

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 EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	GENERAL LAYOUT
3	STATEMENT OF ESTIMATED QUANTITIES & TAB INDEX
4 - 5	TABULATIONS
6 - 7	TYPICAL SECTIONS
8	ALIGNMENT PLAN AND TABULATIONS
9 - 10	INPLACE TOPOGRAPHY & REMOVAL PLAN
11 - 12	CONSTRUCTION PLAN
13 - 14	EXISTING SIGN REMOVALS
15	PERMANENT PAVEMENT MARKING PLAN DETAILS
16 - 19	PERMANENT SIGNING & STRIPING
20 - 23	SIGNING & STRIPING DETAILS
24 - 30	CROSS SECTIONS

THIS PLAN CONTAINS 30 SHEETS

MINNESOTA DEPARTMENT OF TRANSPORTATION ANOKA COUNTY

CONSTRUCTION PLAN FOR GRADING, AGGREGATE BASE, BITUMINOUS SURFACING, CURB AND GUTTER, AND STORM SEWER

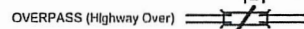
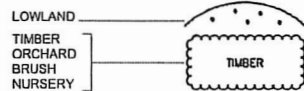
LOCATED ON CSAH 116 BETWEEN CROSTOWN DR NW AND CSAH 78 (HANSON BLVD NW)

STATE AID PROJ. NO. 002-716-023
CSAH 116

GROSS LENGTH	6,962.22	FEET	1.319	MILES
BRIDGES-LENGTH	0.00	FEET	0.000	MILES
EXCEPTIONS-LENGTH	0.00	FEET	0.000	MILES
NET LENGTH	6,962.22	FEET	1.319	MILES

PLAN SYMBOLS

- COUNTY LINE
- TOWNSHIP OR RANGE LINE
- SECTION LINE
- QUARTER LINE
- SIXTEENTH LINE
- RIGHT OF WAY LINE
- SLOPE EASEMENT
- EXISTING RIGHT OF WAY
- PROPERTY LINE
- CORPORATE OR CITY LIMITS
- RETAINING WALL
- RAILROAD
- RAILROAD RIGHT OF WAY
- RIVER OR CREEK
- DRAINAGE DITCH
- CULVERT
- DROP INLET
- GUARD RAIL
- BARBED WIRE FENCE
- WOVEN WIRE FENCE
- CHAIN LINK FENCE
- WOOD FENCE
- STONE WALL OR FENCE
- HEDGE

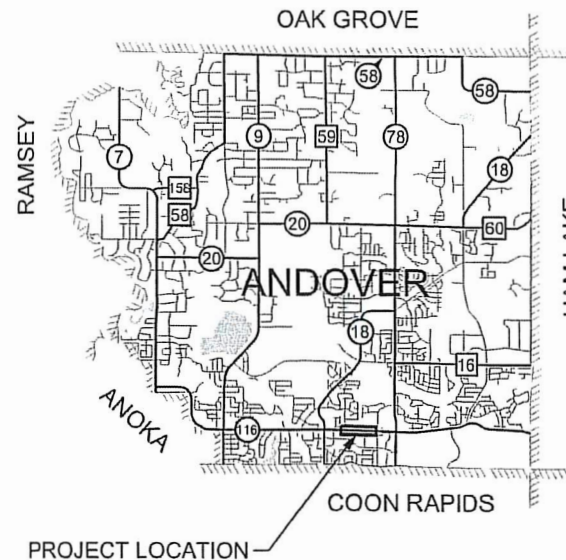
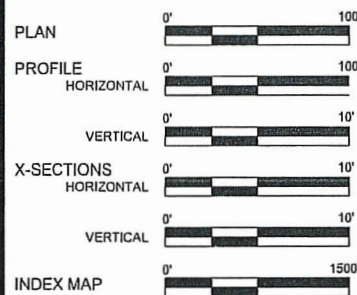


- RAILROAD CROSSING BELL
- RAILROAD CROSSING GATE
- MANHOLE
- CATCH BASIN
- FIRE HYDRANT
- CAST IRON MONUMENT
- IRON PIN
- GRAVEL PIT
- SAND PIT
- BORROW PIT
- ROCK QUARRY

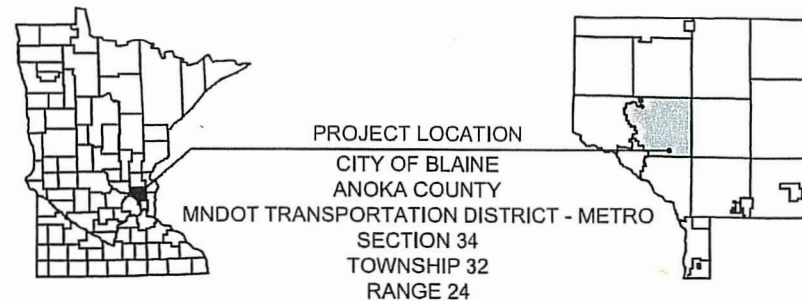
UTILITY SYMBOLS

- POWER POLE LINE
- TELEPHONE OR TELEGRAPH POLE LINE
- JOINT TELEPHONE & POWER ON POWER POLES
- ON TELEPHONE POLES
- ANCHOR
- STEEL TOWER
- STREET LIGHT
- PEDESTAL (Cable Terminal)
- GAS MAIN
- WATERMAIN
- TELEPHONE CABLE IN CONDUIT
- ELECTRIC CABLE IN CONDUIT
- TELEPHONE MANHOLE
- ELECTRIC MANHOLE
- BURIED TELEPHONE CABLE
- BURIED ELECTRIC CABLE
- OVERHEAD UTILITY CABLE
- SEWER (Sanitary or Storm)
- SEWER MANHOLE

SCALES

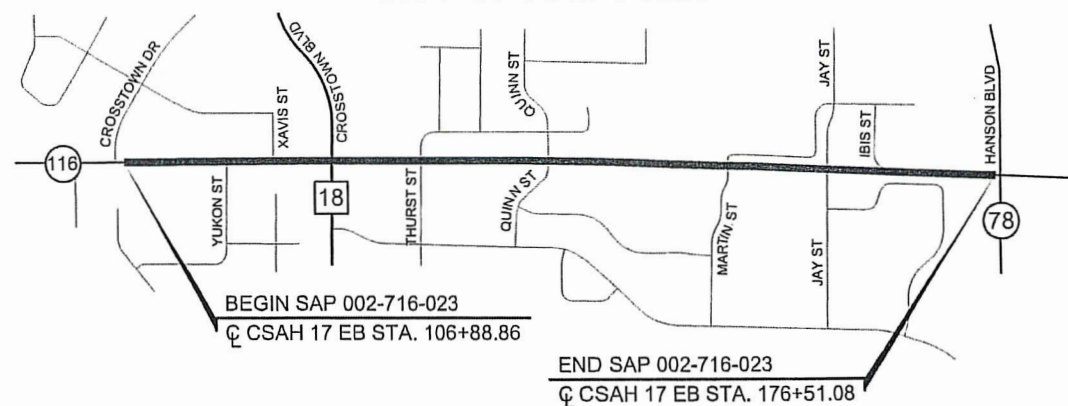


PROJECT LOCATION



PROJECT LOCATION
CITY OF BLAINE
ANOKA COUNTY
MNDOT TRANSPORTATION DISTRICT - METRO
SECTION 34
TOWNSHIP 32
RANGE 24

CITY OF ANDOVER



BEGIN SAP 002-716-023
CSAH 17 EB STA. 106+88.86

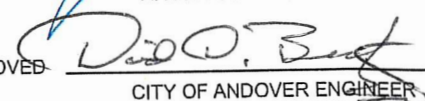
END SAP 002-716-023
CSAH 17 EB STA. 176+51.08



DESIGN DESIGNATION (CSAH 116)

ESAL ₂₀	3,334,000	FUNCTIONAL CLASSIFICATION	A-MINOR RELIEVER
R VALUE	65	NO. OF TRAFFIC LANES	4
ADT (2022)	17,530	DESIGN SPEED	55 MPH
PROJ. ADT (2042)	21,660	BASED ON STOPPING SIGHT DISTANCE:	
PROJ. HCADT (2042)	1,624	HEIGHT OF EYE	3.5'
SOIL FACTOR	N/A	DESIGN SPEED NOT ACHIEVED AT:	
	10 TON DESIGN	STA. _____ TO STA. _____	MPH _____

APPROVED  ANOKA COUNTY ENGINEER DATE 4-14-22

APPROVED  CITY OF ANDOVER ENGINEER DATE 4-14/22

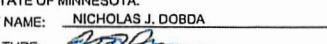
 For DATE 4/19/2022

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

 For DATE 4/19/2022

STATE AID ENGINEER: APPROVED FOR STATE AID FUNDING DATE

NO	DATE	BY	CHKD	APPR	REVISION
1	04/05/2022	BTU	NJD	NJD	UPDATED PROJECT LENGTH AND LOCATION

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: NICHOLAS J. DOBDA
SIGNATURE: 
DATE: 4/16/22 LICENSE NO. 49046

DRAWN BY BTU DATE 03/17/22
DESIGN BY BTU DATE 03/17/22
CHECKED BY NJD DATE 03/17/22


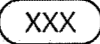



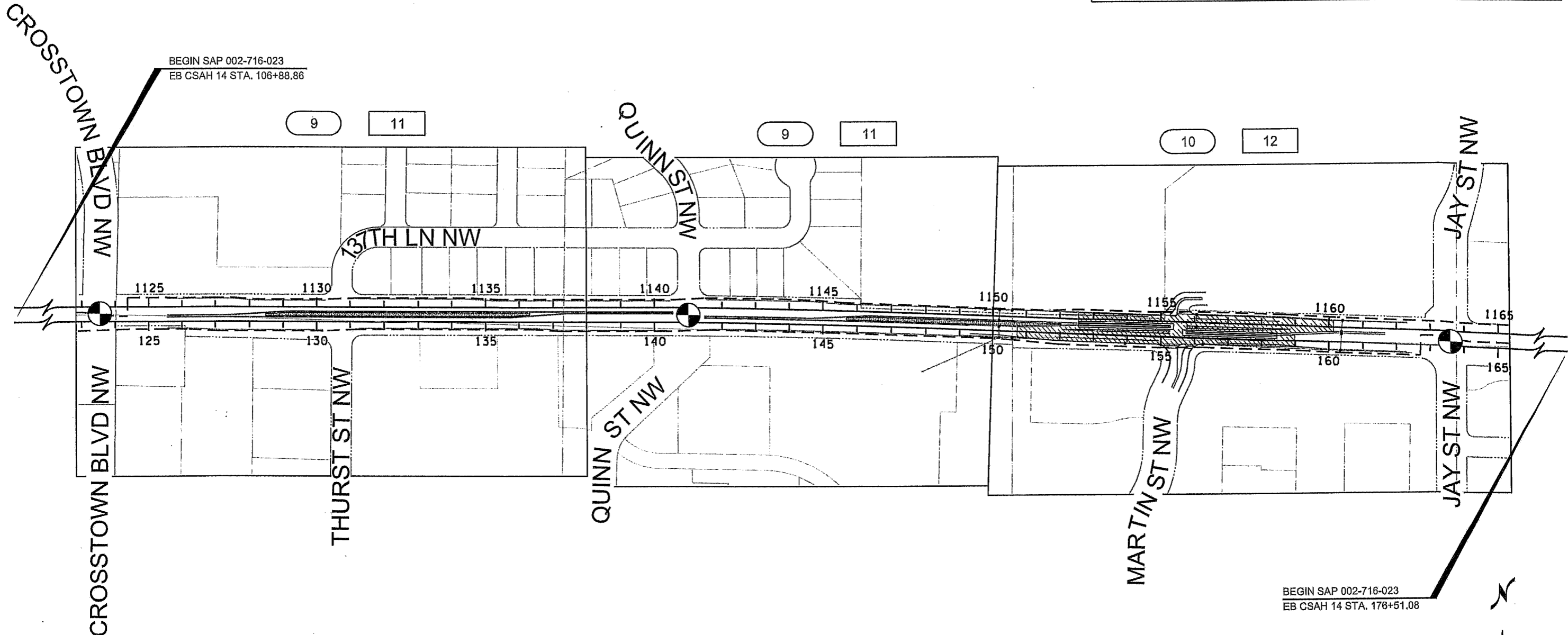
ANOKA COUNTY
HIGHWAY DEPT.

SAP 002-716-023

TITLE SHEET

Sheet 1 of 30 Sheets

LEGEND	
	SIGNAL SYSTEM
	INPLACE TOPOGRAPHY AND REMOVAL PLAN SHEET NUMBER
	CONSTRUCTION PLAN SHEET NUMBER



BEGIN SAP 002-716-023
EB CSAH 14 STA. 106+88.86

BEGIN SAP 002-716-023
EB CSAH 14 STA. 176+51.08



NO	DATE	BY	CHKD	APPR	REVISION
1	04/04/2022	BTU	NJD	NJD	ADJUSTED LEADERS, CONSTRUCTION LIMITS, & PROJECT EXTENTS
NAME: P:\22-01-001CSAH_116_(BUNKER_AT_MARTIN)\Plan\002-716-023_GL.dgn 04/05/2022 11:07:16 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: NICHOLAS J. DOBDA
 SIGNATURE: *N. Dobda*
 DATE: 4/6/22 LICENSE NO. 49046

DRAWN BY BTU DATE 03/17/22
 DESIGN BY BTU DATE 03/17/22
 CHECKED BY NJD DATE 03/17/22



**ANOKA COUNTY
HIGHWAY DEPT.**

SAP 002-716-023

GENERAL LAYOUT
 Sheet 2 of 30 Sheets

002-716-023						
STATEMENT OF ESTIMATED QUANTITIES						
TAB / NOTE	ITEM NUMBER	ITEM DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITIES	ANOKA COUNTY 002-716-023 ROADWAY QUANTITIES ESTIMATED	CITY OF ANDOVER ROADWAY QUANTITIES ESTIMATED
	2021.501	MOBILIZATION	LUMP SUM	1	1	
D	2104.502	REMOVE CASTING	EACH	2	2	
D	2104.502	REMOVE DRAINAGE STRUCTURE	EACH	2	2	
E	2104.502	REMOVE SIGN TYPE C	EACH	12	12	
A	2104.503	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LIN FT	12	12	
A	2104.503	SAWING BIT PAVEMENT (FULL DEPTH)	LIN FT	1182	1182	
A	2104.503	REMOVE CURB AND GUTTER	LIN FT	1069	1069	
A	2104.504	REMOVE BITUMINOUS PAVEMENT	SQ YD	706	706	
A	2104.518	REMOVE CONCRETE MEDIAN	SQ FT	2140	2140	
B	2105.607	COMMON EXCAVATION	CU YD	522		522
C, B	2211.509	AGGREGATE BASE CLASS 5	TON	572	255	317
A	2232.504	MILL BITUMINOUS SURFACE (2.0")	SQ YD	6326	6326	
C	2357.506	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	383	383	
C	2360.509	TYPE SP 12.5 WEARING COURSE MIX (4,B)	TON	804	804	
C	2360.509	TYPE SP 12.5 BIT MIXTURE FOR PATCHING	TON	192	192	
D	2503.503	15" RC PIPE SEWER CLASS V	LIN FT	5	5	
D	2503.602	CONNECT TO EXISTING STORM SEWER	EACH	2	2	
D	2506.502	CASTING ASSEMBLY	EACH	2	2	
D	2506.503	CONST. DRAINAGE STRUCTURE DESIGN G OR H	LIN FT	5	4.8	
D	2506.503	CONST. DRAINAGE STRUCTURE DESIGN 48-4020	LIN FT	5	5.4	
B, [1]	2521.518	4" CONCRETE WALK	SQ FT	14095		14095
B, [1]	2521.518	4" CONCRETE WALK SPECIAL	SQ FT	2323	2323	
B, [1]	2521.518	6" CONCRETE WALK	SQ FT	40	40	
B	2531.503	CONCRETE CURB & GUTTER DESIGN B412 (MOD)	LIN FT	1068	1068	
	2563.601	TRAFFIC CONTROL	LUMP SUM	1	1	
G	2564.518	SIGN PANELS TYPE C	SQ FT	80	80	
	2573.502	STORM DRAIN INLET PROTECTION	EACH	28	16	12
F	2582.503	4" SOLID LINE MULTI COMP	LIN FT	1513	1513	
F	2582.503	8" SOLID LINE MUTLI-COMPONENT	LIN FT	1986	1986	
F	2582.503	4" BROKEN LINE MULTI COMP	LIN FT	1710	1710	
F, [2]	2582.603	PAVEMENT MARKING SPECIAL	LIN FT	216	216	


INDEX OF TABULATION CHARTS		
TAB.	DESCRIPTION	SHEET NO.
AA	EARTHWORK SUMMARY & TABULATIONS	2
A	REMOVALS, SAWING, AND MILLING	3
B	CONCRETE	3
C	AGGREGATE AND BITUMINOUS SUMMARY	3
D	STORM SEWER	4
E	EXISTING SIGN REMOVALS	14
F	PAVEMENT MARKING TABULATION	15
G	F & I SIGN PANELS	19

BASIS OF QUANTITIES		
SPEC NO	DESCRIPTION	RATE
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	0.05 GAL / SQ YD / LIFT
2211.000	AGGREGATE BASE CLASS 5	1.8 TONS / CU YD
2360.501	TYPE SP12.5 WEARING COURSE MIXTURE	115 LBS / SQ YD / IN
2360.502	TYPE SP12.5 NON-WEARING COURSE MIXTURE	115 LBS / SQ YD / IN

THE FOLLOWING STANDARD PLATES APPROVED BY THE DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION SHALL APPLY ON THIS PROJECT.

