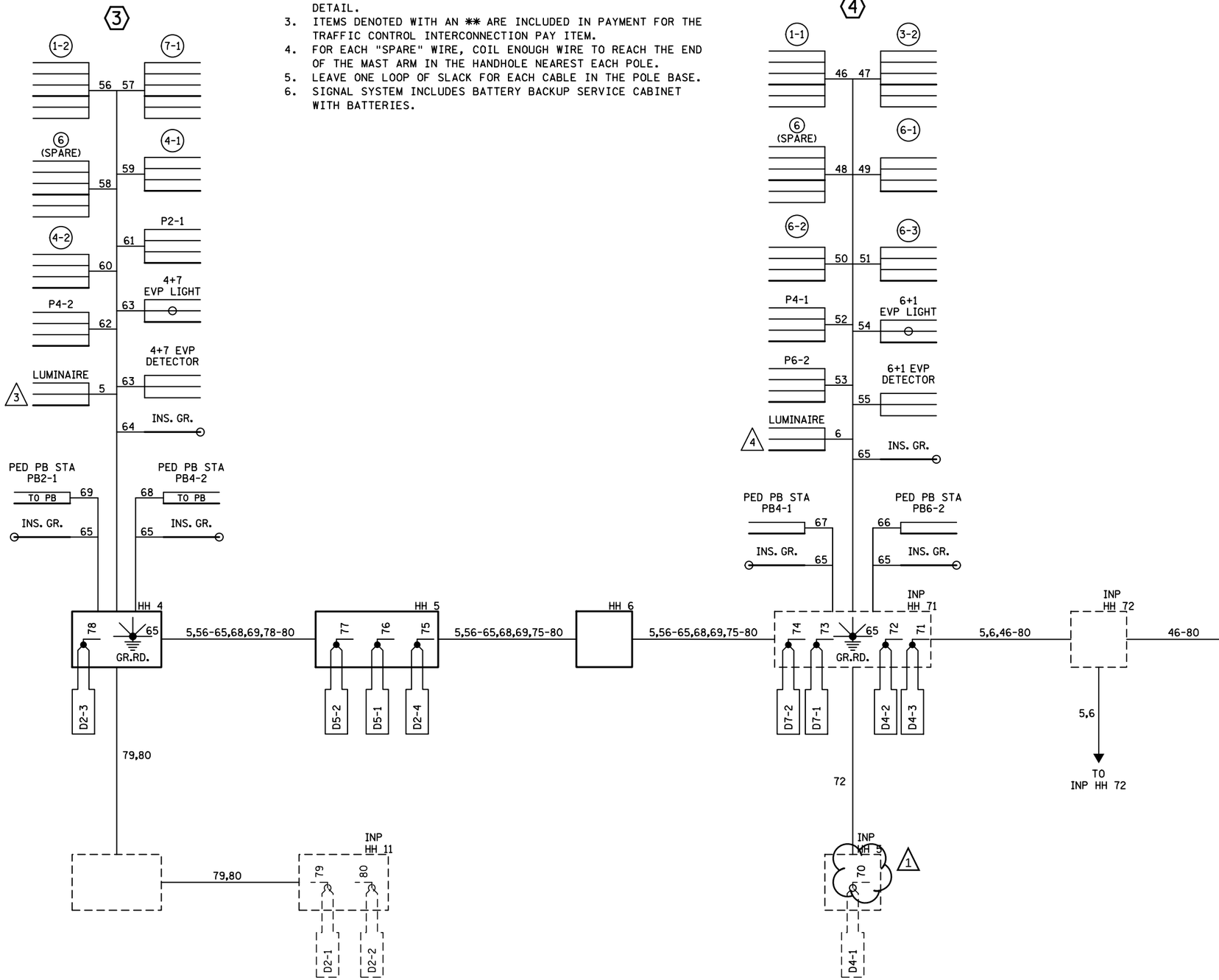
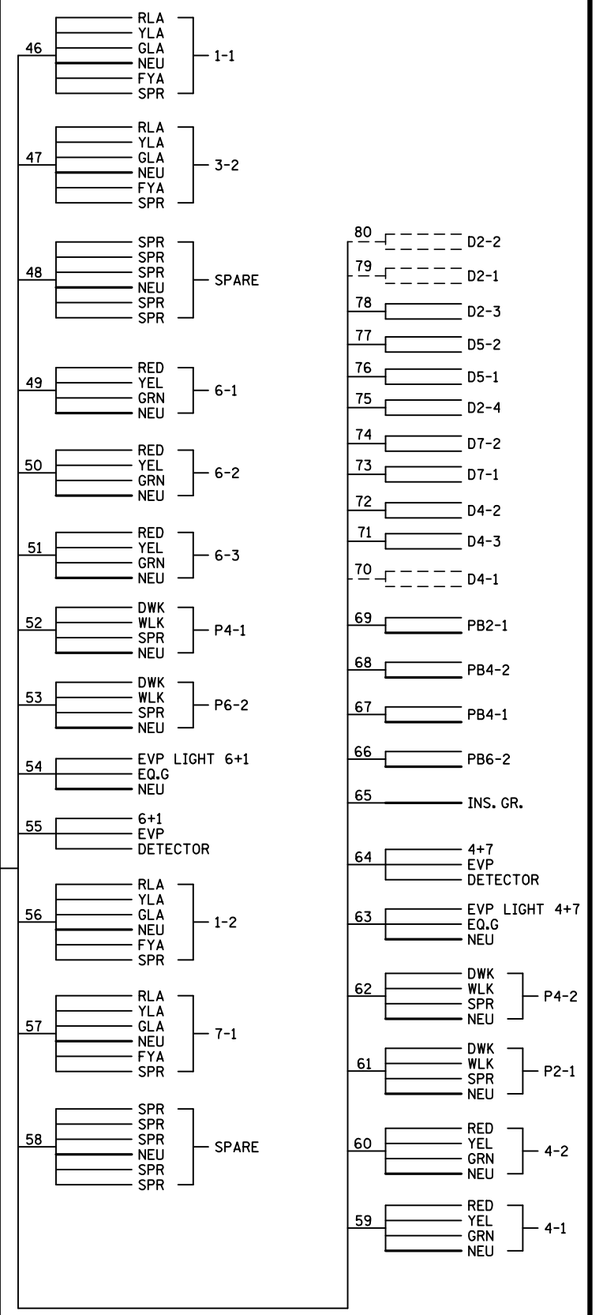
4. FOR EACH "SPARE" WIRE, COIL ENOUGH WIRE TO REACH THE END OF THE MAST ARM IN THE HANDHOLE NEAREST EACH POLE.
5. LEAVE ONE LOOP OF SLACK FOR EACH CABLE IN THE POLE BASE.
6. SIGNAL SYSTEM INCLUDES BATTERY BACKUP SERVICE CABINET WITH BATTERIES.



CONTROLLER CABINET



NO	DATE	BY	CKD	APPR	REVISION
1	1/9/2025	NHV	NHV	NHV	ADD CABLE # FOR D4-1 AT INP HH 5

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM D WIRING
BUNKER LAKE BLVD & QUINN ST
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CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 118 of 174 Sheets

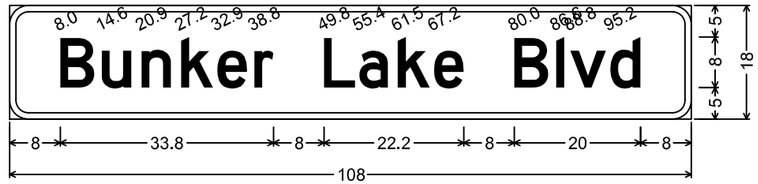
SIGN PANEL DETAILS

SIGN PANELS ON SIGNALS

POLE NUMBER	"A" DISTANCE (FEET) OR POLE	PANEL				
		QTY	CODE NUMBER	LEGEND	SIZE (INCHES)	AREA (SQ FT)
1	22	1	D-1	BUNKER LAKE BLVD	108 x 18	13.50
1	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50
2	34	1	D-5	QUINN ST	60 x 18	7.50
2	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50
3	27	1	D-1	BUNKER LAKE BLVD	108 x 18	13.50
3	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50
4	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50

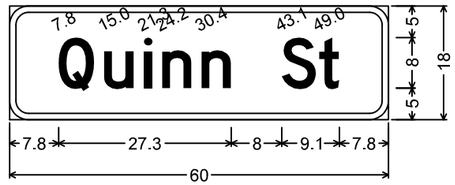
GENERAL NOTES:
1. SEE MnDOT STANDARD SIGNS AND MARKINGS MANUAL FOR STANDARD SIGN DESIGNS, ARROW DETAILS, AND SPLICE PLATE DETAILS.
2. FOR NON STANDARD SIGN DESIGNS, LAYOUTS ARE INCLUDED. SIGN PANEL DIMENSIONS ARE IN INCHES.
3. SEE STANDARD PLAN 5-297.731 FOR SIGN MOUNTING TO MAST ARM.
4. MOUNTING HEIGHT OF POLE MOUNTED SIGN PANELS MUST BE 7 FOOT MINIMUM. MOUNTING HEIGHT IS MEASURED FROM BOTTOM OF SIGN PANEL TO SURFACE IMMEDIATELY BELOW THE SIGN PANEL.
5. "A" DISTANCE = DISTANCE FROM THE END OF THE MAST ARM TO THE EDGE OF EACH SIGN PANEL.
6. THE SIGNS ON THIS DETAIL SHEET ARE SIGNS THAT ARE MOUNTED ON THE SIGNAL MAST ARM OR SIGNAL POLES. THESE SIGNS ARE INCLUDED IN THE LUMP SUM PAYMENT FOR THE REVISE TRAFFIC CONTROL SIGNAL SYSTEM.

D-1



3.0" Radius, 1.0" Border, White on Green;
"Bunker Lake Blvd", D 2K;

D-5



3.0" Radius, 1.0" Border, White on Green;
"Quinn St", D 2K;

NO	DATE	BY	CKD	APPR	REVISION

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ANOKA COUNTY

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REVISE SIGNAL SYSTEM D DETAILS
BUNKER LAKE BLVD & QUINN ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

INTERCONNECT NOTES:

1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651-454-0002) AS REQUIRED BY MINNESOTA STATUTE 216D.
2) (***) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION "C"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
3) ALL ITEMS OF THIS SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED, PROTECTED AND MAINTAINED INPLACE, EXCEPT WHERE BOXED IN & DENOTED BY BOTH (***) AND BY F & I (INTERCONNECT ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR).
4) SEE SPECIAL PROVISIONS FOR INFORMATION REGARDING LABOR AND MATERIALS TO BE PROVIDED AND INSTALLED BY THE CONTRACTOR IN EACH INPLACE TRAFFIC SIGNAL CONTROLLER CABINET AS PART OF THE "TRAFFIC CONTROL INTERCONNECTION "C" PAY ITEM.

④ PA100 POLE FOUNDATION
TYPE PA100-A-50-D40-G (DAVIT AT 350°)
LUMINAIRE-200 WATT H.P.S. WITH PEC AND CHECK SWITCH
3-ONE WAY SIGNALS-OVERHEAD (AT 0',11',23')
2-TYPE 10B-POLE MOUNTED 90° AND 180°
2-PEDESTRIAN PUSH BUTTONS
2-R6-1 SIGN PANELS (3 FT. X 1 FT.)-POLE MOUNTED 0° AND 180°
TYPE "D" SIGN PANEL (6.5 FT. X 1.5 FT.)-OVERHEAD (D-2)
ONE WAY EVP DETECTOR AND LIGHT- OVERHEAD (#6,1)
EXTEND INTO EX. HH 71:
3 IN. R.S.C.
3-12/c#12
2-3/c#12
1-3/c#20
1-3/c#12 (LUM)

Ⓐ CONTROLLER AND CABINET
CABINET FOUNDATION
EXTENDED INTO H.H.9:
METERED SIGNAL SERVICE
1 1/4"R.S.C.
3-1/c#6
EXTENDED INTO H.H.7:
4"R.S.C.
6-12/c#12
4-3/c#12
2-3/c#20
10-2/c#14
(***) 1-6 Pr.#19-INPLACE (REMOVE)
(***) 1-12 SM FIBER-OPTIC CABLE-F & I
EXTENDED INTO H.H.72:
4"R.S.C.
6-12/c#12
4-3/c#12
2-3/c#20
11-2/c#14
(***) 1-6 Pr.#19-INPLACE (REMOVE)
(***) 1-12 SM FIBER-OPTIC CABLE-F & I

Ⓑ SERVICE CABINET
CABINET FOUNDATION
EXTEND INTO HH 9:
2 IN. R.S.C.
METERED SIGNAL SERVICE:
3-1/c#8
UNMETERED STREET LIGHT SERVICE:
4-3/c#12 (LUM)
STUB OUT 2 IN. R.S.C. (FOR SERVICE BY CONNEXUS)

N.M.C. LOOP DETECTORS

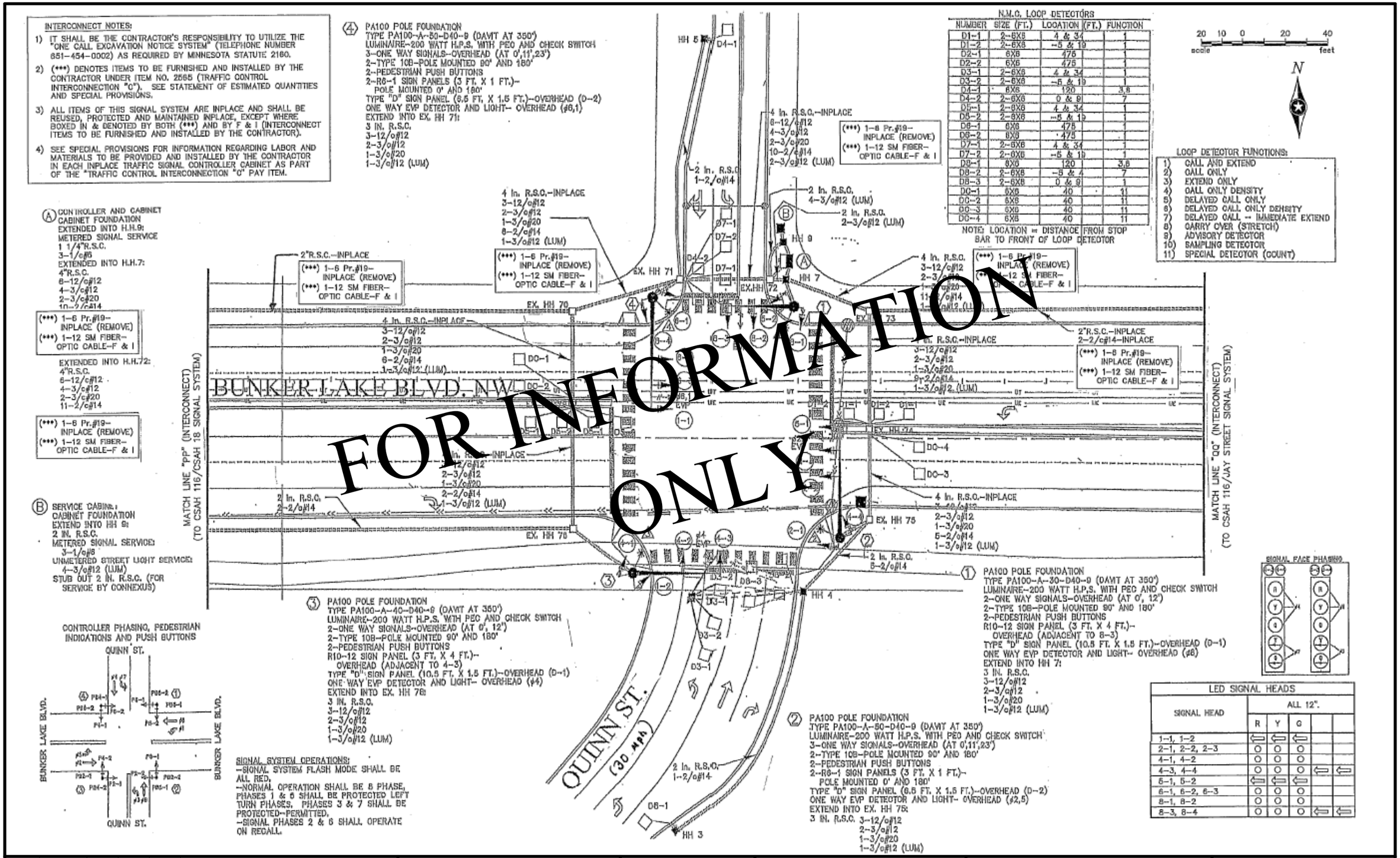
NUMBER	SIZE (FT.)	LOCATION (FT.)	FUNCTION
D1-1	2-6X6	4 & 34	1
D1-2	2-6X6	-5 & 19	1
D2-1	6X6	475	1
D2-2	6X6	475	1
D3-1	2-6X6	4 & 34	1
D3-2	2-6X6	-5 & 19	1
D4-1	6X6	120	3,6
D4-2	2-6X6	0 & 9	7
D5-1	2-6X6	4 & 34	1
D5-2	2-6X6	-5 & 19	1
D6-1	6X6	475	1
D6-2	6X6	475	1
D7-1	2-6X6	4 & 34	1
D7-2	2-6X6	-5 & 19	1
D8-1	6X6	120	3,6
D8-2	2-6X6	-5 & 4	7
D8-3	2-6X6	0 & 9	1
DC-1	6X6	40	11
DC-2	6X6	40	11
DC-3	6X6	40	11
DC-4	6X6	40	11

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

LOOP DETECTOR FUNCTIONS:
1) CALL AND EXTEND
2) CALL ONLY
3) EXTEND ONLY
4) CALL ONLY DENSITY
5) DELAYED CALL ONLY
6) DELAYED CALL ONLY DENSITY
7) DELAYED CALL -- IMMEDIATE EXTEND
8) CARRY OVER (STRETCH)
9) ADVISORY DETECTOR
10) SAMPLING DETECTOR
11) SPECIAL DETECTOR (COUNT)

scale 20 10 0 20 40 feet

N



③ PA100 POLE FOUNDATION
TYPE PA100-A-40-D40-G (DAVIT AT 350°)
LUMINAIRE-200 WATT H.P.S. WITH PEC AND CHECK SWITCH
2-ONE WAY SIGNALS-OVERHEAD (AT 0', 12')
2-TYPE 10B-POLE MOUNTED 90° AND 180°
2-PEDESTRIAN PUSH BUTTONS
R10-12 SIGN PANEL (3 FT. X 4 FT.)-OVERHEAD (ADJACENT TO 4-3)
TYPE "D" SIGN PANEL (10.5 FT. X 1.5 FT.)-OVERHEAD (D-1)
ONE WAY EVP DETECTOR AND LIGHT- OVERHEAD (#4)
EXTEND INTO EX. HH 76:
3 IN. R.S.C.
3-12/c#12
2-3/c#12
1-3/c#20
1-3/c#12 (LUM)

① PA100 POLE FOUNDATION
TYPE PA100-A-30-D40-G (DAVIT AT 350°)
LUMINAIRE-200 WATT H.P.S. WITH PEC AND CHECK SWITCH
2-ONE WAY SIGNALS-OVERHEAD (AT 0', 12')
2-TYPE 10B-POLE MOUNTED 90° AND 180°
2-PEDESTRIAN PUSH BUTTONS
R10-12 SIGN PANEL (3 FT. X 4 FT.)-OVERHEAD (ADJACENT TO 6-3)
TYPE "D" SIGN PANEL (10.5 FT. X 1.5 FT.)-OVERHEAD (D-1)
ONE WAY EVP DETECTOR AND LIGHT- OVERHEAD (#8)
EXTEND INTO HH 7:
3 IN. R.S.C.
3-12/c#12
2-3/c#12
1-3/c#20
1-3/c#12 (LUM)

② PA100 POLE FOUNDATION
TYPE PA100-A-50-D40-G (DAVIT AT 350°)
LUMINAIRE-200 WATT H.P.S. WITH PEC AND CHECK SWITCH
3-ONE WAY SIGNALS-OVERHEAD (AT 0',11',23')
2-TYPE 10B-POLE MOUNTED 90° AND 180°
2-PEDESTRIAN PUSH BUTTONS
2-R6-1 SIGN PANELS (3 FT. X 1 FT.)-POLE MOUNTED 0° AND 180°
TYPE "D" SIGN PANEL (6.5 FT. X 1.5 FT.)-OVERHEAD (D-2)
ONE WAY EVP DETECTOR AND LIGHT- OVERHEAD (#2,5)
EXTEND INTO EX. HH 75:
3 IN. R.S.C. 3-12/c#12 2-3/c#12 1-3/c#20 1-3/c#12 (LUM)

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS

SIGNAL SYSTEM OPERATIONS:
-SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
-NORMAL OPERATION SHALL BE 8 PHASE, PHASES 1 & 6 SHALL BE PROTECTED LEFT TURN PHASES. PHASES 3 & 7 SHALL BE PROTECTED-PERMITTED.
-SIGNAL PHASES 2 & 6 SHALL OPERATE ON RECALL.

SIGNAL FACE PHASING

LED SIGNAL HEADS

SIGNAL HEAD	ALL 12".				
	R	Y	G		
1-1, 1-2	⇦	⇦	⇦		
2-1, 2-2, 2-3	O	O	O		
4-1, 4-2	O	O	O		
4-3, 4-4	O	O	O	⇦	⇦
5-1, 5-2	⇦	⇦	⇦		
6-1, 6-2, 6-3	O	O	O		
8-1, 8-2	O	O	O		
8-3, 8-4	O	O	O	⇦	⇦

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_sgl45.dgn 11/26/2024 3:00:25 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: NICK VANGUNST
SIGNATURE: Nick VanGunst
DATE: 11/26/24 LICENSE NO. 44683

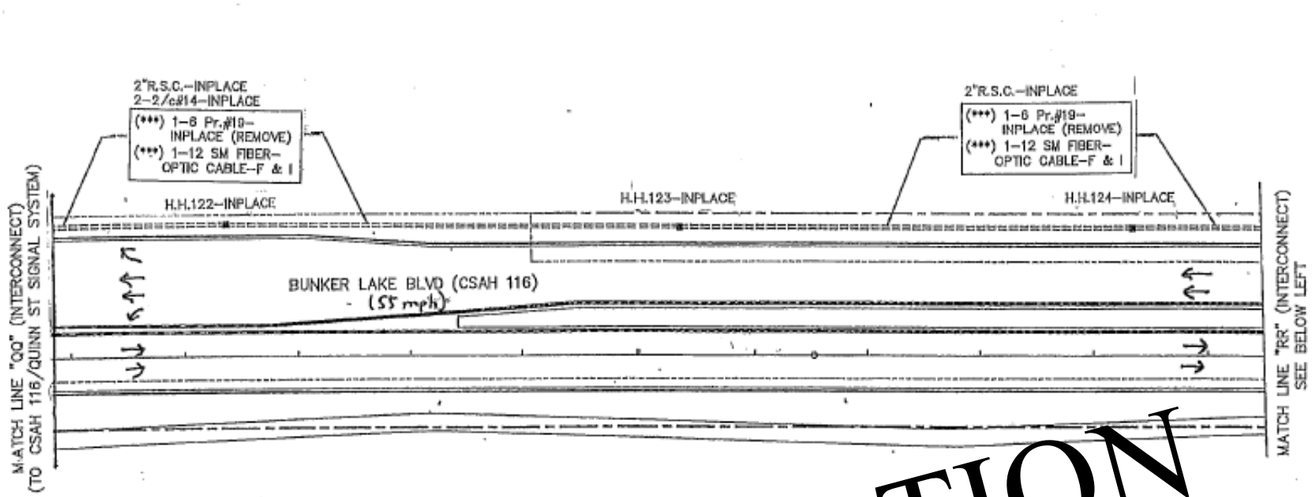
DRAWN BY KAS DATE 11/26/24
DESIGN BY KAS DATE 11/26/24
CHECKED BY NHV DATE 11/26/24

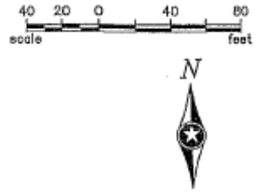
ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM D AS BUILT
BUNKER LAKE BLVD & QUINN ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

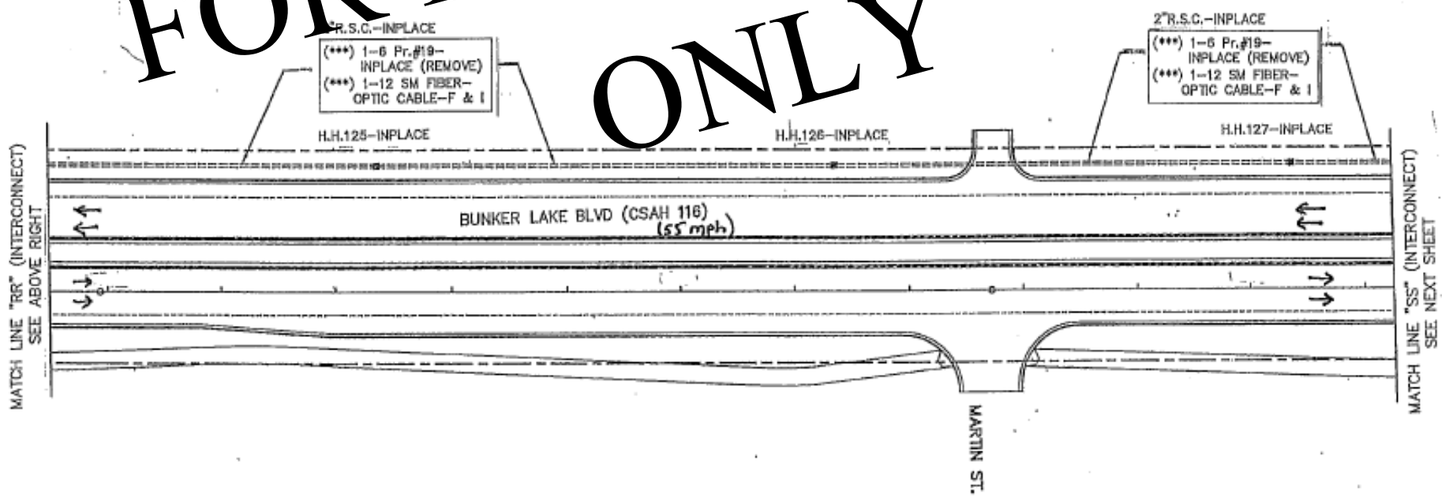
Sheet 120 of 174 Sheets





INTERGONNEGT NOTES:

1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651–454–0002) AS REQUIRED BY MINNESOTA STATUTE 216D.
2) (***) DENOTES ITEMS TO BE FURNISHED AND INSTALLED (OR REMOVED) BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION "C"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
3) ALL HANDHOLES AND CONDUIT ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE AS PART OF TRAFFIC CONTROL INTERCONNECTION "C" PAY ITEM.



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DATE: 11/26/24 LICENSE NO. 44683

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DESIGN BY KAS DATE 11/26/24

CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

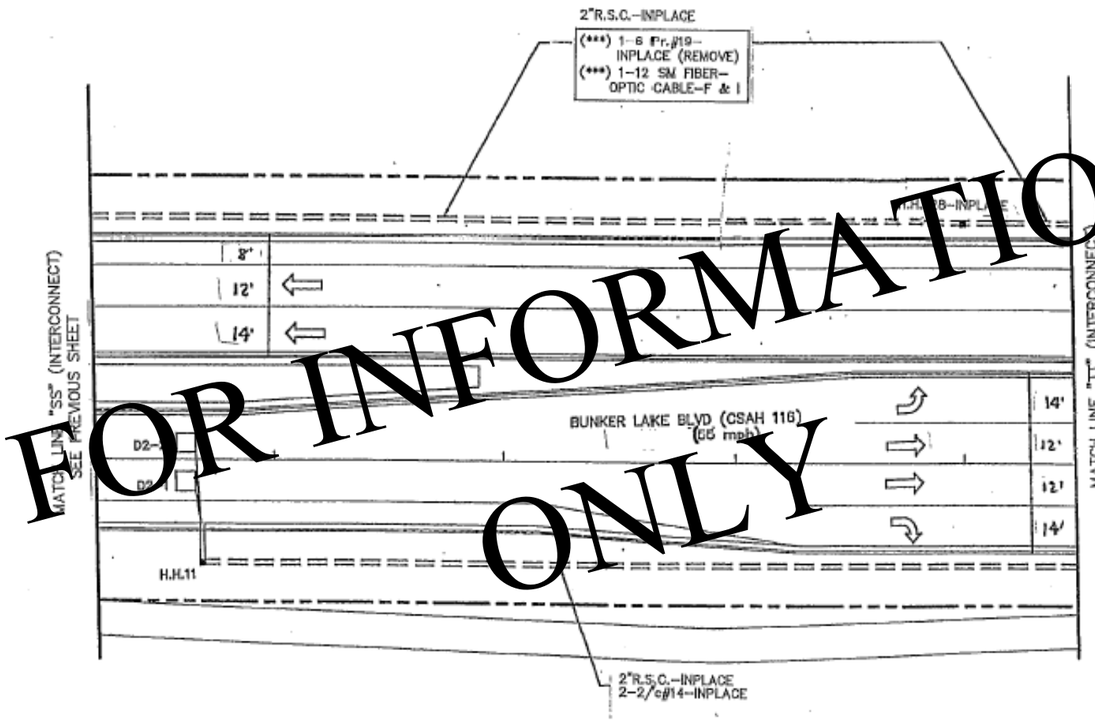
REVISE SIGNAL SYSTEM D AS BUILT
BUNKER LAKE BLVD & QUINN ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 121 of 174 Sheets

20 10 0 20 40
scale feet

N



INTERCONNECT NOTES:

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3) ALL HANDHOLES AND CONDUIT ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE AS PART OF TRAFFIC CONTROL INTERCONNECTION "C" PAY ITEM.

NO	DATE	BY	CKD	APPR	REVISION

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CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM D AS BUILT
BUNKER LAKE BLVD & QUINN ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 122 of 174 Sheets

INTERCONNECT NOTES:

1) ALL ITEMS OF THIS SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED, PROTECTED AND MAINTAINED INPLACE, EXCEPT WHERE BOXED IN AND DENOTED BY (***) (INTERCONNECT ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR).
2) (***) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION "C"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
3) CONTRACTOR SHALL REMOVE AND DISPOSE OF INPLACE CABLES 93 AND 93A (1-6 Pr.#19) FROM CSAH 18 SIGNAL SYSTEM TO JAY STREET SIGNAL SYSTEM AS PART OF "TRAFFIC CONTROL INTERCONNECTION C" PAY ITEM.

CONDUCTOR COLOR CODING

R	BLK	
O	R	2-1/c#8
BL	WH	
WH	R	
R/BLK	WH	3/c#12
O/BLK	BLK	
BL/BLK	BLK	
WH/BLK	CLEAR	2/c#14
BLK	R OR O	
BLK/WH	WH OR YEL	3/c#20
R/BLK	BLK OR BL	
O		

NOTE: ALL TERMINAL BLOCK CONNECTIONS SHALL BE ARRANGED AS SPECIFIED ABOVE.

CONTROLLER CABINET

SERVICE CABINET

(***) INTERCONNECT TO CSAH 116/ CSAH 18 CONTROLLER CABINET

(***) INTERCONNECT TO CSAH 116/JAY ST CONTROLLER CABINET

(***) 85

(***) 86

(***) 93—REMOVE

(***) 93A—REMOVE

NO	DATE	BY	CKD	APPR	REVISION

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CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM D AS BUILT
BUNKER LAKE BLVD & QUINN ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 123 of 174 Sheets

SIGNAL HEAD CHART

FACE	R	Y	FYA	G
1-1, 1-2	←	←	←	←
2-1, 2-2, 2-3	●	●		●
3-1, 3-2	←	←	←	←
4-1, 4-2	●	●		●
5-1, 5-2	←	←	←	←
6-1, 6-2, 6-3	●	●		●
7-1, 7-2	←	←	←	←
8-1, 8-2	●	●		●

-ALL SIGNAL INDICATIONS SHALL BE 12" LED
-ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS
-FYA DENOTES FLASHING YELLOW ARROW

-ALL LOOP DETECTORS SHALL BE PVC UNLESS NOTED OTHERWISE
-LOCATION: DISTANCE FROM TEMPORARY CROSSWALK IN FEET

LOOP DETECTOR CHART

	NUMBER	SIZE (FT)	LOCATION
	D1-1, D5-1	3-6x6	25, 40, 55
	D1-2, D5-2	6x6	10
	D2-1, D2-2	6x6	EXISTING
	D2-3, D2-4	6x6	10
	D3-1, D7-1	3-6x6	25, 40, 55
	D3-2, D7-2	6x6	10
	D4-1	6x6	EXISTING
	D4-2	6x6	25
	D4-3, D4-4	6x6	10
	D6-1, D6-2	6x6	EXISTING
	D8-1, D8-2	6x6	EXISTING
	D8-2	6x6	25
	D8-3,D8-4	6x6	10
ABANDON	DC-1, DC-2, DC-3, DC-4	6x6	EXISTING

MATCHLINE A

MATCHLINE B

CSAH 116
(BUNKER LAKE BLVD NW)
(50 MPH)

JAY ST NW
(30 MPH)

F&I: PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB6-2)
EXTEND INTO HH 14:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

EXTEND: 1 1/4" RSC TO HH 14
REMOVE: 1-2/C 14
F&I: 1-2/C 14

F&I: 4" CONDUIT
6-6/C 16
9-4/C 16
2-3/C 16
2-3/C 20
14-2/C 14
2-3/C 16 (LUM)
1-1/C 6 INS. GR.