STANDARD PLATES	
PLATE NO.	DESCRIPTION
3000L	REINFORCED CONCRETE PIPE (5 SHEETS)
3006G	GASKET JOINT FOR R.C. PIPE (2 SHEETS)
3007E	SHEAR REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES
4020J	MANHOLE OR CATCH BASIN (FOR USE WITH OR WITHOUT TRAFFIC LOADS) (2 SHEETS)
4026A	CONCRETE ENCASED CONCRETE ADJUSTING RINGS
4134A	CURB BOX CASTING FOR CATCH BASIN (FOR DESIGN B CURBS)- CASTING NO. 825
4154B	CATCH BASIN GRATE CASTING - CASTING NO. 816
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 TYPE A, B, AND C (3 SHEETS)

GENERAL NOTES:
 [1] CONCRETE NOSE DESIGN PAID FOR AS 6" CONCRETE WALK. CONCRETE MEDIAN PAID FOR AS 4" CONCRETE WALK. COLORED, STAMPED CONCRETE MEDIAN PAID FOR AS 4" CONCRETE WALK SPECIAL.
 [2] 24" SOLID WHITE LINE - PREFORM THERMOPLASTIC

1	04/04/2022	BTU	NJD	NJD	ADDED STANDARD PLATES; UPDATED SEQ	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: NICHOLAS J. DOBDA SIGNATURE: <i>[Signature]</i> DATE: 5/11/22 LICENSE NO. 49046	DRAWN BY BTU DATE 03/17/22 DESIGN BY BTU DATE 03/17/22 CHECKED BY NJD DATE 03/17/22	 ANOKA COUNTY HIGHWAY DEPT.	SAP 002-716-023	STATEMENT OF ESTIMATED QUANTITIES & TAB INDEX
2	05/05/2022	BTU	NJD	NJD	UPDATED SEQ					
NO	DATE	BY	CKD	APPR	REVISION					

NAME: P:\22-01-00\CSAH_116_(BUNKER_AT_MARTIN)\Plan\002-716-023_TAB.dgn 05/05/2022 10:42:25 AM

Sheet 3 of 30 Sheets

REMOVALS, SAWING, AND MILLING									A	
ALIGNMENT	LOCATION		REMOVE SPEC. 2104			SAWING SPEC. 2104		EXCAVATION SPEC. 2105	MILLING SPEC. 2232	NOTES
			BITUMINOUS PAVEMENT	CONCRETE MEDIAN	CONC. CURB & GUTTER	BITUMINOUS PAVEMENT	CONCRETE PAVEMENT	COMMON EXCAVATION	MILL BITUMINOUS SURFACE (2.0")	
			(SQ YD)	(SQ FT)	(LIN FT)	(LIN FT)	(LIN FT)	(SQ YD)	(SQ YD)	
<116E_3>	128+49.87	- 136+31.20						295		[2]
<116E_3>	145+68.20	- 150+73.45						195		[2]
<116E_3>	150+73.45	- 154+49.55	125	1049	267	287	6	32	2262	[1] [2]
<116E_3>	154+49.55	- 157+45.78	249	1091	268	307	6		1018	[1]
<116W_3>	1151+55.40	- 1154+50.82	238		267	304			808	
<116W_3>	1154+50.82	- 1157+46.33	94		267	284			2238	
PROJECT TOTAL			706	2140	1069	1182	12	522	6326	

REMOVALS NOTES:

- [1] CONCRETE APPROACH NOSE REMOVAL PAID AS CONCRETE MEDIAN REMOVAL
- [1] REMOVAL OF IRRIGATION AND PLUMBING IN LANDSCAPED MEDIAN CONSIDERED INCIDENTAL TO COMMON EXCAVATION

CONCRETE								B	
ALIGNMENT	LOCATION		OFFSET	SPEC. 2531	SPEC. 2521			SPEC. 2211	NOTES
				CONCRETE CURB AND GUTTER DESIGN B418 (MODIFIED) (LIN FT)	4" CONCRETE WALK (SQ FT)	4" CONCRETE WALK SPECIAL (SQ FT)	6" CONCRETE WALK (SQ FT)	AGGREGATE BASE CLASS 5 (4.0") (TON)	
<116E_3>	128+49.87	- 136+31.20			7975			179	[1]
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<116E_3>	152+54.51	- 154+49.55	27 LT - 29 LT	267		1234	20	28	[1] [2] [3]
<116E_3>	154+49.55	- 157+45.78	13 LT - 15 LT	267		1089	20	25	[2] [3]
<116W_3>	1151+55.40	- 1154+50.82	14 RT - 13 RT	267					
<116W_3>	1154+50.82	- 1157+46.33	30 RT - 27 RT	267					
PROJECT TOTAL				1068	14095	2323	40	370	

CONCRETE NOTES:

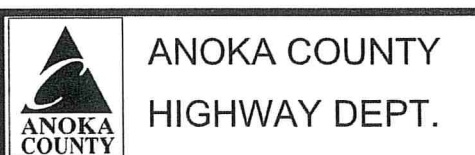
- [1] CONCRETE MEDIAN PAID FOR AS 4" CONCRETE WALK
- [2] COLORED, STAMPED CONCRETE MEDIAN PAID FOR AS 4" CONCRETE WALK SPECIAL
- [3] CONCRETE APPROACH NOSE PAID FOR AS 6" CONCRETE WALK

AGGREGATE AND BITUMINOUS SUMMARY						C	
ALIGNMENT	LOCATION		SPEC. 2211	SPEC. 2357	SPEC. 2360		NOTES
			AGGREGATE BASE CLASS 5 (TON)	BITUMINOUS MATERIAL FOR TACK COAT (GALLON)	TYPE SP 12.5 BIT MIXTURE FOR PATCHING (TON)	TYPE SP 12.5 WEARING COURSE MIX (4.B) (TON)	
<116E_3>	150+73.45	- 154+49.55	47	129	45	278	
<116E_3>	154+49.55	- 157+45.78	56	69	53	138	
<116W_3>	1151+55.40	- 1154+50.82	54	58	51	113	
<116W_3>	1154+50.82	- 1157+46.33	45	127	43	275	
PROJECT TOTAL			202	383	192	804	

NO	DATE	BY	CHKD	APPR	REVISION
NAME: P:\22-01-00\CSAH_116_(BUNKER_AT_MARTIN)\Plan\002-716-023_TAB.dgn 03/17/2022 2:24:46 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: NICHOLAS J. DOBDA
 SIGNATURE: *NJD*
 DATE: 3/24/22 LICENSE NO. 49046

DRAWN BY: BTU DATE: 03/17/22
 DESIGN BY: BTU DATE: 03/17/22
 CHECKED BY: NJD DATE: 03/17/22



SAP 002-716-023

STORM SEWER															D					
STRUCTURE NUMBER		ALIGNMENT	LOCATION		OFFSET		REMOVE SPEC. 2104		DRAINAGE STRUCTURES				STORM SEWER					NOTES		
FLOWS FROM	FLOWS TO		STATION	TO STATION	FROM	TO	DRAINAGE STRUCTURE (EACH)	CASTING (EACH)	TYPE	DESIGN	PAY HEIGHT		CASTING ASSEMBLY	TOP OF CASTING ELEVATION	OUTLET ELEVATION	DOWN STREAM INLET	SLOPE (%)		15" RCP CL V (LIN FT)	CONNECT TO EX. STORM SEWER
625EX	EX. PIPE	<116E_3>	156+24.58		18 RT															[1]
627	625EX	<116E_3>	156+25.42	- 156+24.58	13 LT - 18 RT	1	1	CB	48-4020		5.4	1	891.72	886.06	-	-		2	1	[2], [3], [4]
629EX	627	<116E_3>	156+03.57	- 156+25.42	32 LT - 13 LT								892.43	887.70	887.62	0.30%				[1]
630	629EX	<116E_3>	155+91.63	- 156+03.57	18 LT - 32 LT	1	1	CB	G OR H	4.8		1	892.34	887.80	887.70	0.30%		3	1	[2], [4]
632EX	630	<116E_3>	156+04.13	- 155+91.63	69 LT - 18 LT								891.93	887.86	887.80	0.30%				[1]
PROJECT TOTAL						2	2			4.8	5.4	2						5	2	

REMOVE STORM NOTES:

[1] INPLACE STORM SEWER INFORMATION SHOWN FOR REFERENCE PURPOSES ONLY

[2] 12" RCP CL V ITEM TO FACILITATE CONNECTION TO EXISTING STORM SEWER.

[3] EXISTING DRAINAGE STRUCTURE IS DESIGN G

[4] PAY HEIGHT IS MEASURED FROM INVERT OF OUTLET PIPE TO TOP OF PRECASE CONCRETE STRUCTURE PLUS AN ALLOWANCE OF 0.70 FEET FOR THE DEPTH OF THE CONCRETE BASE, REGARDLESS OF ITS ACTUAL THICKNESS. CONCRETE ADJUSTMENT RINGS ARE INCIDENTAL.

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:122-01-001CSAH_116 (BUNKER_AT_MARTIN)Plan002-716-023_TAB.dgn 03/17/2022 2:24:50 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: NICHOLAS J. DOBDA
 SIGNATURE: *N. Dobda*
 DATE: 3/24/21 LICENSE NO. 49046

DRAWN BY BTU DATE 03/17/22
 DESIGN BY BTU DATE 03/17/22
 CHECKED BY NJD DATE 03/17/22



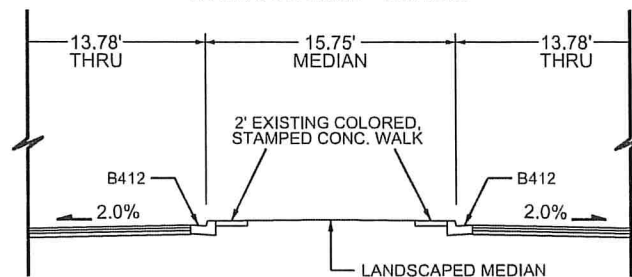
**ANOKA COUNTY
HIGHWAY DEPT.**

SAP 002-716-023

TABULATIONS

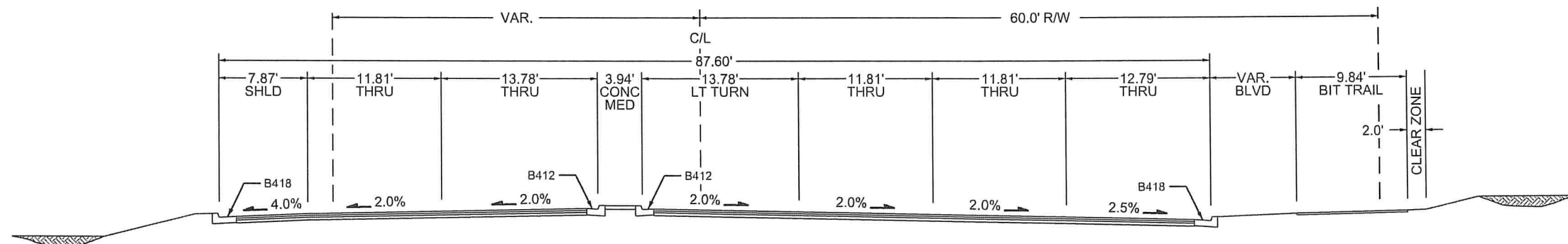
EXISTING CSAH 116 (BUNKER LAKE BLVD NW)

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EB STA. 145+68.20 - 152+03.03



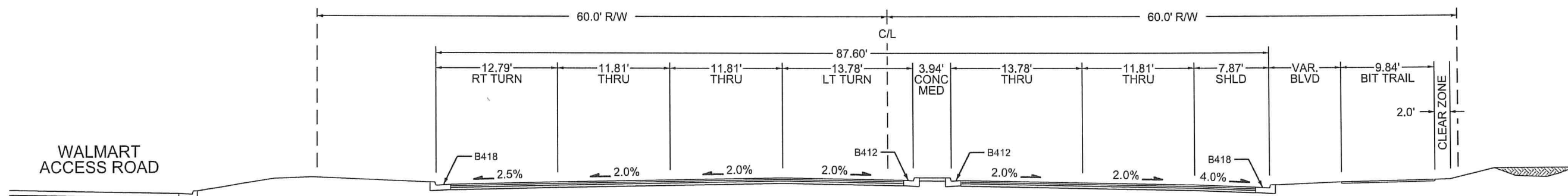
EXISTING CSAH 116 (BUNKER LAKE BLVD NW)

EB STA. 151+54.40 - 154+49.55



EXISTING CSAH 116 (BUNKER LAKE BLVD NW)

EB STA. 154+49.55 - 157+45.78

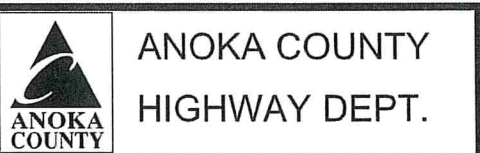


NO	DATE	BY	CHKD	APPR	REVISION

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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: NICHOLAS J. DOBDA
 SIGNATURE: *[Signature]*
 DATE: 3/24/22 LICENSE NO. 49046

DRAWN BY: BTU DATE: 03/17/22
 DESIGN BY: BTU DATE: 03/17/22
 CHECKED BY: NJD DATE: 03/17/22

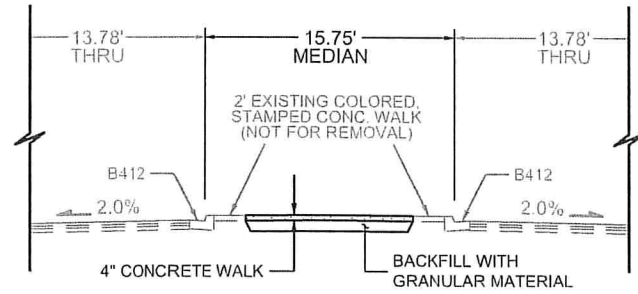


SAP 002-716-023

TYPICAL SECTIONS EXISTING
 Sheet 6 of 30 Sheets

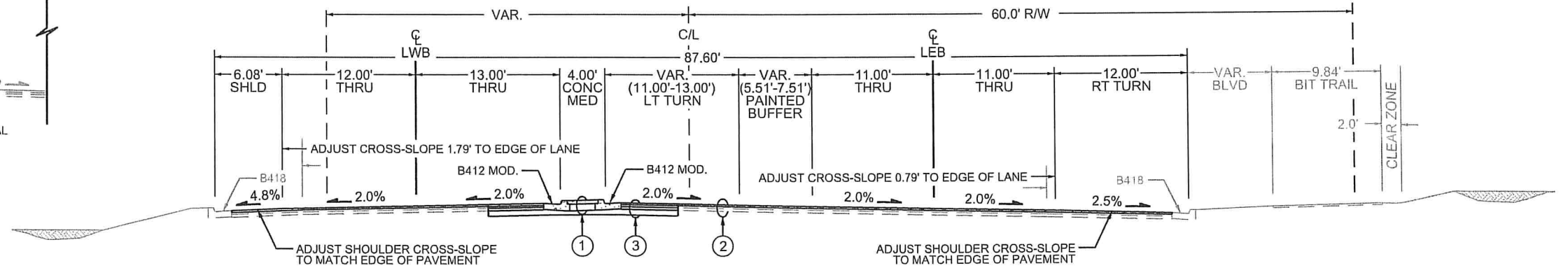
PROPOSED CSAH 116 (BUNKER LAKE BLVD NW)

EB STA. 128+49.87 - 136+31.20
EB STA. 145+68.20 - 152+03.03



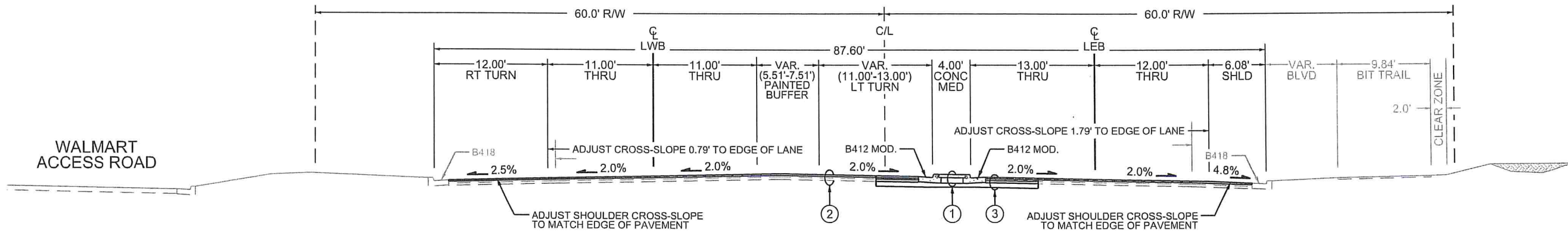
PROPOSED CSAH 116 (BUNKER LAKE BLVD NW)

EB STA. 152+54.49 - 155+49.66

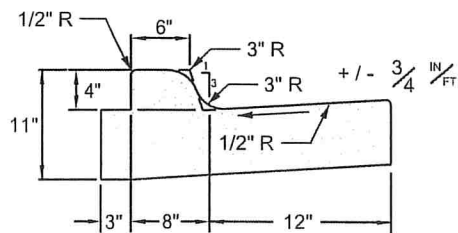


PROPOSED CSAH 116 (BUNKER LAKE BLVD NW)

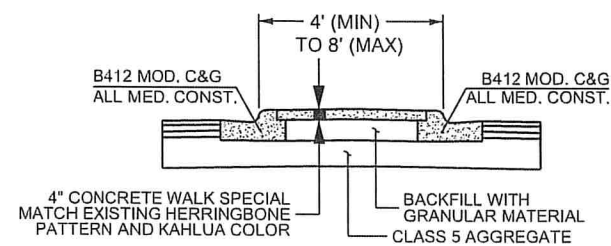
EB STA. 155+49.66 - 158+45.89



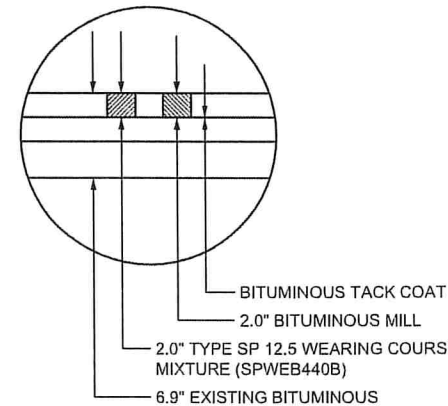
DETAIL "A"
B412 MODIFIED CURB & GUTTER



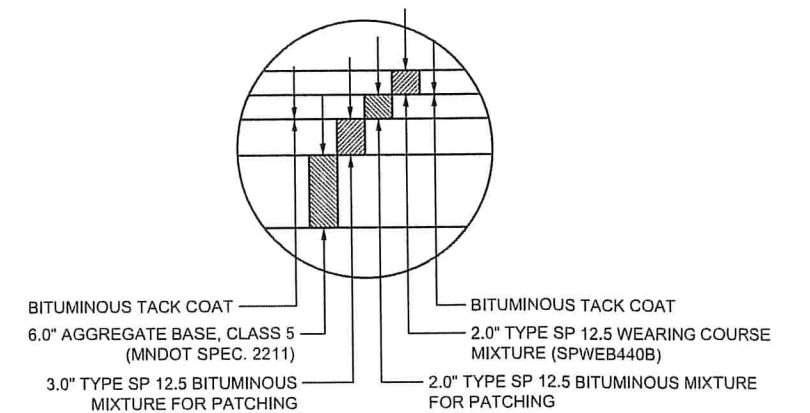
① DETAIL "B"
4' TO 8' MEDIAN



② INSET "A"
2.0" MILL & OVERLAY



③ INSET "B"
MAINLINE RECONSTRUCTION



GENERAL NOTES:

- SEE CONSTRUCTION PLAN SHEET 12 FOR TURN LANE LOCATIONS.
- ALL CROSS SLOPES ARE EXPRESSED AS A PERCENTAGE.
- UNLESS OTHERWISE SPECIFIED, THE GRADING GRADE CROSS SLOPES SHALL BE THE SAME AS THE FINISHED SURFACE OF THE MAINLINE.
- ALL STATIONING BASED ON EB ALIGNMENT OF CSAH 116 <116E_3> UNLESS OTHERWISE NOTED.

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\22-01-00\CSAH_116_(BUNKER_AT_MARTIN)\Plan\002-716-023_TYP.dgn 03/17/2022 2:24:59 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: NICHOLAS J. DOBDA
SIGNATURE: *Nicholas J. Dobda*
DATE: 3/24/22 LICENSE NO. 49046

DRAWN BY: BTU DATE: 03/17/22
DESIGN BY: BTU DATE: 03/17/22
CHECKED BY: NJD DATE: 03/17/22



ANOKA COUNTY
HIGHWAY DEPT.

SAP 002-716-023

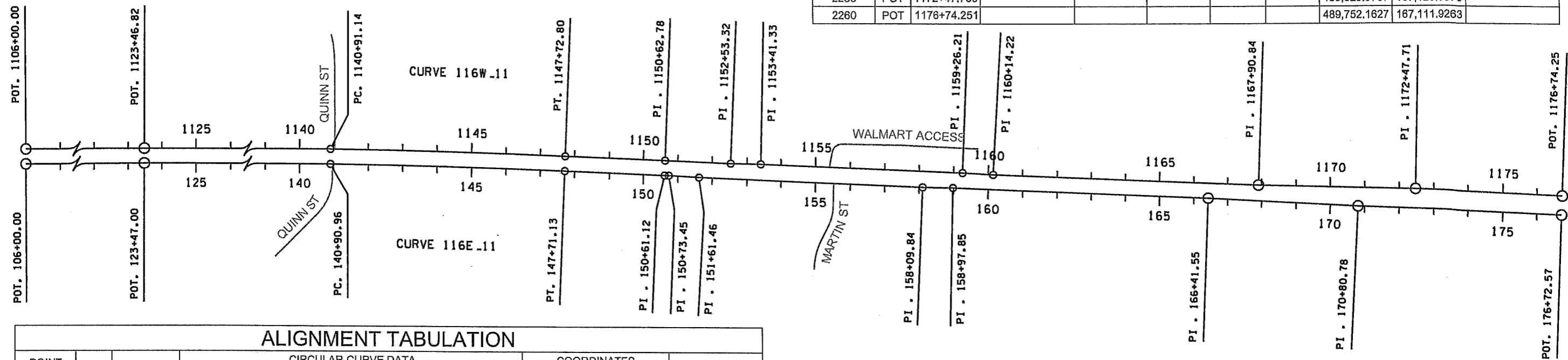
TYPICAL SECTIONS
PROPOSED

ALIGNMENT NOTES:

- EASTBOUND AND WESTBOUND ALIGNMENTS ARE NOT PARALLEL TO EACH OTHER.
- HORIZONTAL CONTROL IS BASED ON ANOKA COUNTY COORDINATE SYSTEM NAD 83 (1996 ADJUSTMENT)
- CROSS-STREET ALIGNMENTS SHOWN FOR REFERENCE ONLY

ALIGNMENT TABULATION

POINT NUMBER	POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH	E	N	
CSAH 116 (BUNKER LAKE BLVD NW) WESTBOUND <116W_3>										
2250	POT	1106+00.000						482,680.3691	167,231.2993	
2251	POT	1123+46.821						484,427.1531	167,242.7227	
	PC	1140+91.144						486,171.4730	167,239.9181	S 89° 24' 52.41" E
116W_31	PI	1144+31.999	1° 42' 59.35" RT	0° 15' 06.52"	22,753.578'	340.855'	681.659'	486,512.3102	167,236.4354	PI
	CC							485,938.9840	144,487.5278	
	PT	1147+72.803						486,852.8901	167,222.7448	S 87° 41' 53.07" E
2253	POT	1150+62.784						487,142.6374	167,211.0976	
2254	POT	1152+53.317						487,333.0187	167,203.4839	
2255	POT	1153+41.332						487,421.0124	167,201.5662	
2256	POT	1159+26.210						488,005.4230	167,178.1947	
2257	POT	1160+14.224						488,093.2888	167,173.0795	
2258	POT	1167+90.839						488,869.2832	167,142.0462	
2259	POT	1172+47.709						489,325.9767	167,129.3579	
2260	POT	1176+74.251						489,752.1627	167,111.9263	



ALIGNMENT TABULATION

POINT NUMBER	POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH	E	N	
CSAH 116 (BUNKER LAKE BLVD NW) EASTBOUND <116E_3>										
2234	POT	106+00.000						482,680.2994	167,187.9880	
2235	POT	123+46.998						484,427.2599	167,199.4125	
	PC	140+90.957						486,171.2168	167,196.6085	S 89° 24' 50.72" E
116E_31	PI	144+31.070	1° 42' 57.65" RT	0° 15' 08.24"	22,710.268'	340.113'	680.175'	486,511.3120	167,193.1305	PI
	CC							485,938.9840	144,487.5278	
	PT	147+71.132						486,851.1506	167,179.4698	S 87° 41' 53.07" E
2237	POT	150+61.118						487,140.9023	167,167.8224	
2238	POT	150+73.450						487,153.2243	167,167.3296	
2239	POT	151+61.464						487,241.0901	167,162.2144	
2240	POT	158+09.837						487,888.9445	167,136.3056	
2241	POT	158+97.851						487,976.9381	167,134.3879	
2242	POT	166+41.552						488,720.0448	167,104.6698	
2243	POT	170+80.777						489,158.5677	167,079.8489	
2244	POT	176+72.565						489,749.8965	167,056.5186	



1	04/05/2022	BTU	NJD	NJD	UPDATED TABULATIONS AND ALIGNMENT FOR PROJECT EXTENTS
NO	DATE	BY	CHKD	APPR	REVISION
NAME: P:\22-01-00\CSAH_116_(BUNKER_AT_MARTIN)\Plan\002-716-023_AL-P1.dgn 04/05/2022 11:07:38 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: NICHOLAS J. DOBDA
 SIGNATURE: *N. Dobda*
 DATE: 4/6/22 LICENSE NO. 49046

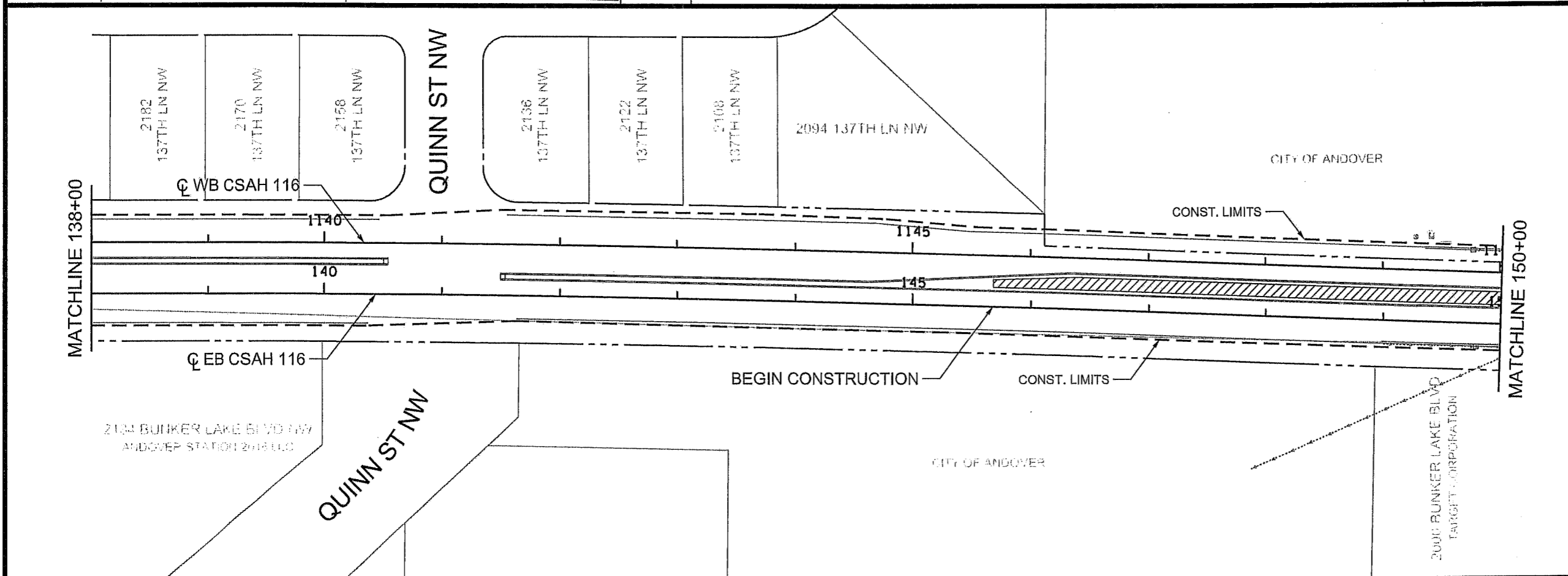
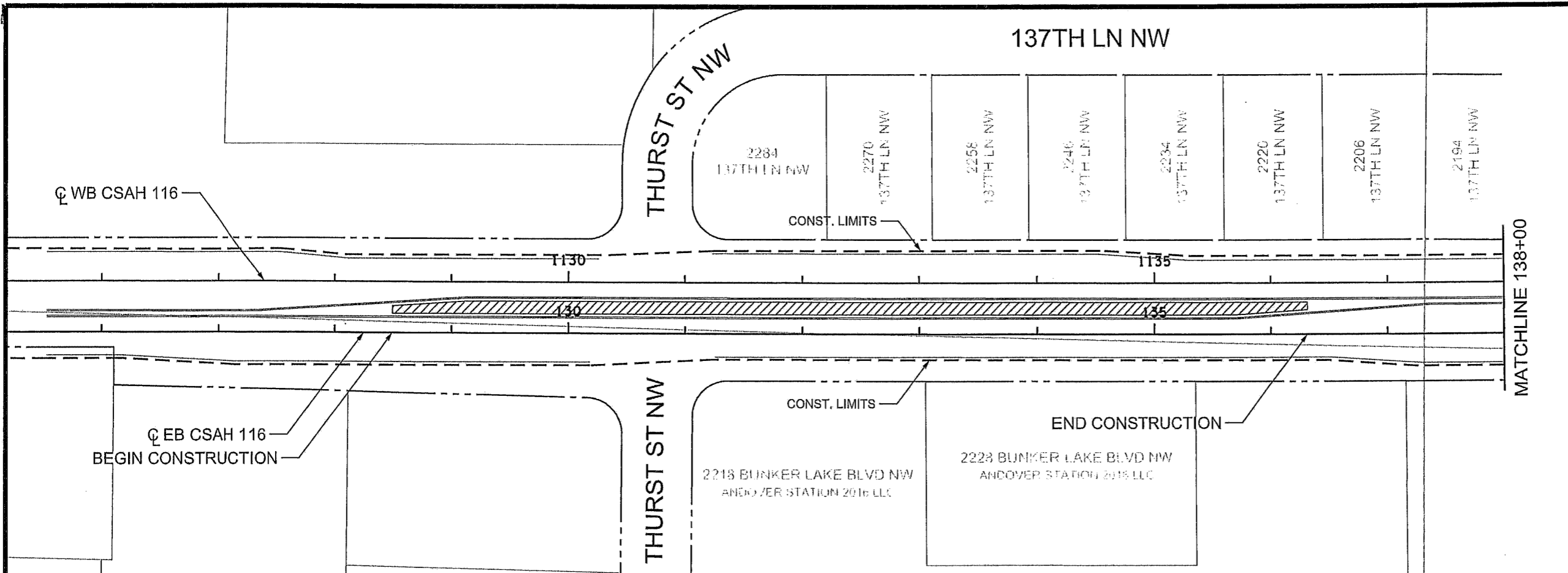
DRAWN BY: BTU DATE: 03/17/22
 DESIGN BY: BTU DATE: 03/17/22
 CHECKED BY: NJD DATE: 03/17/22



ANOKA COUNTY
HIGHWAY DEPT.

SAP 002-716-023

ALIGNMENT PLAN
& TABULATIONS
Sheet 8 of 30 Sheets



LEGEND

	REMOVE BITUMINOUS PAVEMENT
	REMOVE CONCRETE MEDIAN
	COMMON EXCAVATION (1' DEPTH)
	MILL AND OVERLAY BITUMINOUS PAVEMENT
	REMOVE DRAINAGE STRUCTURE
	REMOVE CURB AND GUTTER

REMOVAL NOTES:

ALL MANHOLES AND CATCH BASINS WILL BE PAID FOR AS "REMOVE DRAINAGE STRUCTURE" ITEM 2104.509 CALLED OUT IN REMOVAL PLANS AS MH OR CB. FOR INFORMATION PURPOSES ONLY.

REMOVE MISC. STRUCTURES INCLUDES BOULDERS, SIGNS AND LANDSCAPING AS DIRECTED BY ENGINEER.

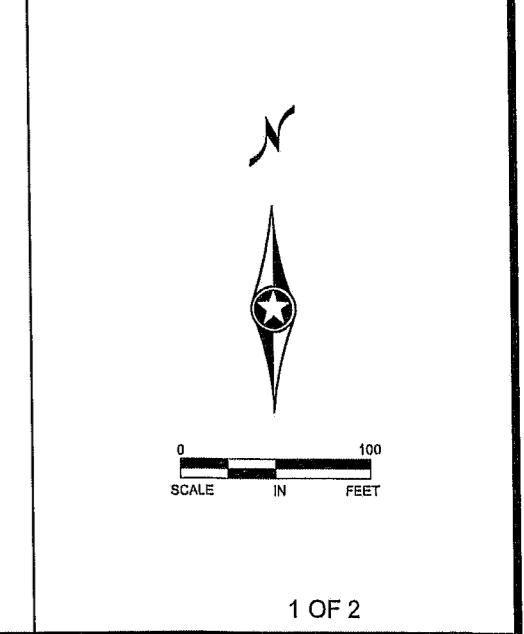
ALL PRIVATE UTILITIES TO BE RELOCATED BY OTHERS AS REQUIRED.

ALL ROADWAY SIGNS WITHIN THE CONSTRUCTION LIMITS AND CONFLICTING SIGNS SHALL BE SALVAGED BY THE CONTRACTOR.

REMOVAL OF IRRIGATION AND PLUMBING IN LANDSCAPED MEDIAN TO BE CONSIDERED INCIDENTAL TO COMMON EXCAVATION. EXCAVATION DEPTH 1', TYP.

EXISTING 2' COLORED AND STAMPED CONCRETE MEDIAN EDGE TO BE KEPT INPLACE THROUGHOUT LANDSCAPED MEDIAN REMOVAL AREA.

ALL SAWCUT LOCATIONS ARE AT THE MIDDLE OF THE PROPOSED ADJACENT LANE



NO	DATE	BY	CHKD	APPR	REVISION
1	04/05/2022	BTU	NJD	NJD	UPDATED CONSTRUCTION LIMITS AND PROJECT EXTENTS

NAME: P:\22-01-00\CSAH_116_(BUNKER_AT_MARTIN)\Plan\002-716-023_RM-P1.dgn 04/06/2022 10:19:25 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: NICHOLAS J. DOBDA

SIGNATURE: *N. Dobda*

DATE: 4/12/22 LICENSE NO. 49046

DRAWN BY: BTU DATE: 03/17/22

DESIGN BY: BTU DATE: 03/17/22

CHECKED BY: NJD DATE: 03/17/22







ANOKA COUNTY
HIGHWAY DEPT.