F&I: 4" CONDUIT
3-6/C 16
4-4/C 16
1-3/C 16
1-3/C 20
8-2/C 14
1-3/C 16 (LUM)
1-1/C 6 INS. GR

REMOVE INPLACE HANDHOLE 14

ABANDON: 2" RSC
**REMOVE: 1-FO CABLE (12SM)
F&I: 1.5" CONDUIT
**1-FO ARMORED CABLE (12SM)

ABANDON INPLACE

REMOVE: HANDHOLE
F&I: HANDHOLE

INPLACE: RSC
REMOVE: SIGNAL CABLES

INPLACE: 2" RSC
REMOVE: 2-2/C 14
F&I: 2-2/C 14

REMOVE: HANDHOLE
F&I: HANDHOLE

F&I: 4" CONDUIT
6-6/C 16
5-4/C 16
1-3/C 16
1-3/C 20
12-2/C 14
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

EXTEND: 2" RSC TO HH 15
REMOVE: 2-2/C 14
F&I: 2-2/C 14

REMOVE INPLACE HANDHOLE 15

F&I: PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB8-2)
EXTEND INTO INP HH 1:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

**F&I: 1.5" CONDUIT
1-FO ARMORED CABLE (12SM)

**F&I: PULL VAULT

INPLACE: 2" RSC
REMOVE: 2-2/C 14
** 1-FO CABLE (12SM)
F&I: 2-2/C 14

INPLACE: RSC
REMOVE: SIGNAL CABLES

ABANDON INPLACE

F:I 4" CONDUIT
3-6/C 16
5-4/C 16
1-3/C 16
1-3/C 20
9-2/C 14
1-3/C 16 (LUM)
1-1/C 6 INS. GR

F&I: PED PB STATION
1-APS PB AND SIGN
(LT ARROW) (PB8-1)
EXTEND INTO HH 6:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

F&I: 4" CONDUIT
3-6/C 16
4-4/C 16
1-3/C 16
1-3/C 20
5-2/C 14
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

REMOVE: HANDHOLE
F&I: HANDHOLE

F&I: PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB4-2)
EXTEND INTO INP HH 9:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

REMOVE INPLACE HANDHOLE 6

ABANDON: 3" RSC
REMOVE: 2-2/C 14
F&I: 2" CONDUIT
2-2/C 14

F&I: PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB2-2)
EXTEND INTO HH 6:
1" CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

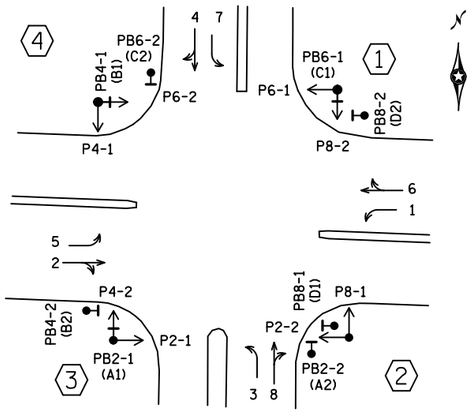
EXTEND: 2" RSC INTO HH 6
REMOVE: 2-2/C 14
F&I: 2-2/C 14

INP HH 17
INP HH 18
INP HH 15
INP HH 16
INP HH 14
INP IHH 128
INP IHH 12
INP HH 10
INP HH 8
INP HH 6
INP HH 7
INP HH 4

D4-1
D4-2
D4-3
D4-4
D7-1
D7-2
D5-1
D5-2
D2-3
D2-4
D1-1
D1-2
D6-3
D6-4
D3-1
D3-2
D8-1
D8-2
D8-3
D8-4
DC-1
DC-2
DC-3
DC-4

8+3 EVP
6+1 EVP
2+5 EVP
4+7 EVP

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS



PEDESTRIAN PUSH BUTTONS SHALL BE LOCATED AS SHOWN ABOVE

SIGNAL SYSTEM OPERATION

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

SCALE 0 40 IN FEET

NOTES:

1. SEE THE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
2. THE EXACT LOCATION OF THE HANDHOLES, LOOP DETECTORS, UNDERGROUND CONDUIT, AND THE EQUIPMENT PAD ARE DETERMINED IN THE FIELD. VERIFY THE LOCATIONS OF ALL SIGNAL COMPONENTS WITH ANOKA COUNTY PERSONNEL. CONDUITS UNDER ROADWAYS TYPICALLY REQUIRE BORING.
3. ALL SIGNAL MOUNTED SIGNS ARE INCLUDED IN PAYMENT WITH THE LUMP SUM SIGNAL SYSTEM PAY ITEM. SEE SIGNING DETAIL SHEET FOR MAST ARM MOUNTED SIGNS.
4. SEE CONSTRUCTION PLANS FOR PAVEMENT MARKINGS.
5. CONSTRUCTION OF PEDESTRIAN CURB RAMPS, CONCRETE WALK AND MEDIAN WORK ARE INCLUDED WITH THE ADA PLAN AND ARE PAID FOR SEPARATELY.
6. USE PVC OR HDPE FOR NEW CONDUIT. CONDUIT SIZES ARE NOMINAL DIAMETER.
7. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
8. CONTRACTOR SHALL FURNISH AND INSTALL NEW LOOP DETECTOR SPLICE KITS FOR LOCATIONS THAT INCLUDE SPLICING EXISTING LOOP DETECTION LEAD IN CABLES TO NEW 2/C 14 CABLES.
8. ALL ITEMS DENOTED WITH A ■ ARE TO BE PAID FOR AS INDIVIDUAL PAY ITEMS. SEE STATEMENT OF ESTIMATED QUANTITIES.
9. **SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) IN THE SPECIAL PROVISIONS FOR IMPORTANT TRAFFIC SIGNAL STAGING REQUIREMENTS.**

NO	DATE	BY	CKD	APPR	REVISION

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SIGNATURE: Nick Van Gunst
DATE: 11/26/24 LICENSE NO. 44683

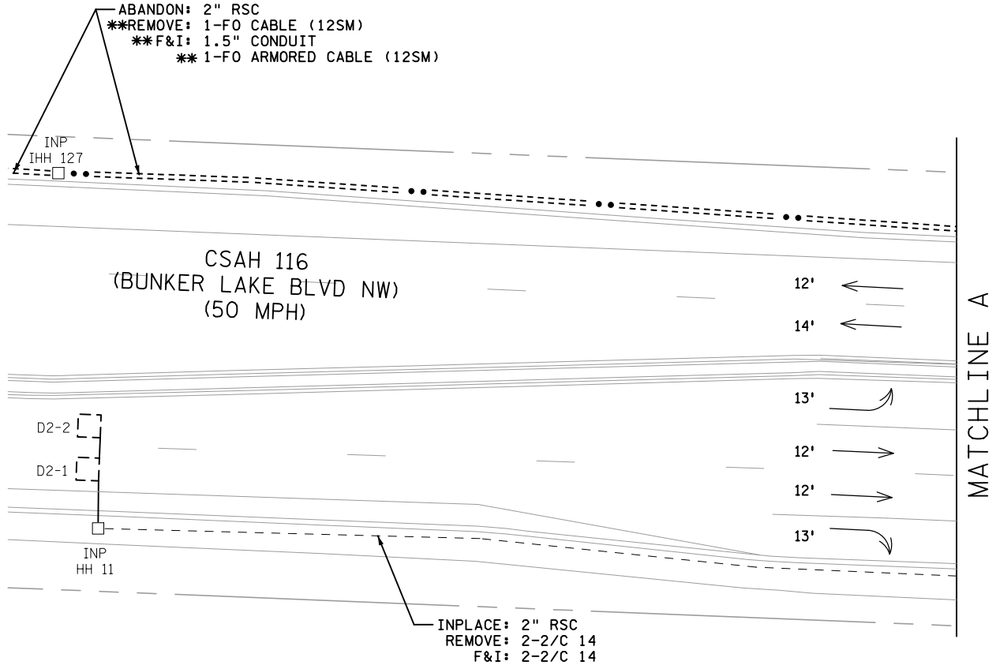
DRAWN BY KAS DATE 11/26/24
DESIGN BY KAS DATE 11/26/24
CHECKED BY NHV DATE 11/26/24

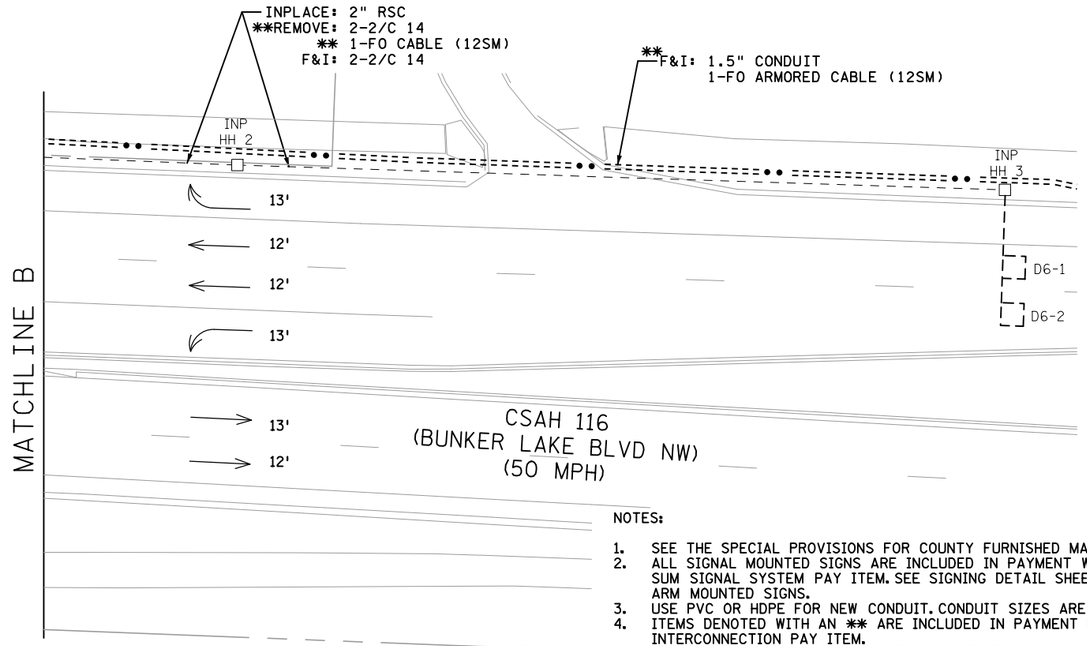
ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM E LAYOUT
BUNKER LAKE RD & JAY ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 124 of 174 Sheets





NOTES:

1. SEE THE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
2. ALL SIGNAL MOUNTED SIGNS ARE INCLUDED IN PAYMENT WITH THE LUMP SUM SIGNAL SYSTEM PAY ITEM. SEE SIGNING DETAIL SHEET FOR MAST ARM MOUNTED SIGNS.
3. USE PVC OR HDPE FOR NEW CONDUIT. CONDUIT SIZES ARE NOMINAL DIAMETER.
4. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
5. **SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) IN THE SPECIAL PROVISIONS FOR IMPORTANT TRAFFIC SIGNAL STAGING REQUIREMENTS.**

(1)
INPLACE: PA100 POLE FOUNDATION
TYPE PA100-A-40-D40-9 (DAVIT AT 350°)
2-R6-1 SIGN PANELS-POLE MOUNTED AT 0 & 180 DEG
ONE WAY EVP DETECTOR AND LIGHT (PHASE 8+3)
REMOVE: 2-ONE WAY SIGNALS-OVERHEAD (0' & 12' FROM END OF MAST ARM)
2-TYPE 10B-POLE MOUNTED AT 90° & 180°
2-PEDESTRIAN PUSHBUTTONS & SIGNS & PLUG HOLE
LUMINAIRE-200 W HPS W/ PEC & CHECK SWITCH
R10-12 SIGN PANEL ADJACENT TO HEAD (8-3)
TYPE D SIGN PANEL-OVERHEAD
F&I: LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 12' FROM END OF MAST ARM)
2-TYPE 10B-POLE MOUNTED AT 90° & 180°
1-APS PB AND SIGN (LT ARROW) (PB6-1) AND APS PB MOUNTING SPACERS
1-R10-X12 SIGN ADJACENT TO HEAD (3-1)
1-SIGN (BUNKER LAKE BLVD) (SEE SIGN DETAILS)
EXTEND: 3" RSC TO INP HH 1:
F&I: 3-6/C 16
4-4/C 16
1-3/C 16
1-3/C 20
1-2/C 14
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

(A)(B)
REMOVE: TRAFFIC SIGNAL CABINET & SERVICE CABINET
SERVICE CABINET AND FOUNDATION
F&I: EQUIPMENT PAD (SEE DETAIL SHEET)
SERVICE CABINET WITH BATTERY BACKUP (SEE DETAIL SHEET)
TS2 CABINET AND CONTROLLER (COUNTY PROVIDED)

1-4" NMC TO INP HH 1:	1-4" NMC TO HH 15:
3-6/C 16	3-6/C 16
5-4/C 16	5-4/C 16
1-3/C 16	1-3/C 16
1-3/C 20	1-3/C 20
12-2/C 14	8-2/C 14

1-4" NMC TO INP HH 1:	1-4" NMC TO HH 15:
3-6/C 16	3-6/C 16
4-4/C 16	4-4/C 16
1-3/C 16	1-3/C 16
1-3/C 20	1-3/C 20
5-2/C 14	7-2/C 14

F&I: GROUND WIRE AND GROUND ROD - MIN 8' STUBBED OUT FROM PAD
2-2" AND 1-3" CONDUIT STUBBED OUT (CAPPED BOTH ENDS)
**1.5" CONDUIT TO TMS VAULT:
**2-FO ARMORED CABLES (12SM)
CONTROLLER CABINET TO SERVICE CABINET:
2" CONDUIT
3-1/C 6
CONTROLLER CABINET TO TO INP HH 1 (COMMS):
2" CONDUIT
1-6PR 19

SERVICE CABINET TO GROUND MOUNTED TRANSFORMER:
2" CONDUIT
3-1/C 2

SERVICE CABINET TO INP HH 1:
2" CONDUIT
2-3/C 16 (LUM)

SERVICE CABINET TO HH 15:
2" CONDUIT
2-3/C 16 (LUM)

SERVICE CABINET TO EXTERNAL GR. RD.:
1" CONDUIT
1-1/C INS. GR.
(SEE EQUIPMENT PAD LAYOUT)

(2)
X:488500.9128
Y:167081.1028
REMOVE: PA100 POLE FOUNDATION
F&I: PA100 FOUNDATION
SALVAGE & REINSTALL: TYPE PA100-A-50-D40-9 (DAVIT AT 350°)
INPLACE: LUMINAIRE-LED
REMOVE: 3-ONE WAY SIGNALS-OVERHEAD (0', 11' & 23' FROM END OF MAST ARM)
2-TYPE 10B-POLE MOUNTED AT 90° & 180°
2-PEDESTRIAN PUSHBUTTONS & SIGNS & PLUG HOLES
TYPE D SIGN PANEL-OVERHEAD
F&I: 1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNALS OVERHEAD AT 12' & 24'
2-TYPE 10B-POLE MOUNTED AT 90° & 180°
1-R10-X12 SIGN ADJACENT TO HEAD (5-1)
1-SIGN (JAY ST NW) (SEE SIGN DETAILS)
SALVAGE & REINSTALL: ONE WAY EVP DETECTOR AND LIGHT (PHASES 2+5)
2-R6-1 SIGN PANELS-POLE MOUNTED AT 0° & 180°
F&I: 3" NMC TO INP HH 5:
3-6/C 16
5-4/C 16
1-3/C 16
1-3/C 20
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

(3)
X:488392.6582
Y:167072.0180
REMOVE: PA100 POLE FOUNDATION
PA100-A-50-D40-9
LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
2-ONE WAY SIGNALS-OVERHEAD (0' & 12' FROM END OF MAST ARM)
2-TYPE 10B-POLE MOUNTED AT 90° & 180°
2-PEDESTRIAN PUSHBUTTONS & SIGNS
2-R6-1 SIGN PANELS-POLE MOUNTED AT 0 & 180 DEG
R10-12 SIGN PANEL-ADJACENT TO 4-3
TYPE D SIGN PANEL-OVERHEAD
F&I: PA100 POLE FOUNDATION
PA100-A-40-D30-9 (DAVIT AT 350°)
LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 12'
2-ANGLE MOUNT SIGNALS AT 90° AND 180°
2-ANGLE MOUNT C.D. PED HEADS AT 90° AND 180°
1-APS PB AND SIGN (LT ARROW) (PB2-1) AND APS PB MOUNTING SPACERS
1-R10-X12 SIGN ADJACENT TO HEAD (7-1)
1-SIGN (BUNKER LAKE BLVD) (SEE SIGN DETAILS)
1-R6-1L SIGN AT 0 DEG (36"x12")
1-R6-1R SIGN AT 180 DEG (36"x12")
SALVAGE & REINSTALL: ONE WAY EVP DETECTOR AND LIGHT (PHASE 4+7)
F&I: 3" NMC TO INP HH 9:
3-6/C 16
4-4/C 14
1-3/C 16
1-3/C 20
1-2/C 14
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

(4)
INPLACE: PA100 POLE FOUNDATION
TYPE PA100-A-50-D40-9 (DAVIT AT 350°)
2-R6-1 SIGN PANELS-POLE MOUNTED AT 0 & 180°
ONE WAY EVP DETECTOR AND LIGHT (PHASES 6+1)
REMOVE: LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
3-ONE WAY SIGNALS-OVERHEAD (0', 11' & 23' FROM END OF MAST ARM)
2-TYPE 10B-POLE MOUNTED AT 90° & 180°
2-PEDESTRIAN PUSHBUTTONS & SIGNS & PLUG HOLES
TYPE D SIGN PANEL-OVERHEAD
F&I: LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNALS OVERHEAD AT 12' & 24'
2-TYPE 10B-POLE MOUNTED AT 90° & 180°
1-APS PB AND SIGN (LT ARROW) (PB4-1) AND APS PB MOUNTING SPACERS
1-R10-X12 SIGN ADJACENT TO HEAD (1-1)
1-SIGN (JAY ST NW) (SEE SIGN DETAILS)
EXTEND: 3" RSC TO HH 14:
F&I: 3-6/C 16
5-4/C 16
1-3/C 16
1-3/C 20
1-2/C 14
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_sgl51.dgn 12/13/2024 8:34:25 AM

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: NICK VANGUNST
SIGNATURE: Nick Van Gunst
DATE: 11/26/24 LICENSE NO. 44683

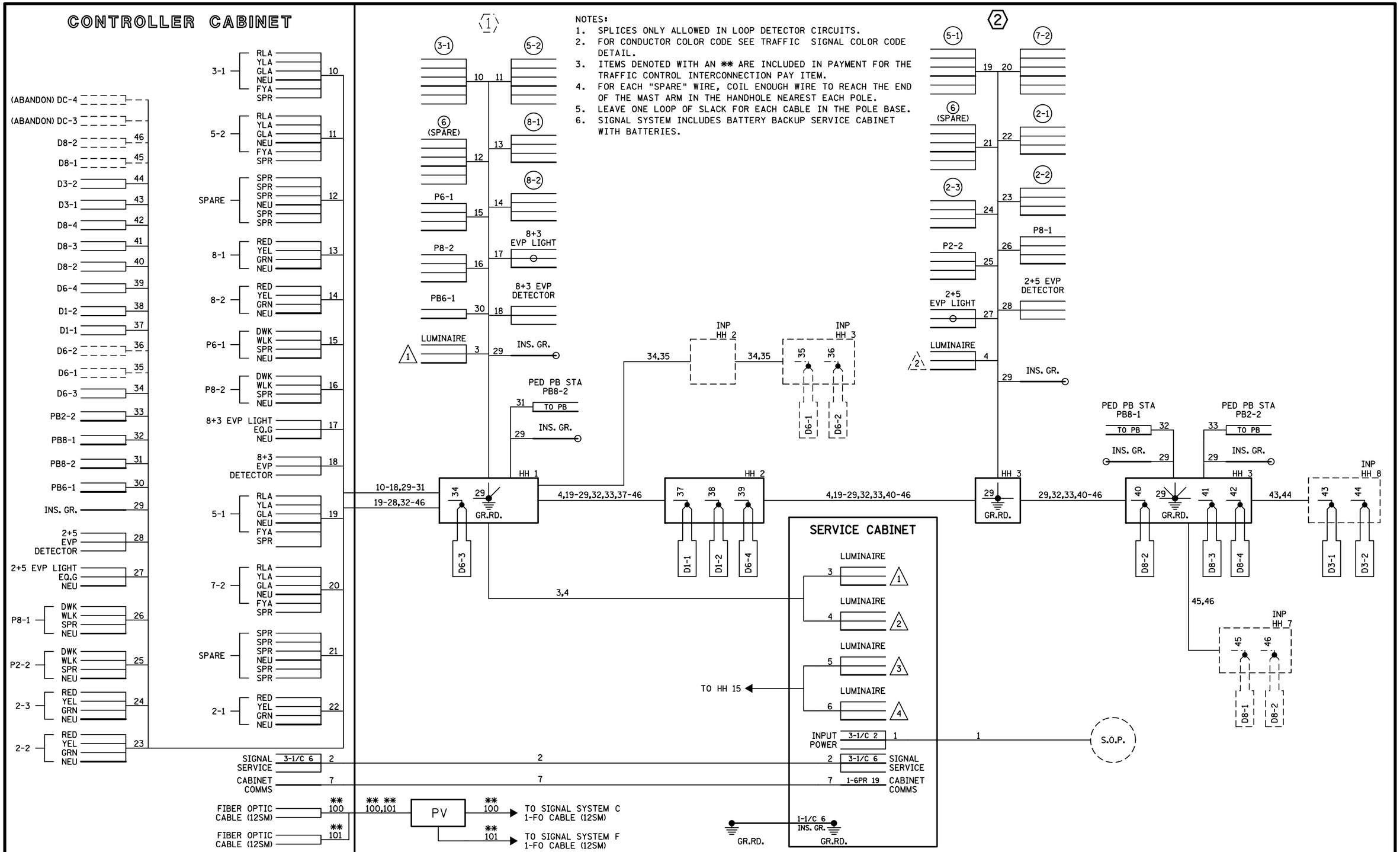
DRAWN BY KAS DATE 11/26/24
DESIGN BY KAS DATE 11/26/24
CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM E NOTES
BUNKER LAKE RD & JAY ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 125 of 174 Sheets



NOTES:
1. SPLICES ONLY ALLOWED IN LOOP DETECTOR CIRCUITS.
2. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL COLOR CODE DETAIL.
3. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
4. FOR EACH "SPARE" WIRE, COIL ENOUGH WIRE TO REACH THE END OF THE MAST ARM IN THE HANDHOLE NEAREST EACH POLE.
5. LEAVE ONE LOOP OF SLACK FOR EACH CABLE IN THE POLE BASE.
6. SIGNAL SYSTEM INCLUDES BATTERY BACKUP SERVICE CABINET WITH BATTERIES.

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PRINT NAME: NICK VANGUNST

SIGNATURE: Nick Van Gunst

DATE: 11/26/24 LICENSE NO. 44683

DRAWN BY KAS DATE 11/26/24

DESIGN BY KAS DATE 11/26/24

CHECKED BY NHV DATE 11/26/24

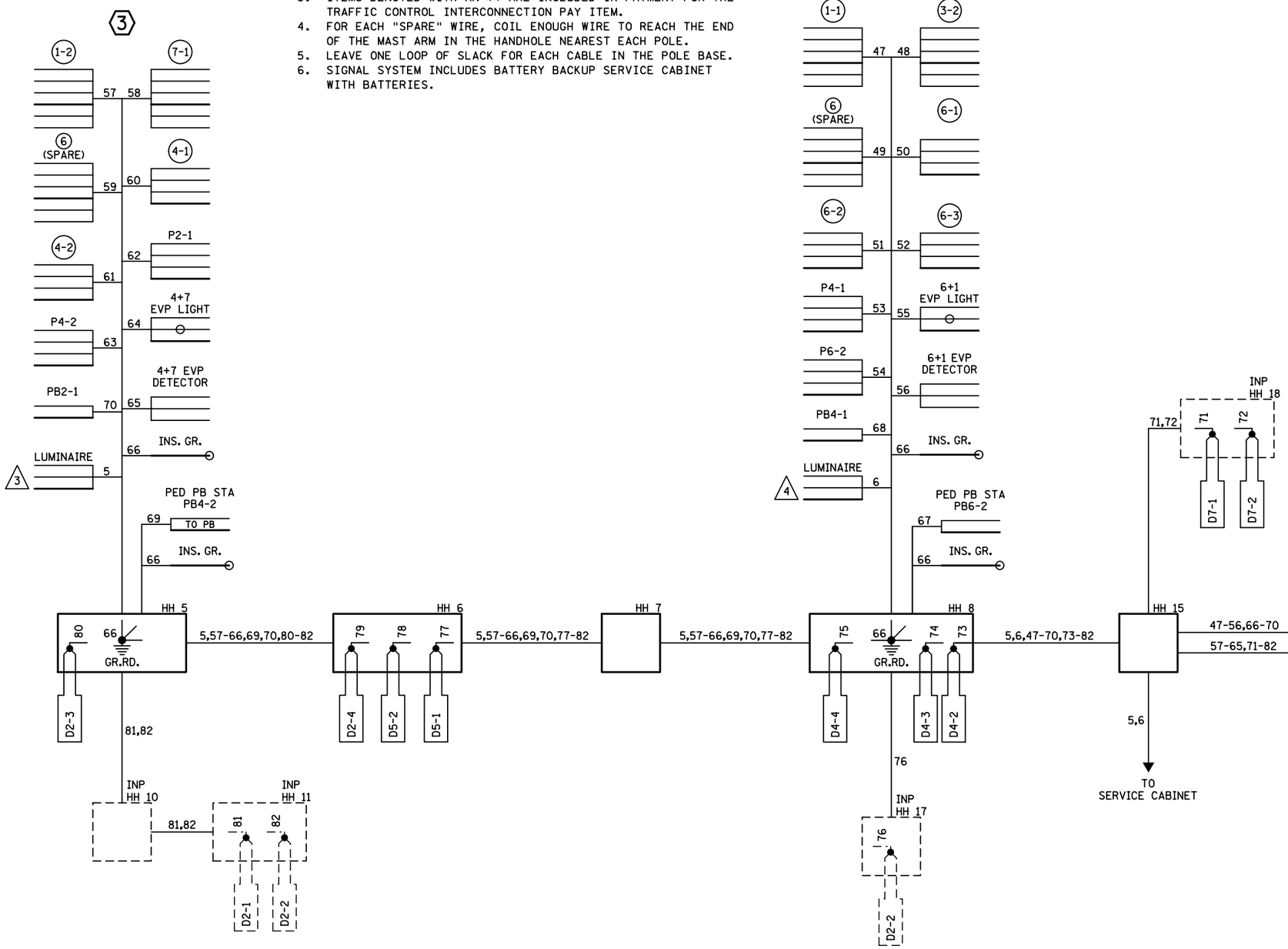
ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM E WIRING
BUNKER LAKE RD & JAY ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

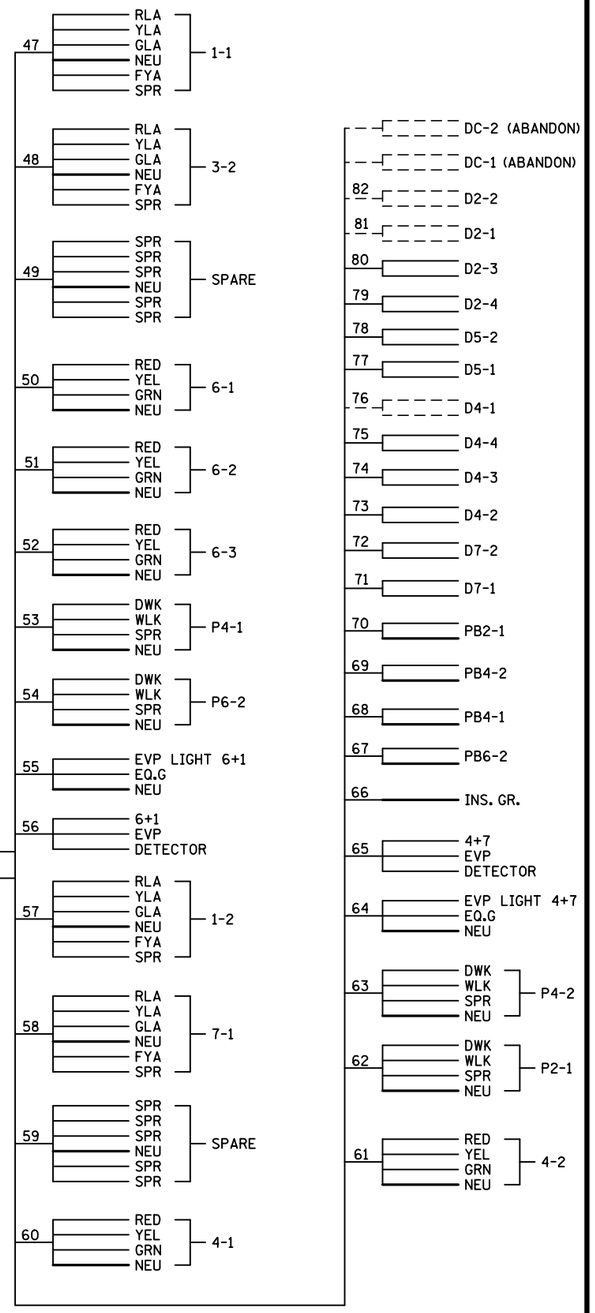
CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 126 of 174 Sheets

NOTES:
1. SPLICES ONLY ALLOWED IN LOOP DETECTOR CIRCUITS.
2. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL COLOR CODE DETAIL.
3. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
4. FOR EACH "SPARE" WIRE, COIL ENOUGH WIRE TO REACH THE END OF THE MAST ARM IN THE HANDHOLE NEAREST EACH POLE.
5. LEAVE ONE LOOP OF SLACK FOR EACH CABLE IN THE POLE BASE.
6. SIGNAL SYSTEM INCLUDES BATTERY BACKUP SERVICE CABINET WITH BATTERIES.



CONTROLLER CABINET



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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM E WIRING
BUNKER LAKE RD & JAY ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

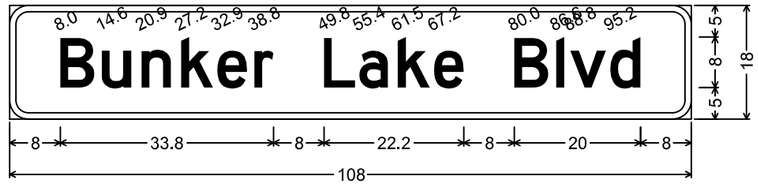
CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

SIGN PANEL DETAILS

SIGN PANELS ON SIGNALS						
POLE NUMBER	"A" DISTANCE (FEET) OR POLE	PANEL				
		QTY	CODE NUMBER	LEGEND	SIZE (INCHES)	AREA (SQ FT)
1	17	1	D-1	BUNKER LAKE BLVD	108 x 18	13.50
1	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50
2	36	1	D-6	JAY ST NW	72 x 18	9.00
2	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50
3	22	1	D-1	BUNKER LAKE BLVD	108 x 18	13.50
3	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50
4	34	1	D-6	JAY ST NW	72 x 18	9.00
4	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50

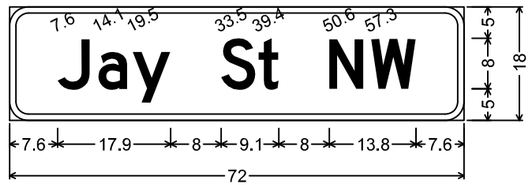
GENERAL NOTES:
1. SEE MnDOT STANDARD SIGNS AND MARKINGS MANUAL FOR STANDARD SIGN DESIGNS, ARROW DETAILS, AND SPLICE PLATE DETAILS.
2. FOR NON STANDARD SIGN DESIGNS, LAYOUTS ARE INCLUDED. SIGN PANEL DIMENSIONS ARE IN INCHES.
3. SEE STANDARD PLAN 5-297.731 FOR SIGN MOUNTING TO MAST ARM.
4. MOUNTING HEIGHT OF POLE MOUNTED SIGN PANELS MUST BE 7 FOOT MINIMUM. MOUNTING HEIGHT IS MEASURED FROM BOTTOM OF SIGN PANEL TO SURFACE IMMEDIATELY BELOW THE SIGN PANEL.
5. "A" DISTANCE = DISTANCE FROM THE END OF THE MAST ARM TO THE EDGE OF EACH SIGN PANEL.
6. THE SIGNS ON THIS DETAIL SHEET ARE SIGNS THAT ARE MOUNTED ON THE SIGNAL MAST ARM OR SIGNAL POLES. THESE SIGNS ARE INCLUDED IN THE LUMP SUM PAYMENT FOR THE REVISE TRAFFIC CONTROL SIGNAL SYSTEM.

D-1



3.0" Radius, 1.0" Border, White on Green;
"Bunker Lake Blvd", D 2K;

D-6



3.0" Radius, 1.0" Border, White on Green;
"Jay St NW", D 2K;

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_sgl54.dgn 11/26/2024 3:01:49 PM

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CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM E DETAILS
BUNKER LAKE RD & JAY ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

INTERCONNECT NOTES:

1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651-454-0002) AS REQUIRED BY MINNESOTA STATUTE 216D.
2) (***) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION "C"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
3) ALL ITEMS OF THIS SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED, PROTECTED AND MAINTAINED INPLACE, EXCEPT WHERE BOXED IN & DENOTED BY BOTH (***) AND BY F & I (INTERCONNECT ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR).
4) SEE SPECIAL PROVISIONS FOR INFORMATION REGARDING LABOR AND MATERIALS TO BE PROVIDED AND INSTALLED BY THE CONTRACTOR IN EACH INPLACE TRAFFIC SIGNAL CONTROLLER CABINET AS PART OF THE "TRAFFIC CONTROL INTERCONNECTION "C" PAY ITEM.

scale 20 10 0 20 40 feet

N

(4) PA100 POLE FOUNDATION
TYPE PA100-A-60-D40-9 (DAVIT AT 350°)
LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
3-ONE WAY SIGNALS-OVERHEAD (0', 11', 23' FROM END OF MAST ARM)
2-TYPE 10B-POLE MOUNTED 90° & 180°
2-PEDESTRIAN PUSH BUTTONS & SIGNS
2-R5-1 SIGN PANELS-POLE MOUNTED 0° & 180°
TYPE D SIGN PANEL-OVERHEAD
ONE WAY EVP DETECTOR AND LIGHT (#6,1)
EXTENDED INTO H.H.14:
3"R.S.C.
3-12/c#12
2-3/c#12
1-3/c#20
1-3/c#12 (LUM)

H.H.14 TO H.H.17:
2"R.S.C.-INPLACE
1-2/c#14-INPLACE

H.H.13 TO H.H.14:
4"R.S.C.-INPLACE
2-12/c#12-INPLACE
3-3/c#12-INPLACE
1-3/c#20-INPLACE
6-2/c#14-INPLACE
1-3/c#12 (LUM)-INPLACE

2"R.S.C.-INPLACE
(***) 1-6 Pr.#19-INPLACE (REMOVE)
(***) 1-12 SM FIBER-OPTIC CABLE-F & I

(***) 1-6 Pr.#19-INPLACE (REMOVE)
(***) 1-12 SM FIBER-OPTIC CABLE-F & I

(***) 1-6 Pr.#19-INPLACE (REMOVE)
(***) 1-12 SM FIBER-OPTIC CABLE-F & I

H.H.14 TO H.H.15:
4"R.S.C.-INPLACE
5-12/c#12-INPLACE
6-3/c#12-INPLACE
2-3/c#20-INPLACE
9-2/c#14-INPLACE
2-3/c#12 (LUM)-INPLACE

H.H.15 TO H.H.16:
2"R.S.C.-INPLACE
2-2/c#14-INPLACE

H.H.1 TO H.H.15:
2"R.S.C.-INPLACE
2-3/c#12 (LUM)-INPLACE
3"R.S.C.-INPLACE
2-12/c#12-INPLACE
3-3/c#12-INPLACE
1-3/c#20-INPLACE
1-3/c#12 (LUM)-INPLACE

(1) PA100 POLE FOUNDATION
TYPE PA100-A-40-D40-9 (DAVIT AT 350°)
LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
2-ONE WAY SIGNALS-OVERHEAD (0' & 12' FROM END OF MAST ARM)
2-TYPE 10B-POLE MOUNTED 90° & 180°
2-PEDESTRIAN PUSH BUTTONS & SIGNS
R10-12 SIGN PANEL-ADJACENT TO 8-3
TYPE D SIGN PANEL-OVERHEAD
ONE WAY EVP DETECTOR AND LIGHT (#8)
EXTEND INTO H.H.15:
3"R.S.C.
2-12/c#12
3-3/c#12
1-3/c#20
1-3/c#12 (LUM)

(B) SIGNAL SERVICE CABINET
CABINET FOUNDATION
2"R.S.C. STUB OUT TO EAST (FOR POWER CABLES)
EXTENDED INTO H.H.16:
METERED SIGNAL SERVICE
1 1/4"R.S.C.
3-1/c#6
EXTENDED INTO H.H.1:
UNMETERED STREET LIGHT SERVICE
1 1/4"R.S.C.
4-3/c#12 (LUM)-INPLACE

(C) INPLACE GROUND MOUNTED TRANSFORMER (CONNEXUS)
INPLACE POWER CABLES BETWEEN TRANSFORMER & SERVICE CABINET-REUSE AND MAINTAIN INPLACE

H.H.1 TO H.H.4:
3"R.S.C.-INPLACE
3-12/c#12-INPLACE
2-3/c#12-INPLACE
1-3/c#20-INPLACE
10-2/c#14-INPLACE
1-3/c#12 (LUM)-INPLACE

2"R.S.C.-INPLACE
2-2/c#14-INPLACE
(***) 1-6 Pr.#19-INPLACE (REMOVE)
(***) 1-12 SM FIBER-OPTIC CABLE-F & I

CSAH 116 (BUNKER LAKE BLVD) (50 mph)

MATCH LINE "TT" (INTERCONNECT) (TO CSAH 116/QUINN ST SIGNAL SYSTEM)

MATCH LINE "UU" (INTERCONNECT) (TO CSAH 116/CSAH 78 SIGNAL SYSTEM)

JAY STREET NW (30 mph)

FRONTAGE ROAD

H.H.9 TO H.H.10:
H.H.10 TO H.H.11:
2"R.S.C.-INPLACE
2-2/c#14-INPLACE

H.H.12 TO H.H.13:
4"R.S.C.-INPLACE
2-12/c#12-INPLACE
3-3/c#12-INPLACE
1-3/c#20-INPLACE
6-2/c#14-INPLACE
1-3/c#12 (LUM)-INPLACE

H.H.9 TO H.H.12:
4"R.S.C.-INPLACE
2-12/c#12-INPLACE
3-3/c#12-INPLACE
1-3/c#20-INPLACE
2-2/c#14-INPLACE
1-3/c#12 (LUM)-INPLACE

(3) PA100 POLE FOUNDATION
TYPE PA100-A-45-D40-9 (DAVIT AT 350°)
LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
2-ONE WAY SIGNALS-OVERHEAD (0' & 12' FROM END OF MAST ARM)
2-TYPE 10B-POLE MOUNTED 90° & 180°
2-PEDESTRIAN PUSH BUTTONS & SIGNS
R10-12 SIGN PANEL-ADJACENT TO 4-3
TYPE D SIGN PANEL-OVERHEAD
ONE WAY EVP DETECTOR AND LIGHT (#4)
EXTENDED INTO H.H.9:
3"R.S.C.
2-12/c#12
3-3/c#12
1-3/c#20
1-3/c#12 (LUM)

(2) PA100 POLE FOUNDATION
TYPE PA100-A-50-D40-9 (DAVIT AT 350°)
LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH
3-ONE WAY SIGNALS-OVERHEAD (0', 11', 23' FROM END OF MAST ARM)
2-TYPE 10B-POLE MOUNTED 90° & 180°
2-PEDESTRIAN PUSH BUTTONS & SIGNS
2-R5-1 SIGN PANELS-POLE MOUNTED 0° & 180°
TYPE D SIGN PANEL-OVERHEAD
ONE WAY EVP DETECTOR AND LIGHT (#2,5)
EXTENDED INTO H.H.5:
3"R.S.C.
3-12/c#12
2-3/c#12
1-3/c#20
1-3/c#12 (LUM)

H.H.5 TO H.H.6:
2"R.S.C.-INPLACE
8-2/c#14-INPLACE

H.H.4 TO H.H.5:
3"R.S.C.-INPLACE
3-12/c#12-INPLACE
2-3/c#12-INPLACE
1-3/c#20-INPLACE
6-2/c#14-INPLACE
1-3/c#12 (LUM)-INPLACE

H.H.6 TO H.H.8:
3"R.S.C.-INPLACE
2-2/c#14-INPLACE

(A) CONTROLLER AND CABINET
CABINET FOUNDATION
EXTENDED INTO H.H.16:
METERED SIGNAL SERVICE
1 1/4"R.S.C.
3-1/c#6
EXTENDED INTO H.H.1:
4"R.S.C.
5-12/c#12
5-3/c#12
2-3/c#20
12-2/c#14

(***) 1-6 Pr.#19-INPLACE (REMOVE)
(***) 1-12 SM FIBER-OPTIC CABLE-F & I
EXTENDED INTO H.H.15:
4"R.S.C.
5-12/c#12
5-3/c#12
2-3/c#20
11-2/c#14

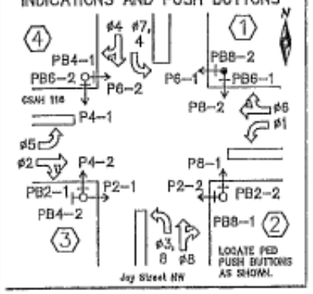
H.H.6 TO H.H.7:
2"R.S.C.-INPLACE
2-2/c#14-INPLACE

(***) 1-6 Pr.#19-INPLACE (REMOVE)
(***) 1-12 SM FIBER-OPTIC CABLE-F & I

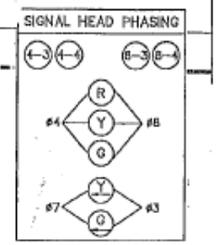
SIGNAL SYSTEM OPERATIONS:

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 8 PHASE, WITH PHASES 1 & 5 BEING PROTECTED LEFT TURN PHASES, AND PHASES 3 & 7 BEING ADDED AS PROTECTED/PERMISSIVE LEFT TURN PHASES.
- VEHICLE SIGNAL PHASES 2 & 6 SHALL OPERATE ON RECALL.