SAP 002-716-023

INPLACE TOPOGRAPHY & REMOVAL PLAN

Sheet 9 of 30 Sheets

LEGEND

-  REMOVE BITUMINOUS PAVEMENT
-  REMOVE CONCRETE MEDIAN
-  COMMON EXCAVATION (1' DEPTH)
-  MILL AND OVERLAY BITUMINOUS PAVEMENT
-  REMOVE DRAINAGE STRUCTURE
-  REMOVE CURB AND GUTTER

REMOVAL NOTES:

ALL MANHOLES AND CATCH BASINS WILL BE PAID FOR AS "REMOVE DRAINAGE STRUCTURE" ITEM 2104.509 CALLED OUT IN REMOVAL PLANS AS MH OR CB. FOR INFORMATION PURPOSES ONLY.

REMOVE MISC. STRUCTURES INCLUDES BOULDERS, SIGNS AND LANDSCAPING AS DIRECTED BY ENGINEER.

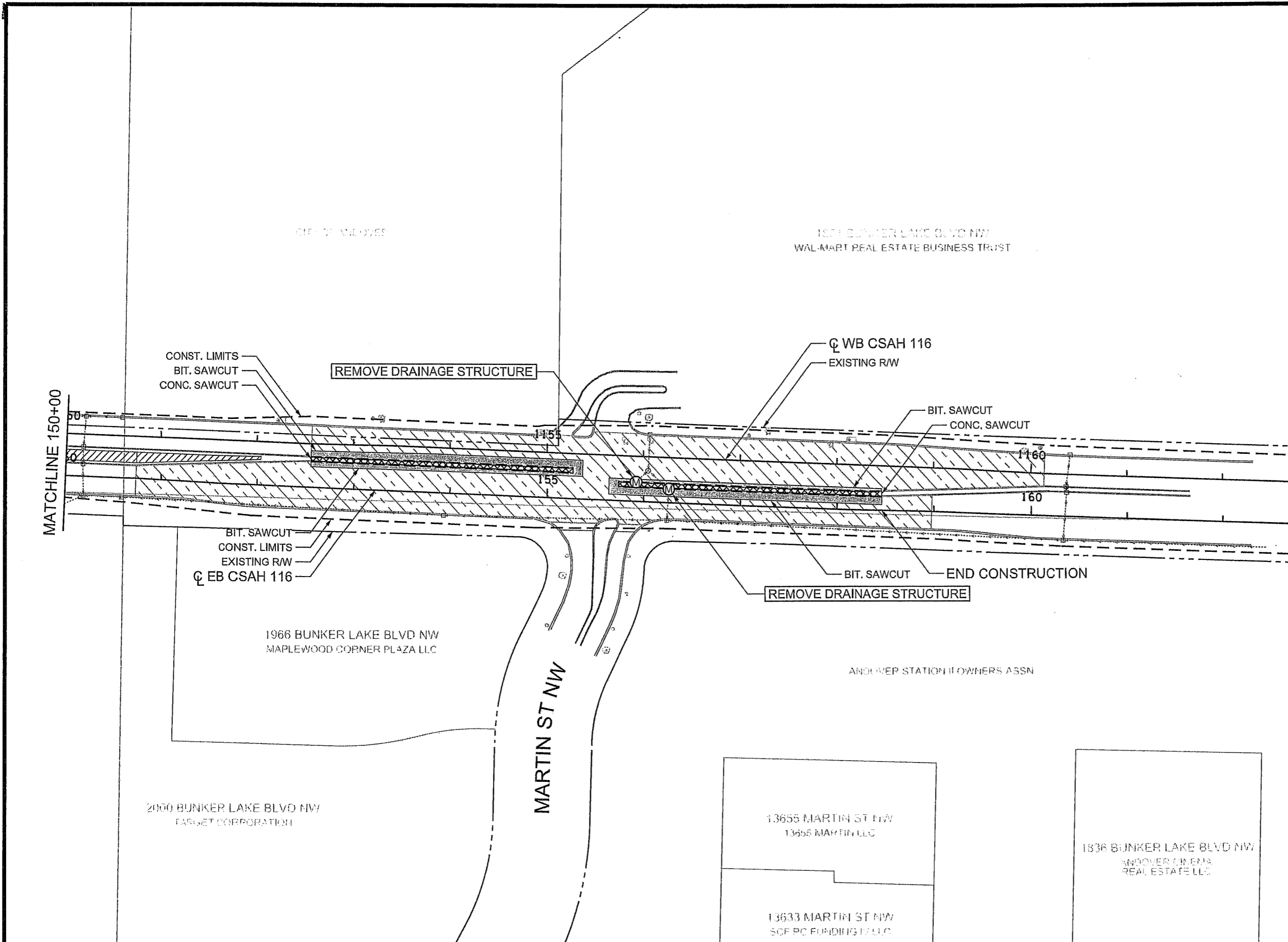
ALL PRIVATE UTILITIES TO BE RELOCATED BY OTHERS AS REQUIRED.

ALL ROADWAY SIGNS WITHIN THE CONSTRUCTION LIMITS AND CONFLICTING SIGNS SHALL BE SALVAGED BY THE CONTRACTOR.

REMOVAL OF IRRIGATION AND PLUMBING IN LANDSCAPED MEDIAN TO BE CONSIDERED INCIDENTAL TO COMMON EXCAVATION. EXCAVATION DEPTH 1', TYP.

EXISTING 2' COLORED AND STAMPED CONCRETE MEDIAN EDGE TO BE KEPT INPLACE THROUGHOUT LANDSCAPED MEDIAN REMOVAL AREA.

ALL SAWCUT LOCATIONS ARE AT THE MIDDLE OF THE PROPOSED ADJACENT LANE



1	04/05/2022	BTU	NJD	NJD	UPDATED CONSTRUCTION LIMITS AND PROJECT EXTENTS
NO	DATE	BY	CKD	APPR	REVISION
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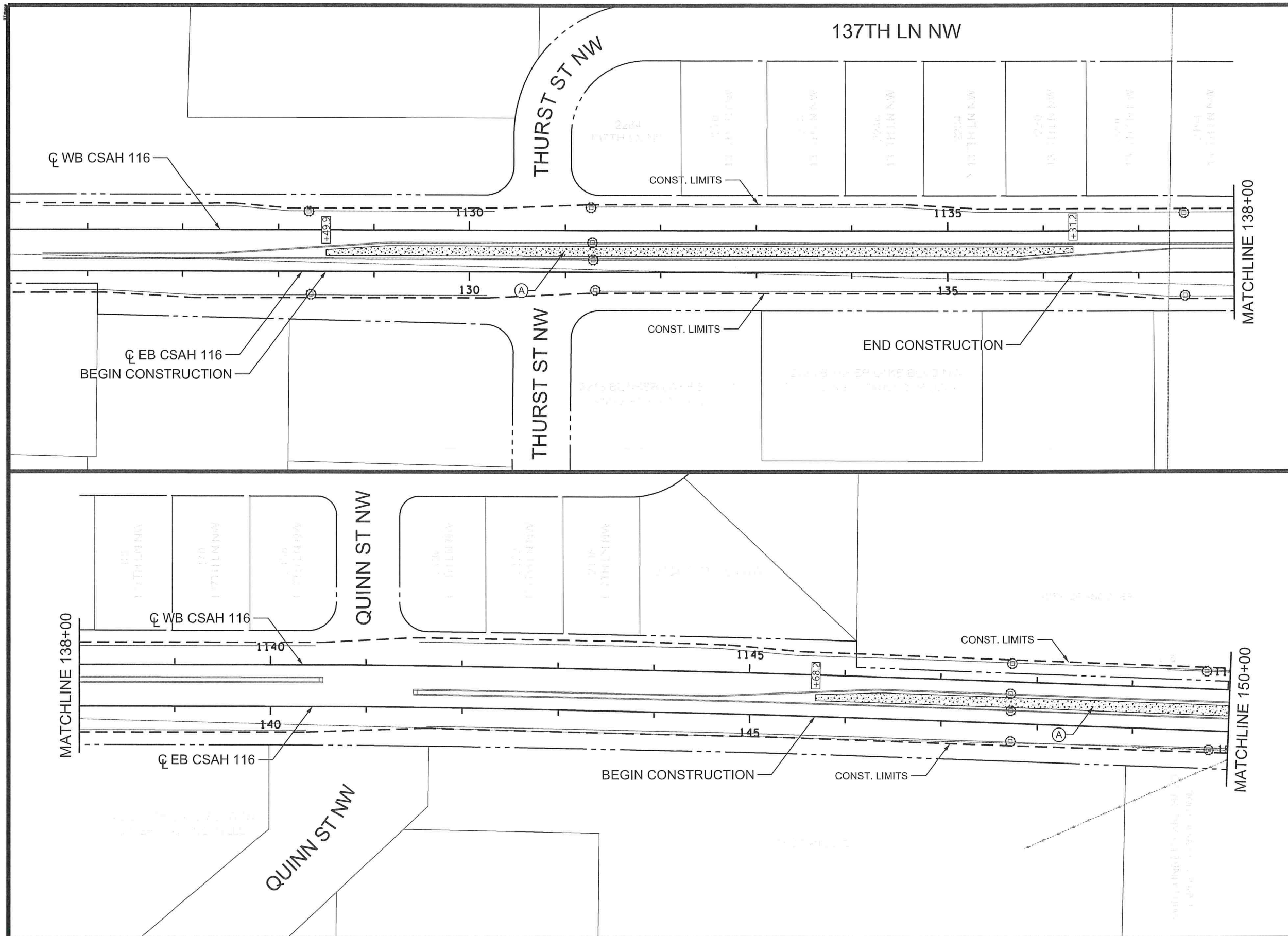
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 PRINT NAME: NICHOLAS J. DOBDA
 SIGNATURE: *NJD*
 DATE: 4/12/22 LICENSE NO. 49046

DRAWN BY BTU DATE 03/17/22
 DESIGN BY BTU DATE 03/17/22
 CHECKED BY NJD DATE 03/17/22



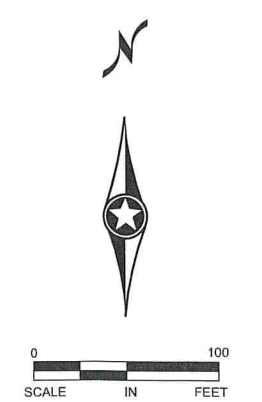
ANOKA COUNTY
 HIGHWAY DEPT.

SAP 002-716-023



- CONSTRUCTION NOTES**
- (A) CONCRETE MEDIAN
 - (B) COLORED AND STAMPED CONCRETE MEDIAN
 - (C) B412 CURB & GUTTER
 - (D) CONCRETE APPROACH NOSE STD. PLATE 7113
 - PROPOSED CATCH BASIN
 - INPLACE CATCH BASIN
 - INPLACE MANHOLE
 - INLET PROTECTION
 - ▨ 2" MILL AND OVERLAY BITUMINOUS PAVEMENT
- ALL DIMENSIONS ARE TO FACE OF CURB OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
- INPLACE CURB AND GUTTER IN MEDIAN IS B412.
- STATIONING BASED ON EASTBOUND CSAH 116 ALIGNMENT <116E_3>
- MATCH EXISTING HERRINGBONE PATTERN AND KAHLUA COLOR FOR COLORED AND STAMPED CONCRETE MEDIAN.

- STAGING REQUIREMENTS / TRAFFIC CONTROL PERFORMANCE SPEC**
1. 12' MINIMUM LANE WIDTH
 2. 1 LANE IN EACH DIRECTION WITH 1 RIGHT OR LEFT TURN LANE
 3. LEFT TURN LANES CAN ONLY BE CLOSED FOR 10 WORKING DAYS
 4. WORK AT THE INTERSECTION OF MARTIN ST AND CSAH 116 MUST BE COMPLETED BEFORE THE COMMON EXCAVATION AND INSTALLATION OF MEDIAN CONCRETE
 5. WHEN THE CONTRACTOR IS PERFORMING THE COMMON EXCAVATION AND INSTALLATION OF MEDIAN CONCRETE, TRAFFIC CONTROL CAN ONLY BE INPLACE DURING CONSTRUCTION ACTIVITIES. TRAFFIC CONTROL SHALL BE TAKEN DOWN ON A DAILY BASIS.



1	04/05/2022	BTU	NJD	NJD	UPDATED CONSTRUCTION LIMITS AND PROJECT EXTENTS
2	05/05/2022	BTU	NJD	NJD	ADDED INLET PROTECTION
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: NICHOLAS J. DOBDA

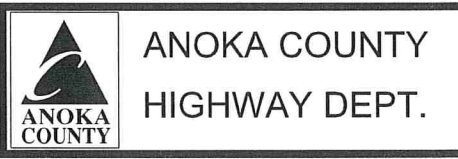
SIGNATURE: *[Signature]*

DATE: 5/11/22 LICENSE NO. 49046

DRAWN BY: BTU DATE: 03/17/22

DESIGN BY: BTU DATE: 03/17/22

CHECKED BY: NJD DATE: 03/17/22



SAP 002-716-023

CONSTRUCTION NOTES

- (A) CONCRETE MEDIAN
- (B) COLORED AND STAMPED CONCRETE MEDIAN
- (C) B412 CURB & GUTTER
- (D) CONCRETE APPROACH NOSE STD. PLATE 7113
- PROPOSED CATCH BASIN
- INPLACE CATCH BASIN
- INPLACE MANHOLE
- INLET PROTECTION
- ▨ 2" MILL AND OVERLAY BITUMINOUS PAVEMENT

ALL DIMENSIONS ARE TO FACE OF CURB OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

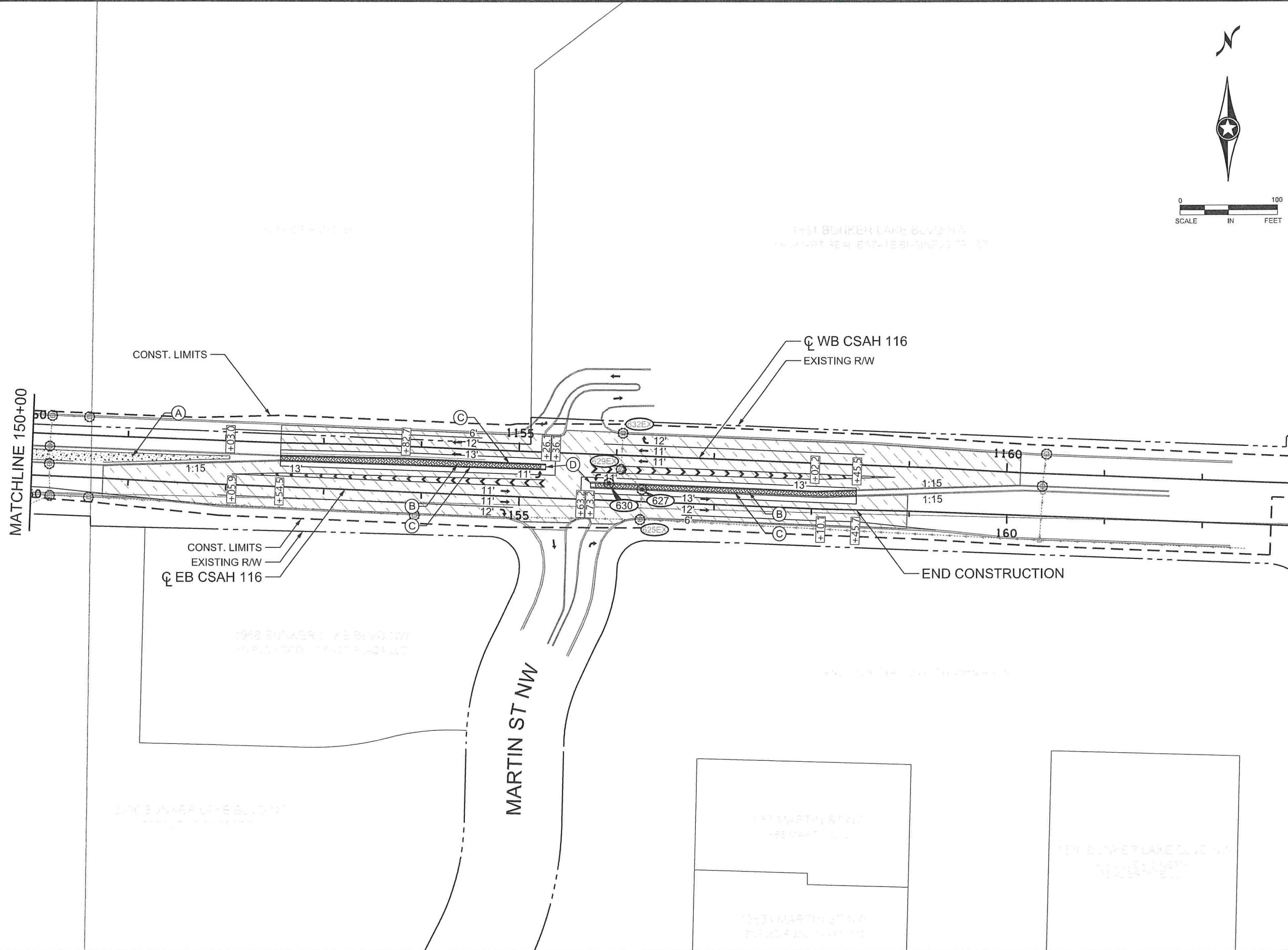
INPLACE CURB AND GUTTER IN MEDIAN IS B412.

STATIONING BASED ON EASTBOUND CSAH 116 ALIGNMENT <116E_3>

MATCH EXISTING HERRINGBONE PATTERN AND KAHLUA COLOR FOR COLORED AND STAMPED CONCRETE MEDIAN.

STAGING REQUIREMENTS / TRAFFIC CONTROL PERFORMANCE SPEC

1. 12' MINIMUM LANE WIDTH
2. 1 LANE IN EACH DIRECTION WITH 1 RIGHT OR LEFT TURN LANE
3. LEFT TURN LANES CAN ONLY BE CLOSED FOR 10 WORKING DAYS
4. WORK AT THE INTERSECTION OF MARTIN ST AND CSAH 116 MUST BE COMPLETED BEFORE THE COMMON EXCAVATION AND INSTALLATION OF MEDIAN CONCRETE
5. WHEN THE CONTRACTOR IS PERFORMING THE COMMON EXCAVATION AND INSTALLATION OF MEDIAN CONCRETE, TRAFFIC CONTROL CAN ONLY BE INPLACE DURING CONSTRUCTION ACTIVITIES. TRAFFIC CONTROL SHALL BE TAKEN DOWN ON A DAILY BASIS.

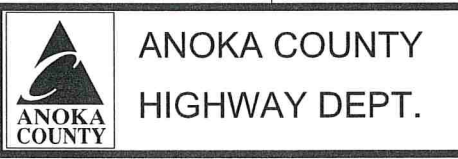


JAY ST NW

1	04/05/2022	BTU	NJD	NJD	UPDATED CONSTRUCTION LIMITS AND PROJECT EXTENTS
2	05/05/2022	BTU	NJD	NJD	ADDED INLET PROTECTION
NO	DATE	BY	CKD	APPR	REVISION
NAME: P:\22-01-00CSAH_116_(BUNKER_AT_MARTIN)\Plan\002-716-023_PP-P2.dgn 05/05/2022 10:44:38 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: NICHOLAS J. DOBDA
 SIGNATURE: *Nicholas J. Dobda*
 DATE: 5/11/22 LICENSE NO. 49046

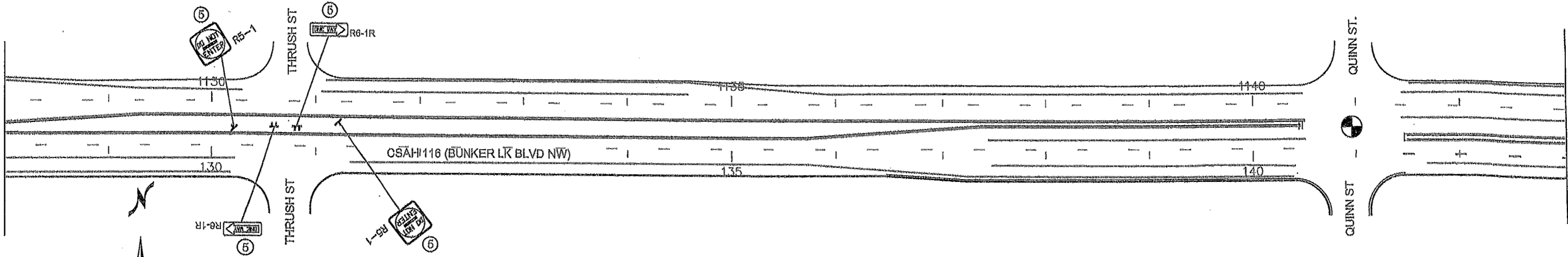
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 DESIGN BY BTU DATE 03/17/22
 CHECKED BY NJD DATE 03/17/22



SAP 002-716-023

STATION 128+00

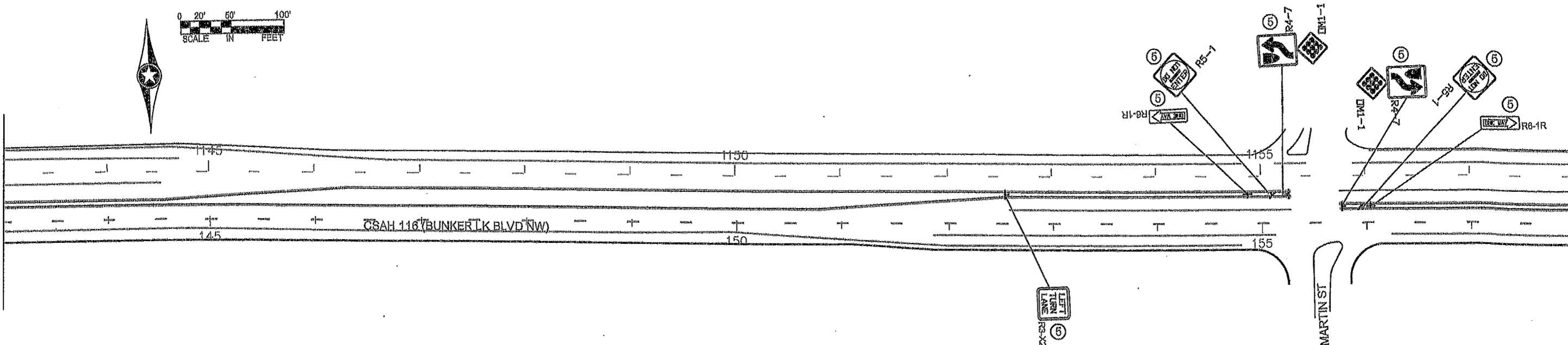
STATION 143+00



SIGN NOTES:
⑤ REMOVE SIGN

STATION 143+00

STATION 158+00



NO	DATE	BY	CHKD	APPR	REVISION
NAME: P:\22-01-00\CSAH_116 (Bunker_at_Martin)\Base\Traffic\Existing Sign Removals.dwg					

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

PRINT NAME: SEAN R. THIEL DATE: 3/10/22
 SIGNATURE: *Sean R. Thiel* LICENSE NO. 48129

DRAWN BY TMV DATE 03/10/22
 DESIGN BY DATE
 CHECKED BY SRT DATE 03/10/22



ANOKA COUNTY
HIGHWAY DEPT.

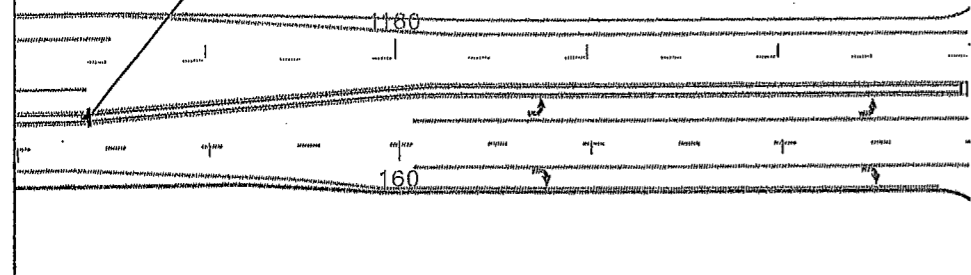
SAP 002-716-023

EXISTING SIGN
REMOVALS
SHEET 13 OF 30 SHEETS

STATION 158+00



SIGN NOTES:
 ⑥ REMOVE SIGN



EXISTING SIGN REMOVALS

STATION	ADDRESS/ DESCRIPTION (NOTES)	REMOVE SIGN TYPE C	SIGN NUMBER	SIGN LEGEND
		EACH		
130+21	MEDIAN	1	R5-1	DO NOT ENTER
130+60	MEDIAN	1	R6-1R	ONE WAY
130+82	MEDIAN	1	R6-1R	ONE WAY
131+23	MEDIAN	1	R5-1	DO NOT ENTER
152+54	MEDIAN	1	R3-X2	LEFT TURN LANE
154+85	MEDIAN	1	R6-1R	ONE WAY
155+11	MEDIAN	1	R5-1	DO NOT ENTER
155+26	MEDIAN	1	R4-7	KEEP RIGHT
			OM1-1	9 BUTTON
155+79	MEDIAN	1	R4-7	KEEP RIGHT
			OM1-1	9 BUTTON
155+96	MEDIAN	1	R5-1	DO NOT ENTER
156+05	MEDIAN	1	R6-1R	ONE WAY
158+37	MEDIAN	1	R3-X2	LEFT TURN LANE
TOTAL		12		

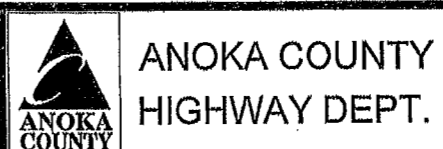
NO.	DATE	BY	CHKD	APPR	REVISION

NAME: P:\22-01-00\CSAH_116_(Bunker_at_Martin)\Base\Traffic\Existing Sign Removals.dwg

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

PRINT NAME: SEAN R. THIEL DATE: 3/10/22
 SIGNATURE: *Sean R. Thiel* LICENSE NO. 46129

DRAWN BY: TMV DATE: 03/10/22
 DESIGN BY: DATE:
 CHECKED BY: SRT DATE: 03/10/22



SAP 002-716-023

EXISTING SIGN REMOVALS
 SHEET 14 OF 30 SHEETS

**PERMANENT PAVEMENT MARKING PLAN
NOTES AND GUIDELINES**

GENERAL INFORMATION:

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

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

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

MULTI COMPONENT (MULTI COMP):

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

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

A MULTI COMP LINE SHALL BE APPLIED WITH A MINIMUM THICKNESS OF 20 MILS (WET) AND 4" WIDE. GLASS BEADS SHALL BE APPLIED AT A MINIMUM RATE OF 25LBS POUNDS PER GALLON RATE SUFFICIENT TO ACHIEVE AN ACCEPTABLE NO-TRACK SYSTEM.

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

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

PREFORMED THERMOPLASTIC:

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

PAINT:

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

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



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

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





PAVEMENT MARKING TABULATION		
ITEM	UNIT	TOTAL QUANTITY
1 4" BROKEN LINE WHITE - MULTICOMP	LIN FT	1710
8" SOLID LINE WHITE - MULTI COMP	LIN FT	1986
4" SOLID LINE YELLOW - MULTICOMP	LIN FT	1513
24" SOLID LINE WHITE - PREFORMED THERMOPLASTIC (PMS*)	LIN FT	216

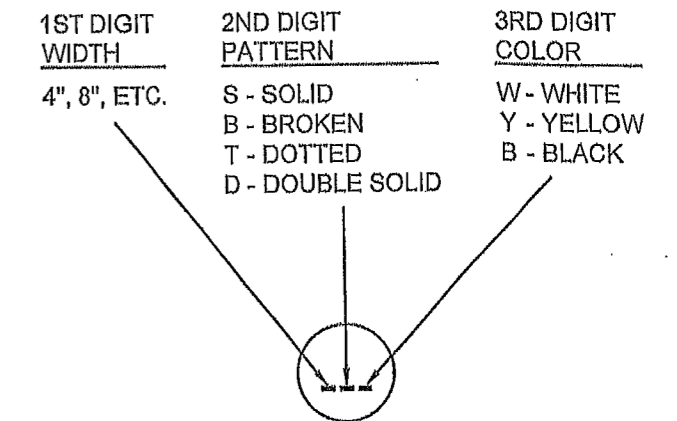
1 10' STRIPE, 40' GAP
* PAVEMENT MARKING SPECIAL

SYMBOLS & MATERIALS LEGEND



-  CROSSWALK BLOCK WHITE - POLY PREFORM
-  PAVEMENT MESSAGE (LEFT ARROW) POLY PREFORM

STRIPING KEY

-  CIRCLE - MULTI COMP
-  TRIANGLE - PAINT
-  SQUARE - POLY PREFORM THERMOPLASTIC
-  PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING



EXAMPLE: (4SW) = SOLID LINE WHITE - MULTI COMP

-  BROKEN LINE - 50' CYCLE (10' LINE, 40' GAP)
-  DOTTED LINE - 15' CYCLE (3' LINE, 12' GAP) UNLESS SHOWN OTHERWISE IN THE PLAN

NO	DATE	BY	CHKD	APPR	REVISION

NAME: PA22-01-00CSAH_116_(Bunker_Al_Martin)BaseTrafficPavm Pvrnt Mrkg Guide Notes 2021.dwg

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

PRINT NAME: SEAN R. THIEL DATE: 3/10/22
SIGNATURE: *Sean R. Thiel* LICENSE NO. 45120

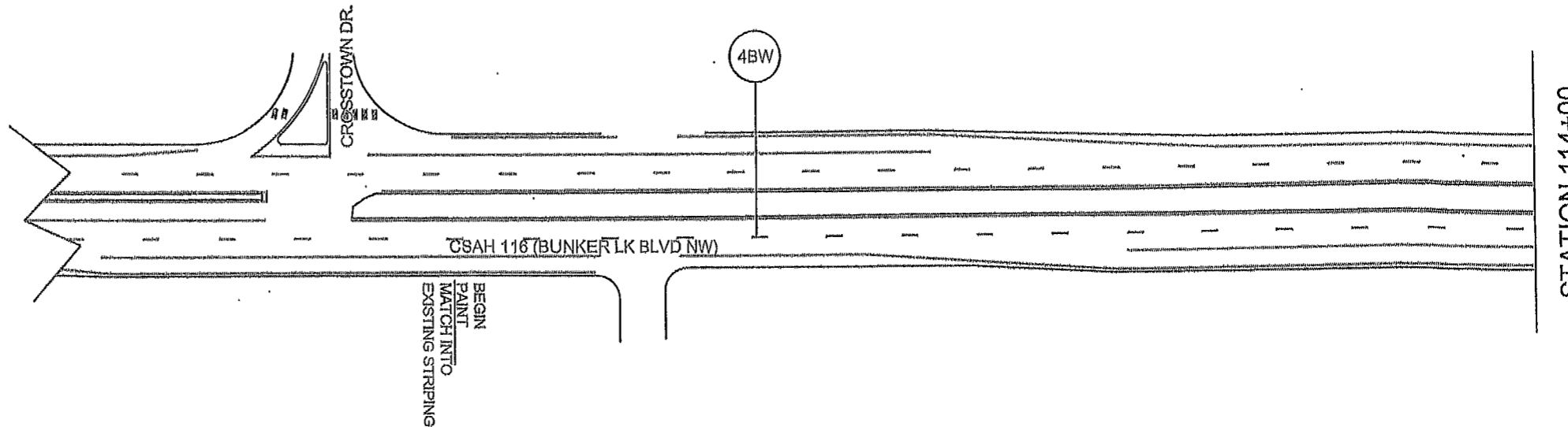
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DESIGN BY: _____ DATE: _____
CHECKED BY: SRT DATE: 02/23/22



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SAP 002-716-023

PERMANENT PAVEMENT MARKING PLAN DETAILS
SHEET 15 OF 30 SHEETS



STATION 114+00

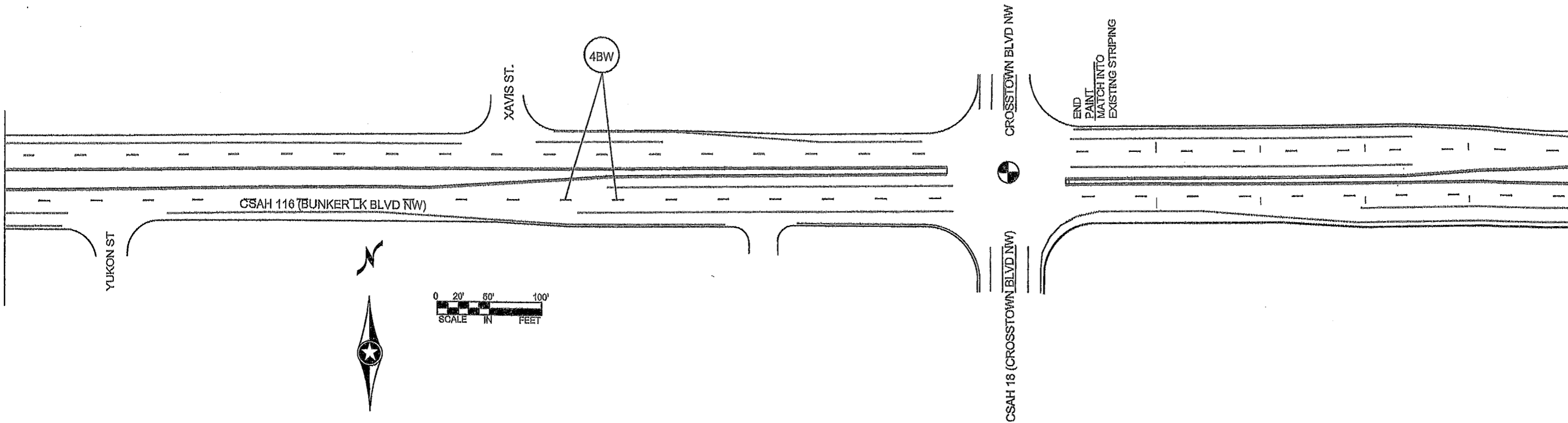
STRIPING KEY

- CIRCLE - MULTI COMP
- SQUARE - POLY PREFORM

SIGN NOTES:
 ① INSTALL SIGN

- NOTES:
- LOCATIONS OF PAVEMENT MARKINGS ARE APPROXIMATE. EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.
 - ALL PERMANENT STRIPING AND PAVEMENT MESSAGES SHALL BE PLACED WITHIN 72 HOURS OF MAINLINE PAVING.
 - ANY REQUIRED PERMANENT SIGNING SHALL BE INSTALLED THE SAME DAY AS PERMANENT STRIPING.