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS



SIGNAL HEAD PHASING



LED SIGNAL HEADS

SIGNAL HEAD	ALL 12".				
	R	Y	G		
1-1, 1-2	⇦	⇦	⇦		
2-1, 2-2, 2-3	○	○	○		
4-1, 4-2	○	○	○		
4-3, 4-4	○	○	○	⇦	⇦
5-1, 5-2	⇦	⇦	⇦		
6-1, 6-2, 6-3	○	○	○		
8-1, 8-2	○	○	○		
8-3, 8-4	○	○	○	⇦	⇦

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_sgl55.dgn 11/26/2024 3:02:00 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: NICK VANGUNST
SIGNATURE: Nick Van Gunst
DATE: 11/26/24 LICENSE NO. 44683

DRAWN BY KAS DATE 11/26/24
DESIGN BY KAS DATE 11/26/24
CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM E AS BUILT
BUNKER LAKE RD & JAY ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 129 of 174 Sheets

(CSAH 116/JAY ST)

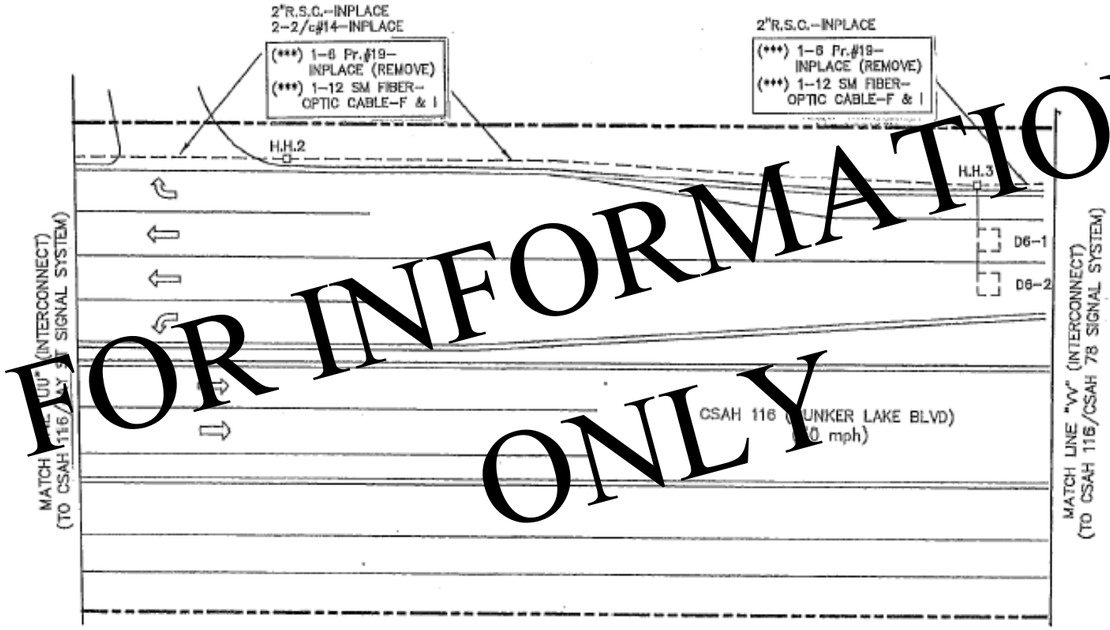
NMC LOOP DETECTORS			
NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	2-6x6	AS SHOWN	1
D1-2	2-6x6	AS SHOWN	1
D2-1	6x6	475'	1
D2-2	6x6	475'	1
D3-1	2-6x6	AS SHOWN	1
D3-2	2-6x6	AS SHOWN	1
D4-1	6x6	120'	3,8
D4-2	2-6x6	5' & 20'	7
D4-3	2-6x6	5' & 20'	1
D5-1	2-6x6	AS SHOWN	1
D5-2	2-6x6	AS SHOWN	1
D6-1	6x6	475'	1
D6-2	6x6	475'	1
D7-1	2-6x6	20' & 50'	1
D7-2	2-6x6	5' & 35'	1
D8-1	6x6	120'	3,8
D8-2	6x6	120'	7
D8-3	2-6x6	AS SHOWN	7
D8-4	2-6x6	AS SHOWN	1
DC-1	6x6	50'	11
DC-2	6x6	50'	11
DC-3	6x6	50'	11
DC-4	6x8	50'	11

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

FUNCTIONS:
1) CALL AND EXTEND
3) EXTEND ONLY
7) DELAYED CALL, IMMEDIATE EXTEND
8) CARRY OVER (STRETCH)
11) COUNT DETECTOR

scale 20 10 0 20 40 feet

N



INTERCONNECT NOTES:
1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651-454-0002) AS REQUIRED BY MINNESOTA STATUTE 216D.
2) (***) DENOTES ITEMS TO BE FURNISHED AND INSTALLED (OR REMOVED) BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION "C"). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
3) ALL HANDHOLES AND CONDUIT ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE AS PART OF TRAFFIC CONTROL INTERCONNECTION "C" PAY ITEM.

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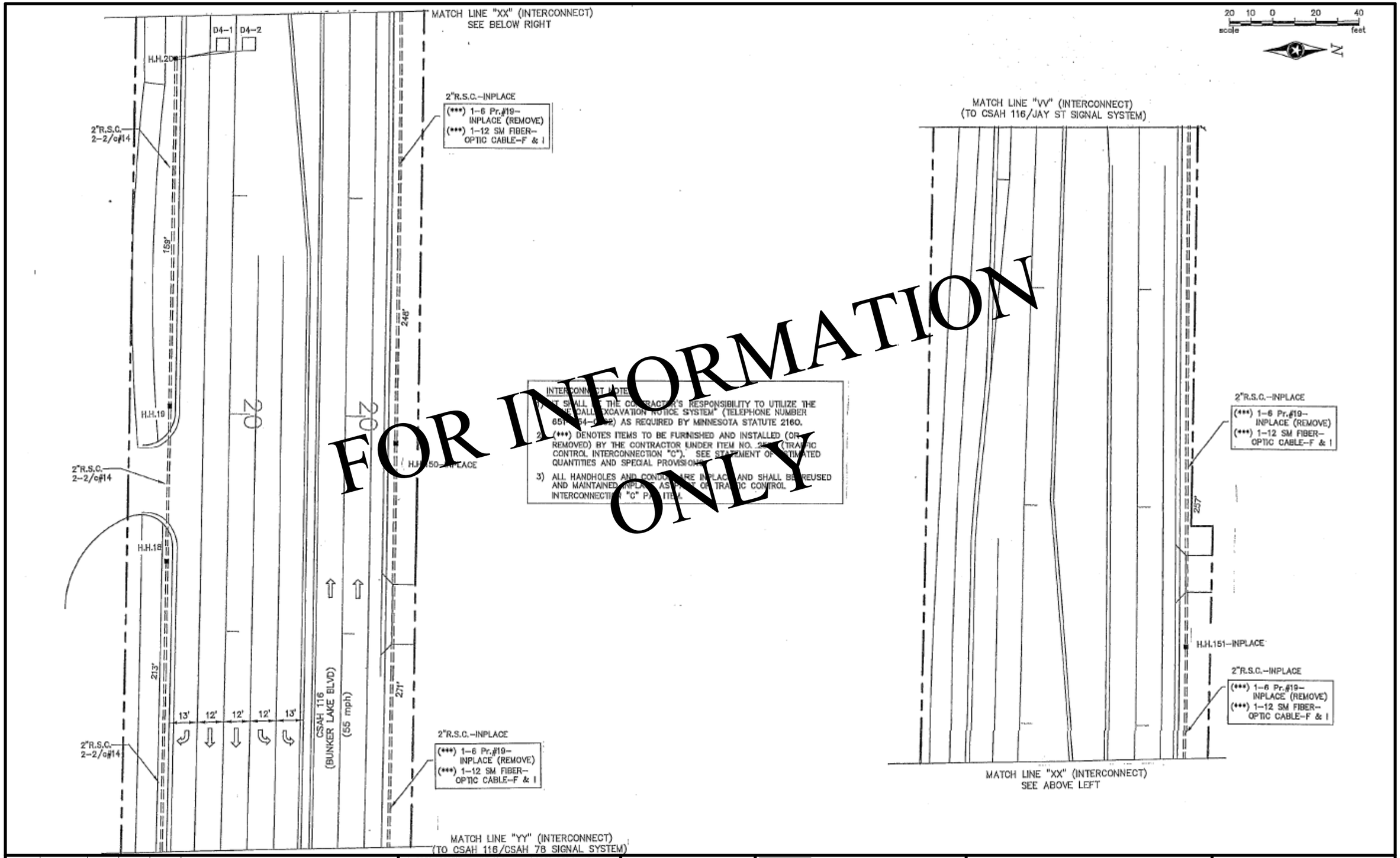
ANOKA COUNTY
HIGHWAY DEPT.

REVISE SIGNAL SYSTEM E AS BUILT
BUNKER LAKE RD & JAY ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS



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SIGNATURE: Nick VanGunst

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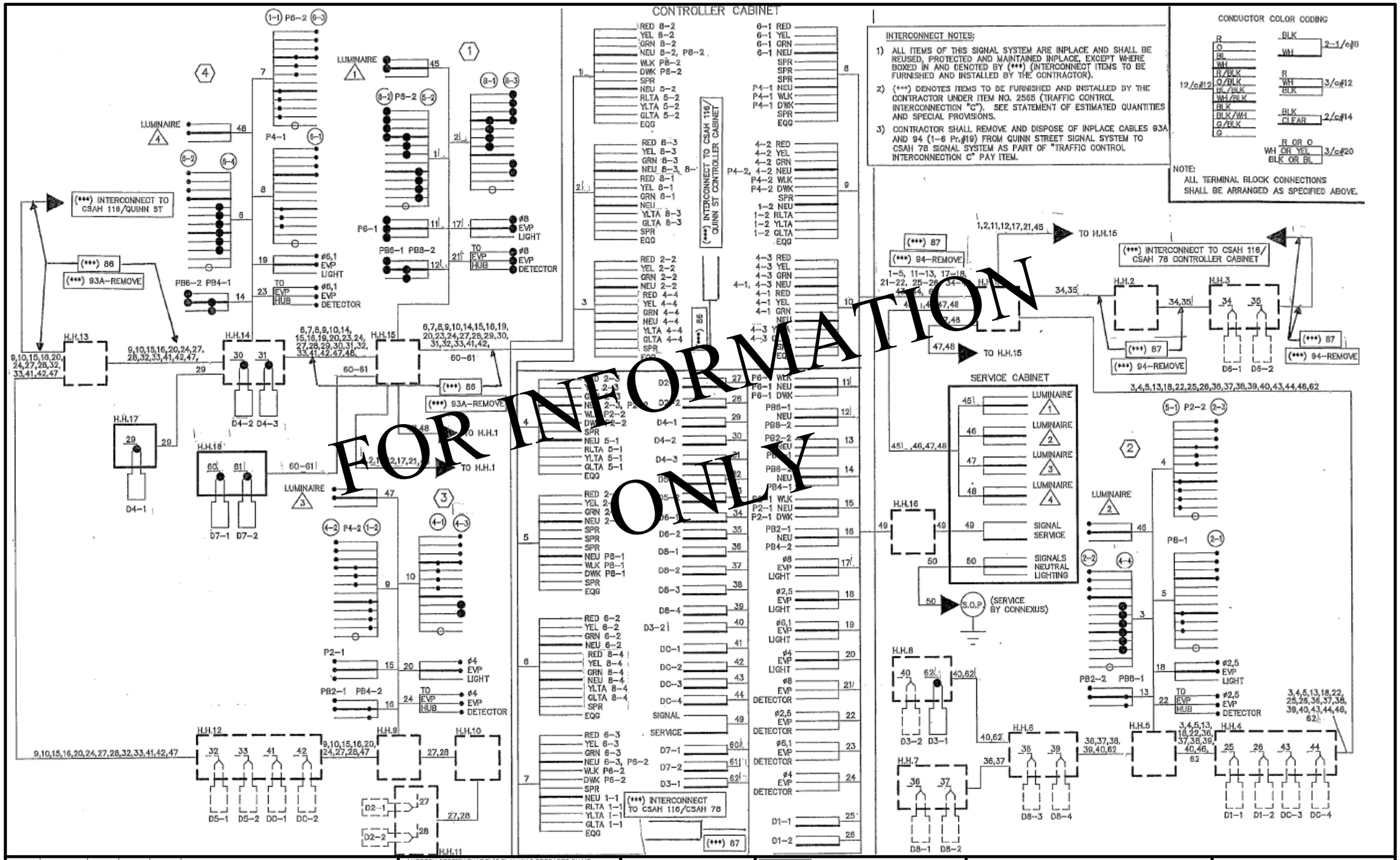
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM E AS BUILT
BUNKER LAKE RD & JAY ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 131 of 174 Sheets



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SIGNATURE: Nick Van Gunst

DATE: 11/26/24 LICENSE NO. 44683

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CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM E AS BUILT
BUNKER LAKE RD & JAY ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 132 of 174 Sheets

SIGNAL HEAD CHART

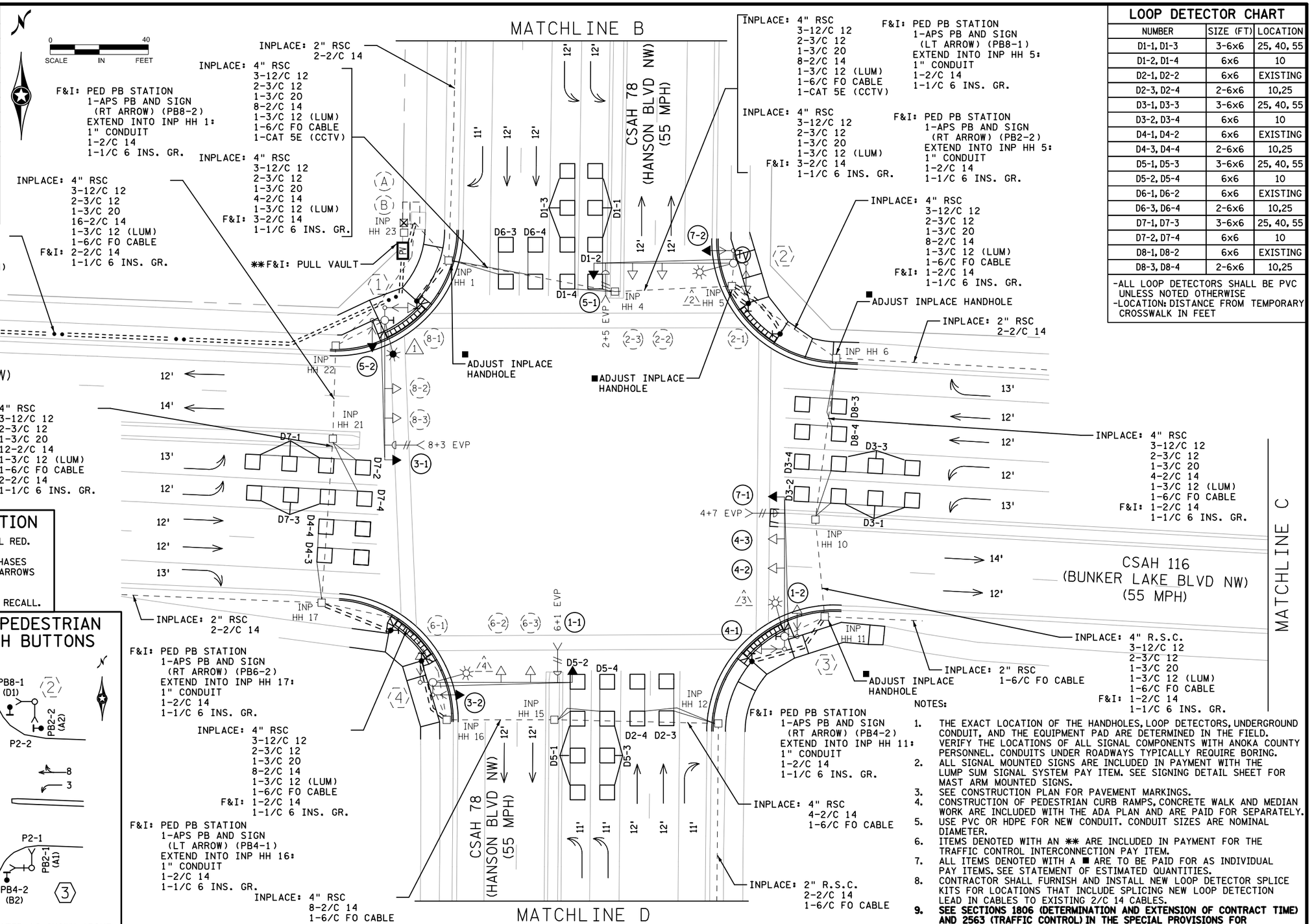
FACE	R	Y	FYA	G
1-1, 1-2	←	←	←	←
2-1, 2-2, 2-3	○	○		○
3-1, 3-2	←	←	←	←
4-1, 4-2, 4-3	○	○		○
5-1, 5-2	←	←	←	←
6-1, 6-2, 6-3	○	○		○
7-1, 7-2	←	←	←	←
8-1, 8-2, 8-3	○	○		○

-ALL SIGNAL INDICATIONS SHALL BE 12" LED
-ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS
-FYA DENOTES FLASHING YELLOW ARROW

LOOP DETECTOR CHART

NUMBER	SIZE (FT)	LOCATION
D1-1, D1-3	3-6x6	25, 40, 55
D1-2, D1-4	6x6	10
D2-1, D2-2	6x6	EXISTING
D2-3, D2-4	2-6x6	10,25
D3-1, D3-3	3-6x6	25, 40, 55
D3-2, D3-4	6x6	10
D4-1, D4-2	6x6	EXISTING
D4-3, D4-4	2-6x6	10,25
D5-1, D5-3	3-6x6	25, 40, 55
D5-2, D5-4	6x6	10
D6-1, D6-2	6x6	EXISTING
D6-3, D6-4	2-6x6	10,25
D7-1, D7-3	3-6x6	25, 40, 55
D7-2, D7-4	6x6	10
D8-1, D8-2	6x6	EXISTING
D8-3, D8-4	2-6x6	10,25

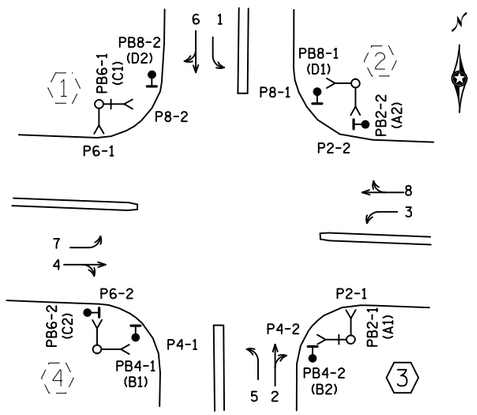
-ALL LOOP DETECTORS SHALL BE PVC UNLESS NOTED OTHERWISE
-LOCATION: DISTANCE FROM TEMPORARY CROSSWALK IN FEET



SIGNAL SYSTEM OPERATION

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

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS



PEDESTRIAN PUSH BUTTONS SHALL BE LOCATED AS SHOWN ABOVE

NOTES:

1. THE EXACT LOCATION OF THE HANDHOLES, LOOP DETECTORS, UNDERGROUND CONDUIT, AND THE EQUIPMENT PAD ARE DETERMINED IN THE FIELD. VERIFY THE LOCATIONS OF ALL SIGNAL COMPONENTS WITH ANOKA COUNTY PERSONNEL. CONDUITS UNDER ROADWAYS TYPICALLY REQUIRE BORING.
2. ALL SIGNAL MOUNTED SIGNS ARE INCLUDED IN PAYMENT WITH THE LUMP SUM SIGNAL SYSTEM PAY ITEM. SEE SIGNING DETAIL SHEET FOR MAST ARM MOUNTED SIGNS.
3. SEE CONSTRUCTION PLAN FOR PAVEMENT MARKINGS.
4. CONSTRUCTION OF PEDESTRIAN CURB RAMPS, CONCRETE WALK AND MEDIAN WORK ARE INCLUDED WITH THE ADA PLAN AND ARE PAID FOR SEPARATELY.
5. USE PVC OR HDPE FOR NEW CONDUIT. CONDUIT SIZES ARE NOMINAL DIAMETER.
6. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
7. ALL ITEMS DENOTED WITH A ■ ARE TO BE PAID FOR AS INDIVIDUAL PAY ITEMS. SEE STATEMENT OF ESTIMATED QUANTITIES.
8. CONTRACTOR SHALL FURNISH AND INSTALL NEW LOOP DETECTOR SPLICE KITS FOR LOCATIONS THAT INCLUDE SPLICING NEW LOOP DETECTION LEAD IN CABLES TO EXISTING 2/C 14 CABLES.
9. **SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) IN THE SPECIAL PROVISIONS FOR IMPORTANT TRAFFIC SIGNAL STAGING REQUIREMENTS.**

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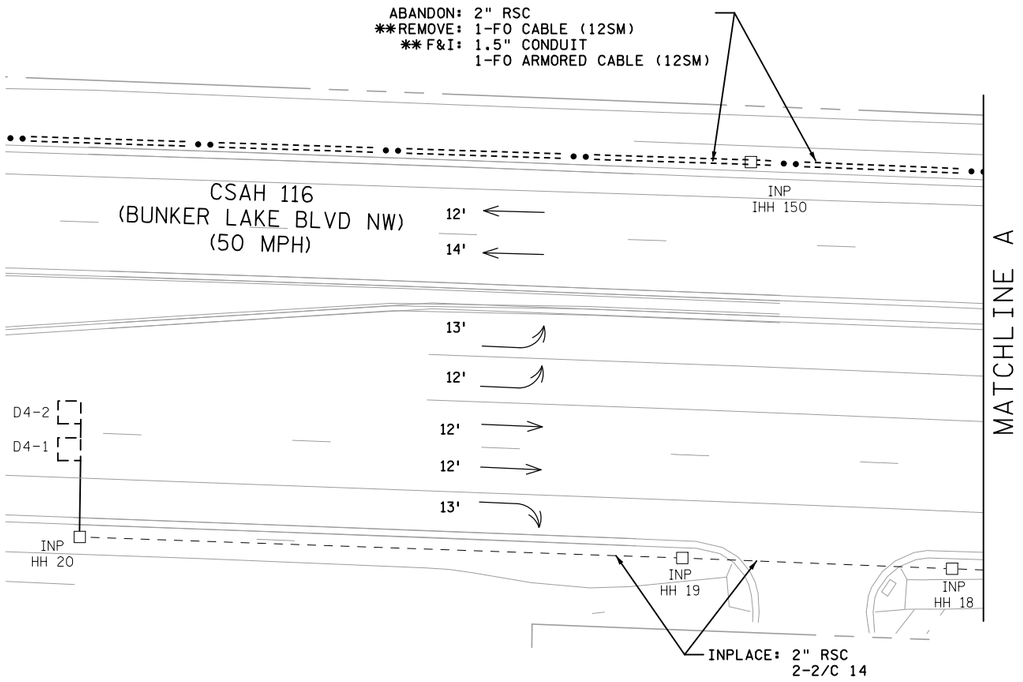
CHECKED BY NHV DATE 11/26/24

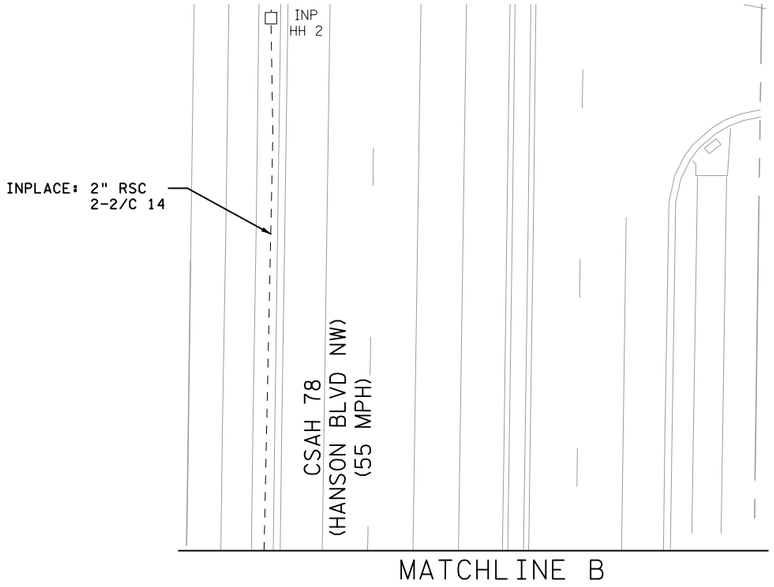
ANOKA COUNTY HIGHWAY DEPT.

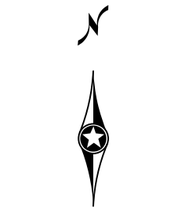
REVISE SIGNAL SYSTEM F LAYOUT
BUNKER LAKE BLVD & HANSON BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

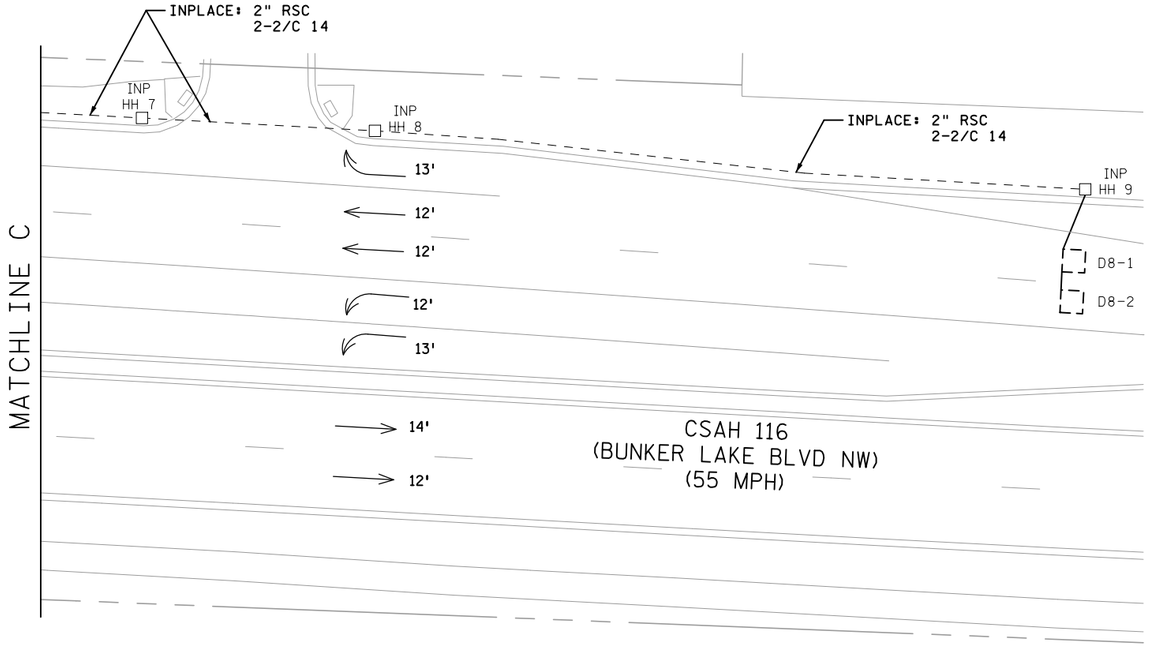
CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

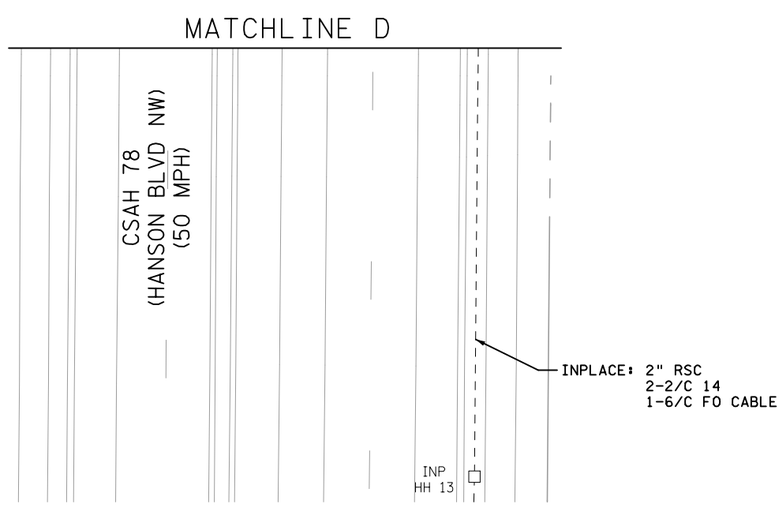
Sheet 133 of 174 Sheets











NOTES:

1. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
2. **SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) IN THE SPECIAL PROVISIONS FOR IMPORTANT TRAFFIC SIGNAL STAGING REQUIREMENTS.**

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CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

REVISE SYSTEM F MATCHLINES
BUNKER LAKE BLVD & HANSON BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 134 of 174 Sheets

(1) INPLACE: PA100 POLE FOUNDATION
PA100-A55-D40-9 (DAVIT 350°)
LUMINAIRE-250 W HPS
PA100 SWING-AWAY HINGES
3-ONE WAY SIGNALS OVERHEAD (0', 17' & 29' FROM END OF MAST ARM)
2-ANGLE MOUNT SIGNALS AT 45° & 225°
2-ANGLE MOUNT C.D. PED HEADS AT 45° & 225°
2-PEDESTRIAN PUSH BUTTONS
ONE WAY EVP DETECTOR AND LIGHT (PHASES 8+3)
TYPE D SIGN PANEL OVERHEAD
2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°
REMOVE: 1-ONE WAY SIGNAL OVERHEAD AT 0'
1-ANGLE MOUNT SIGNAL AT 45°
2-PEDESTRIAN PUSHBUTTONS & SIGNS & PLUG HOLE D40-9 AND LUMINAIRE-250 W HPS
F&I: 1-ONE WAY SIGNAL OVERHEAD AT 0'
1-ANGLE MOUNT SIGNAL AT 45°
1-APS PB AND SIGN (LT ARROW) (PB6-1) AND APS PB MOUNTING SPACERS
1-D30-9 LUMINAIRE EXTENSION
LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
1-R10-X12 SIGN ADJACENT TO HEAD (3-1)
INPLACE: 3" RSC TO INP HH 22:
3-12/C 12
1-3/C 12
1-3/C 12 (EVP)
1-3/C 20 (EVP)
1-3/C 12 (LUM)

(2) INPLACE: PA100 POLE FOUNDATION
PA100-A55-D40-9 (DAVIT 350°)
LUMINAIRE-LED
PA100 SWING-AWAY HINGES
3-ONE WAY SIGNALS OVERHEAD (0', 17' & 29' FROM END OF MAST ARM)
2-ANGLE MOUNT SIGNALS AT 45° & 225°
2-ANGLE MOUNT C.D. PED HEADS AT 45° & 225°
2-PEDESTRIAN PUSH BUTTONS
ONE WAY EVP DETECTOR AND LIGHT (PHASES 2+5)
TRAFFIC MANAGEMENT CAMERA
TYPE D SIGN PANEL OVERHEAD
2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°
REMOVE: 1-ONE WAY SIGNAL OVERHEAD AT 0'
1-ANGLE MOUNT SIGNAL AT 45°
2-PEDESTRIAN PUSHBUTTONS & SIGNS & PLUG HOLES
F&I: 1-ONE WAY SIGNAL OVERHEAD AT 0'
1-ANGLE MOUNT SIGNAL AT 45°
1-R10-X12 SIGN ADJACENT TO HEAD (5-1)
INPLACE: 3" RSC TO INP HH 5:
3-12/C 12
1-3/C 12
1-3/C 12 (EVP)
1-3/C 20 (EVP)
1-3/C 12 (LUM)
1-CAT 5E (CCTV)

(3) INPLACE: PA100 POLE FOUNDATION
PA100-A55-D40-9 (DAVIT 350°)
LUMINAIRE-LED
PA100 SWING-AWAY HINGES
3-ONE WAY SIGNALS OVERHEAD (0', 17' & 29' FROM END OF MAST ARM)
2-ANGLE MOUNT SIGNALS AT 45° & 225°
2-ANGLE MOUNT C.D. PED HEADS AT 45° & 225°
2-PEDESTRIAN PUSH BUTTONS
ONE WAY EVP DETECTOR AND LIGHT (PHASES 4+7)
TYPE D SIGN PANEL OVERHEAD
2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°
REMOVE: 1-ONE WAY SIGNAL OVERHEAD AT 0'
1-ANGLE MOUNT SIGNAL AT 45°
2-PEDESTRIAN PUSHBUTTONS & SIGNS & PLUG HOLE
F&I: 1-ONE WAY SIGNAL OVERHEAD AT 0'
1-ANGLE MOUNT SIGNAL AT 45°
1-APS PB AND SIGN (LT ARROW) (PB2-1) AND APS PB MOUNTING SPACERS
1-R10-X12 SIGN ADJACENT TO HEAD (7-1)
INPLACE: 3" RSC TO INP HH 11:
3-12/C 12
1-3/C 12
1-3/C 12 (EVP)
1-3/C 20 (EVP)
1-3/C 12 (LUM)

(4) INPLACE: PA100 POLE FOUNDATION
PA100-A55-D40-9 (DAVIT 350°)
LUMINAIRE-LED
PA100 SWING-AWAY HINGES
3-ONE WAY SIGNALS OVERHEAD (0', 17' & 29' FROM END OF MAST ARM)
2-ANGLE MOUNT SIGNALS AT 45° & 225°
2-ANGLE MOUNT C.D. PED HEADS AT 45° & 225°
2-PEDESTRIAN PUSH BUTTONS
ONE WAY EVP DETECTOR AND LIGHT (PHASES 6+1)
TYPE D SIGN PANEL OVERHEAD
2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°
REMOVE: 1-ONE WAY SIGNAL OVERHEAD AT 0'
1-ANGLE MOUNT SIGNAL AT 45°
2-PEDESTRIAN PUSHBUTTONS & SIGNS & PLUG HOLES D40-9
F&I: 1-ONE WAY SIGNAL OVERHEAD AT 0'
1-ANGLE MOUNT SIGNAL AT 45°
1-D30-9 LUMINAIRE EXTENSION
1-R10-X12 SIGN ADJACENT TO HEAD (3-1)
SALVAGE & REINSTALL: LUMINAIRE-LED
INPLACE: 3" RSC TO INP HH 16:
3-12/C 12
1-3/C 12
1-3/C 12 (EVP)
1-3/C 20 (EVP)
1-3/C 12 (LUM)

(A) INPLACE: CONTROLLER AND CABINET
CABINET FOUNDATION
1 1/4" RSC TO INP HH 23:
3-1/C 6
INPLACE: 4" RSC TO INP HH 1:
3-12/C 12
1-3/C 12
1-3/C 12 (EVP)
1-3/C 20 (EVP)
8-2/C 14
1-6SM FO CABLE
F&I: 4-2/C 14
1-1/C 6 INS. GR.

4" RSC
3-12/C 12
1-3/C 12
1-3/C 12 (EVP)
1-3/C 20 (EVP)
8-2/C 14
1-6SM FO CABLE
1-CAT 5E (CCTV)

INPLACE: 4" RSC TO INP HH 22:
3-12/C 12
1-3/C 12
1-3/C 12 (EVP)
1-3/C 20 (EVP)
16-2/C 14

4" RSC
3-12/C 12
1-3/C 12
1-3/C 12 (EVP)
1-3/C 20 (EVP)
** REMOVE: 1-6PR 19
1-FO CAB (6SM)
F&I: 2-2/C #14
1-1/C 6 INS. GR.

** F&I: 1.5" CONDUIT TO PULL VAULT
1-FO ARMORED CABLE (12SM)

(B) INPLACE: SIGNAL SERVICE CABINET
2" RSC TO INP HH 23:
3-1/C 6
REMOVE: SERVICE CABINET
F&I: BATTERY BACKUP SERVICE CABINET (SEE DETAIL SHEET)
INPLACE: 2" RSC TO INP HH 1
4-3/C 12 (LUM)
INPLACE: BETWEEN INP HH 1 AND INP HH 23
2" RSC
2-3/C 12 (LUM)
INPLACE: BETWEEN INP HH 22 AND INP HH 23
2" RSC
2-3/C 12 (LUM)

STUB OUT 2" RSC FROM SERVICE CABINET TO WEST

NOTES:

1. ALL SIGNAL MOUNTED SIGNS ARE INCLUDED IN PAYMENT WITH THE LUMP SUM SIGNAL SYSTEM PAY ITEM. SEE SIGNING DETAIL SHEET FOR MAST ARM MOUNTED SIGNS.
2. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.
3. **SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) IN THE SPECIAL PROVISIONS FOR IMPORTANT TRAFFIC SIGNAL STAGING REQUIREMENTS.**

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PRINT NAME: NICK VANGUNST
SIGNATURE: Nick VanGunst
DATE: 11/26/24 LICENSE NO. 44683

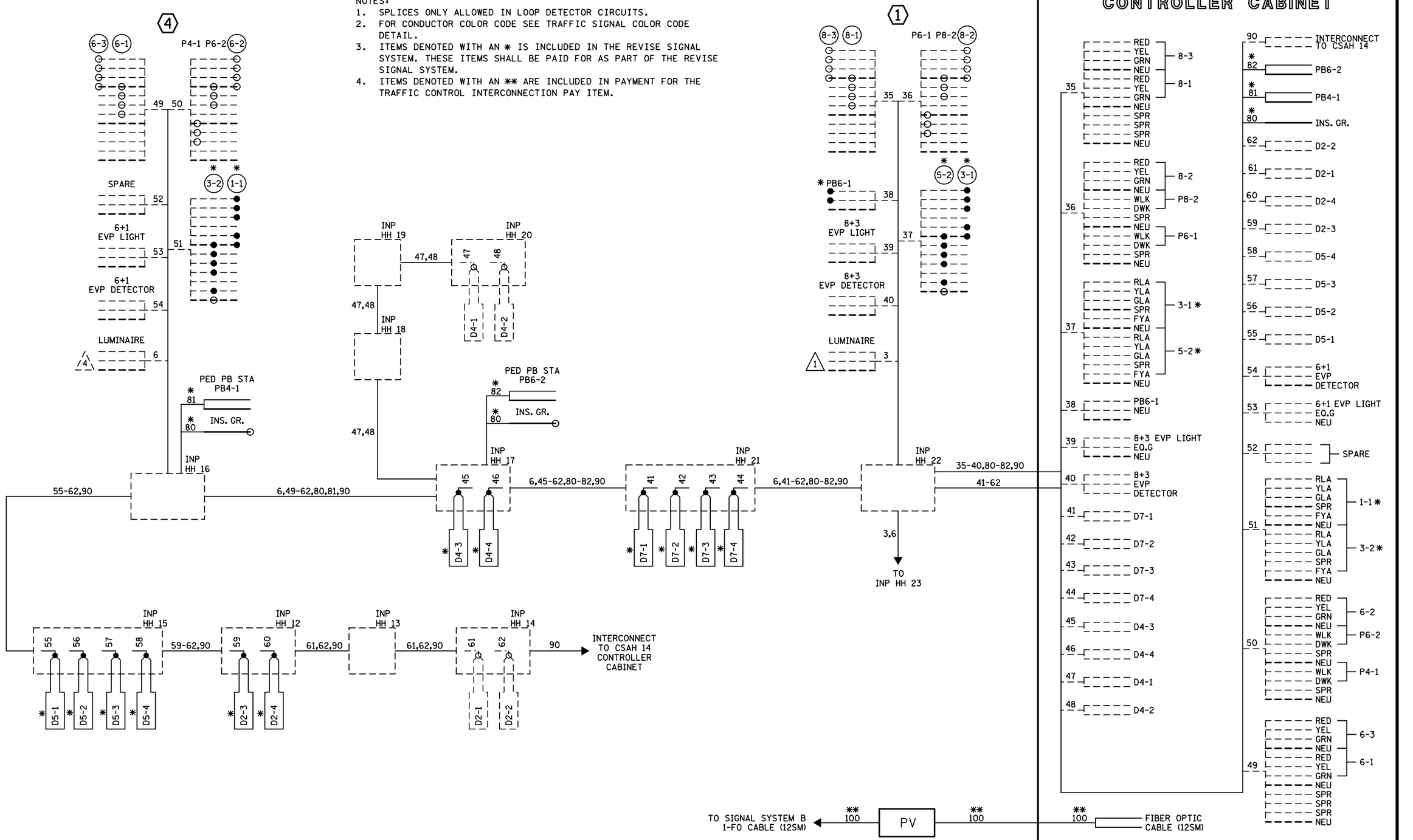
DRAWN BY KAS DATE 11/26/24
DESIGN BY KAS DATE 11/26/24
CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY
HIGHWAY DEPT.

REVISE SIGNAL SYSTEM F NOTES
BUNKER LAKE BLVD & HANSON BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

NOTES:
1. SPLICES ONLY ALLOWED IN LOOP DETECTOR CIRCUITS.
2. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL COLOR CODE DETAIL.
3. ITEMS DENOTED WITH AN ✱ IS INCLUDED IN THE REVISE SIGNAL SYSTEM. THESE ITEMS SHALL BE PAID FOR AS PART OF THE REVISE SIGNAL SYSTEM.
4. ITEMS DENOTED WITH AN ✱✱ ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.



CONTROLLER CABINET

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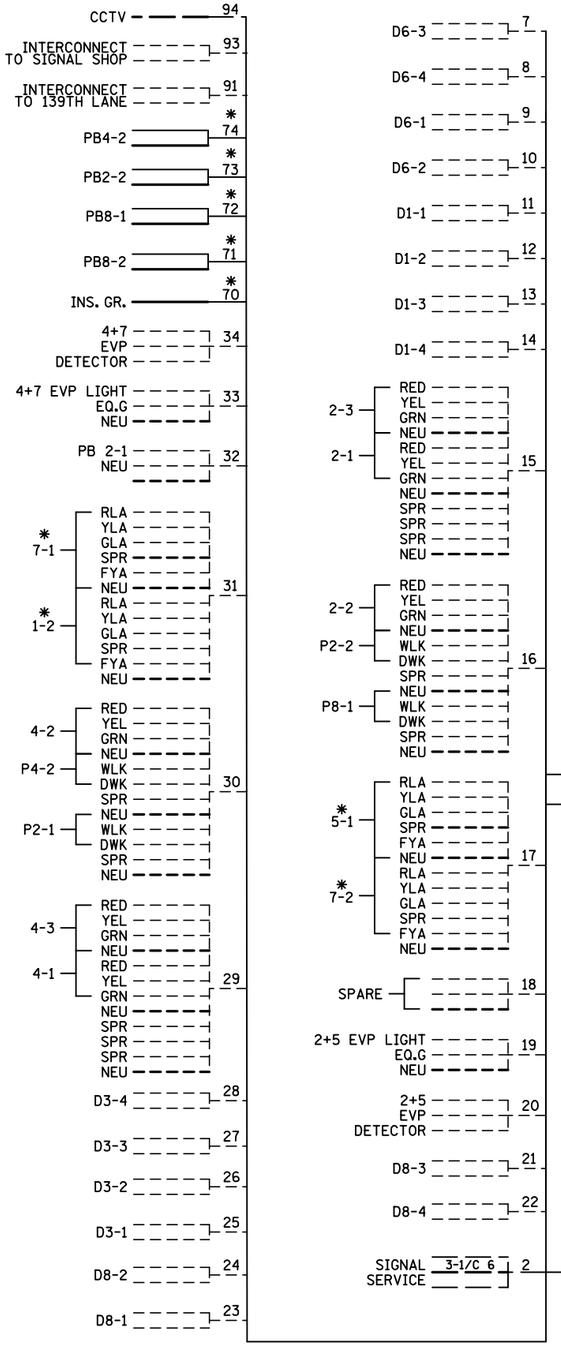
ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM F WIRING
BUNKER LAKE BLVD & HANSON BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

CONTROLLER CABINET



NOTES:
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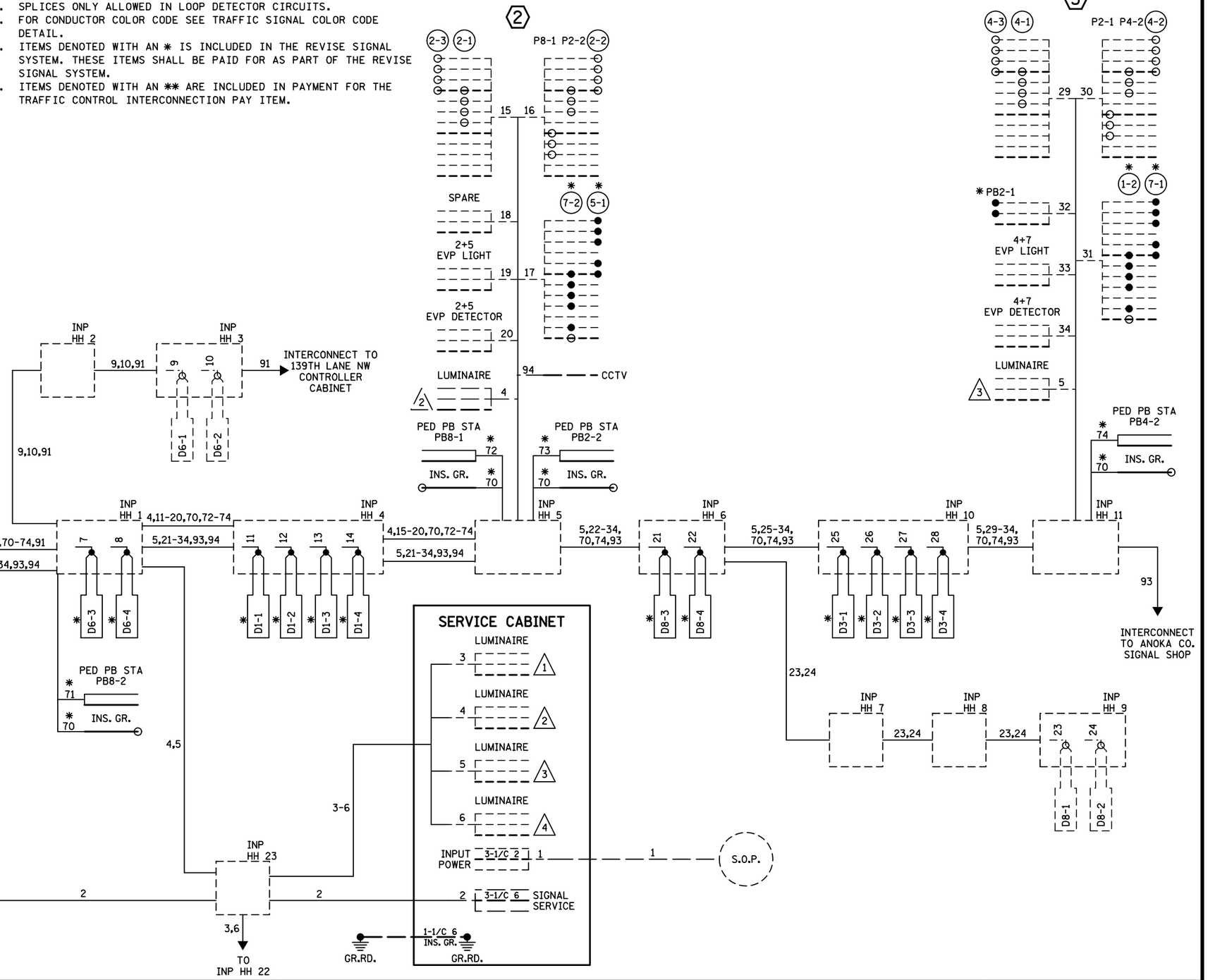
2. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL COLOR CODE DETAIL.
3. ITEMS DENOTED WITH AN * IS INCLUDED IN THE REVISE SIGNAL SYSTEM. THESE ITEMS SHALL BE PAID FOR AS PART OF THE REVISE SIGNAL SYSTEM.
4. ITEMS DENOTED WITH AN ** ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.



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ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM F WIRING
BUNKER LAKE BLVD & HANSON BLVD
COUNTY PROJECT SAP 002-716-024
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CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 137 of 174 Sheets

SIGN PANEL DETAILS

SIGN PANELS ON SIGNALS

POLE NUMBER	"A" DISTANCE (FEET) OR POLE	PANEL				
		QTY	CODE NUMBER	LEGEND	SIZE (INCHES)	AREA (SQ FT)
1	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50
2	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50
3	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50
4	0	1	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW ARROW	36 x 42	10.50

GENERAL NOTES:

1. SEE MnDOT STANDARD SIGNS AND MARKINGS MANUAL FOR STANDARD SIGN DESIGNS, ARROW DETAILS, AND SPLICE PLATE DETAILS.
2. FOR NON STANDARD SIGN DESIGNS, LAYOUTS ARE INCLUDED. SIGN PANEL DIMENSIONS ARE IN INCHES.
3. SEE STANDARD PLAN 5-297.731 FOR SIGN MOUNTING TO MAST ARM.
4. MOUNTING HEIGHT OF POLE MOUNTED SIGN PANELS MUST BE 7 FOOT MINIMUM. MOUNTING HEIGHT IS MEASURED FROM BOTTOM OF SIGN PANEL TO SURFACE IMMEDIATELY BELOW THE SIGN PANEL.
5. "A" DISTANCE = DISTANCE FROM THE END OF THE MAST ARM TO THE EDGE OF EACH SIGN PANEL.
6. THE SIGNS ON THIS DETAIL SHEET ARE SIGNS THAT ARE MOUNTED ON THE SIGNAL MAST ARM OR SIGNAL POLES. THESE SIGNS ARE INCLUDED IN THE LUMP SUM PAYMENT FOR THE REVISE TRAFFIC CONTROL SIGNAL SYSTEM.

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM F DETAILS
BUNKER LAKE BLVD & HANSON BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

N.M.C. LOOP DETECTORS			
NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	6x6	40'	1
D1-2	6x6	40'	1
D1-3	6x6	10'	1
D1-4	6x6	10'	1
D2-1	6x6	400'	1
D2-2	6x6	400'	1
D2-3	2-6x6	5' & 20'	2
D2-4	2-6x6	5' & 20'	2
D3-1	6x6	40'	1
D3-2	6x6	40'	1
D3-3	6x6	10'	1
D3-4	6x6	10'	1
D4-1	6x6	475'	1
D4-2	6x6	475'	1
D4-3	2-6x6	5' & 20'	2
D4-4	2-6x6	5' & 20'	2

N.M.C. LOOP DETECTORS			
NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D5-1	6x6	40'	1
D5-2	6x6	40'	1
D5-3	6x6	10'	1
D5-4	6x6	10'	1
D6-1	6x6	475'	1
D6-2	6x6	475'	1
D6-3	2-6x6	5' & 20'	2
D6-4	2-6x6	5' & 20'	2
D7-1	6x6	40'	1
D7-2	6x6	40'	1
D7-3	6x6	10'	1
D7-4	6x6	10'	1
D8-1	6x6	475'	1
D8-2	6x6	475'	1
D8-3	2-6x6	5' & 20'	2
D8-4	2-6x6	5' & 20'	2

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

LOOP DETECTORS FUNCTIONS:
1) CALL AND EXTEND
2) CALL ONLY

SEE NEXT 2 SHEETS FOR GENERAL NOTES, CONTROLLER CABINET NOTES AND SERVICE CABINET NOTES.

MATCH LINE – STATION 22 + 00

MATCH LINE – STATION 148 + 80

MATCH LINE – STATION 155 + 00

MATCH LINE – STATION 25 + 70

CSAH 78 (HANSON BLVD NW)
(50 mph)

CSAH 78 (HANSON BLVD NW)
(55 mph)

CSAH 116 (BUNKER LAKE BLVD)
(55 mph)

P-BUR

THORE

2"R.S.C.
2-2/c#14

4"R.S.C.
3-12/c#12
1-3/c#12
1-3/c#12 (EVP)
1-3/c#20 (EVP)
12-2/c#14
1-3/c#12 (LUM)
1-6/c FIBER OPTIC CABLE (INTERCONNECT)

4"R.S.C.
3-12/c#12
1-3/c#12
1-3/c#12 (EVP)
1-3/c#20 (EVP)
8-2/c#14
1-3/c#12 (LUM)
1-6/c FIBER OPTIC CABLE (INTERCONNECT)

2"R.S.C. (INTERCONNECT)
1-6 Pr.#19-INPLACE (S & I)-INTERCONNECT

4"R.S.C.
3-12/c#12
1-3/c#12
1-3/c#12 (EVP)
1-3/c#20 (EVP)
16-2/c#14
1-3/c#12 (LUM)
1-6/c FIBER OPTIC CABLE (INTERCONNECT)

4"R.S.C.
3-12/c#12
1-3/c#12
1-3/c#12 (EVP)
1-3/c#20 (EVP)
8-2/c#14
1-3/c#12 (LUM)
1-6/c FO CABLE (INTERCONNECT)

2"R.S.C.
2-2/c#14
1-6/c FIBER OPTIC CABLE (INTERCONNECT)

4"R.S.C.
8-2/c#14
1-6/c FIBER OPTIC CABLE (INTERCONNECT)

2"R.S.C.
2-2/c#14
1-6/c FIBER OPTIC CABLE (INTERCONNECT)

4"R.S.C.
3-12/c#12
1-3/c#12
1-3/c#12 (EVP)
1-3/c#20 (EVP)
1-3/c#12 (LUM)

4"R.S.C.
3-12/c#12
1-3/c#12
1-3/c#12 (EVP)
1-3/c#20 (EVP)
8-2/c#14
1-3/c#12 (LUM)
1-6/c FO CABLE (INTERCONNECT)

4"R.S.C.
3-12/c#12
1-3/c#12
1-3/c#12 (EVP)
1-3/c#20 (EVP)
4-2/c#14
1-3/c#12 (LUM)
1-6/c FO CABLE (INTERCONNECT)

2"R.S.C.
2-2/c#14

2"R.S.C. (INTERCONNECT)
1-6/c FIBER OPTIC CABLE (INTERCONNECT)

H.H.4 H.H.5 H.H.6 H.H.10 H.H.11 H.H.12 H.H.13 H.H.15 H.H.16 H.H.17 H.H.21 H.H.22

D1-1 D1-2 D1-3 D1-4 D2-3 D2-4 D3-1 D3-2 D3-3 D3-4 D4-3 D4-4 D5-1 D5-2 D5-3 D5-4 D6-1 D6-3 D7-1 D7-2 D7-3 D7-4 D8-3 D8-4

#8,3 EVP #2,5 EVP #4,7 EVP

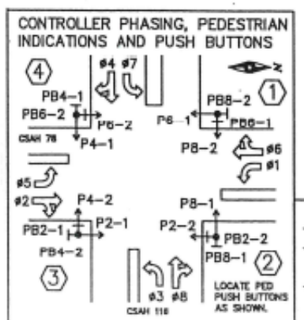
(1) PA100 POLE FOUNDATION
TYPE PA100-A-55-D40-9 (DAVIT AT 350')
PA100 SWING-AWAY HINGES
LUMINAIRE-250 W HPS
3-ONE WAY SIGNALS-OVERHEAD (0', 17' AND 29' FROM END OF MAST ARM)
2-ONE WAY SIGNALS-POLE MOUNTED 45° & 225°
2-SETS PEDESTRIAN INDICATIONS-POLE MOUNTED 45° & 225°
2-PEDESTRIAN PUSH BUTTONS
2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°
TYPE D SIGN PANEL-OVERHEAD (D-7)
ONE WAY EVP DETECTOR AND LIGHT (#8,3) (EVP)
EXTEND INTO H.H.22:
3"R.S.C.
3-12/c#12
1-3/c#12
1-3/c#12 (EVP)
1-3/c#20 (EVP)
1-3/c#12 (LUM)

(2) PA100 POLE FOUNDATION
TYPE PA100-A-55-D40-9 (DAVIT AT 350')
PA100 SWING-AWAY HINGES
LUMINAIRE-250 W HPS
3-ONE WAY SIGNALS-OVERHEAD (0', 17' AND 29' FROM END OF MAST ARM)
2-ONE WAY SIGNALS-POLE MOUNTED 45° & 225°
2-SETS PEDESTRIAN INDICATIONS-POLE MOUNTED 45° & 225°
2-PEDESTRIAN PUSH BUTTONS
2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°
TYPE D SIGN PANEL-OVERHEAD (D-8)
ONE WAY EVP DETECTOR AND LIGHT (#2,5) (EVP)
EXTEND INTO H.H.5:
3"R.S.C.
3-12/c#12
1-3/c#12
1-3/c#12 (EVP)
1-3/c#20 (EVP)
1-3/c#12 (LUM)

(3) PA100 POLE FOUNDATION
TYPE PA100-A-55-D40-9 (DAVIT AT 350')
PA100 SWING-AWAY HINGES
LUMINAIRE-250 W HPS
3-ONE WAY SIGNALS-OVERHEAD (0', 17' AND 29' FROM END OF MAST ARM)
2-ONE WAY SIGNALS-POLE MOUNTED 45° & 225°
2-SETS PEDESTRIAN INDICATIONS-POLE MOUNTED 45° & 225°
2-PEDESTRIAN PUSH BUTTONS
2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°
TYPE D SIGN PANEL-OVERHEAD (D-9)
ONE WAY EVP DETECTOR AND LIGHT (#4,7) (EVP)
EXTEND INTO H.H.11:
3"R.S.C.
3-12/c#12
1-3/c#12
1-3/c#12 (EVP)
1-3/c#20 (EVP)
1-3/c#12 (LUM)

(4) PA100 POLE FOUNDATION
TYPE PA100-A-55-D40-9 (DAVIT AT 350')
PA100 SWING-AWAY HINGES
LUMINAIRE-250 W HPS
3-ONE WAY SIGNALS-OVERHEAD (0', 17' AND 29' FROM END OF MAST ARM)
2-ONE WAY SIGNALS-POLE MOUNTED 45° & 225°
2-SETS PEDESTRIAN INDICATIONS-POLE MOUNTED 45° & 225°
2-PEDESTRIAN PUSH BUTTONS
2-R6-1 SIGN PANELS-POLE MOUNTED 0° & 180°
TYPE D SIGN PANEL-OVERHEAD (D-10)
ONE WAY EVP DETECTOR AND LIGHT (#6,1) (EVP)
EXTEND INTO H.H.16:
3"R.S.C.
3-12/c#12
1-3/c#12
1-3/c#12 (EVP)
1-3/c#20 (EVP)
1-3/c#12 (LUM)

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS



SIGNAL SYSTEM OPERATIONS:
- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 8 PHASE, WITH PHASES 1,3,5,7 BEING PROTECTED LEFT TURN PHASES.

LED SIGNAL FACES			
SIGNAL FACE	ALL 12".		
	R	Y	G
1-1, 1-2	←		
2-1, 2-2, 2-3	●	●	●
3-1, 3-2	←	←	
4-1, 4-2, 4-3	●	●	●
5-1, 5-2	←		←
6-1, 6-2, 6-3	●	●	●
7-1, 7-2	←	←	←
8-1, 8-2, 8-3	●	●	●

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ANOKA COUNTY HIGHWAY DEPT.

REVISE SIGNAL SYSTEM F AS BUILT
BUNKER LAKE BLVD & HANSON BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
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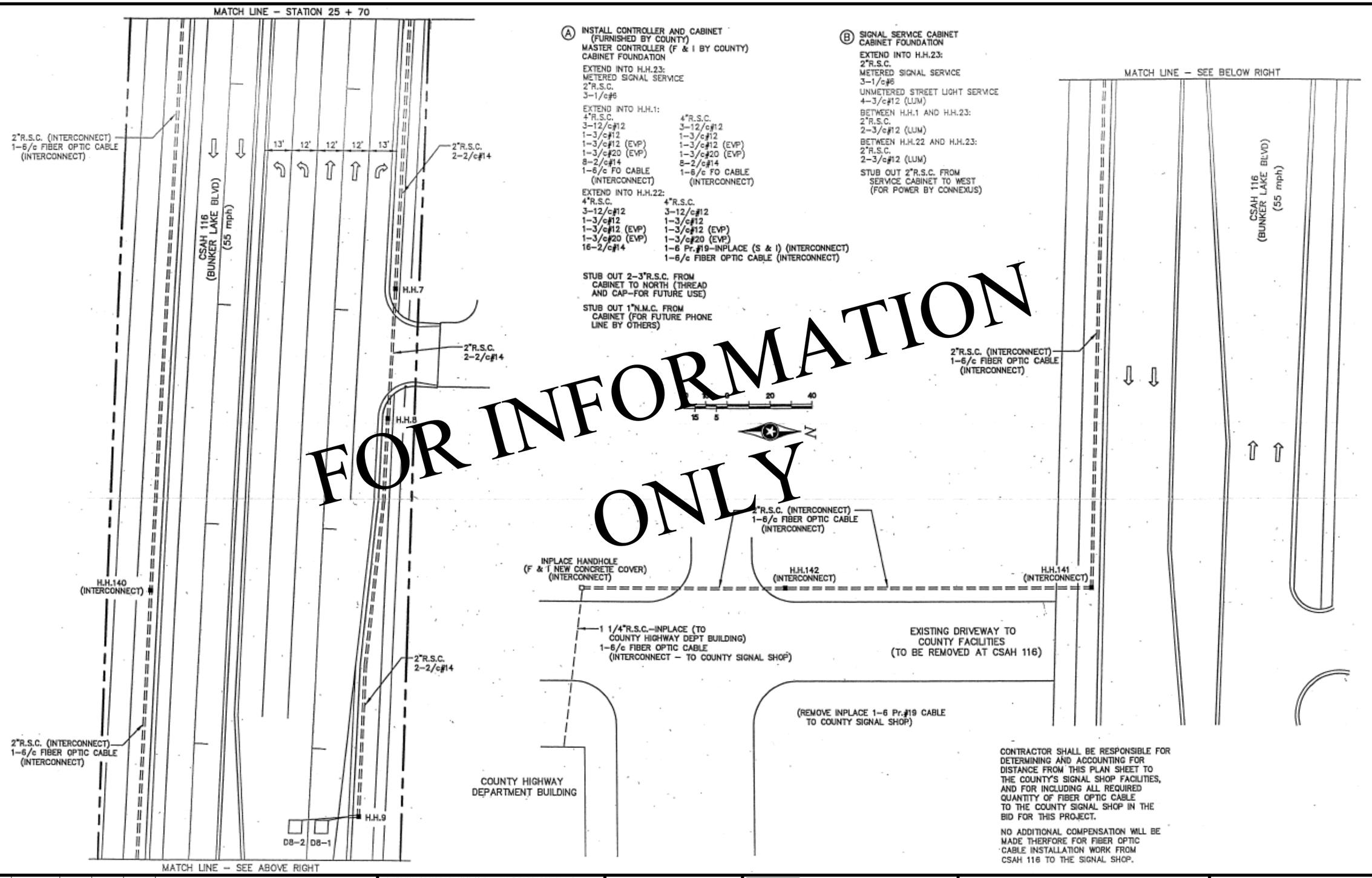
Sheet 139 of 174 Sheets



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ANOKA COUNTY

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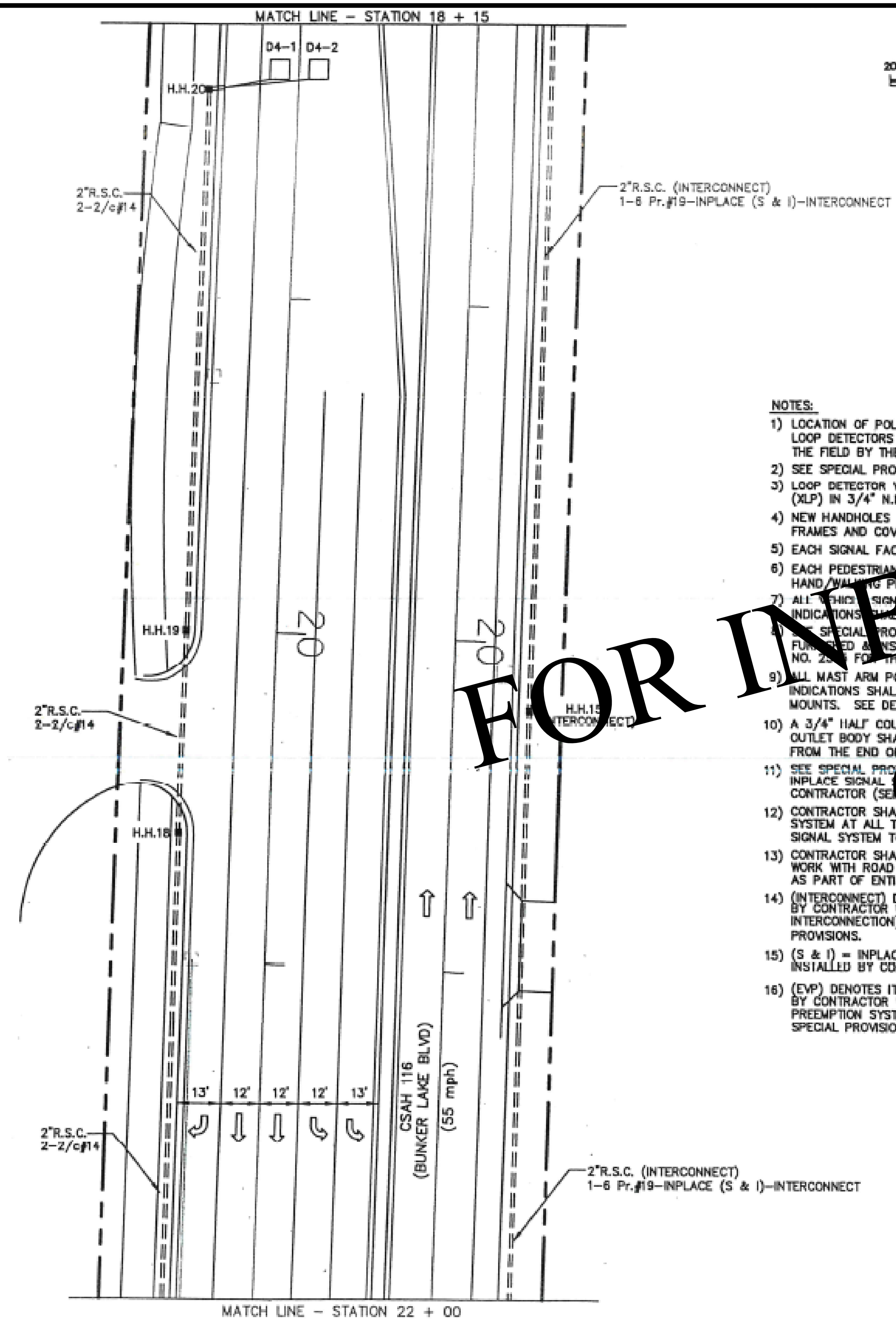
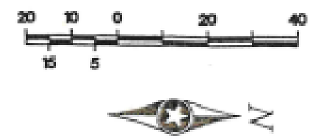
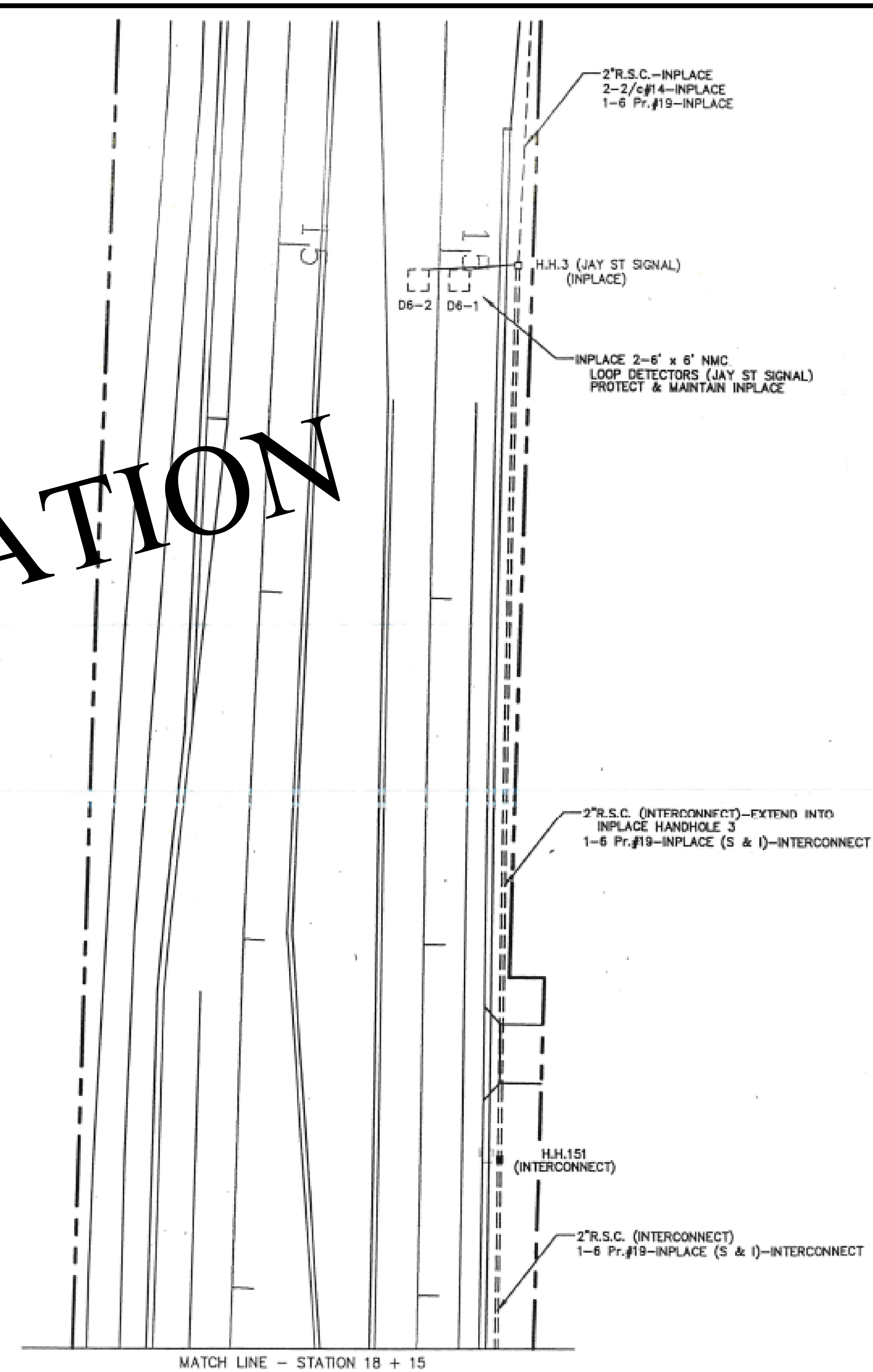




NOTES:

1) LOCATION OF POLES, CONTROLLER CABINET, SERVICE CABINET, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
3) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" N.M.C. SEE SPECIAL PROVISIONS.
4) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS.
5) EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELDS.
6) EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION FILLED HAND/WALKING PERSON INDICATION.
7) ALL VEHICLE SIGNAL INDICATIONS AND ALL PEDESTRIAN SIGNAL INDICATIONS SHALL BE LED.
8) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNS TO BE FURNISHED & INSTALLED BY CONTRACTOR (INCIDENTAL TO ITEM NO. 25[illegible] FOR THIS SIGNAL SYSTEM).
9) ALL MAST ARM POLE MOUNTED VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL BE MOUNTED USING ONE-WAY SIGNAL HEAD MOUNTS. SEE DETAILS & SPECIAL PROVISIONS.
10) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED 6 FEET FROM THE END OF EACH MAST ARM (FOR EVP).
11) SEE SPECIAL PROVISIONS & ESTIMATED QUANTITIES REGARDING INPLACE SIGNAL SYSTEM TO BE REMOVED AND SALVAGED BY CONTRACTOR (SEPARATE FROM ITEM NO. 2565).
12) CONTRACTOR SHALL MAINTAIN OPERATION OF INPLACE SIGNAL SYSTEM AT ALL TIMES UNTIL APPROVED BY ENGINEER FOR SIGNAL SYSTEM TO BE TURNED OFF.
13) CONTRACTOR SHALL COORDINATE ALL TRAFFIC SIGNAL INSTALLATION WORK WITH ROAD CONSTRUCTION TO BE COMPLETED BY OTHERS AS PART OF ENTIRE PROJECT.
14) (INTERCONNECT) DENOTES ITEMS TO BE FURNISHED & INSTALLED BY CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION). SEE ESTIMATED QUANTITIES & SPECIAL PROVISIONS.
15) (S & I) = INPLACE INTERCONNECT CABLE TO BE SALVAGED AND INSTALLED BY CONTRACTOR (INTERCONNECT).
16) (EVP) DENOTES ITEMS TO BE FURNISHED & INSTALLED BY BY CONTRACTOR UNDER ITEM NO. 2565 (EMERGENCY VEHICLE PREEMPTION SYSTEM "B"). SEE ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.