STATION 114+00



STATION 129+00



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NAME: P:\22-01-00\CSAH_116_(Bunker_at_Marlin)\Base\Traffic\Perm S&S.dwg

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PRINT NAME: SEAN R. THIEL DATE: 3/10/22
 SIGNATURE: *Sean R. Thiel* LICENSE NO. 46129

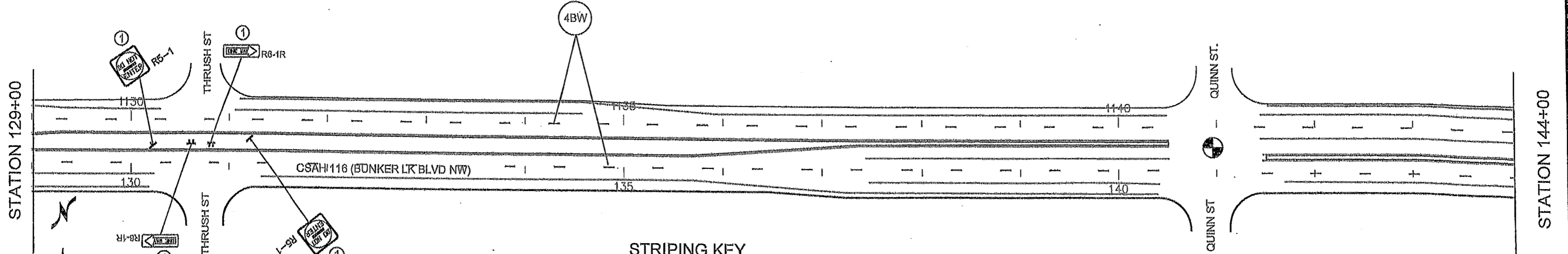
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 DESIGN BY: DATE: _____
 CHECKED BY: SRT DATE: 02/23/22



ANOKA COUNTY
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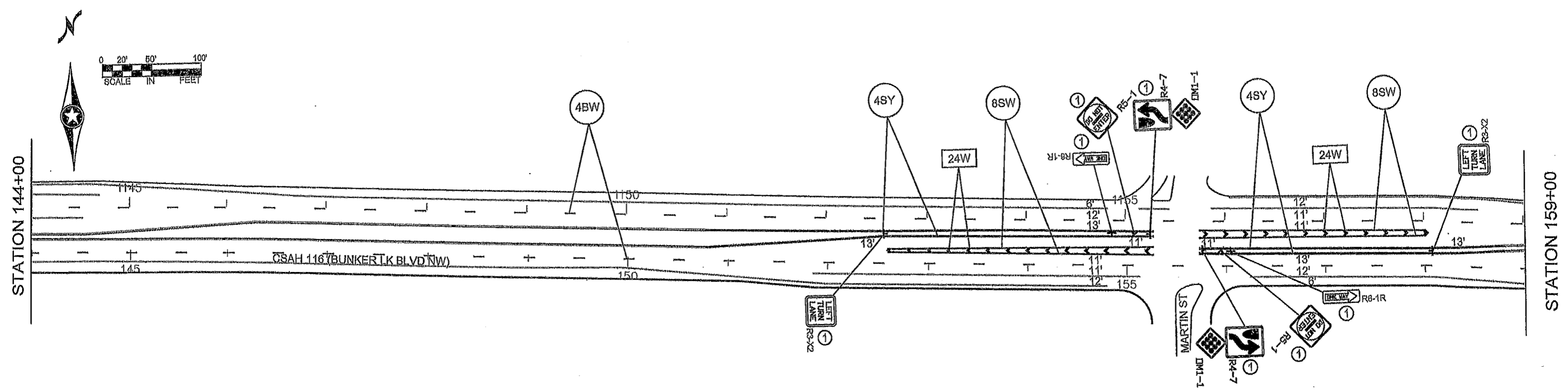
SAP 002-716-023

PERMANENT SIGNING
 & STRIPING
 SHEET 16 OF 30 SHEETS



SIGN NOTES:
 ① INSTALL SIGN

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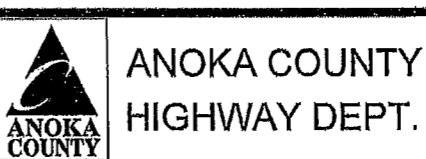


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DRAWN BY: TMV DATE: 02/14/22
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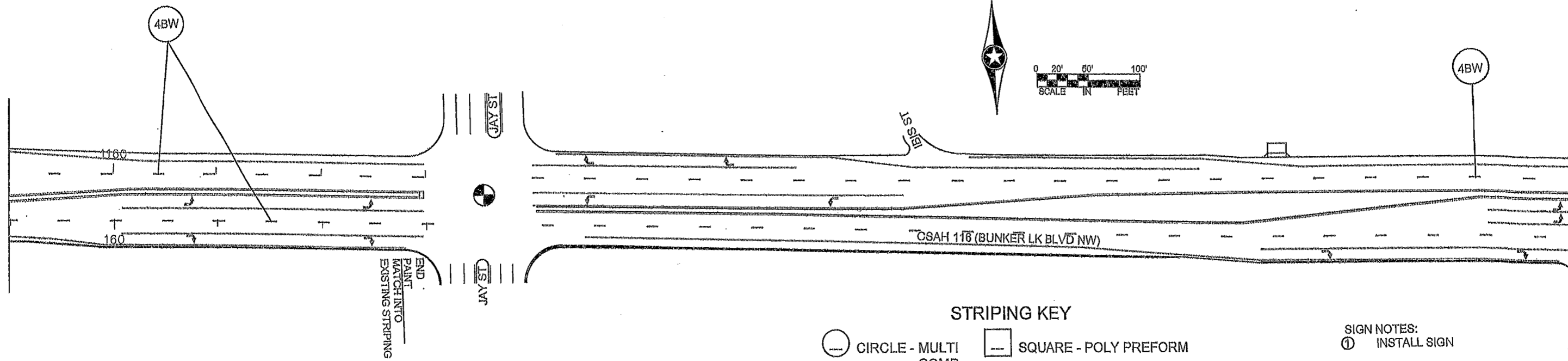


SAP 002-716-023

PERMANENT SIGNING & STRIPING
 SHEET 17 OF 30 SHEETS

STATION 159+00

STATION 174+00



STRIPING KEY

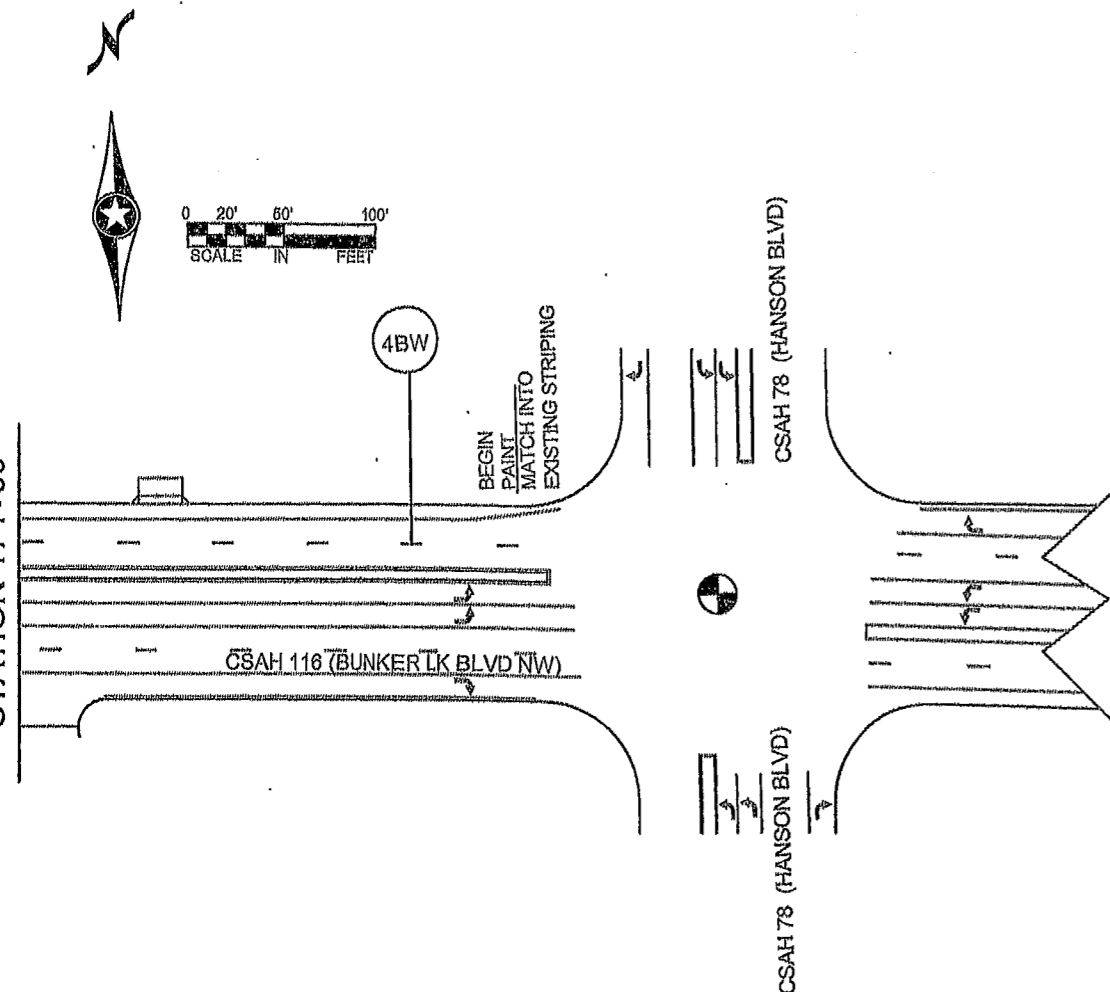
- CIRCLE - MULTI COMP
- SQUARE - POLY PREFORM

SIGN NOTES:
① INSTALL SIGN

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STATION 174+00



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 SIGNATURE: *Sean R. Thiel* LICENSE NO. 48129





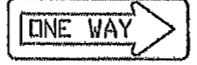
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 CHECKED BY: SRT DATE: 02/23/22



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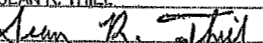
PERMANENT SIGNING
& STRIPING
SHEET 18 OF 30 SHEETS

F & I SIGN PANELS								
M.U.T.C.D. CODE	SIZE	INSERT	QUANTITY	PANEL AREA	TOTAL AREA	MOUNTING POST PER INSTALLATION	MOUNTING HEIGHT	
				SQ. FT.	SQ. FT.		To pavement edge	
R3-X2	30" x 30"	 R3-X2	2	6.25	12.50	1	7.0'	
R4-7	24" x 30"		2	5.00	10.00	1	7.0'	
OM1-1	18" x 18"			2	2.25	5.50		
R5-1	30" x 30"		4	6.25	25.00	1	7.0'	
R6-1R	54" x 18"		4	6.75	27.00	2	7.0'	
PROJECT TOTAL SQ FT					80.00			

NO	DATE	BY	CHKD	APPR	REVISION
NAME: PA22-01-00VCSAH_116_(Bunker_at_Martin)\BaselTrafficPerm S&S.dwg					

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SIGNATURE:  LICENSE NO. 46129

DRAWN BY: TMV DATE: 02/14/22

DESIGN BY: _____ DATE: _____

CHECKED BY: SRT DATE: 02/23/22

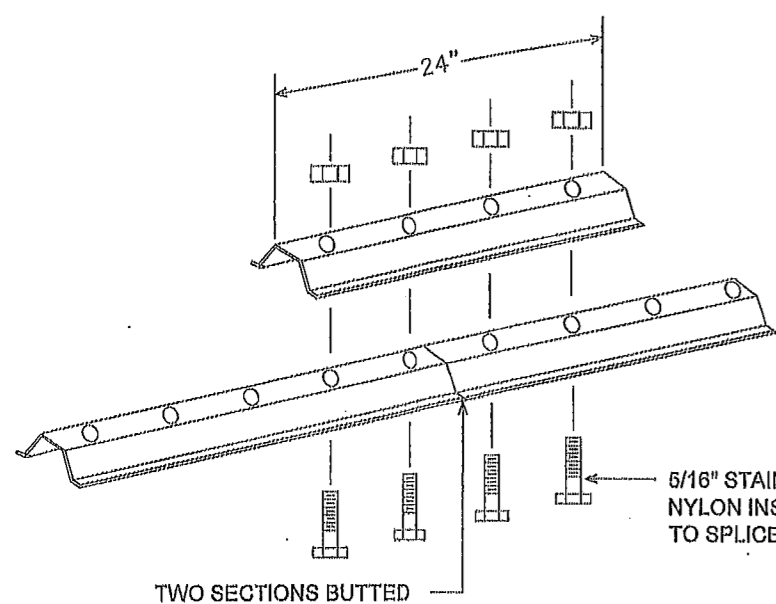


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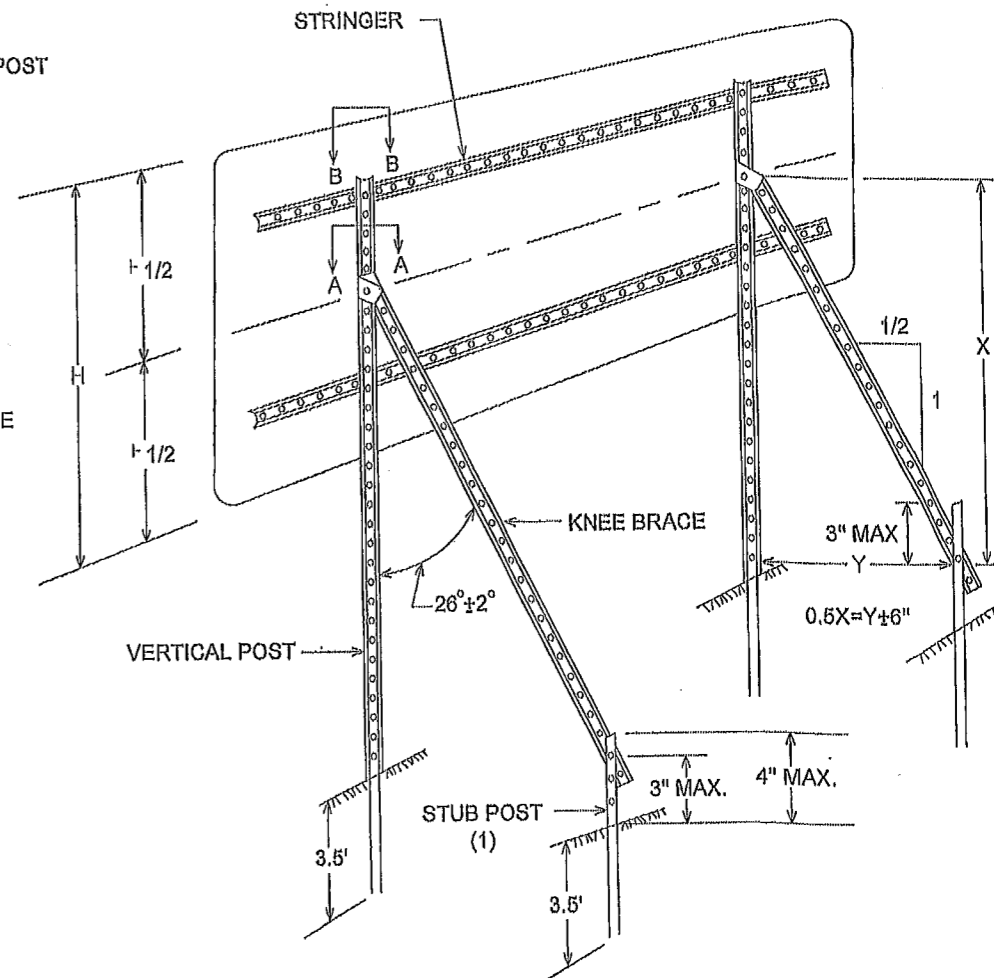
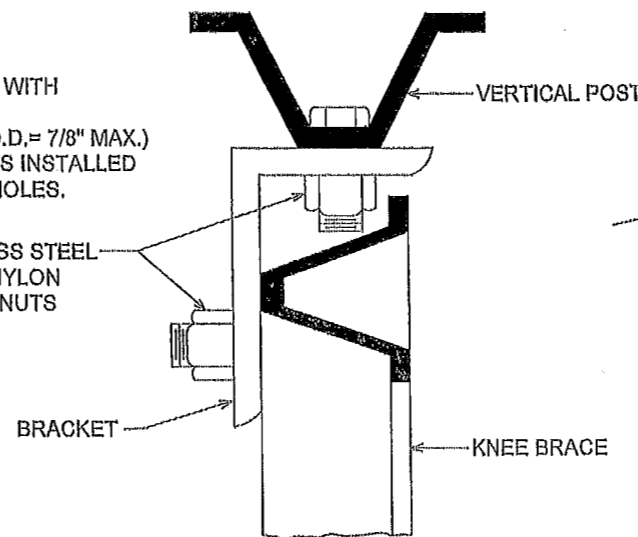
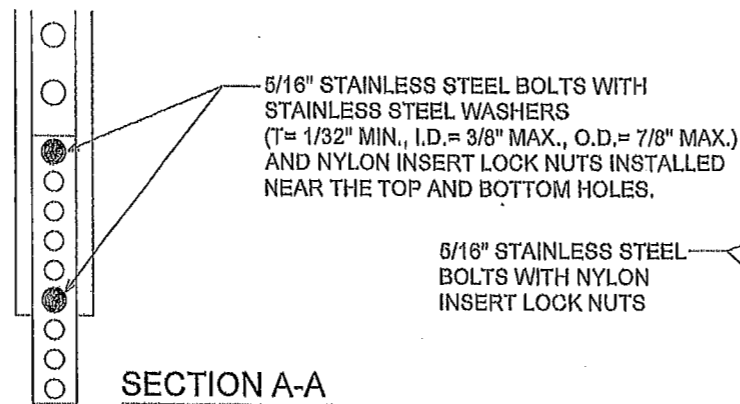
SAP 002-716-023