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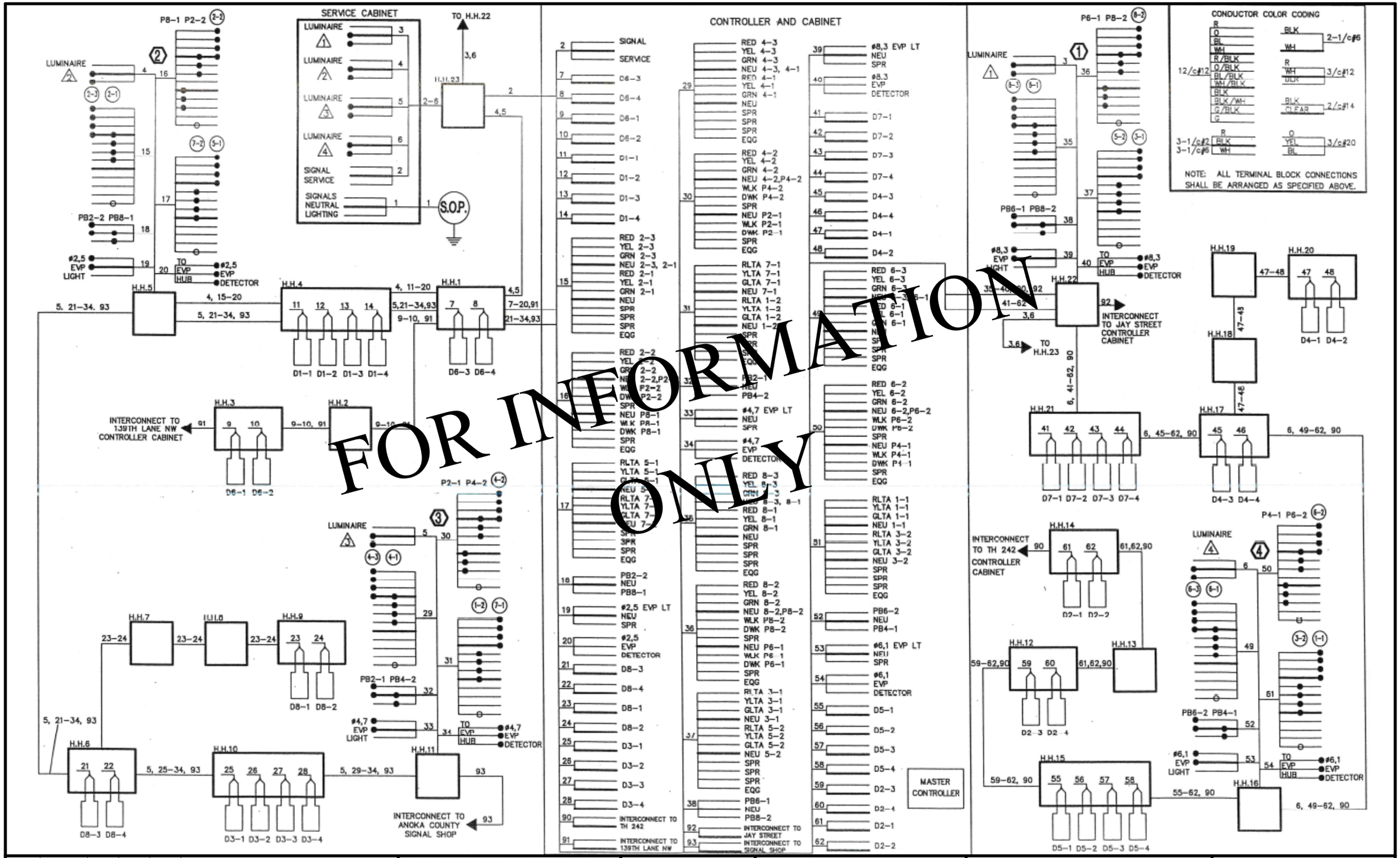

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ANOKA COUNTY HIGHWAY DEPT.

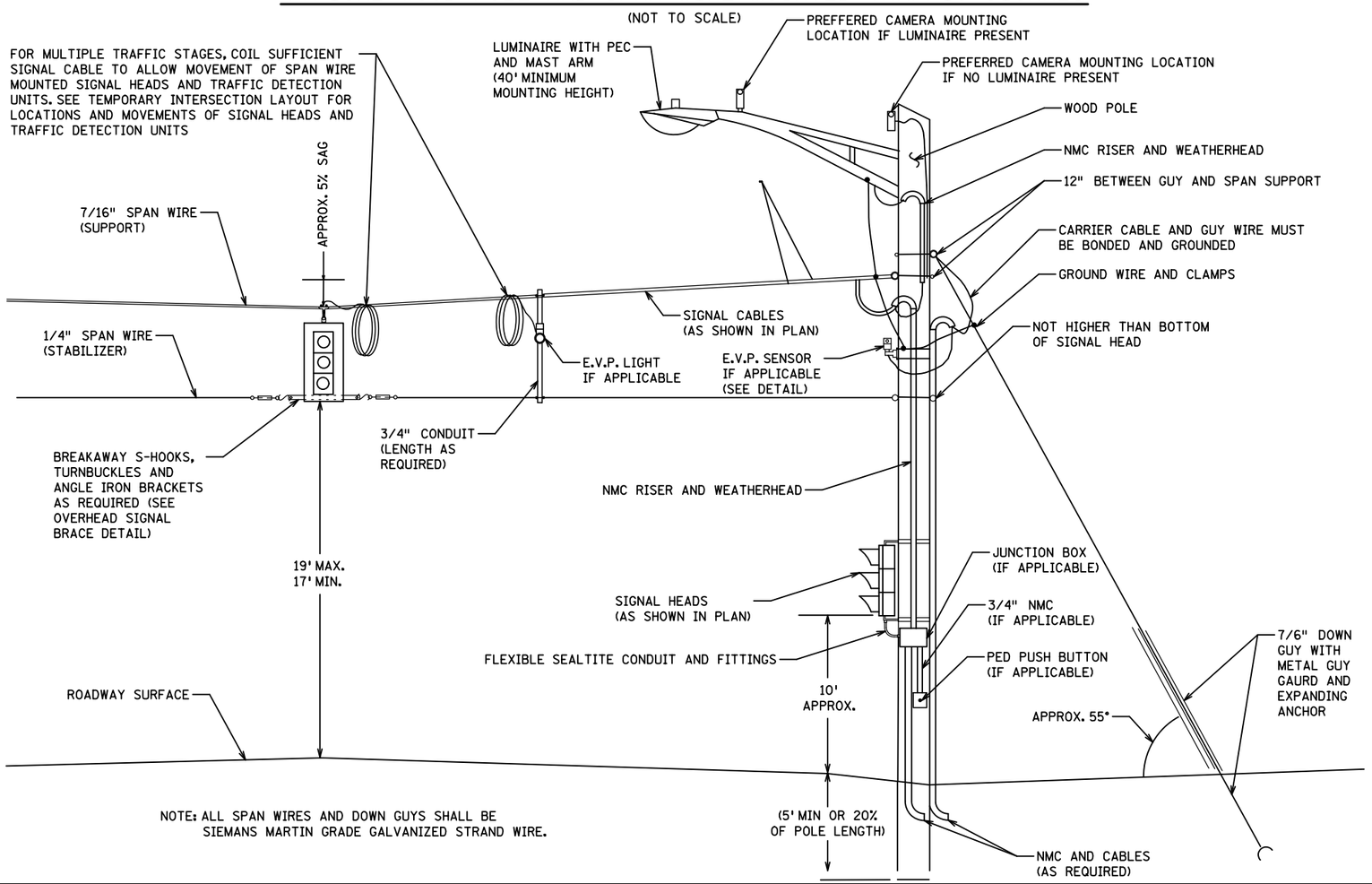
REVISE SIGNAL SYSTEM F AS BUILT
BUNKER LAKE BLVD & HANSON BLVD
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 142 of 174 Sheets

TYPICAL WOOD POLE AND SPAN WIRE MOUNTED TRAFFIC SIGNALS

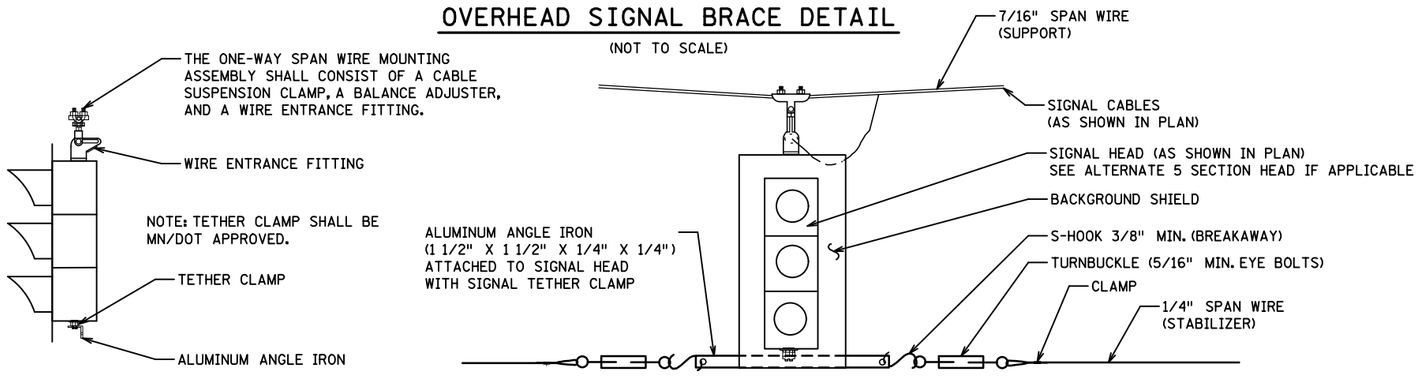
(NOT TO SCALE)



NOTE: ALL SPAN WIRES AND DOWN GUYS SHALL BE SIEMANS MARTIN GRADE GALVANIZED STRAND WIRE.

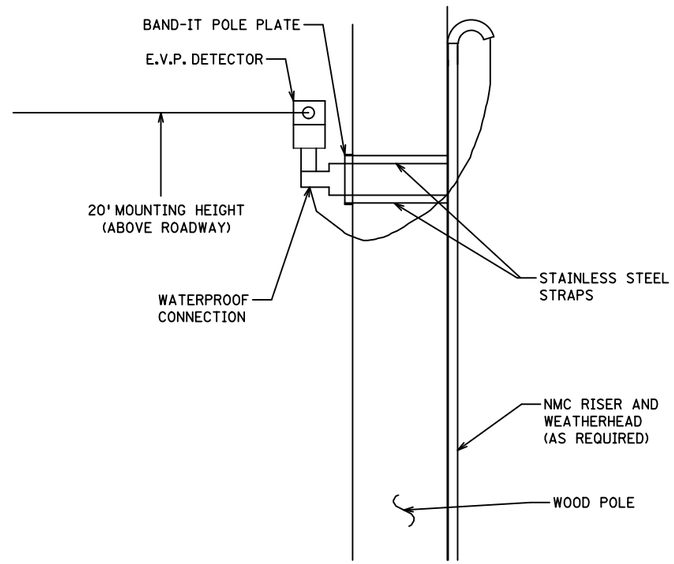
OVERHEAD SIGNAL BRACE DETAIL

(NOT TO SCALE)



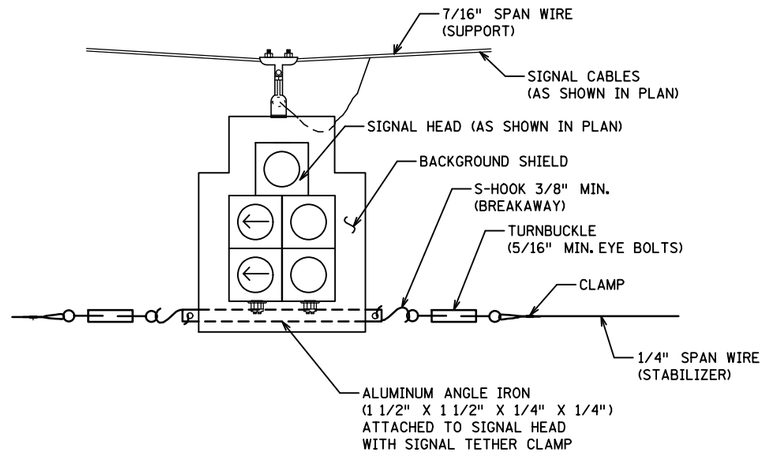
E.V.P. OR TRAFFIC DETECTOR WOOD POLE MOUNT

(NOT TO SCALE)



5 SECTION HEAD OVERHEAD SIGNAL BRACE DETAIL

(NOT TO SCALE)



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ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM DETAILS
WOOD POLE SPAN WIRE DETAIL
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

SIGNAL HEAD CHART

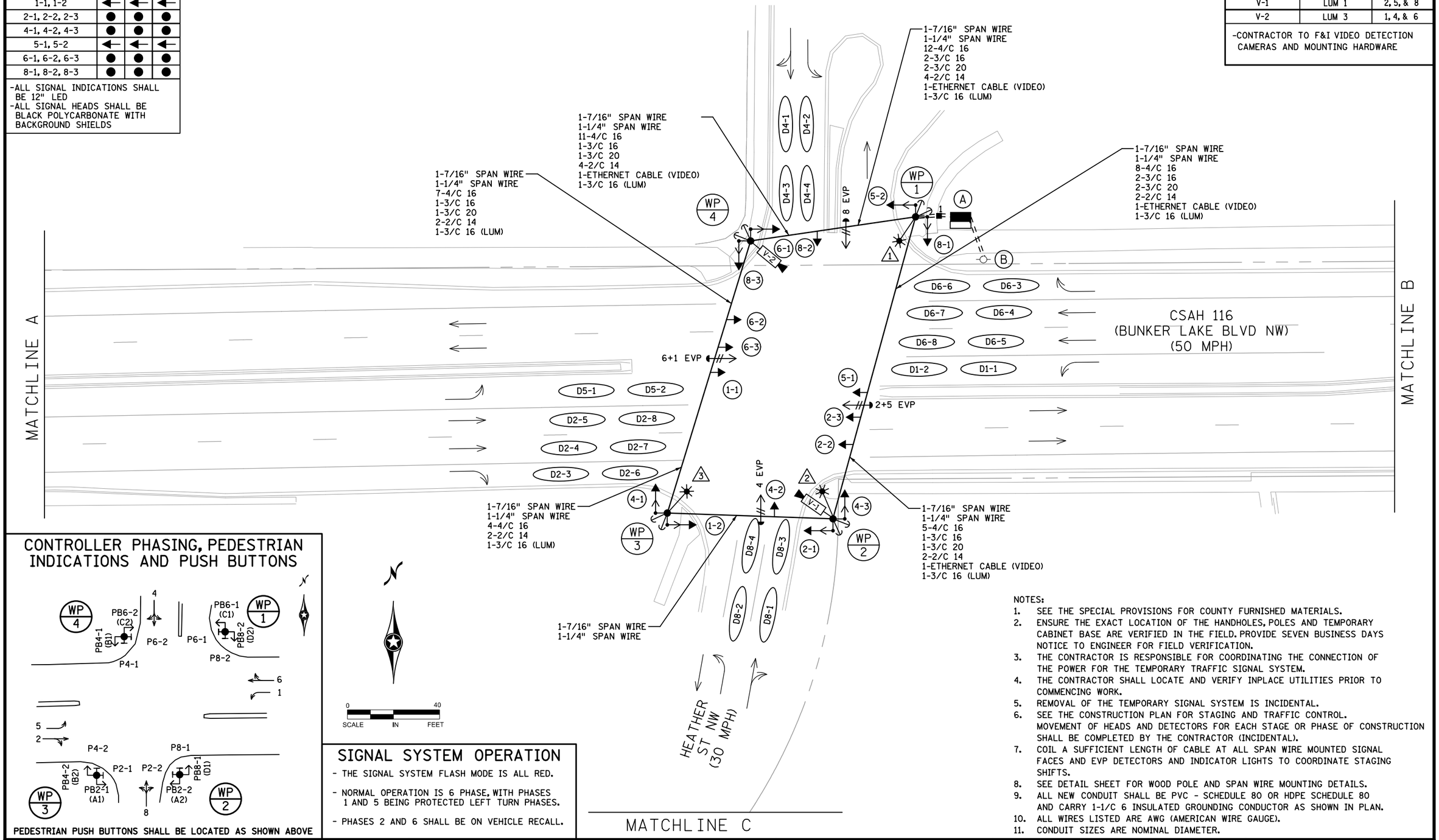
FACE	R	Y	G
1-1, 1-2	←	←	←
2-1, 2-2, 2-3	●	●	●
4-1, 4-2, 4-3	●	●	●
5-1, 5-2	←	←	←
6-1, 6-2, 6-3	●	●	●
8-1, 8-2, 8-3	●	●	●

-ALL SIGNAL INDICATIONS SHALL BE 12" LED
-ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS

VIDEO DETECTOR CHART

CAMERA NUMBER	LOCATION	PHASES
V-1	LUM 1	2, 5, & 8
V-2	LUM 3	1, 4, & 6

-CONTRACTOR TO F&I VIDEO DETECTION CAMERAS AND MOUNTING HARDWARE



CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS

PEDESTRIAN PUSH BUTTONS SHALL BE LOCATED AS SHOWN ABOVE

SIGNAL SYSTEM OPERATION

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

NOTES:

1. SEE THE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
2. ENSURE THE EXACT LOCATION OF THE HANDHOLES, POLES AND TEMPORARY CABINET BASE ARE VERIFIED IN THE FIELD. PROVIDE SEVEN BUSINESS DAYS NOTICE TO ENGINEER FOR FIELD VERIFICATION.
3. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE CONNECTION OF THE POWER FOR THE TEMPORARY TRAFFIC SIGNAL SYSTEM.
4. THE CONTRACTOR SHALL LOCATE AND VERIFY INPLACE UTILITIES PRIOR TO COMMENCING WORK.
5. REMOVAL OF THE TEMPORARY SIGNAL SYSTEM IS INCIDENTAL.
6. SEE THE CONSTRUCTION PLAN FOR STAGING AND TRAFFIC CONTROL. MOVEMENT OF HEADS AND DETECTORS FOR EACH STAGE OR PHASE OF CONSTRUCTION SHALL BE COMPLETED BY THE CONTRACTOR (INCIDENTAL).
7. COIL A SUFFICIENT LENGTH OF CABLE AT ALL SPAN WIRE MOUNTED SIGNAL FACES AND EVP DETECTORS AND INDICATOR LIGHTS TO COORDINATE STAGING SHIFTS.
8. SEE DETAIL SHEET FOR WOOD POLE AND SPAN WIRE MOUNTING DETAILS.
9. ALL NEW CONDUIT SHALL BE PVC - SCHEDULE 80 OR HDPE SCHEDULE 80 AND CARRY 1-1/C 6 INSULATED GROUNDING CONDUCTOR AS SHOWN IN PLAN.
10. ALL WIRES LISTED ARE AWG (AMERICAN WIRE GAUGE).
11. CONDUIT SIZES ARE NOMINAL DIAMETER.

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ANOKA COUNTY HIGHWAY DEPT.

TEMPORARY SIGNAL SYSTEM
BUNKER LAKE BLVD & HEATHER ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 144 of 174 Sheets

WP 1

45' WOOD POLE W/ LUMINAIRE DAVIT
2-DOWN GUYS, GUARDS AND ANCHORS
2-TYPE 10B WOOD POLE MOUNTED AT 90 AND 180 DEG
2-PEDESTRIAN PUSH BUTTONS AND SIGNS
LUMINAIRE - LED (FOR 40' MOUNTING HEIGHT)
METAL JUNCTION BOX WITH TERMINAL BLOCK

2" CONDUIT FROM HH 1 TO JUNCTION BOX WITH:
4-4/C 16
2-2/C 14

3" CONDUIT RISER AND WEATHERHEAD FROM HH 1 TO SPAN WIRE WITH:
8-4/C 16
2-3/C 16
2-3/C 20
2-2/C 14
2-3/C 16 (LUM)
1-ETHERNET CABLE (VIDEO)

3" CONDUIT RISER AND WEATHERHEAD FROM HH 1 TO SPAN WIRE WITH:
12-4/C 16
2-3/C 16
2-3/C 20
4-2/C 14
1-3/C 16 (LUM)
1-ETHERNET CABLE (VIDEO)

1" CONDUIT RISER AND WEATHERHEAD ABOVE SPAN WIRE WITH:
1-3/C 16 (LUM)

WP 2

45' WOOD POLE W/ LUMINAIRE DAVIT
2-DOWN GUYS, GUARDS AND ANCHORS
2-TYPE 10B WOOD POLE MOUNTED AT 90 AND 180 DEG
2-PEDESTRIAN PUSH BUTTONS AND SIGNS
1-GRIDSMART VIDEO DETECTION UNIT MOUNTED TO LUMINAIRE
LUMINAIRE - LED (FOR 40' MOUNTING HEIGHT)
METAL JUNCTION BOX WITH TERMINAL BLOCK

3" CONDUIT ABOVE JUNCTION BOX TO SPAN WIRES WITH:
4-4/C 16
2-2/C 14

1" CONDUIT RISER AND WEATHERHEAD ABOVE SPAN WIRE WITH:
1-3/C 16 (LUM)
1-ETHERNET CABLE (VIDEO)

WP 3

45' WOOD POLE W/ LUMINAIRE DAVIT
2-DOWN GUYS, GUARDS AND ANCHORS
2-TYPE 10B WOOD POLE MOUNTED AT 90 AND 180 DEG
2-PEDESTRIAN PUSH BUTTONS AND SIGNS
LUMINAIRE - LED (FOR 40' MOUNTING HEIGHT)
METAL JUNCTION BOX WITH TERMINAL BLOCK

3" CONDUIT ABOVE JUNCTION BOX TO SPAN WIRES WITH:
4-4/C 16
2-2/C 14

1" CONDUIT RISER AND WEATHERHEAD ABOVE SPAN WIRE WITH:
1-3/C 16 (LUM)

WP 4

45' WOOD POLE W/ LUMINAIRE DAVIT
2-DOWN GUYS, GUARDS AND ANCHORS
2-TYPE 10B WOOD POLE MOUNTED AT 90 AND 180 DEG
2-PEDESTRIAN PUSH BUTTONS AND SIGNS
1-GRIDSMART VIDEO DETECTION UNIT MOUNTED TO LUMINAIRE
METAL JUNCTION BOX WITH TERMINAL BLOCK

3" CONDUIT ABOVE JUNCTION BOX TO SPAN WIRES WITH:
4-4/C 16
2-2/C 14

1" CONDUIT RISER AND WEATHERHEAD ABOVE SPAN WIRE WITH:
1-ETHERNET CABLE (VIDEO)

A

F&I: TEMPORARY SIGNAL CABINET BASE
INSTALL: TEMPORARY CABINET AND CONTROLLER (COUNTY PROVIDED)
F&I: CONTROLLER CABINET TO HH 1:

3" CONDUIT	3" CONDUIT
12-4/C 16	12-4/C 16
2-3/C 16	2-3/C 16
2-3/C 20	2-3/C 20
4-2/C 14	4-2/C 14
1-ETHERNET CABLE (VIDEO)	1-ETHERNET CABLE (VIDEO)

B

INPLACE: SIGNAL SERVICE CABINET
2" CONDUIT TO SOP TRANSFORMER
3-1/C 2
F&I: 2" CONDUIT TO CONTROLLER CABINET:
3-1/C 6
2" CONDUIT TO HH 1:
3-3/C 16 (LUM)

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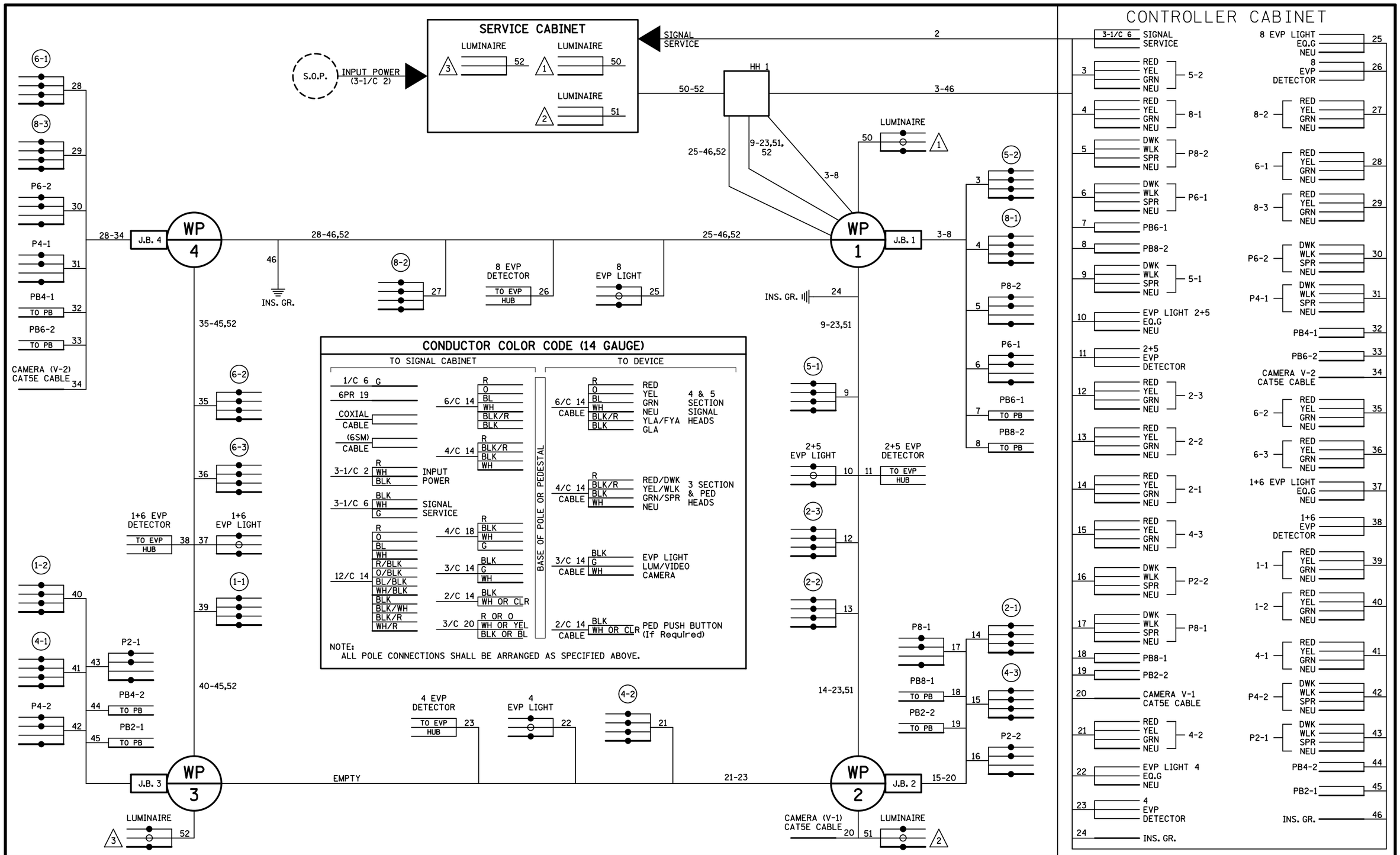
ANOKA COUNTY
HIGHWAY DEPT.

TEMPORARY SIGNAL SYSTEM NOTES
BUNKER LAKE BLVD & HEATHER ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS



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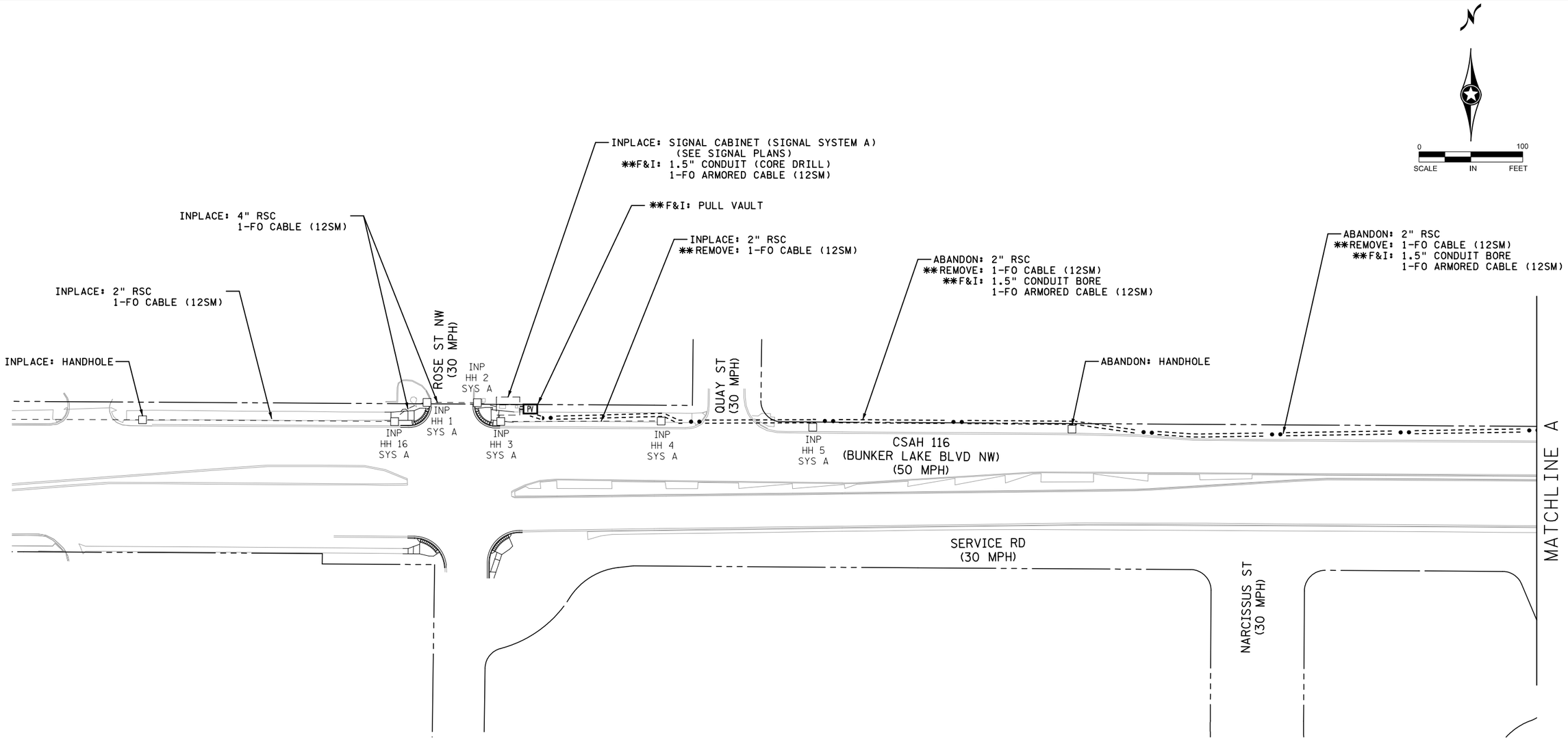
ANOKA COUNTY HIGHWAY DEPT.

TEMPORARY SIGNAL SYSTEM WIRING
BUNKER LAKE BLVD & HEATHER ST
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 146 of 174 Sheets



NOTES:

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5. DIRECTIONAL BORE INTERCONNECT CONDUIT UNDER ALL HARD SURFACES LIKE SIDEWALKS, ROADS AND DRIVEWAYS.

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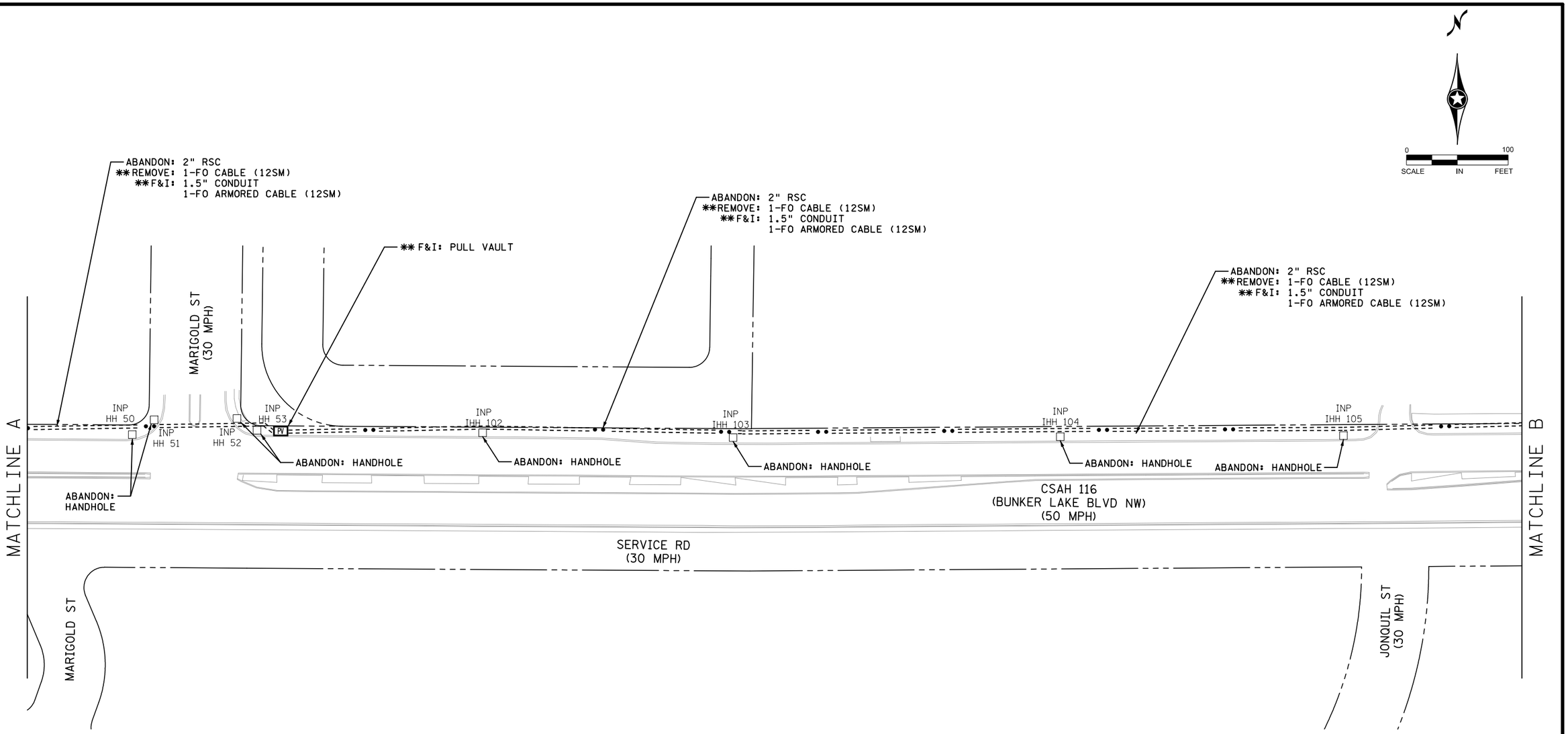
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM
INTERCONNECT LAYOUT
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 147 of 174 Sheets



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COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

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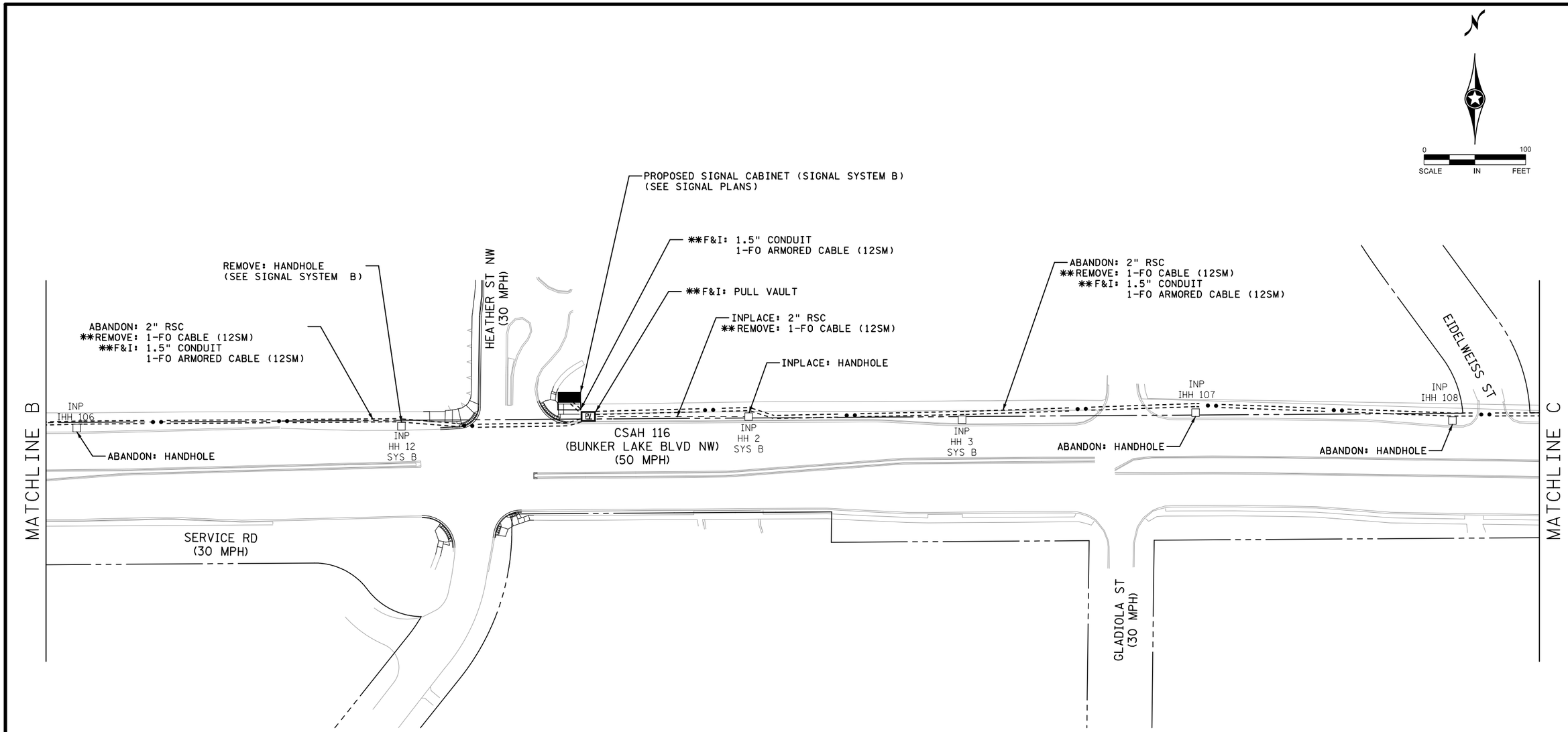

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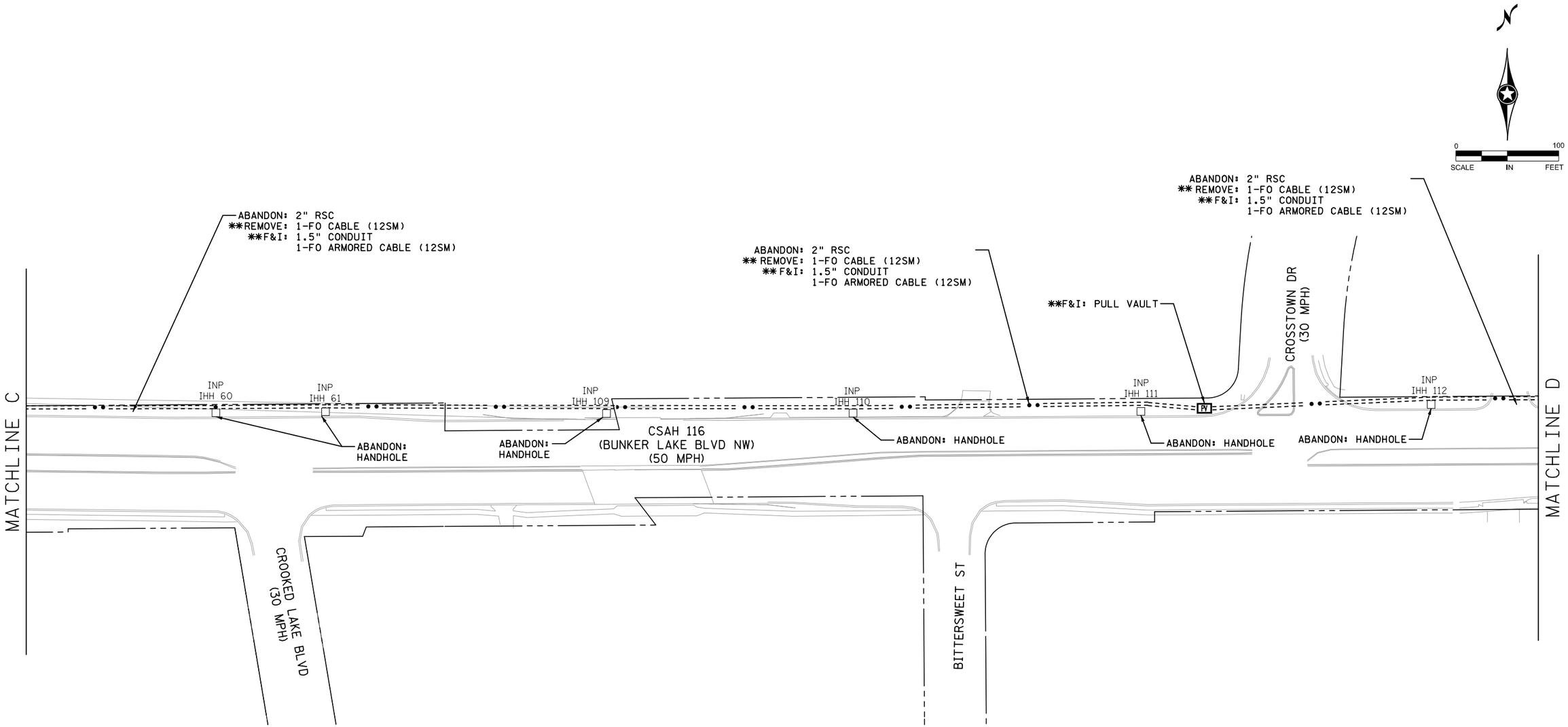
INTERCONNECT LAYOUT
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS



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TRAFFIC SIGNAL SYSTEM
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COUNTY PROJECT SAP 002-716-024
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CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

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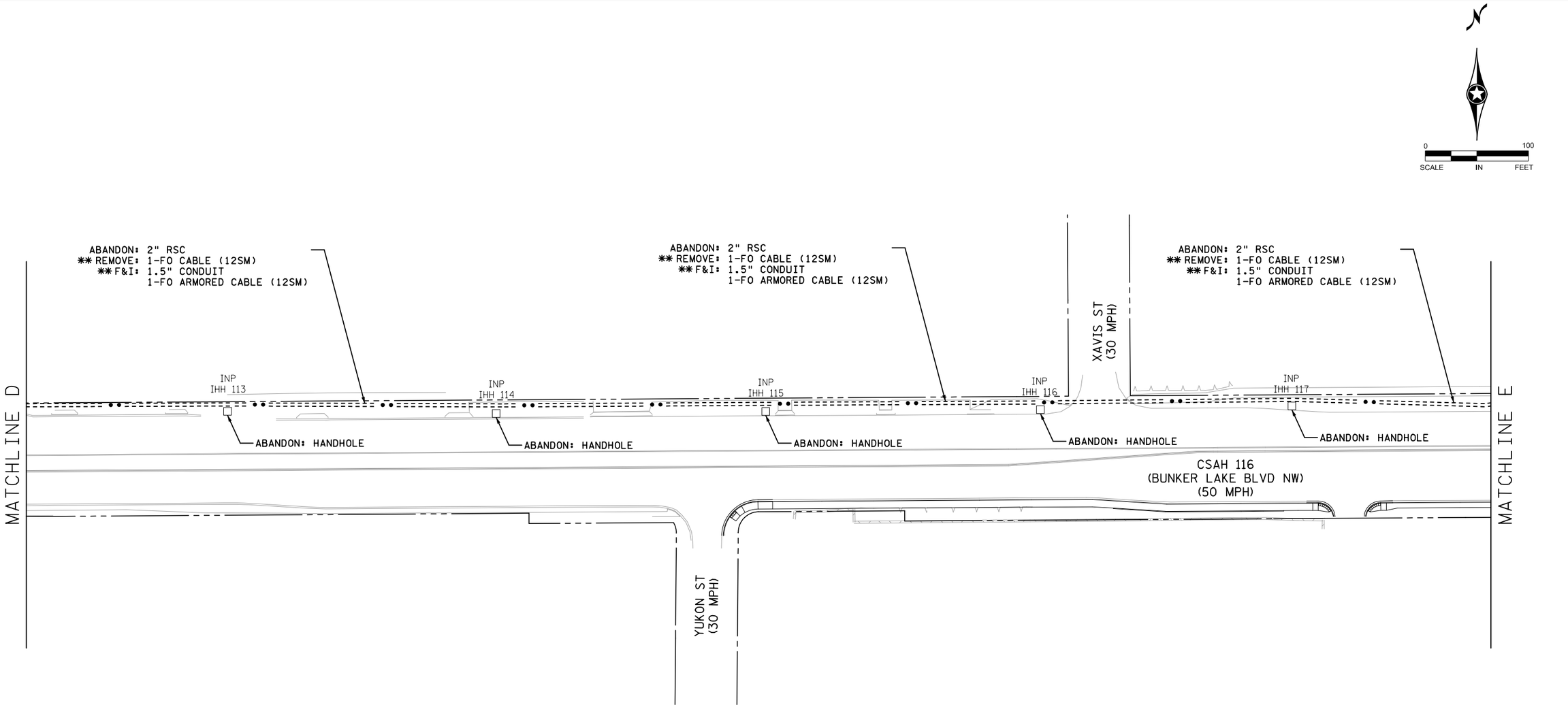

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ANOKA COUNTY

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TRAFFIC SIGNAL SYSTEM
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COUNTY PROJECT SAP 002-716-024
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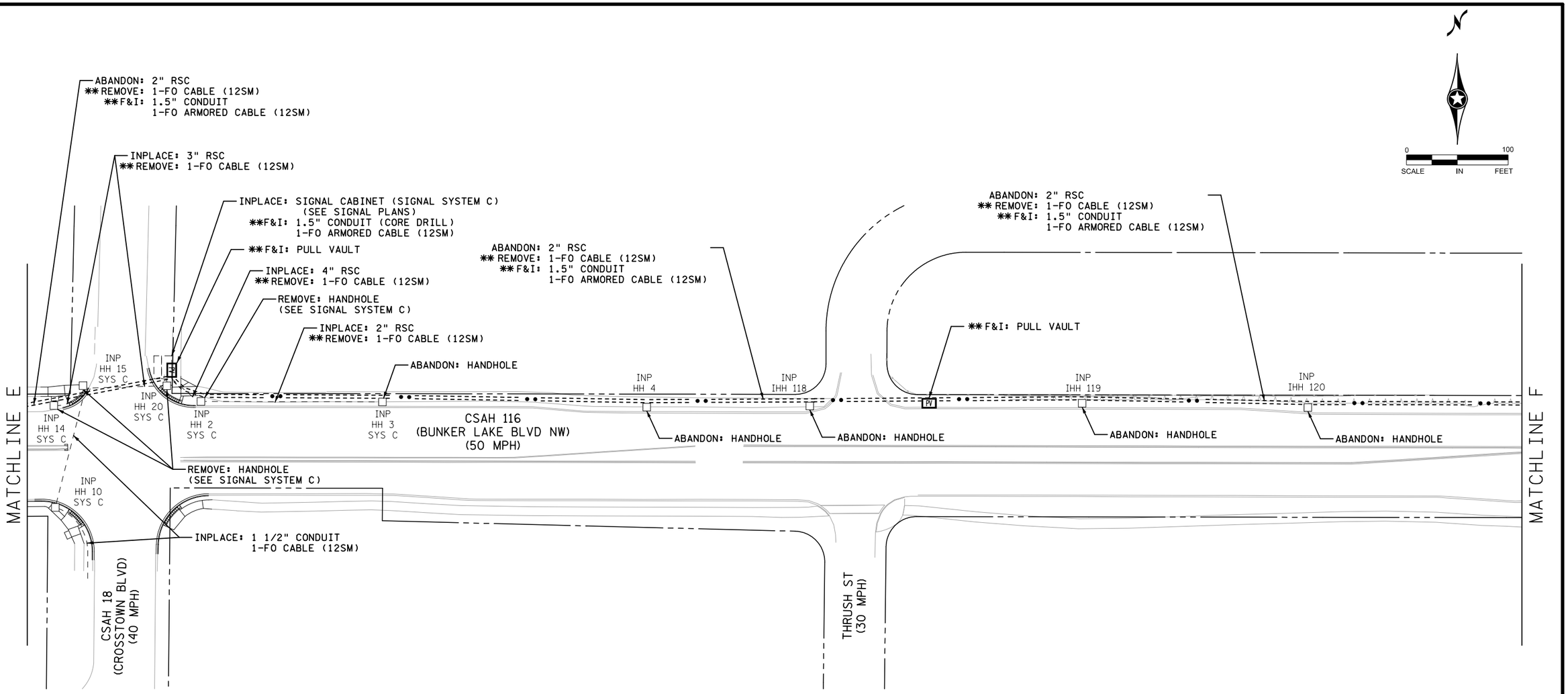
CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 151 of 174 Sheets



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CHECKED BY NHV DATE 11/26/24

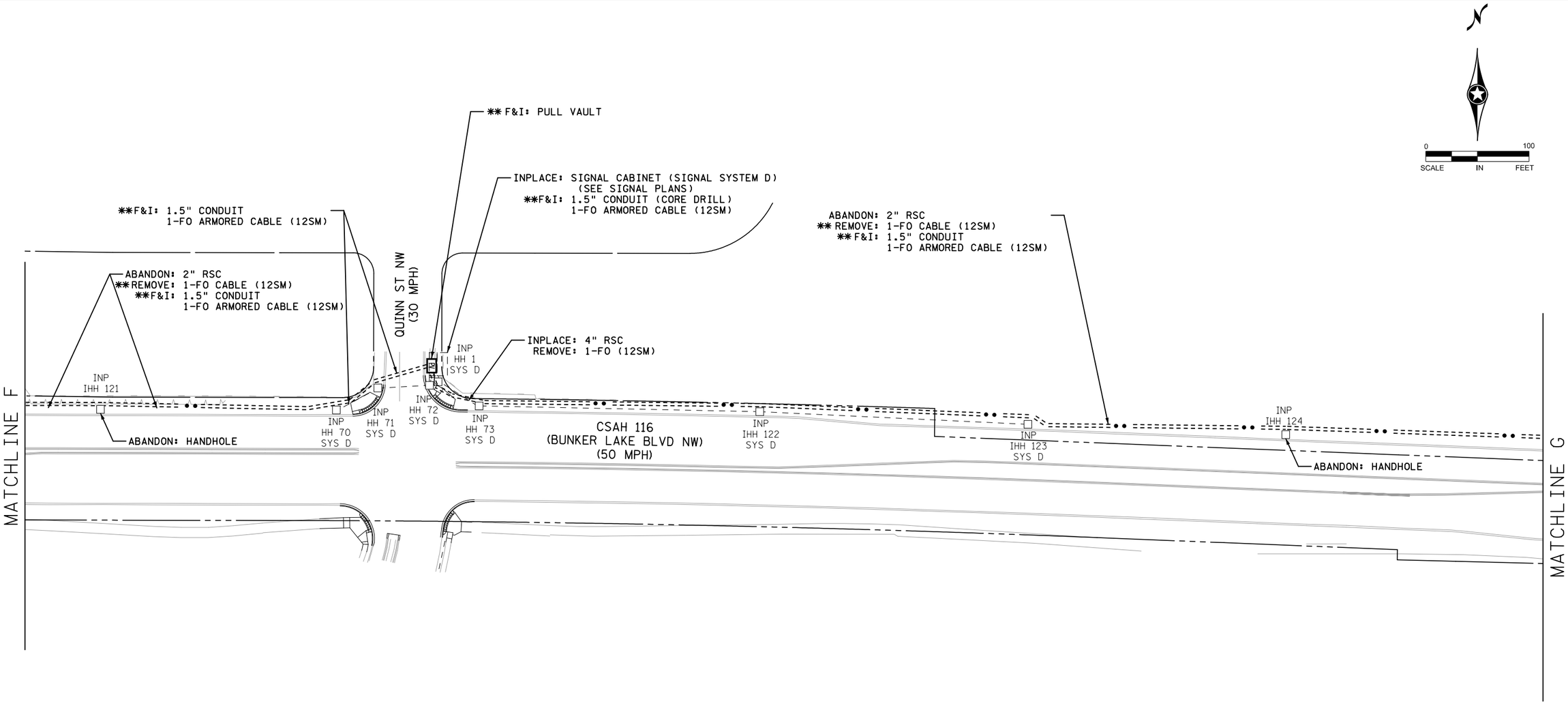
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC SIGNAL SYSTEM
INTERCONNECT LAYOUT
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 152 of 174 Sheets



NOTES:

1. THE LOCATION OF PULL VAULTS AND CONDUITS SHOWN IN THE PLAN ARE APPROXIMATE. EXACT LOCATIONS SHALL BE COORDINATED WITH ALL UTILITY FACILITIES IN SIDEWALK AND ROADWAY AND SHALL BE VERIFIED IN THE FIELD BY THE ENGINEER.
2. ALL ITEMS ARE TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
3. ITEMS DENOTED WITH ** ARE INCLUDED IN THE PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECT PAY ITEM.
4. CONTRACTOR SHALL TERMINATE FIBER OPTIC CABLE WITHIN TRAFFIC SIGNAL CABINETS IN THE CONTRACTOR PROVIDED TERMINATION PANEL. SEE SPECIAL PROVISIONS.
5. DIRECTIONAL BORE INTERCONNECT CONDUIT UNDER ALL HARD SURFACES LIKE SIDEWALKS, ROADS AND DRIVEWAYS.

NO	DATE	BY	CKD	APPR	REVISION

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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: NICK VANGUNST

SIGNATURE: Nick Van Gunst

DATE: 11/26/24 LICENSE NO. 44683

DRAWN BY KAS DATE 11/26/24

DESIGN BY KAS DATE 11/26/24

CHECKED BY NHV DATE 11/26/24

ANOKA COUNTY

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TRAFFIC SIGNAL SYSTEM
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COUNTY PROJECT SAP 002-716-024
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CSAH 116 (BUNKER LAKE BLVD)
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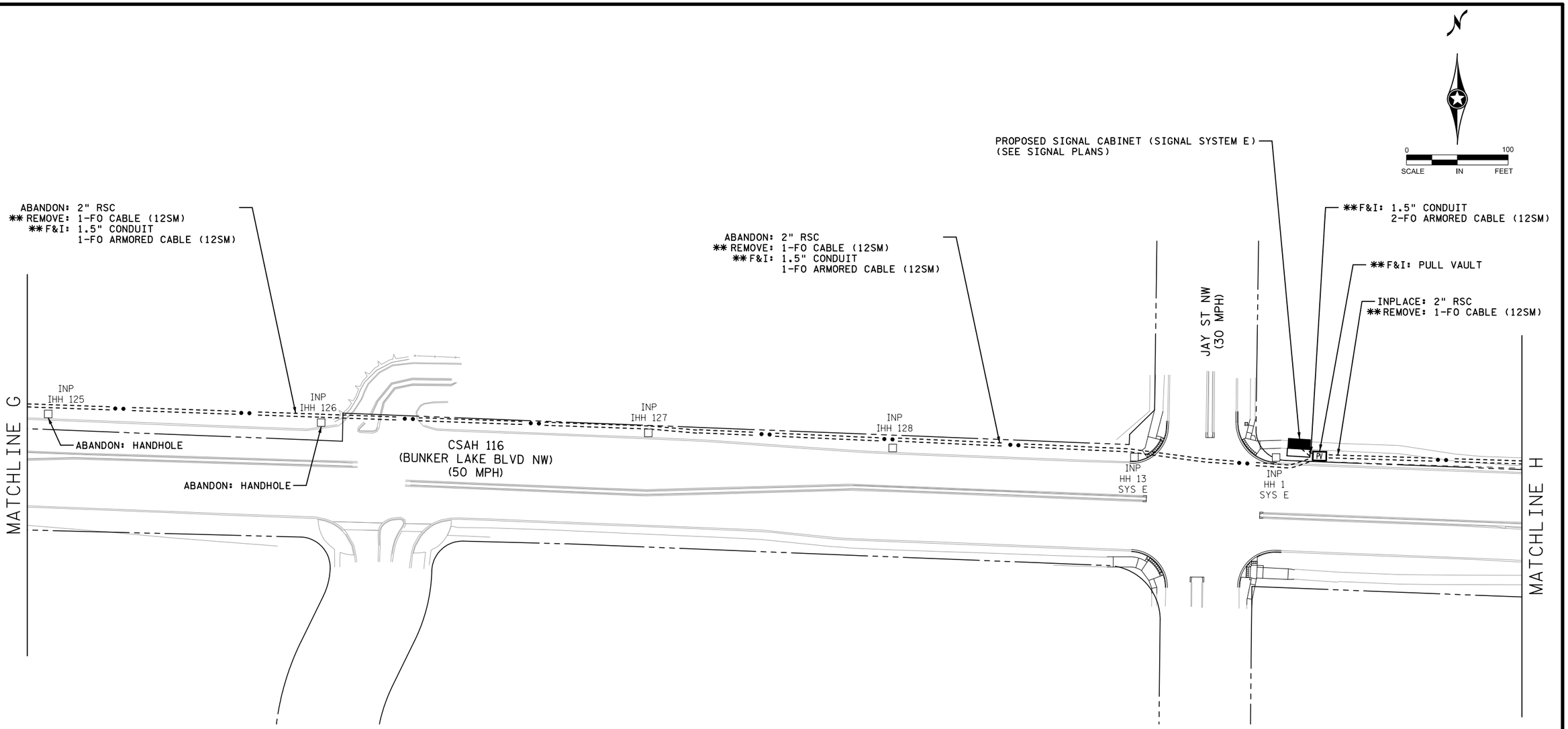

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CSAH 116 (BUNKER LAKE BLVD)
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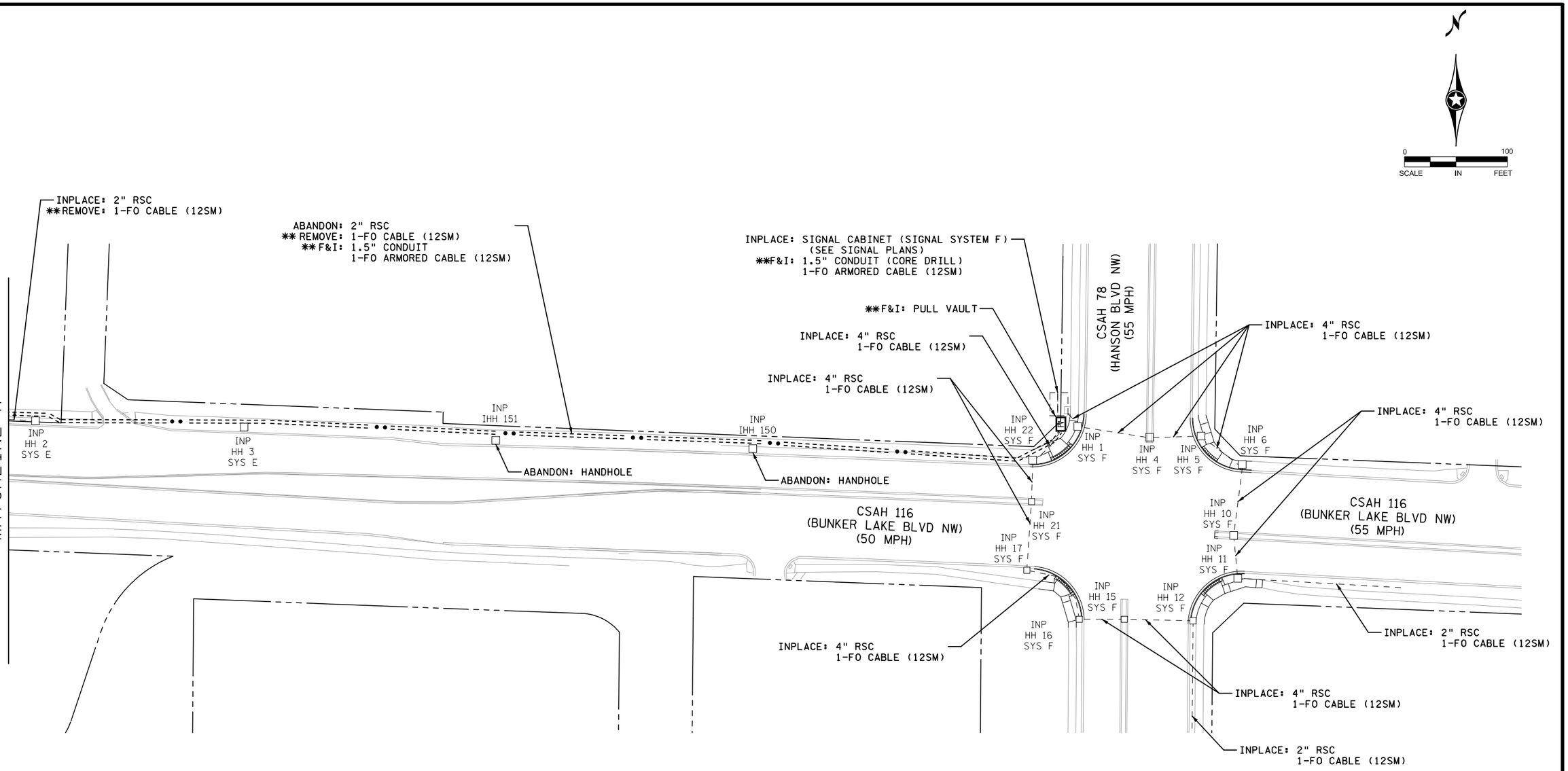

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CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
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NOTES & GUIDELINES

GENERAL INFORMATION:

1. ALL DISTANCES ARE APPROXIMATE.
2. SHORT TERM TEMPORARY CLOSURES PERMITTED WHEN SIGNAL IS IN FLASH MODE.
3. **SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) IN THE SPECIAL PROVISIONS FOR IMPORTANT TRAFFIC SIGNAL STAGING REQUIREMENTS.**

SIGNING:

1. ALL TEMPORARY SIGNS ARE REQUIRED TO BE CRASHWORTHY PER THE AASHTO MANUAL FOR ASSESSING SAFETY HARDWARE 2016 (MASH-2016). TEMPORARY SIGN STRUCTURES THAT ARE CRASHWORTHY UNDER THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM REPORT 350 (NCHRP-350) MAY BE USED PROVIDED THE DEVICES WERE ACQUIRED BY THE CONTRACTOR PRIOR TO DECEMBER 31ST, 2019. THE MINNESOTA TYPE "C" AND "D" BRACED LEG U-CHANNEL (KNEE BRACE) SIGN SUPPORT IS NOT ALLOWED.
2. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE FINAL SIGNS TO ASSURE THAT THE FINAL SIGNS ARE PLACED AS NEEDED, OR PROVIDE TEMPORARY SIGNING UNTIL THE FINAL SIGNING IS PLACED.
3. WHEN MULTIPLE GROUND MOUNTED SIGN STRUCTURES ARE PLACED ADJACENT TO EACH OTHER THERE SHOULD BE NO MORE THAN 2 POSTS WITHIN 84" OF EACH OTHER. WHEN THIS SPACING CAN NOT BE MAINTAINED, THEN SIGN STRUCTURES SHALL BE OFFSET, AND STAGGERED WITH A MINIMUM OF 4' BETWEEN SIGN STRUCTURES BOTH LATERALLY AND LONGITUDINALLY.
4. WHEN A SIGN OR BARRICADE IS ORIENTED SUCH THAT VISIBILITY TO ROAD USERS INCLUDING BIKES AND PEDESTRIANS IS REDUCED ENOUGH TO CAUSE A HAZARD, DELINEATE THE SIGN/BARRICADE WITH APPROPRIATE DEVICES.
5. TEMPORARY SIGNS SHALL BE PLACED SUCH THAT OBSTACLES DO NOT BLOCK THEM FROM BEING VIEWED BY APPROACHING ROAD USERS. OBSTACLES MAY INCLUDE, BUT ARE NOT LIMITED TO, LIGHT POLES, TREES, SIGNS, AND BUILDINGS.
6. TEMPORARY SIGNS SHALL BE PLACED AND ORIENTED APPROXIMATELY AS SHOWN IN THE PLAN, AT RIGHT ANGLES TO DIRECTION OF AND FACING THE TRAFFIC THEY ARE INTENDED TO SERVE, UNLESS OTHERWISE SPECIFIED.
7. LONGITUDINAL DROPOFFS SHALL BE SIGNED AS SHOWN IN THE "MINNESOTA TEMPORARY TRAFFIC CONTROL FIELD MANUAL" PAGES (6K-aj) THRU (6K-al) UNLESS OTHERWISE SPECIFIED IN THESE PLANS.
8. AFTER REMOVAL OF SIGN AND/OR SIGN BASE, BACK FILL, COMPACT, AND LEVEL SOIL TO MATCH SURROUNDING SOIL.

PAVEMENT MARKING:

1. MASK OR REMOVE ANY CONFLICTING PAVEMENT MARKINGS AS SHOWN IN THE PLAN OR APPROVED BY THE ENGINEER.
2. SEE 2582 IN THE SPECIAL PROVISIONS FOR PAVEMENT MARKING SPOTTING RESPONSIBILITIES.

BARRIER & DELINEATION:

1. PLACE AND MAINTAIN PORTABLE BARRIER DELINEATORS ANY TIME TRAFFIC IS WITHIN 10' OF BARRIER. DELINEATORS WILL EACH HAVE A MINIMUM OF 24 SQ IN. OF RETROREFLECTIVE SURFACE ON BOTH SIDES PLACED AT 25' SPACING ON TOP OF THE BARRIER. SIDE MOUNTED PORTABLE BARRIER DELINEATORS WILL HAVE A MINIMUM OF 12 SQ. IN. OF RETROREFLECTIVE SURFACE AREA AND BE PLACED AT 12.5' SPACING. IF A SMALLER APPROVED BARRIER DELINEATOR IS USED IT SHALL BE A MINIMUM OF 6 SQ IN. OF RETROREFLECTIVE SURFACE AREA AND BE PLACED ON BOTH SIDES AT 6.25' SPACING. TEMPORARY BARRIER DELINEATOR COLOR SHALL MATCH APPLICABLE PAVEMENT MARKING.

CONSTRUCTION INFORMATION SIGNING:

1. THE CONTRACTOR SHALL USE CONSTRUCTION INFORMATION SIGNING AS SHOWN IN THE PLAN WHICH ARE TO BE USED AS FOLLOWS:

   PLACE THE G20-X1 ADVANCE CLOSURE NOTICE SIGN(S) 10 DAYS PRIOR TO THE PLANNED CLOSURE DATE.

   PLACE G20-X2 ADVANCE NOTICE SIGNS 10 DAYS PRIOR TO THE WORK STARTING DATE. ONCE WORK BEGINS, COVER THE START DATE LEGEND WITH SUGGESTED PLAQUE CONTAINED IN THIS PLAN. IF NO ALTERNATE MESSAGE IS SHOWN IN THE PLAN OR APPROVED BY THE ENGINEER, DISPLAY THE CORRECT ESTIMATED FINISH DATE, MONTH, OR SEASON.

   IF CONSTRUCTION INFORMATION SIGNING IS NO LONGER VISIBLE TO THE MOTORING PUBLIC ONCE WORK BEGINS, MOVE SAID SIGNING TO A SITE IN ADVANCE OF THE WORK ZONE OR CLOSURE AS SHOWN IN THE PLAN OR APPROVED BY THE ENGINEER.

   PLACE PORTABLE CHANGEABLE MESSAGE SIGNS 10 DAYS PRIOR TO ACTUAL START DATE OF CONSTRUCTION AND THRU CONSTRUCTION

UPDATED 11/25/2024

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PRINT NAME: EMMA JULKOWSKI

SIGNATURE: Emma Julkowski

DATE: 11/26/24 LICENSE NO. 60825

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DESIGN BY EVJ DATE 11/26/24

CHECKED BY EVJ DATE 11/26/24

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

TRAFFIC CONTROL PLAN
TITLE SHEET
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

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1 - ROSE ST/COMMERCIAL ENTRANCE: ADA IMPROVEMENTS, NW SIGNAL REPLACEMENT

CONSTRUCT ADA UNDER ROADWAY TRAFFIC. CONTRACTOR TO MAINTAIN ACCESS AT ALL TIMES.

RIGHT TURN LANE MAY BE CLOSED. USE RIGHT TURN LANE CLOSURE DETAIL (LAYOUT 33 IN FIELD MANUAL).

RIGHT THRU LANE MAY BE CLOSED. USE RIGHT LANE CLOSURE DETAIL (LAYOUT 57 IN FIELD MANUAL).

2A - SCHOOL ENTRANCE: ADA IMPROVEMENTS, SB RIGHT TURN LANE CONSTRUCTION, SIGNAL REPLACEMENT

CONSTRUCT ADA AND RIGHT TURN LANE UNDER ROADWAY TRAFFIC. CONTRACTOR TO MAINTAIN ACCESS AT ALL TIMES.

RIGHT TURN LANE MAY BE CLOSED. USE RIGHT TURN LANE CLOSURE DETAIL (LAYOUT 33 IN FIELD MANUAL).

RIGHT THRU LANE MAY BE CLOSED. USE RIGHT LANE CLOSURE DETAIL (LAYOUT 57 IN FIELD MANUAL).

2B - HEATHER ST: ADA IMPROVEMENTS, SIGNAL REPLACEMENT

CONSTRUCT ADA UNDER ROADWAY TRAFFIC. CONTRACTOR TO MAINTAIN ACCESS AT ALL TIMES.

RIGHT TURN LANE MAY BE CLOSED. USE RIGHT TURN LANE CLOSURE DETAIL (LAYOUT 33 IN FIELD MANUAL).

RIGHT THRU LANE MAY BE CLOSED. USE RIGHT LANE CLOSURE DETAIL (LAYOUT 57 IN FIELD MANUAL).