PERMANENT SIGNING QUANTITIES

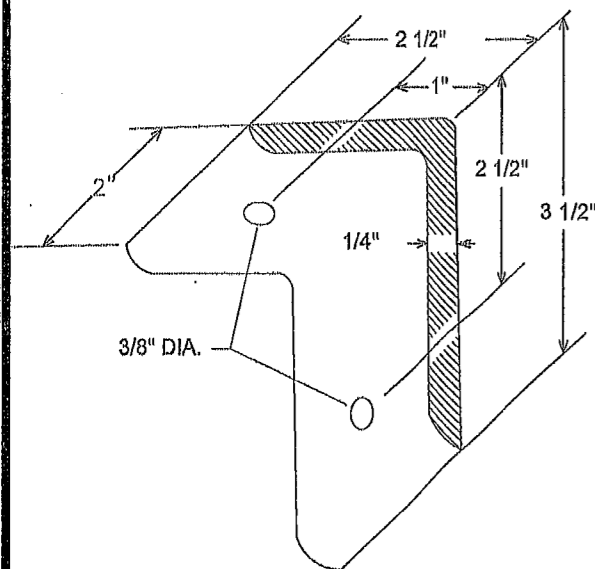
SHEET 19 OF 30 SHEETS



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

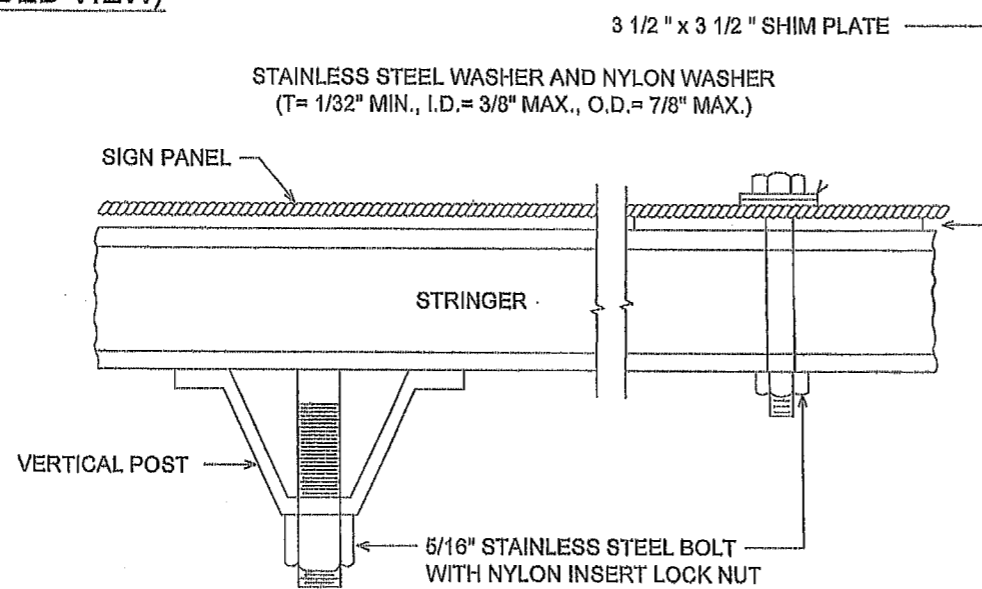


**TYPICAL "A-FRAME" INSTALLATION
TYPE "D" SIGNS**

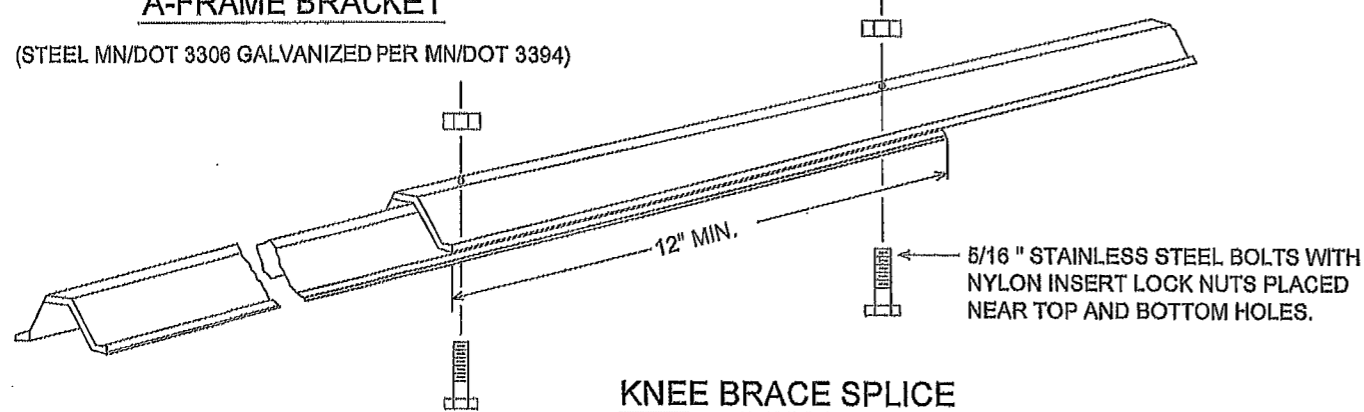


A-FRAME BRACKET

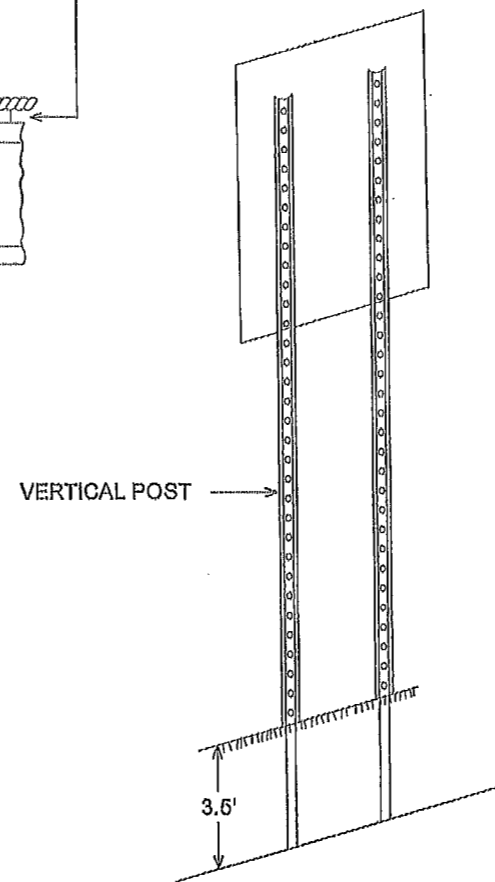
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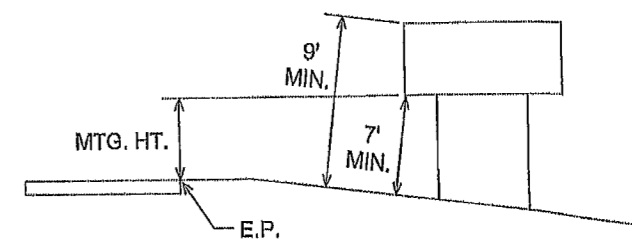
SECTION B-B



KNEE BRACE SPLICE



**TYPICAL INSTALLATION 36" AND LARGER
TYPE "C" SIGNS**



TYPICAL MOUNTING

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

**TYPE C & D SIGN
STRUCTURAL DETAILS**

NO	DATE	BY	CHKD	APPR	REVISION
NAME: P:\22-01-00\GSAH_116_(Bunker_AL_Martin)\Base\Traffic\Sign&Stripe_Details 2019.dwg					

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 PRINT NAME: SEAN R. THIEL DATE: 3/10/22
 SIGNATURE: *Sean R. Thiel* LICENSE NO. 48129

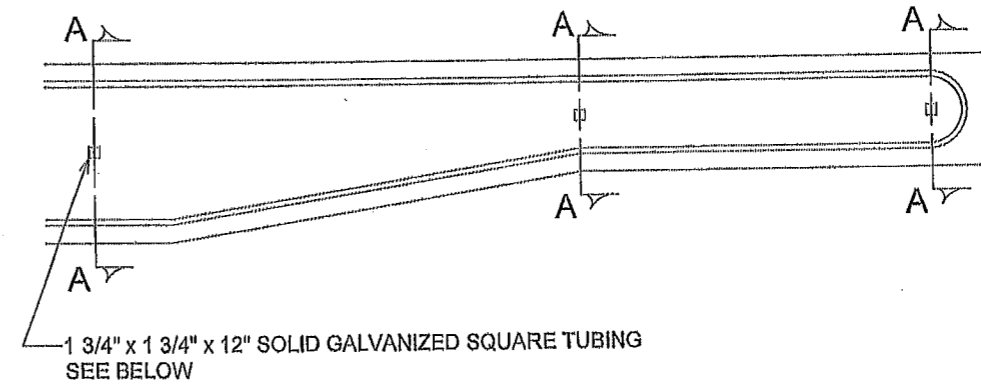
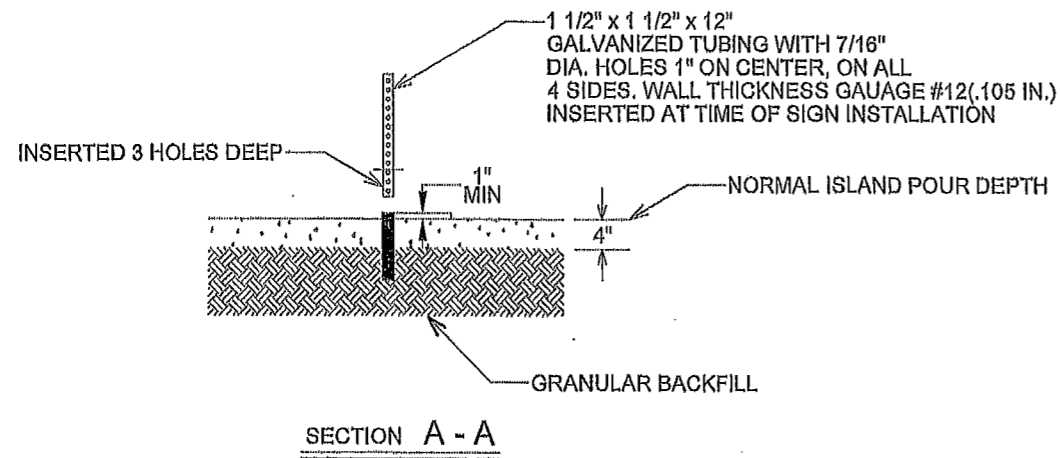
DRAWN BY: TMV DATE: 02/14/22
 DESIGN BY: DATE:
 CHECKED BY: SRT DATE: 02/23/22



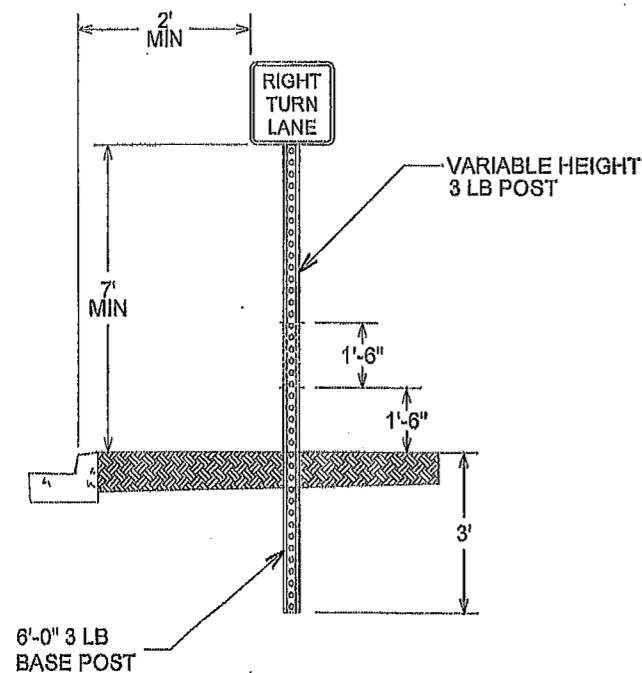
**ANOKA COUNTY
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SAP 002-716-023

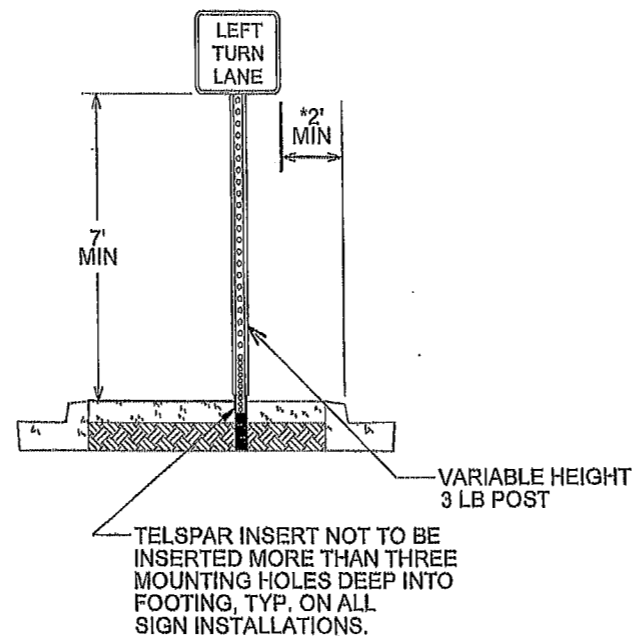
**SIGNING & STRIPING
DETAILS**



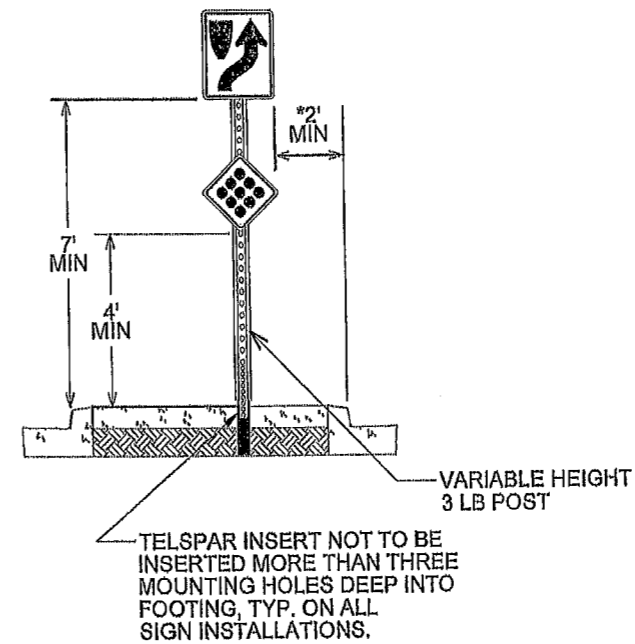
GROUND POST MOUNT SIGN INSTALLATION TYPICAL



ISLAND MOUNT BREAK-AWAY SIGN INSTALLATION TYPICAL



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



*1' MIN FOR NARROW URBAN LOCATIONS

INSTALLATION NEAR SIDEWALK (MN MUTCD)
 The minimum height, measured vertically from the bottom of the sign to the sidewalk, of signs installed above sidewalks shall be 7 feet. If the bottom of a secondary sign that is mounted below another sign is mounted lower than 7 feet above a pedestrian sidewalk or pathway, the secondary sign shall not project more than 4 inches into the pedestrian facility.

NO	DATE	BY	CKD	APPR	REVISION
NAME: P:\22-01-00\GSAH_116_(Bunker Al Martin)\Base\Traffic\Sign&Stripe_Details 2019.dwg					

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DESIGN BY: DATE:

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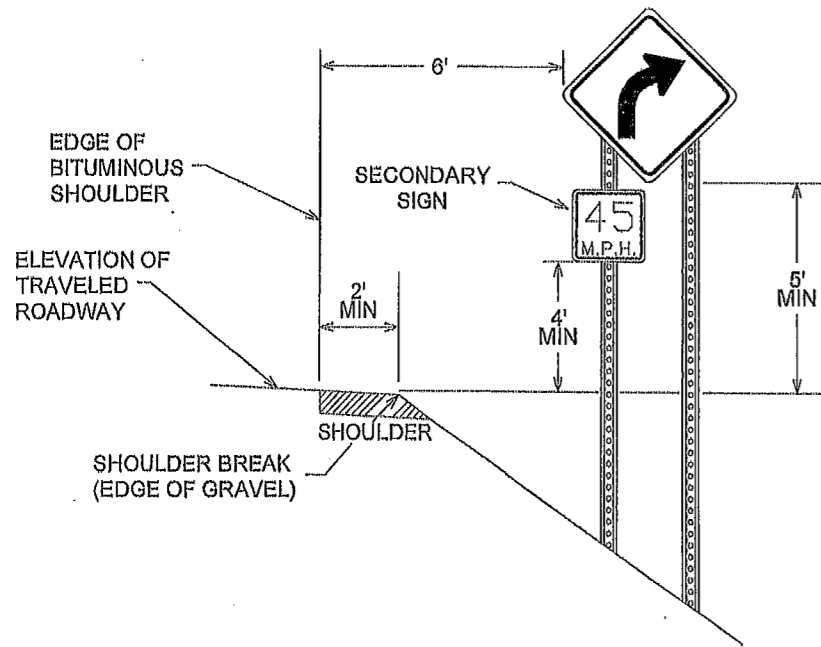
ANOKA COUNTY
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SAP 002-716-023