GENERAL NOTE:

1. **SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) IN THE SPECIAL PROVISIONS FOR IMPORTANT TRAFFIC SIGNAL STAGING REQUIREMENTS.**

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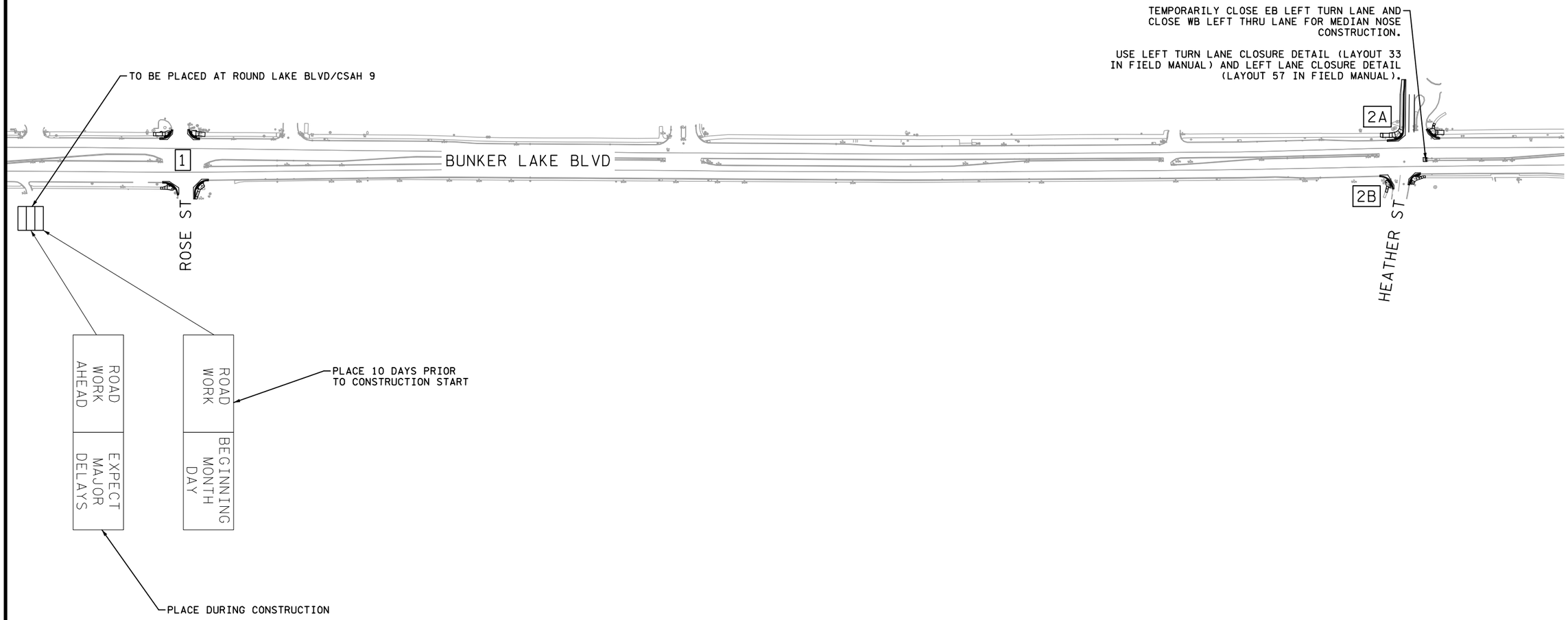

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SIGNATURE: Emma Julkowski

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3 - YUKON ST: ADA RAMP CONSTRUCTION

CONSTRUCT ADA UNDER ROADWAY TRAFFIC. CONTRACTOR TO MAINTAIN ACCESS AT ALL TIMES.

RIGHT THRU LANE MAY BE CLOSED. USE RIGHT LANE CLOSURE DETAIL (LAYOUT 57 IN FIELD MANUAL).

4 - YUKON ST TO CROSSTOWN BLVD: SIDEWALK CONSTRUCTION

CONSTRUCT SIDEWALK UNDER ROADWAY TRAFFIC.

RIGHT THRU LANE MAY BE CLOSED. USE RIGHT LANE CLOSURE DETAIL (LAYOUT 57 IN FIELD MANUAL).

RIGHT TURN LANE MAY BE CLOSED. USE RIGHT TURN LANE CLOSURE DETAIL (LAYOUT 33 IN FIELD MANUAL).

5 - COMMERCIAL ENTRANCE: ACCESS REPLACEMENT

CLOSE ENTRANCE AND DIRECT TRAFFIC TO CSAH 18/CROSSTOWN BLVD.

WORK NOT TO BE DONE AT THE SAME TIME AS 6 - CSAH 18/CROSSTOWN BLVD.

6 - CSAH 18/CROSSTOWN BLVD: ADA IMPROVEMENTS, SIGNAL REPLACEMENT

CONSTRUCT ADA UNDER ROADWAY TRAFFIC. CONTRACTOR TO MAINTAIN ACCESS AT ALL TIMES.

RIGHT TURN LANE MAY BE CLOSED. USE RIGHT TURN LANE CLOSURE DETAIL (LAYOUT 33 IN FIELD MANUAL).

RIGHT THRU LANE MAY BE CLOSED. USE RIGHT LANE CLOSURE DETAIL (LAYOUT 57 IN FIELD MANUAL).

WORK NOT TO BE DONE AT THE SAME TIME AS 5 - COMMERCIAL ENTRANCE.

7 - QUINN ST: ADA IMPROVEMENTS

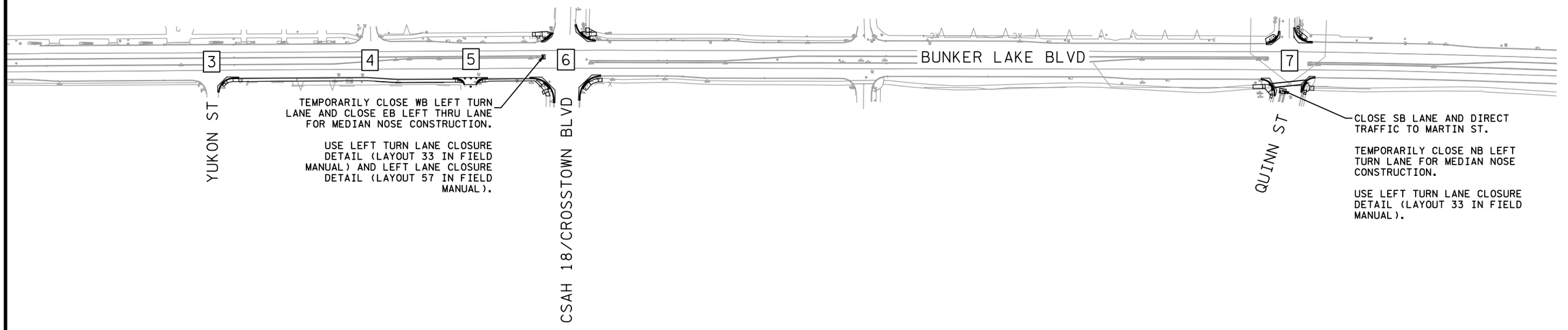
CONSTRUCT ADA UNDER ROADWAY TRAFFIC. CONTRACTOR TO MAINTAIN ACCESS AT ALL TIMES.

RIGHT TURN LANE MAY BE CLOSED. USE RIGHT TURN LANE CLOSURE DETAIL (LAYOUT 33 IN FIELD MANUAL).

RIGHT THRU LANE MAY BE CLOSED. USE RIGHT LANE CLOSURE DETAIL (LAYOUT 57 IN FIELD MANUAL).

GENERAL NOTE:

1. **SEE SECTIONS 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME) AND 2563 (TRAFFIC CONTROL) IN THE SPECIAL PROVISIONS FOR IMPORTANT TRAFFIC SIGNAL STAGING REQUIREMENTS.**



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SCALE IN FEET

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PRINT NAME: EMMA JULKOWSKI

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

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CSAH 116 (BUNKER LAKE BLVD)
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8 - JAY ST: ADA IMPROVEMENTS, SIGNAL REPLACEMENT

CONSTRUCT ADA UNDER ROADWAY TRAFFIC. CONTRACTOR TO MAINTAIN ACCESS AT ALL TIMES.

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RIGHT THRU LANE MAY BE CLOSED. USE RIGHT LANE CLOSURE DETAIL (LAYOUT 57 IN FIELD MANUAL).

9 - CSAH 78/HANSON BLVD: ADA IMPROVEMENTS, SE SIGNAL REPLACEMENT

CONSTRUCT ADA UNDER ROADWAY TRAFFIC. CONTRACTOR TO MAINTAIN ACCESS AT ALL TIMES.

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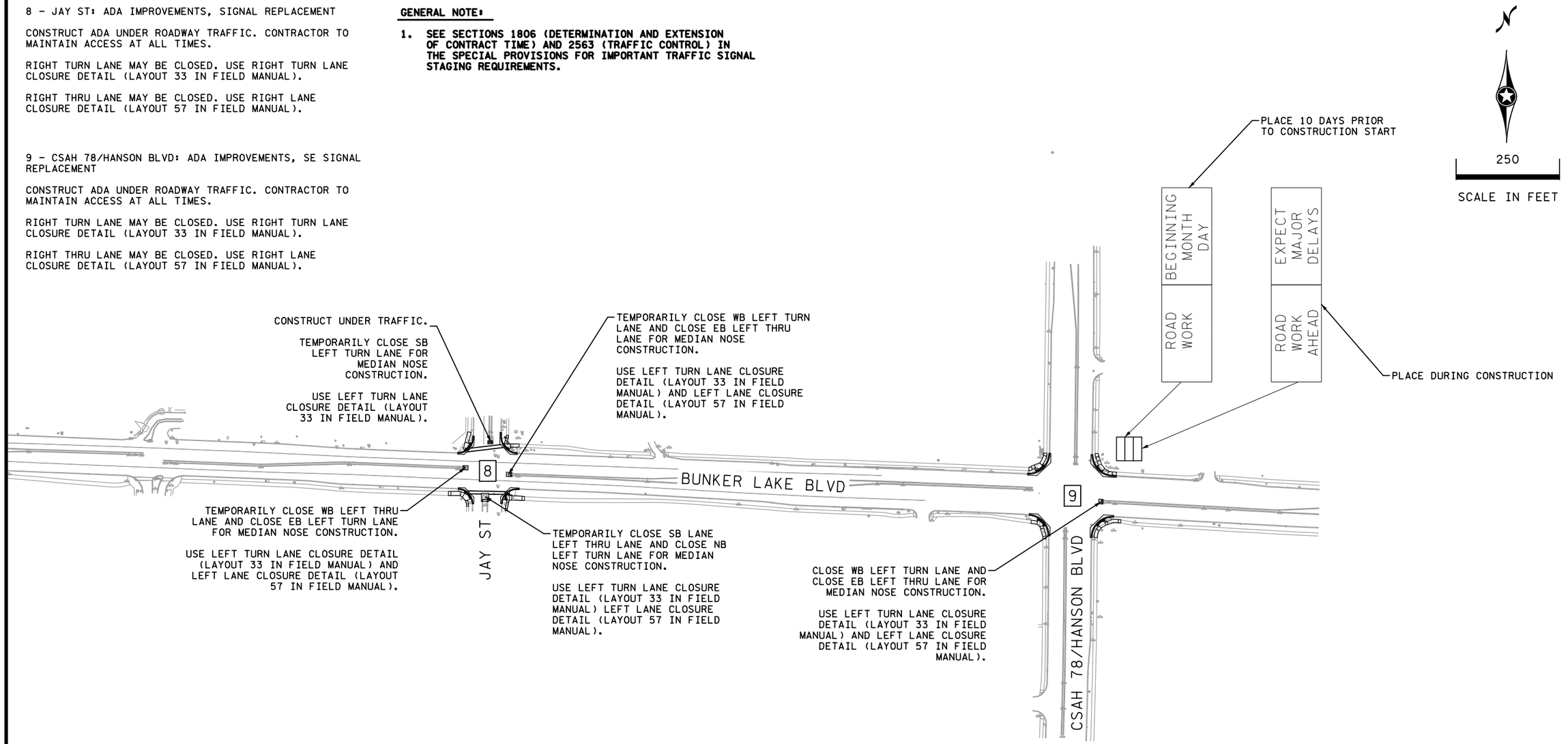

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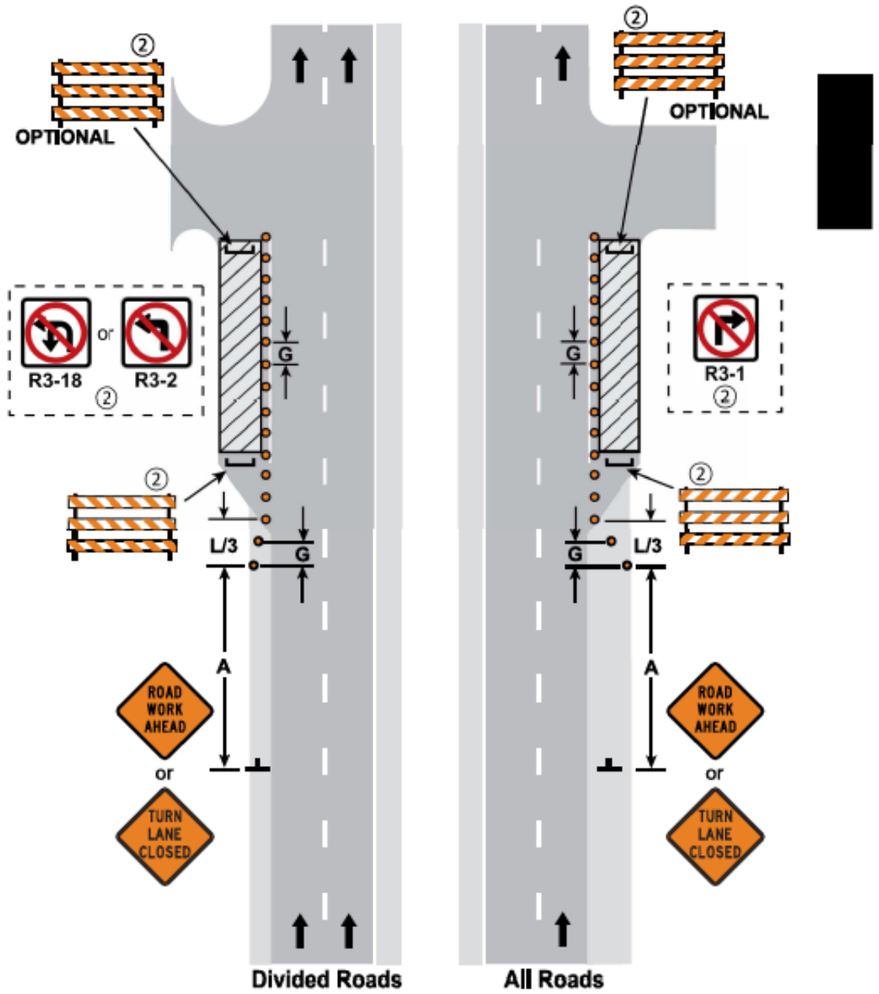
NOTES:

1. Contact the appropriate road authority for signal timing modifications before beginning work at any signalized intersection.
2. Optional R3-1, R3-2, or R3-18 signs may be placed on sign stand or top of barricades on side closest to traffic. Signs are required if turns are prohibited.



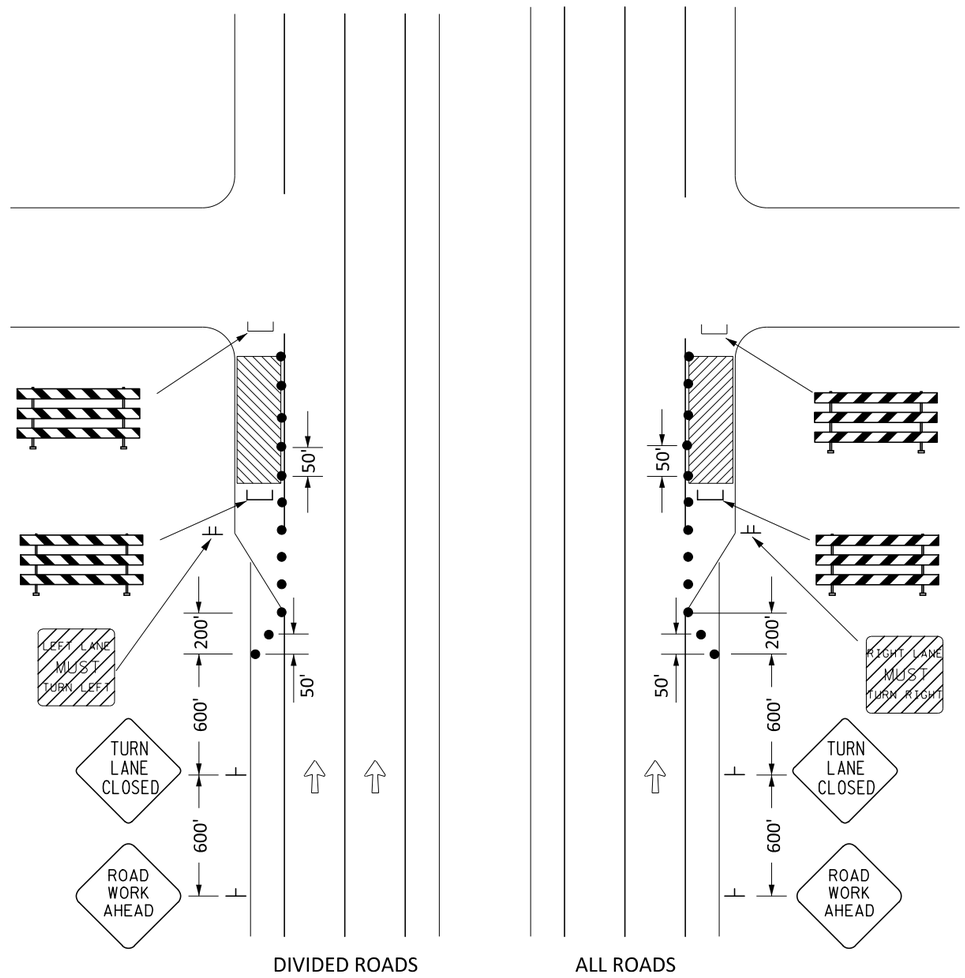
TURN LANE CLOSURES

3 DAYS or LESS

LAYOUT 33

6K-33

NOT TO SCALE



TURN LANE CLOSURES
4 DAYS OR GREATER

LONG TERM TYPICAL APPLICATION 07

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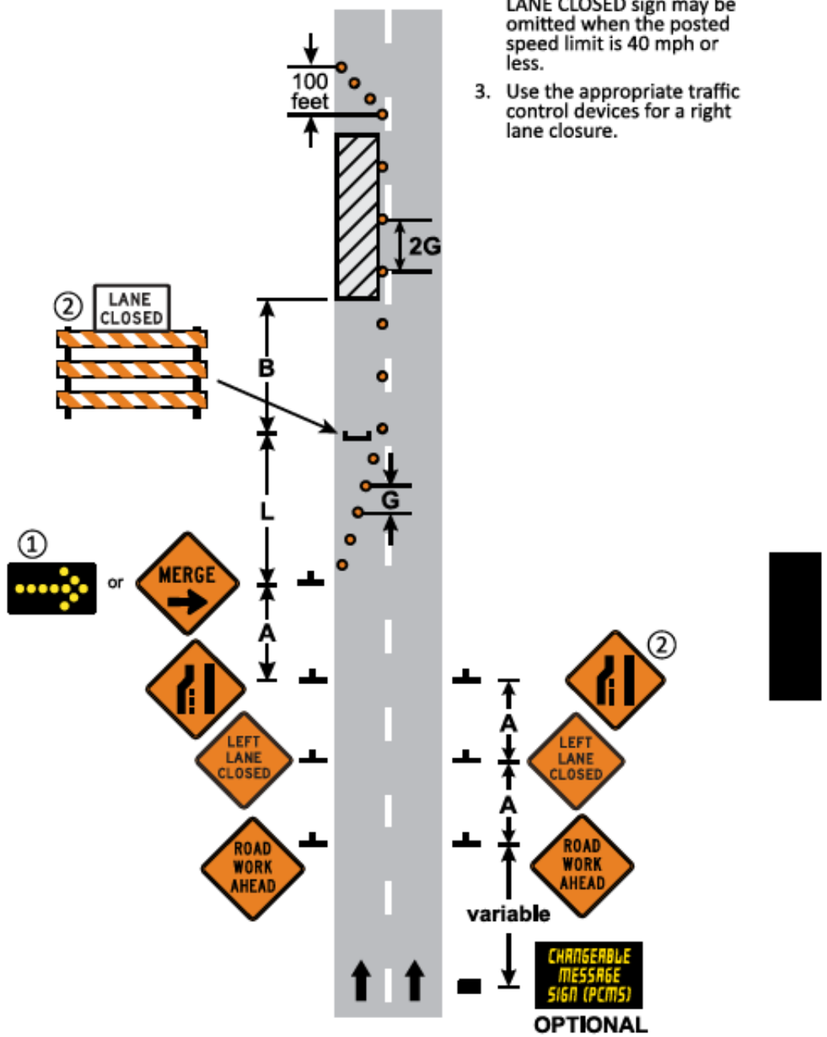
NOTES:

1. The Flashing Arrow Board shall be used where the posted speed limit is 45 mph or greater, and shall be placed on the shoulder. If there is no shoulder, or the shoulder is too narrow, place at the end of the taper in lieu of the Type III barricade assembly.
2. The Lane Ends sign and/or LANE CLOSED sign may be omitted when the posted speed limit is 40 mph or less.
3. Use the appropriate traffic control devices for a right lane closure.

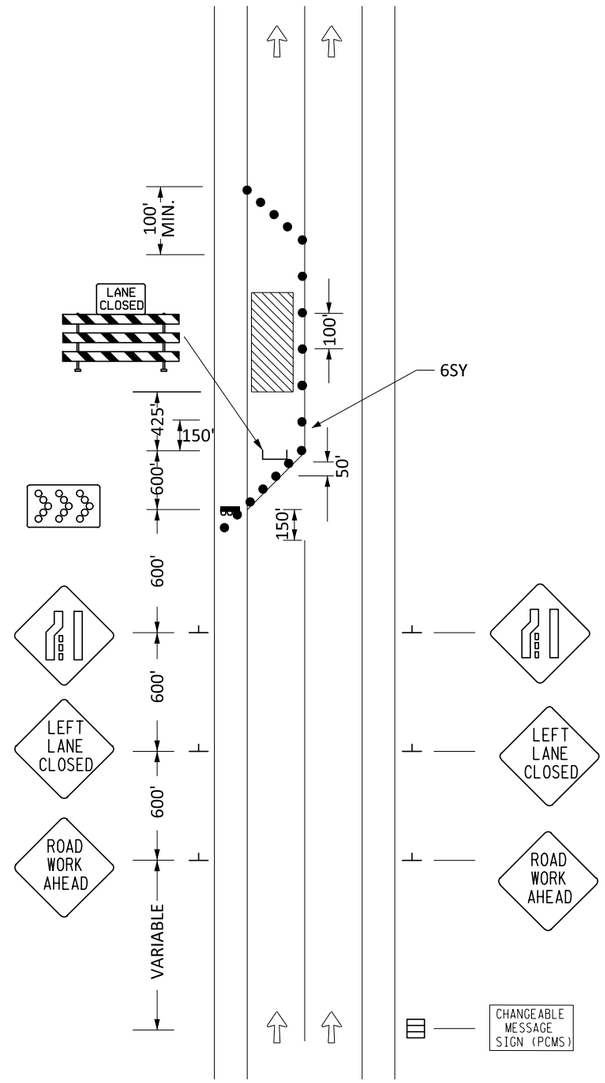


LANE CLOSURE
MULTI-LANE DIVIDED ROAD

3 DAYS or LESS **LAYOUT 57**

6K-57

NOT TO SCALE



LEFT LANE CLOSURE
MULTI-LANE DIVIDED ROAD
4 DAYS OR GREATER

LONG TERM TYPICAL APPLICATION 31

NO	DATE	BY	CKD	APPR	REVISION

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CSAH 116 (BUNKER LAKE BLVD)
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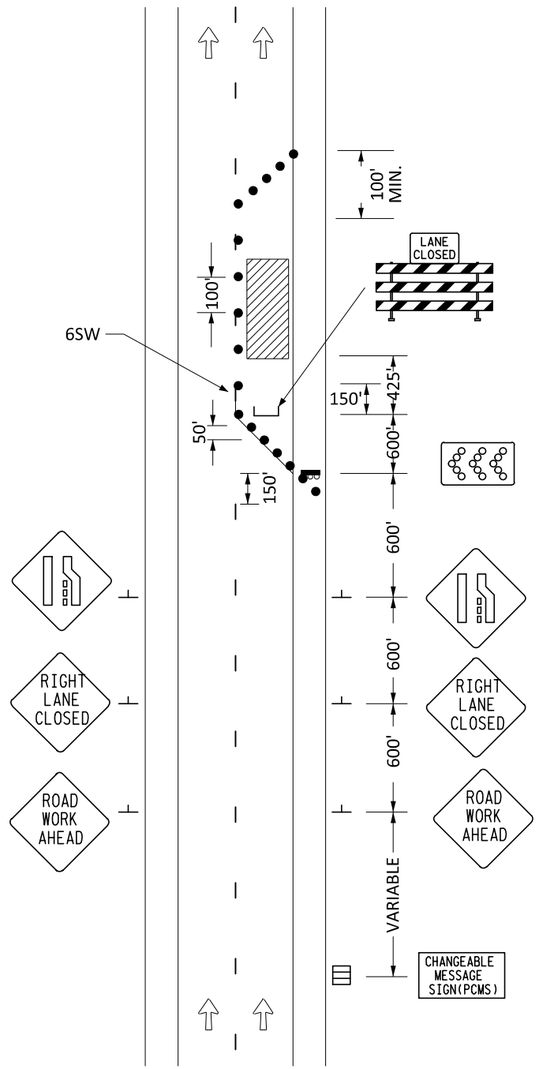

RIGHT LANE CLOSURE
MULTI-LANE DIVIDED ROAD
4 DAYS OR GREATER

LONG TERM TYPICAL APPLICATION 30

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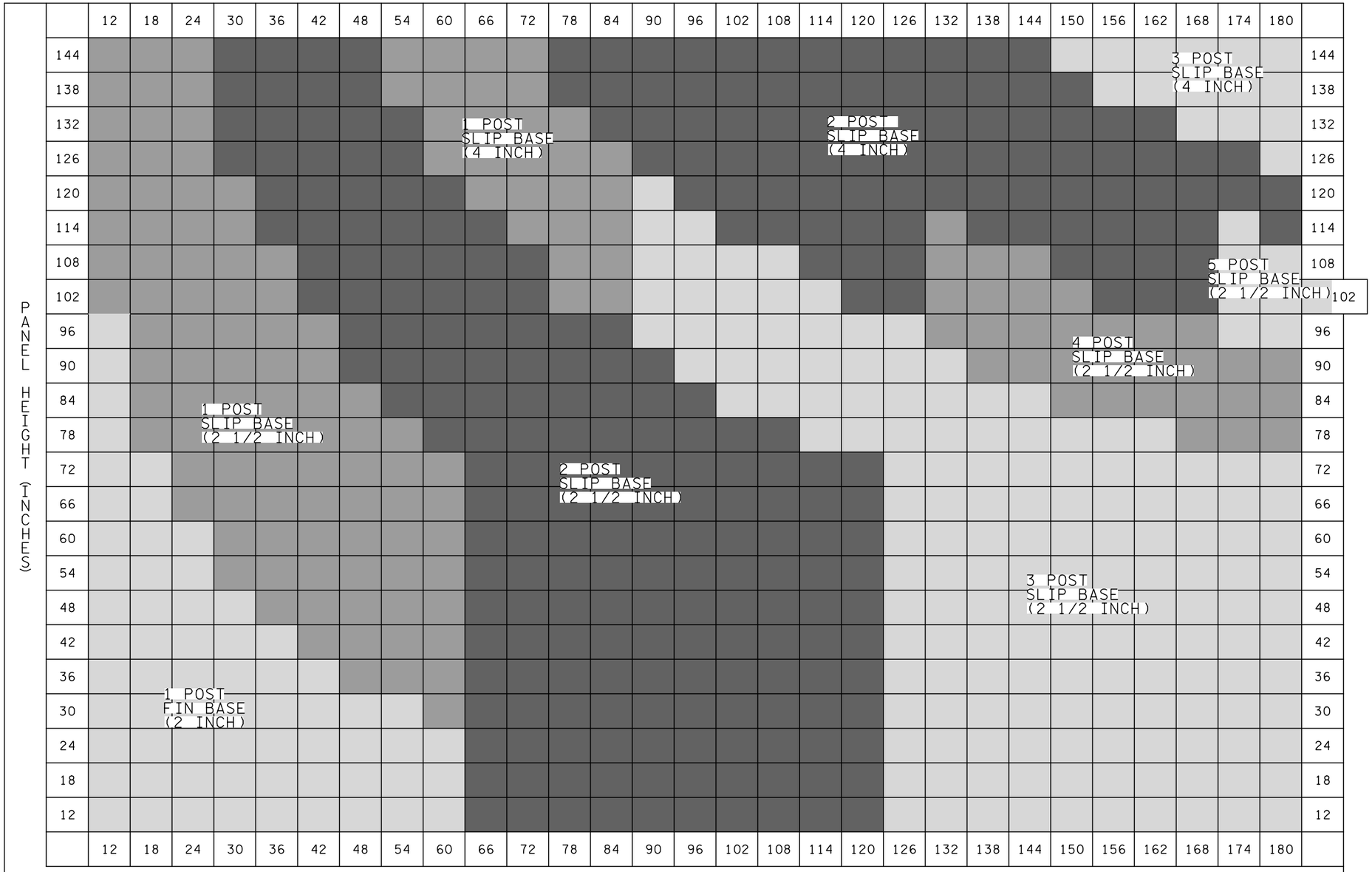
TRAFFIC CONTROL PLAN
DESIGN DETAILS
COUNTY PROJECT SAP 002-716-024
CITY PROJECT SAP 198-020-040

CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

Sheet 162 of 174 Sheets



SLIP BASE RISER POST 4 INCH, 8 GAUGE
SLIP BASE RISER POST 2-1/2 INCH, 10 GAUGE WITH 2-3/16 INCH INSERT
FIN BASE RISER POST 2 IN, 12 GAUGE

BASED ON 90 MPH WIND LOAD

PUBLISHED BY OTE 09/17/2021	MODIFIED BY	TEMPORARY SQUARE TUBE GROUND MOUNTED WIND LOADING CHART

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_tc_dd05.dgn 11/26/2024 3:07:44 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: EMMA JULKOWSKI
SIGNATURE: Emma Julkowski
DATE: 11/26/24 LICENSE NO. 60825

DRAWN BY NNB DATE 11/26/24
DESIGN BY EVJ DATE 11/26/24
CHECKED BY EVJ DATE 11/26/24

ANOKA COUNTY
HIGHWAY DEPT.

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CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

SQUARE TUBE POST SPACING (INCHES)

PANEL WIDTH (INCHES)

	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324	330	336
2 POST	12	12	12	18	24	30	30	36	36	42	42	48	48	48	54	54	60	60	66	66	72	72	78	78	84	84	90	90	96	96	102	102	108	108	114	114	120	120																		
3 POST													42	42	42	42	42	48	48	48	48	48	54	54	54	60	60	60	66	66	66	72	72	72	78	78	78	84	84	84	90	90	90	96	96	96	102	102	102	108	108	108	114	114
4 POST																				42	42	42	42	42	52	48	48	48	48	48	54	54	54	54	60	60	60	60	66	66	66	66	72	72	72	72	78	78	78	78	84	84	84	84
5 POST																											42	42	42	42	42	42	42	48	48	48	48	48	54	54	54	54	54	60	60	60	60	60	66	66	66	66	66	72
6 POST																																		42	42	42	42	42	42	42	42	48	48	48	48	48	54	54	54	54	54	54	60	60
7 POST																																									42	42	42	42	42	42	42	42	42	48	48	48	48	48
8 POST																																																42	42	42	42	42	42	42

DISTANCES ARE CENTER - TO - CENTER OF POSTS.

PUBLISHED BY OTE 09/17/2021	MODIFIED BY	TEMPORARY SQUARE TUBE GROUND MOUNTED POST SPACING

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_tc_dd06.dgn 11/26/2024 3:07:54 PM

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ANOKA COUNTY

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SIGNAL MODIFICATION
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GENERAL NOTES;

1. GROUND MOUNTED SQUARE TUBE SIGN STRUCTURES PLACED WITHIN 50' OF THE RADIUS END OF AN INTERSECTION SHALL BE PLACED ON ONE 2" OR 2-1/2" POST.
2. FOR 2" SQUARE TUBE RISER POST IN SOIL, USE FIN BASE PLACED PER MANUFACTURER'S SPECIFICATIONS. USE A 2" X 2" PRE-PUNCHED, GALVANIZED STEEL, SQUARE TUBE RISER POST. PLACE 3/8" STAINLESS STEEL BOLT THROUGH THE 5TH HOLE DOWN FROM THE TOP OF THE BASE. RISER POST SHALL REST ON THE BOLT.
3. FOR 2-1/2" SQUARE TUBE RISER POST IN SOIL, USE SLIP BASE PLACED PER MANUFACTURER'S SPECIFICATIONS USING A 10 GAUGE , 2-1/2" X 2-1/2" PRE-PUNCHED, GALVANIZED STEEL, SQUARE TUBE RISER POST WITH A 10 GAUGE 2-3/16" X 2-3/16" PRE-PUNCHED, GALVANIZED STEEL, SQUARE TUBE INTERNAL INSERT.

SPECIFIC NOTES;

① IF ANY PART OF A SIGN OR SIGN ASSEMBLY EXTENDS MORE THAN 4" INTO THE PEDESTRIAN FACILITY, THE MINIMUM HEIGHT TO BOTTOM OF THE SIGN OR SIGN ASSEMBLY SHALL BE 7'.

② 6' - 12' FROM EDGE OF ROADWAY, MUST BE A MINIMUM OF 6' FROM EDGE OF PAVED SHOULDER (WHEN PRESENT).

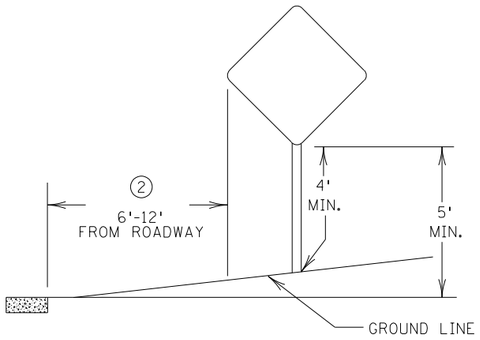
③ IF GROUND MOUNTED TEMPORARY SIGN OR SIGN ASSEMBLY IS PLACED ON 2-1/2" SQUARE TUBE RISER POST(S), THE MINIMUM CLEARANCE FROM THE GROUND LINE TO THE BOTTOM OF THE LOWEST SIGN ON THE ASSEMBLY SHALL BE 7', OR AS SHOWN IN DETAIL, WHICHEVER IS GREATER.

④ 5' MINIMUM IN RURAL. 7' MINIMUM IN BUSINESS, COMMERCIAL, OR RESIDENTIAL AREAS.

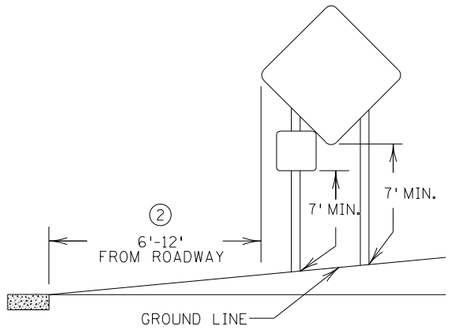
⑤ WHEN MULTIPLE GROUND MOUNTED SIGN STRUCTURES ARE PLACED ADJACENT TO EACH OTHER THERE SHOULD BE NO MORE THAN 2 POSTS WITHIN 84" OF EACH OTHER. WHEN THIS SPACING CAN NOT BE MAINTAINED, THEN SIGN STRUCTURES SHALL BE OFFSET, AND STAGGERED WITH A MINIMUM OF 4' BETWEEN SIGN STRUCTURES BOTH LATERALLY AND LONGITUDINALLY. EXAMPLE SHOWS DETOUR SIGNAGE, BUT THIS REQUIREMENT APPLIES TO ALL SIGNAGE.

⑥ INPLACE AND/OR OTHER CONSTRUCTION SIGNING.

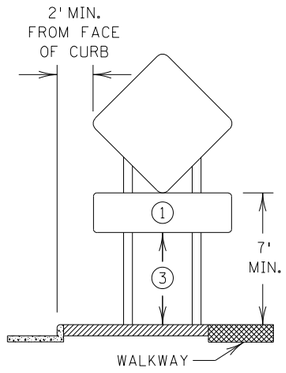
NOT TO SCALE



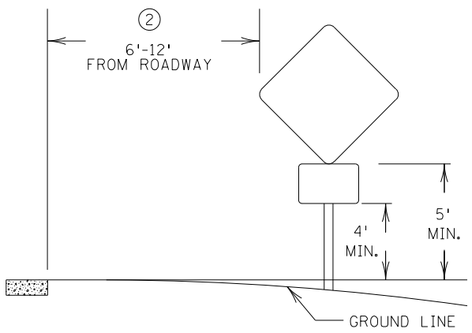
TYPICAL RURAL DESIGN
AND 2" RISER POST



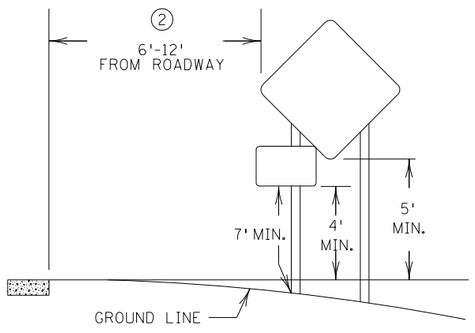
TYPICAL RURAL DESIGN WITH SUPPLEMENTAL
PLAQUE AND 2-1/2" RISER POST



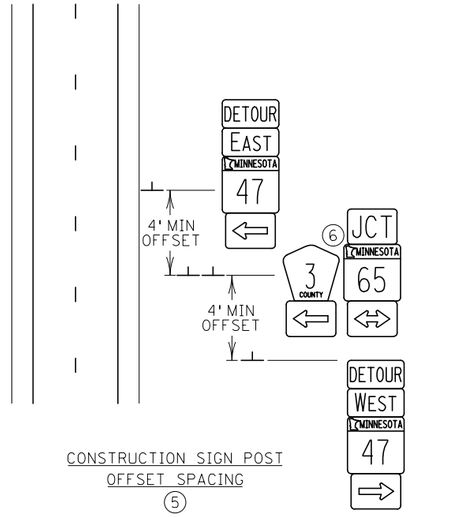
BUSINESS,COMMERCIAL,
OR RESIDENTIAL AREA



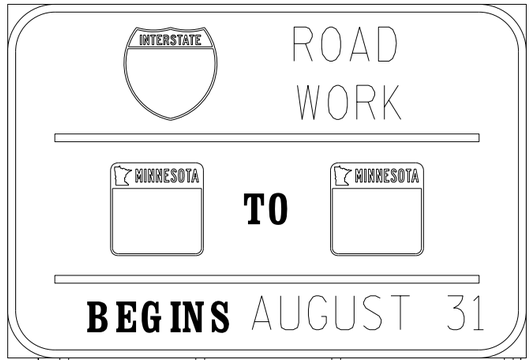
TYPICAL RURAL DESIGN WITH SUPPLEMENTAL
PLAQUE AND 2" RISER POST



TYPICAL RURAL DESIGN
2-1/2" RISER POST



CONSTRUCTION SIGN POST
OFFSET SPACING
⑤



TYPICAL G20-X2 DESIGN

PUBLISHED BY OTE 03/15/2021 | MODIFIED BY | TEMPORARY SQUARE TUBE GROUND MOUNTED SIGN PLACEMENT

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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.
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ANOKA COUNTY
HIGHWAY DEPT.

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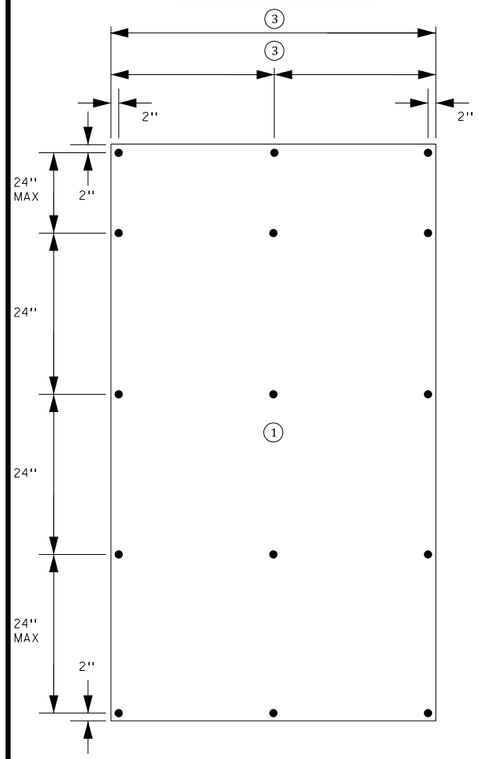
CSAH 116 (BUNKER LAKE BLVD)
SIGNAL MODIFICATION
& ADA IMPROVEMENTS

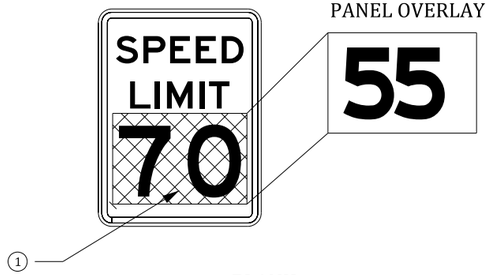
Sheet 165 of 174 Sheets

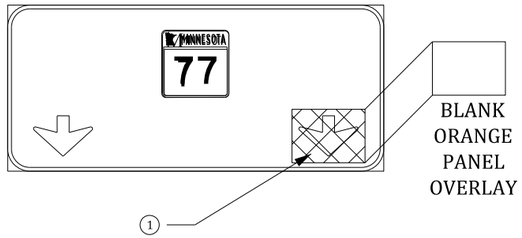
FASTENER SPACING DETAIL
HORIZONTAL PLACEMENT



R2-1

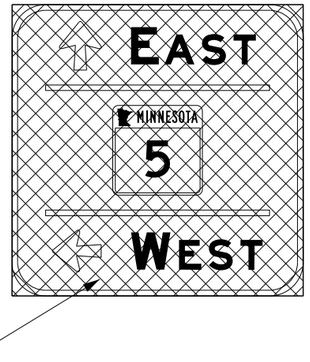
BLACK ON WHITE
PANEL OVERLAY



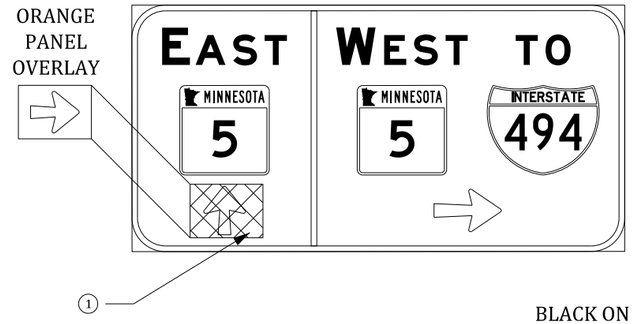


BLANK
ORANGE
PANEL
OVERLAY

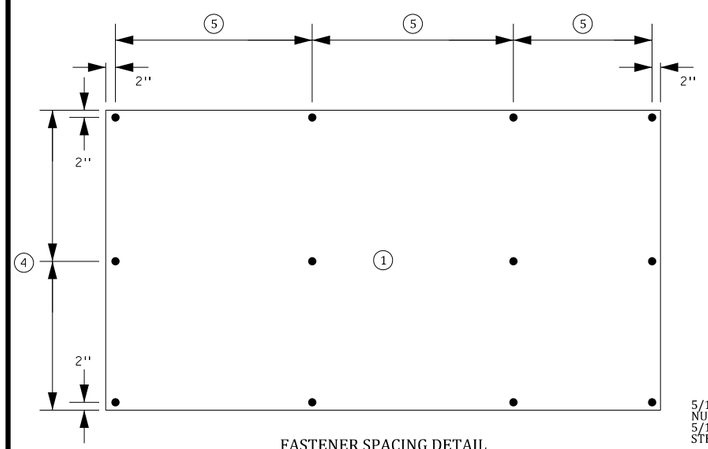
BLANK
NON-REFLECTIVE
GREEN
COVER



BLACK ON
ORANGE
PANEL
OVERLAY

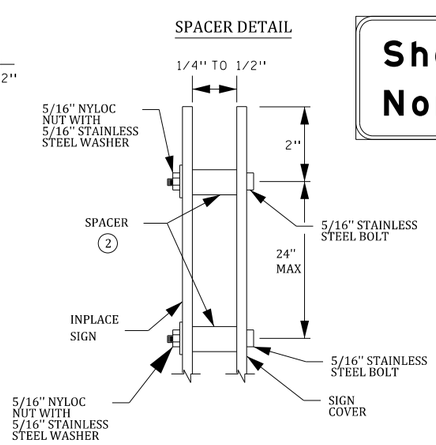


BLACK ON
ORANGE
PANEL
OVERLAY



FASTENER SPACING DETAIL
VERTICAL PLACEMENT

SPACER DETAIL



GENERAL NOTES:

1. SIGN COVERS ARE USED TO COVER THE ENTIRE PANEL OF A INPLACE SIGN. THE COVER SHALL BE BLANK, GREEN IN COLOR, AND MADE OF A RIGID NON-REFLECTIVE MATERIAL (SHEET ALUMINUM, PLYWOOD, CORRUGATED PLASTIC). OTHER MATERIALS MAY BE USED AS APPROVED BY THE ENGINEER.
2. SIGN PANEL OVERLAYS ARE USED TO MODIFY THE MESSAGE OF AN INPLACE SIGN PANEL. THE PANEL OVERLAY SHALL BE MADE OF SHEET ALUMINUM WITH THE APPROPRIATE SHEETING MATERIAL AS SPECIFIED ON THE MNDOT SHEETING FOR RIGID TEMPORARY WORK ZONE SIGNS APL. THE MESSAGE SHALL FOLLOW THE REQUIREMENTS OF THE "MNDOT STANDARD SIGNS AND MARKINGS MANUAL" OR THE "FHWA STANDARD HIGHWAY SIGNS MANUAL" (AND SUPPLEMENTS). THE SIGN PANEL OVERLAY SHALL BE RECTANGULAR IN SHAPE AND FULLY COVER THE MESSAGE ELEMENT(S) BEING MODIFIED.

   SIGN PANEL OVERLAY WITH A MESSAGE SHALL BE BLACK ON FLUORESCENT ORANGE ON ALL SIGNS EXCEPT FOR REGULATORY SIGNS WHICH SHALL BE THE PROPER COLOR ON A WHITE BACKGROUND.

   BLANK SIGN PANEL OVERLAYS SHALL BE FLUORESCENT ORANGE ON ALL SIGNS.

   DO NOT COVER OR MODIFY THE "STOP" (R1-1), "YIELD" (R1-2), OR THE (W14-3) NO PASSING ZONE SIGNS. THESE SIGNS SHALL BE REMOVED IF THEY NO LONGER APPLY OR CONFLICT WITH WORK ZONE SIGNING.
3. MINIMIZE DAMAGE TO THE INPLACE SIGN PANEL. DO NOT APPLY TAPE TO THE INPLACE SIGN SHEETING.
4. SPACERS (SUCH AS PLASTIC OR RUBBER) SHALL BE A MATERIAL THAT WILL NOT HARM THE INPLACE SIGN SHEETING FACE.
5. ATTACH SIGN COVER PANEL OR PANEL OVERLAY USING HARDWARE SHOWN IN THE SPACER DETAIL.
6. IF SHEET METAL SCREWS ARE USED TO PLACE CORRUGATED PLASTIC AS A SIGN COVER PANEL, PLACE FENDER WASHERS BETWEEN THE SCREW HEADS AND THE CORRUGATED PLASTIC.
7. REMOVE ALL COVERING MATERIAL, MOUNTING HARDWARE, AND FASTENERS WHEN SIGN COVER PANEL OR PANEL OVERLAY IS REMOVED.
8. NO HANDLE OR OTHER LIFTING DEVICE SHALL BE LEFT ATTACHED TO ANY SIGN COVER PANEL AFTER PLACEMENT.

SPECIFIC NOTES:

(1) THE SIGN COVER OR PANEL OVERLY SHALL FULLY COVER THE MESSAGE BEING COVERED OR MODIFIED.

(2) PLACE SIGN COVER AND PANEL OVERLAYS WITH SPACERS THAT PROVIDE A SPACING OF 1/4 IN TO 1/2 IN BETWEEN THE COVER MATERIAL AND THE INPLACE SIGN. THE SPACERS SHALL HAVE AN OUTSIDE DIAMETER BETWEEN 3/8 IN TO 7/8 IN. EACH FASTENER REQUIRES A SPACER.

(3) IF THE SIGN COVER OR PANEL OVERLAY IS GREATER THAN 48 IN WIDE, THE FASTENER SPACING SHALL BE NO GREATER THAN 24 IN. IF THE SIGN COVER OR PANEL OVERLAY IS LESS THAN 24 IN WIDE, DO NOT PLACE A CENTER FASTENER (UNLESS REQUIRED BY SPECIFIC NOTE (4)).

(4) VERTICAL SPACING FOR FASTENERS IS 50% OF THE SIGN COVER OR PANEL OVERLAY. IF THE SIGN COVER OR PANEL OVERLAY IS LESS THAN 24 IN HIGH, DO NOT PLACE A CENTER FASTENER (UNLESS REQUIRED PER SPECIFIC NOTE (5)).

(5) HORIZONTAL SPACING FOR FASTENERS SHALL NOT BE LESS THAN 15 IN OR MORE THAN 24 IN.

ASSEMBLY NOTES:

1. DRILL 11/32 IN HOLES ON THE SIGN COVER OR PANEL OVERLAY IN ACCORDANCE WITHHELD FASTENER SPACING DETAILS.
2. ATTACH PLASTIC SPACERS TO SIGN COVER OR PANEL OVERLAY WITH DOUBLE FACED TAPE. CENTERED BEHIND EACH DRILLED HOLE.
3. POSITION THE COVER OR OVERLAY MATERIAL OVER THE SIGN OR MESSAGE TO BE MODIFIED.
4. DRILL ALL THE OUTSIDE HOLES THROUGH THE INPLACE SIGN PANEL AND ATTACH THE COVER OR OVERLAY MATERIAL WITH APPROPRIATE FASTENERS.
5. DRILL ALL THE INNER HOLES THROUGH THE INPLACE SIGN PANEL AND ATTACH WITH APPROPRIATE FASTENERS.

PUBLISHED BY OTE 08/17/2023

MODIFIED BY

TEMPORARY SIGN COVERING AND MODIFICATION DETAIL

NO	DATE	BY	CKD	APPR	REVISION

NAME: ..\Projects\2023\1230174\DESIGN\Plan Sheet Design\cd1230174_tc_dd08.dgn 11/26/2024 3:08:15 PM

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PRINT NAME: EMMA JULKOWSKI

SIGNATURE: Emma Julkowski

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

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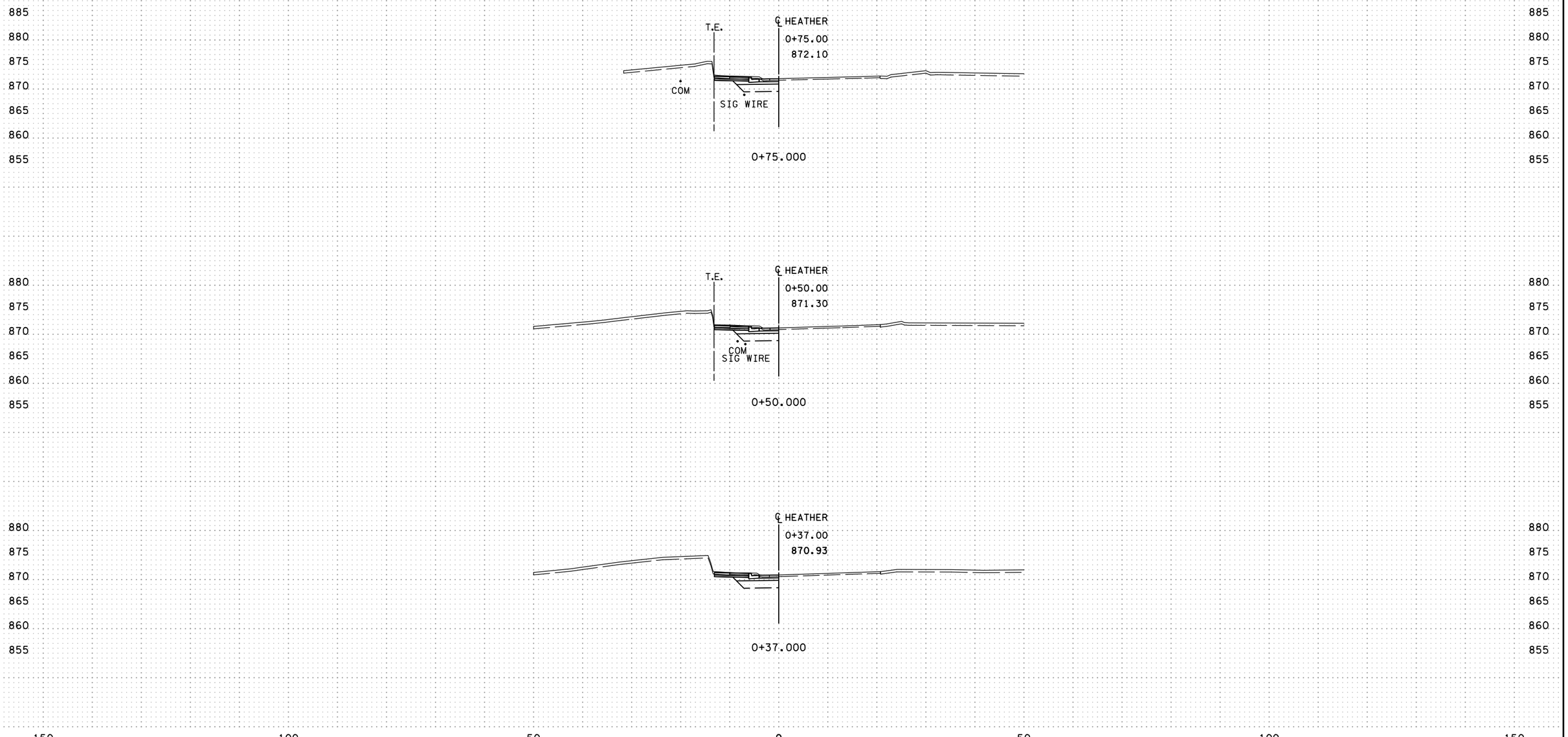
GENERAL CROSS SECTION NOTES:

A. ALL UTILITIES SHOWN ON THE CROSS SECTIONS ARE INPLACE.

B. UTILITY ELEVATIONS AND LOCATIONS ARE APPROXIMATE.

C. SOME UTILITIES MAY HAVE BEEN REMOVED OR ABANDONED. SOME NEW UTILITIES MAY HAVE BEEN RECENTLY CONSTRUCTED AND MAY NOT BE SHOWN.

D. FOR ADDITIONAL SLOPE, SEE TYPICAL SECTIONS.



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HEATHER ST
STA. +37.000 - +75.000

SAP 002-716-024/SAP 198-020-040

SHEET NO. 167 OF 174 SHEETS

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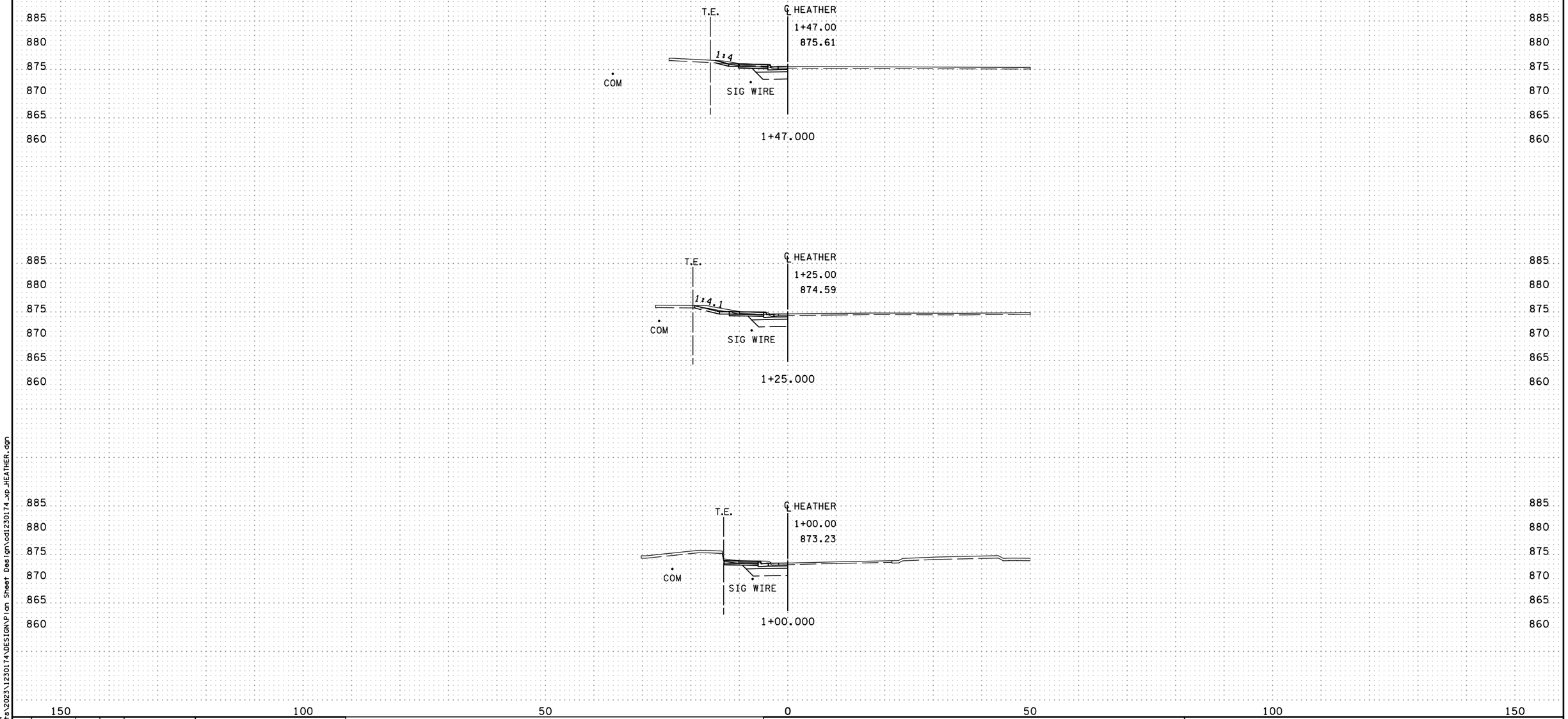

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ANOKA COUNTY
HIGHWAY DEPT.

HEATHER ST
STA. 1+00.000 - 1+47.000

SAP 002-716-024/SAP 198-020-040

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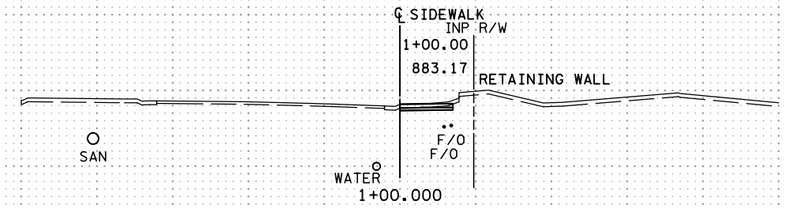

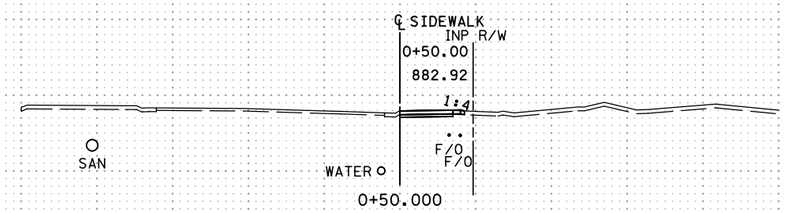

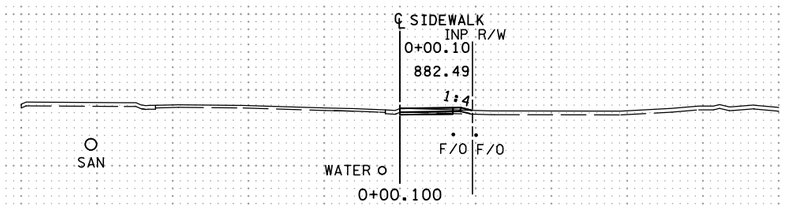

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NO	DATE	DWN	CKD	REVISIONS

ANOKA COUNTY
HIGHWAY DEPT.

SIDEWALK - YUKON ST AND CROSSTOWN BLVD
STA. +00.100 - 1+00.000

SAP 002-716-024/SAP 198-020-040

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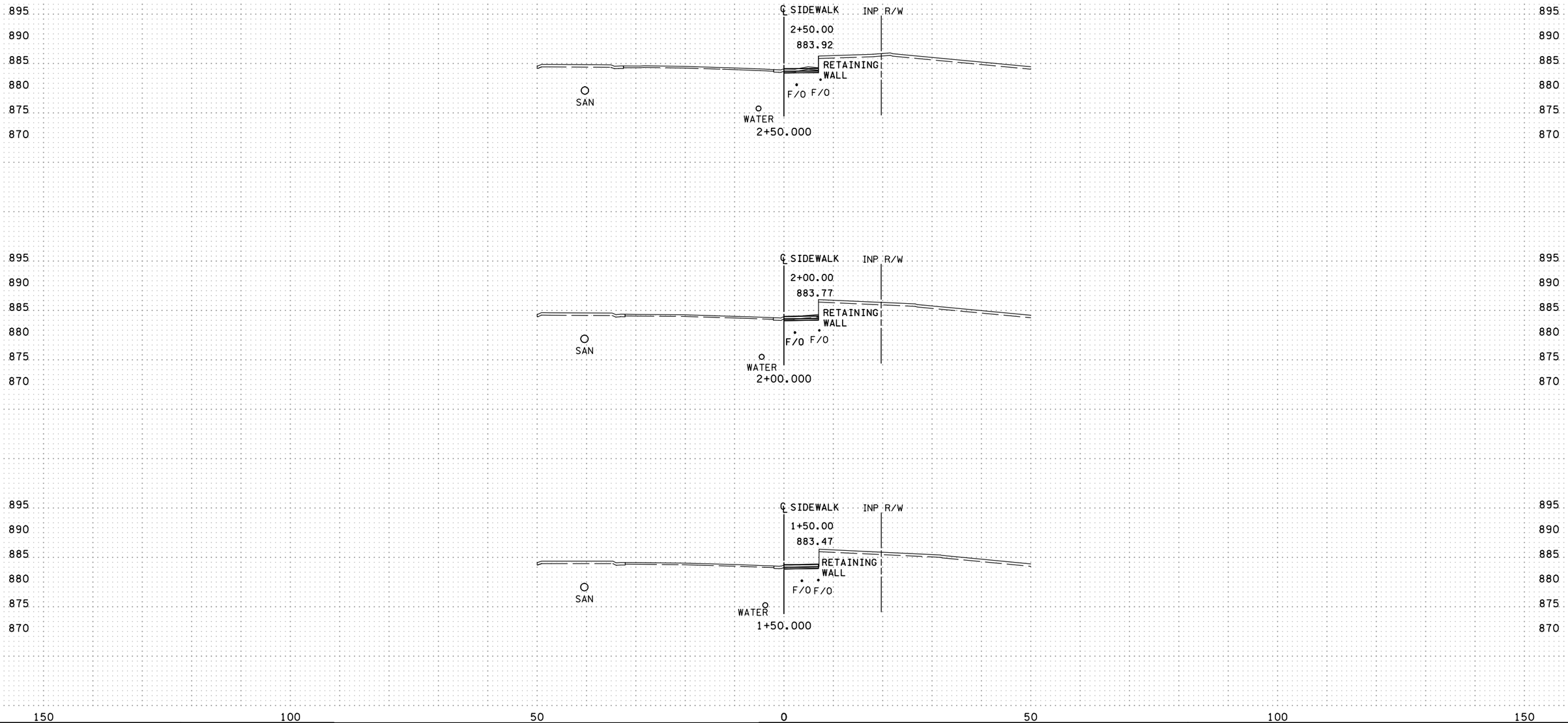

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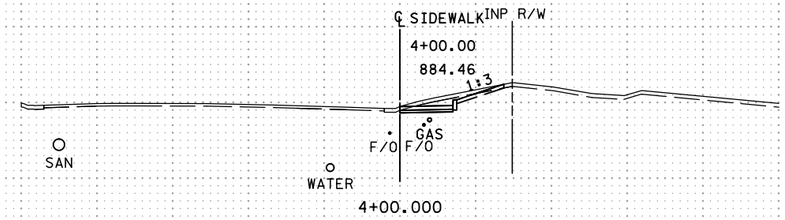
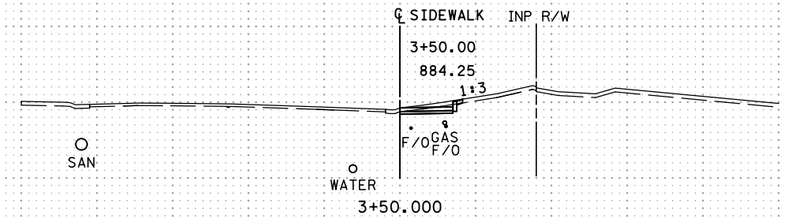
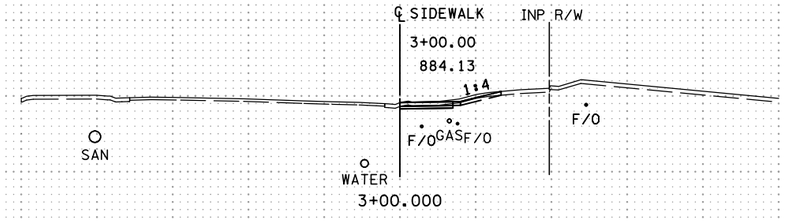
SIDEWALK - YUKON ST AND CROSSTOWN BLVD
STA. 1+50.000 - 2+50.000

SAP 002-716-024/SAP 198-020-040

SHEET NO. 170 OF 174 SHEETS







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STA. 3+00.000 - 4+00.000

SAP 002-716-024/SAP 198-020-040

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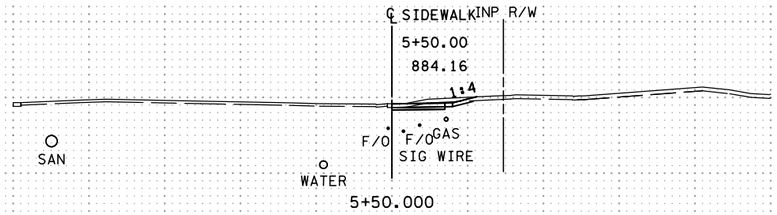

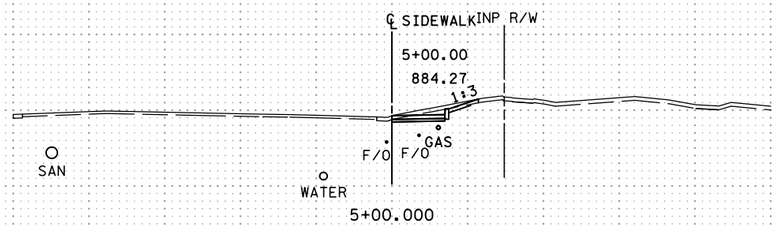

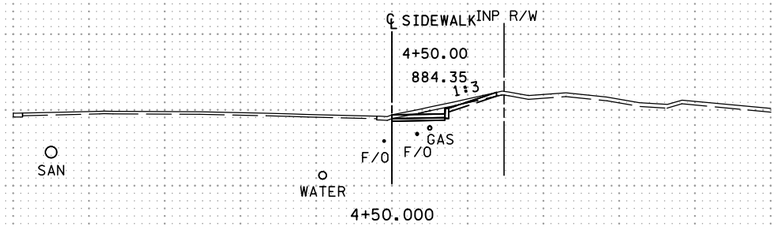

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ANOKA COUNTY
HIGHWAY DEPT.

SIDEWALK - YUKON ST AND CROSSTOWN BLVD
STA. 4+50.000 - 5+50.000

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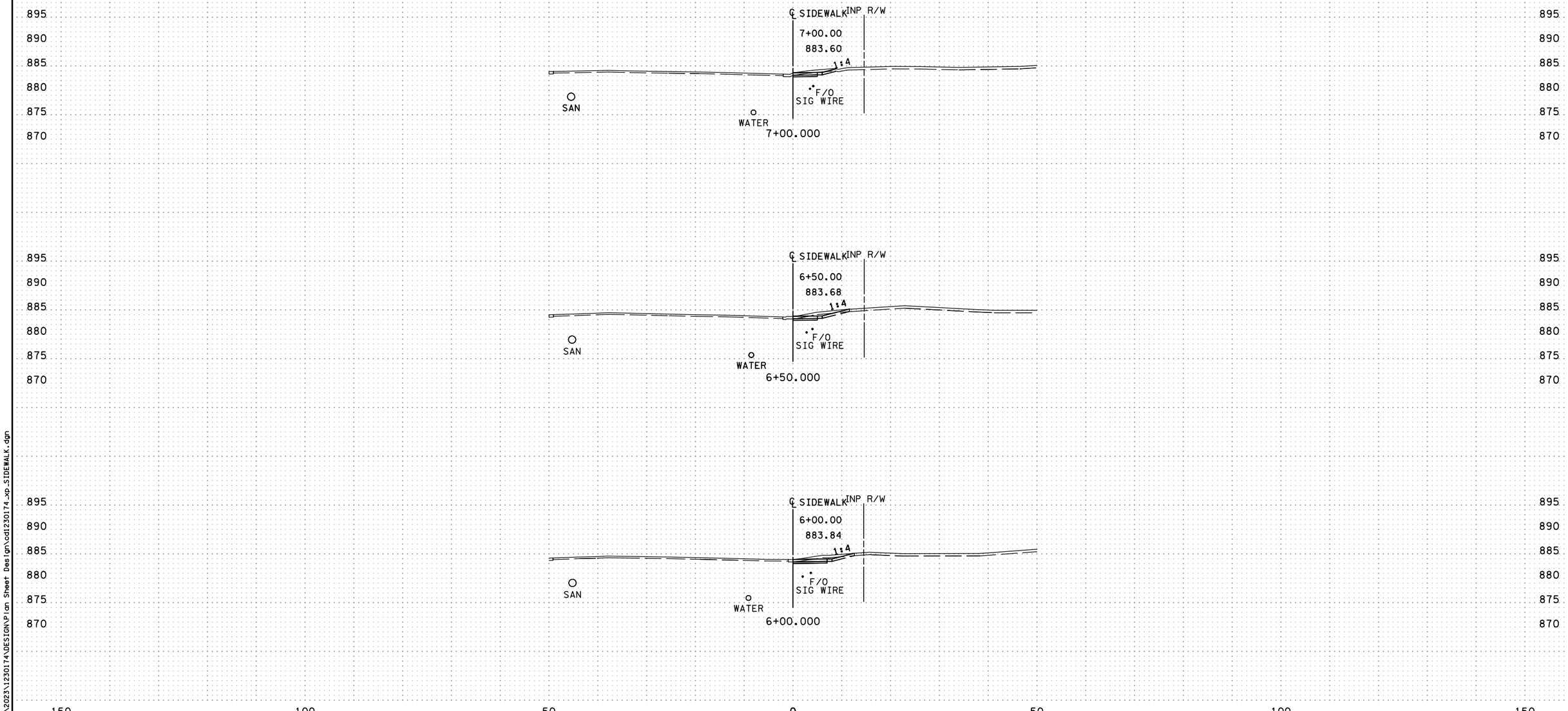

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STA. 6+00.000 - 7+00.000

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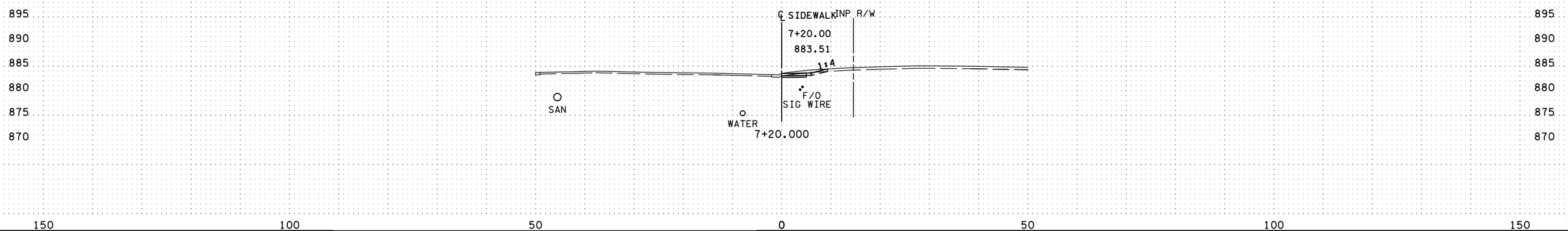

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