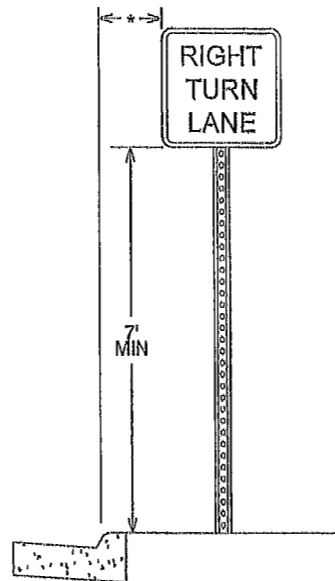
SIGNING & STRIPING
DETAILS

SHEET 21 OF 30 SHEETS

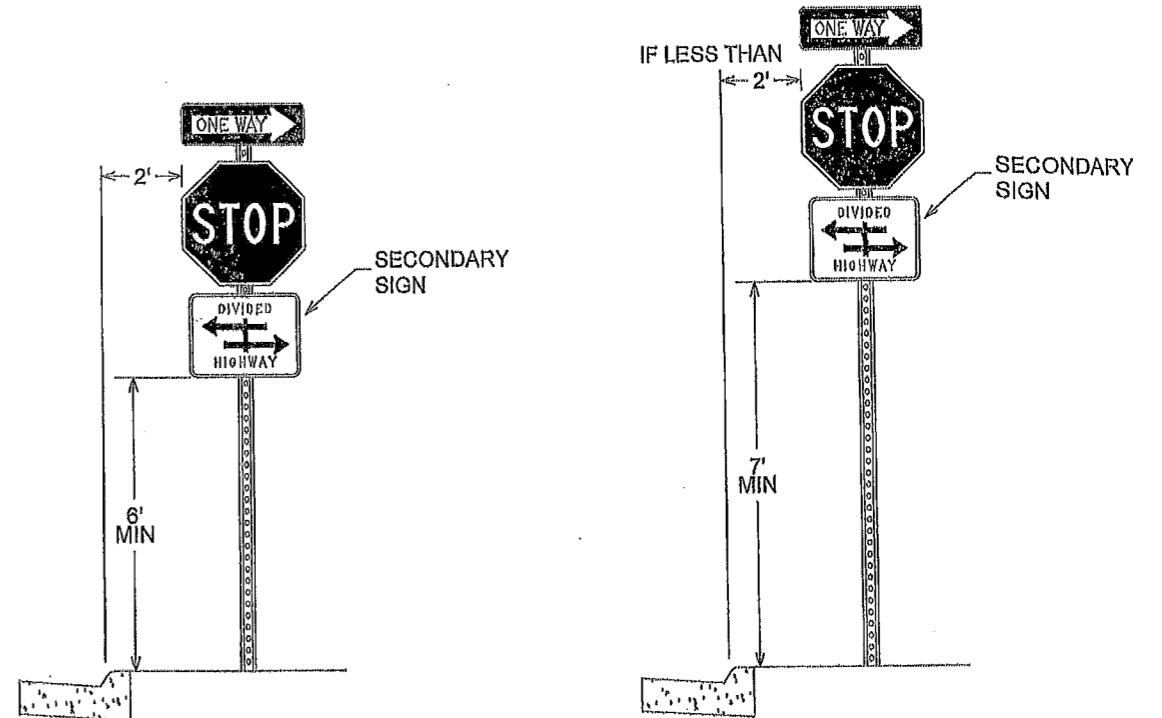
TYPICAL SIGN PLACEMENT
(RURAL)



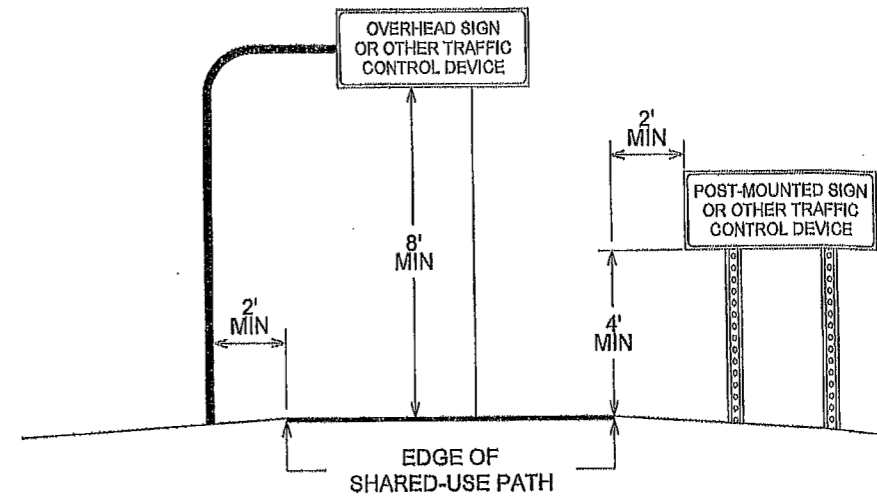
TYPICAL SIGN PLACEMENT
(URBAN)



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



TYPICAL SIGN PLACEMENT
SHARED-USE PATH



NOTES:

- ALL DIMENSIONS ARE MINIMUMS
- MAINTAIN A DISTANCE OF 2' BETWEEN SIGNS AND BITUMINOUS TRAIL
- 7' SIGN CLEARANCE IF A 2' DISTANCE BETWEEN SIGN AND BITUMINOUS TRAIL CANNOT BE MAINTAINED

NO	DATE	BY	CHKD	APPR	REVISION

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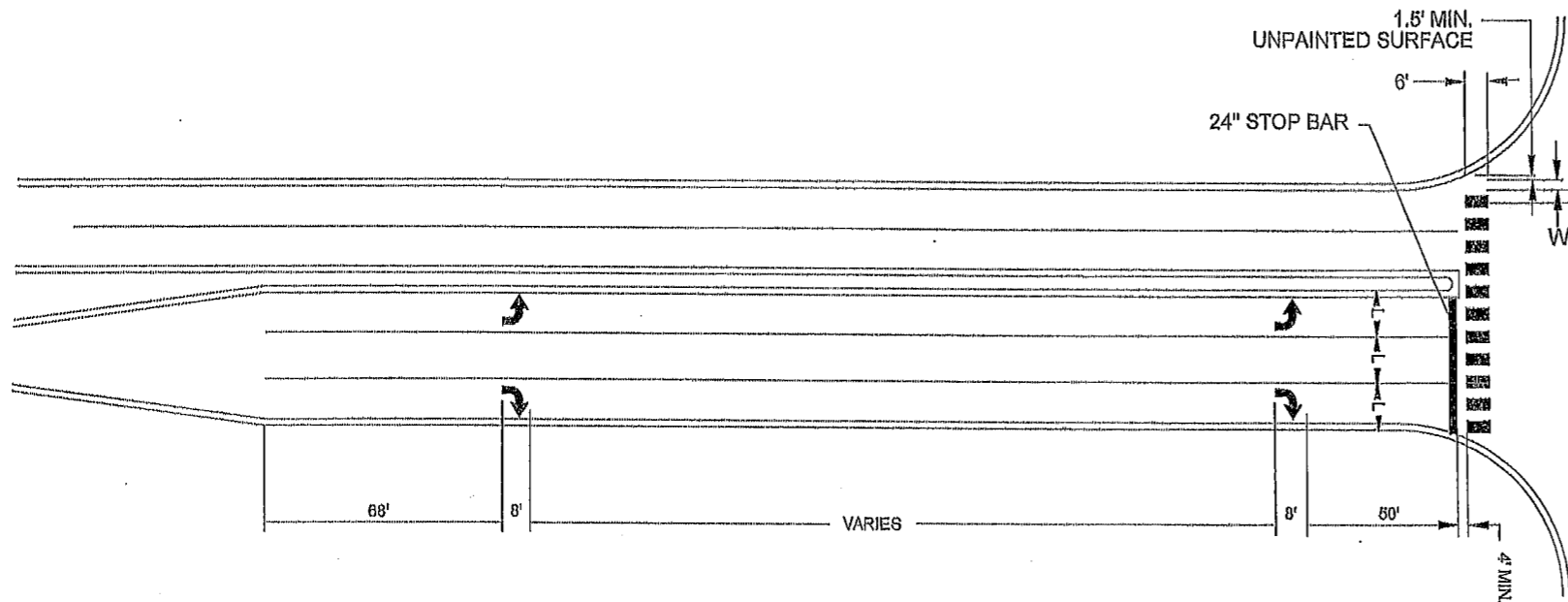


ANOKA COUNTY
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SAP 002-716-023

SIGNING & STRIPING
DETAILS

MARKINGS FOR PEDESTRIAN CROSSWALKS

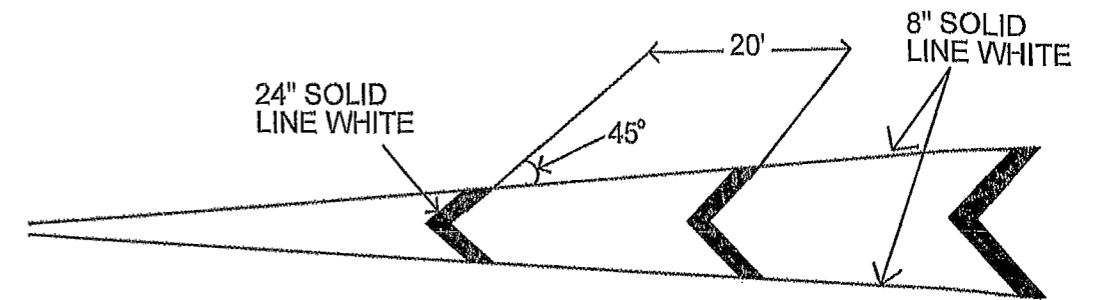


(L)	(W)	(S)
WIDTH OF INSIDE LANE	WIDTH OF PAINTED AREAS	WIDTH OF SPACE
9'	2.0'	2.5'
10'	2.5'	2.5'
11'	2.5'	3.0'
12'	3.0'	3.0'
13'	3.0'	3.0'

NOTES: CROSSWALKS:

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

MARKINGS FOR CHANNELIZED LEFT TURN LANE



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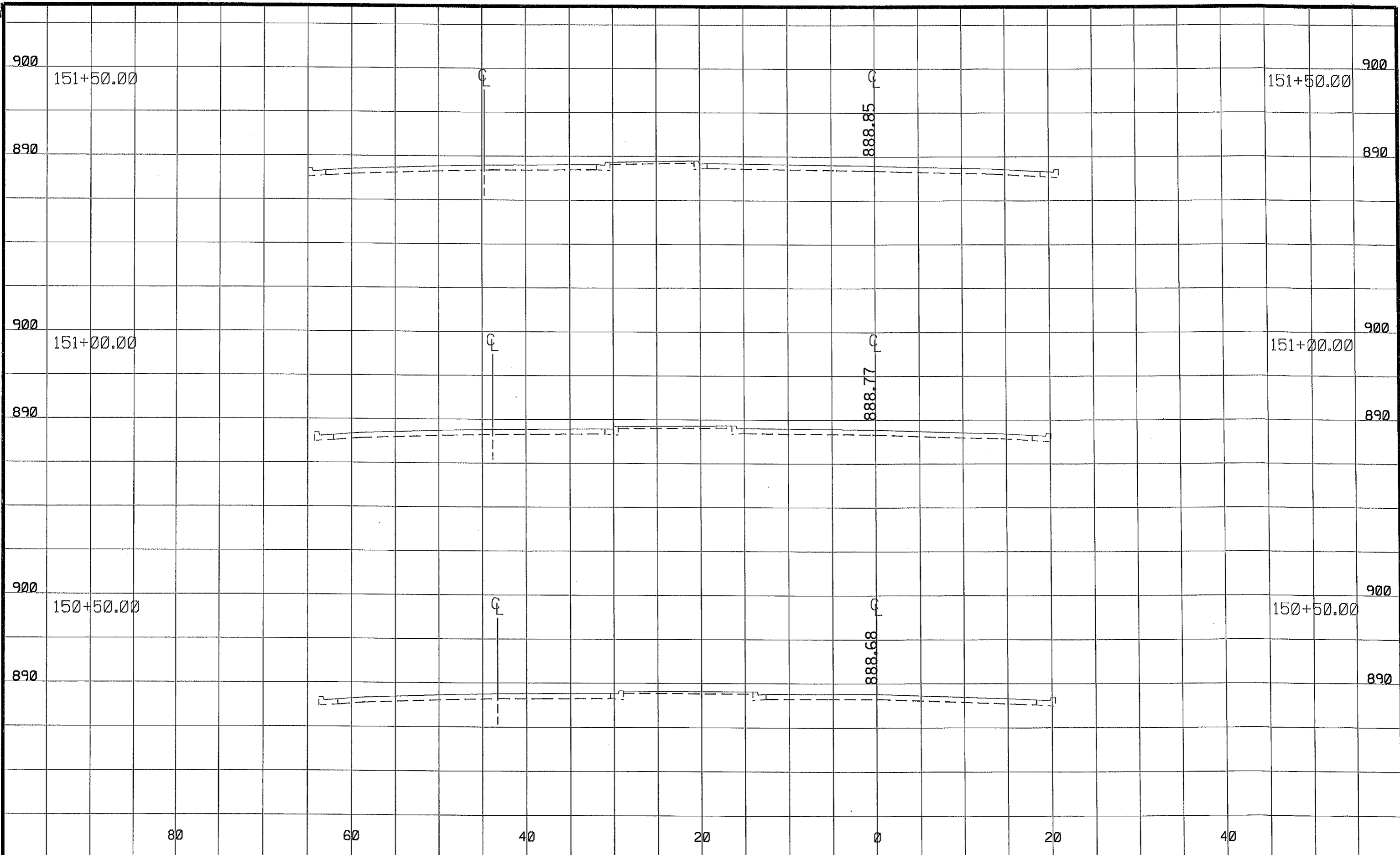


ANOKA COUNTY
HIGHWAY DEPT.

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SIGNING & STRIPING
DETAILS

SHEET 23 OF 30 SHEETS



NO	DATE	BY	CHKD	APPR	REVISION
NAME: P:\22-01-00\CSAH_118_(BUNKER_AT_MARTIN)\Plan\002-716-023_XP.dgn					
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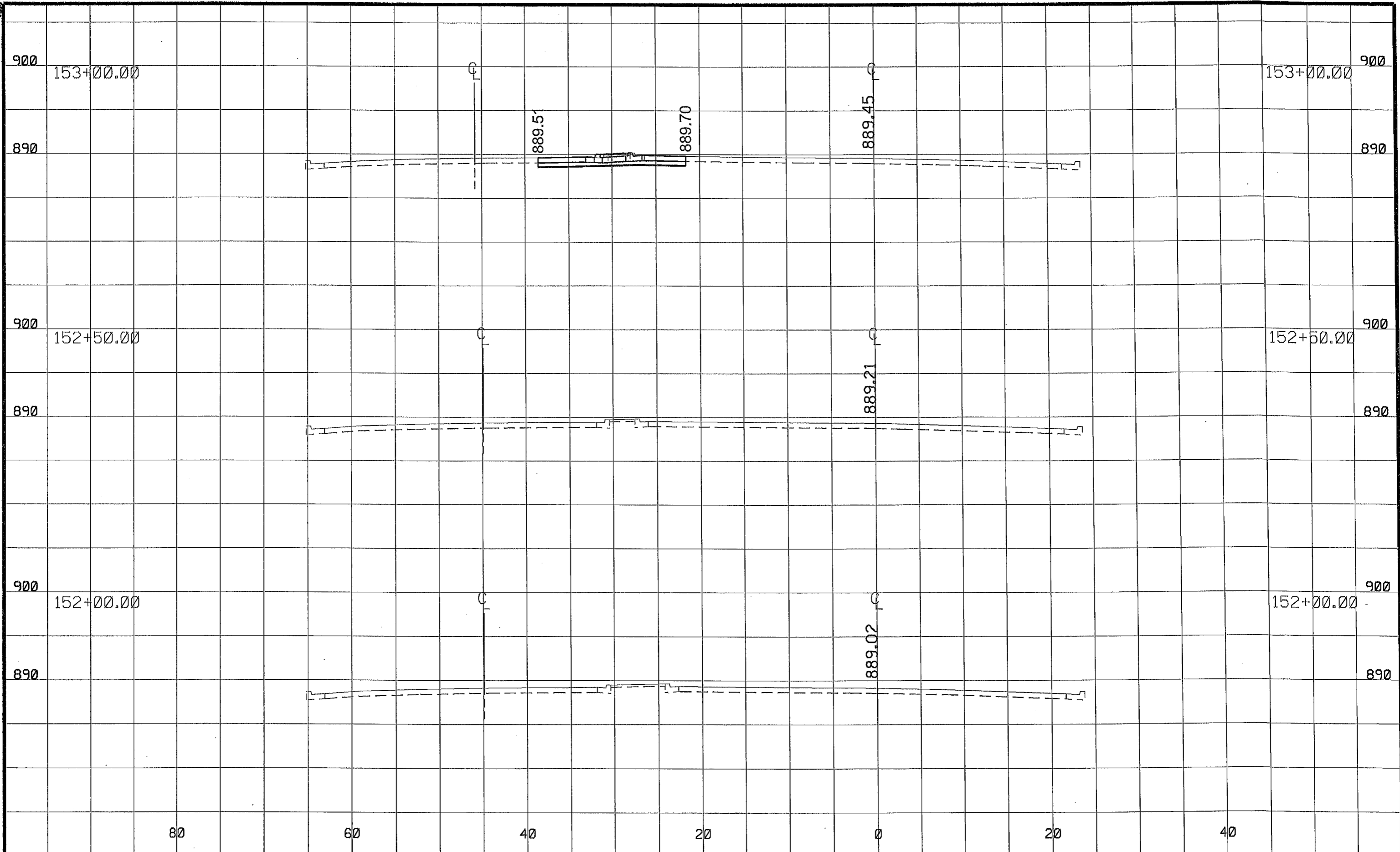
DRAWN BY BTU DATE 03/17/22
 DESIGN BY BTU DATE 03/17/22
 CHECKED BY NJD DATE 03/17/22



**ANOKA COUNTY
HIGHWAY DEPT.**

SAP 002-716-023

CROSS SECTIONS
 STA 150+50.00 TO 151+50.00
 Sheet 24 of 30 Sheets



NO	DATE	BY	CKD	APPR	REVISION
NAME: P:\22-01-00\CSAH_116_(BUNKER_AT_MARTIN)\Plan\002-716-023_XP.dgn					03/17/2022 2:26:19 PM

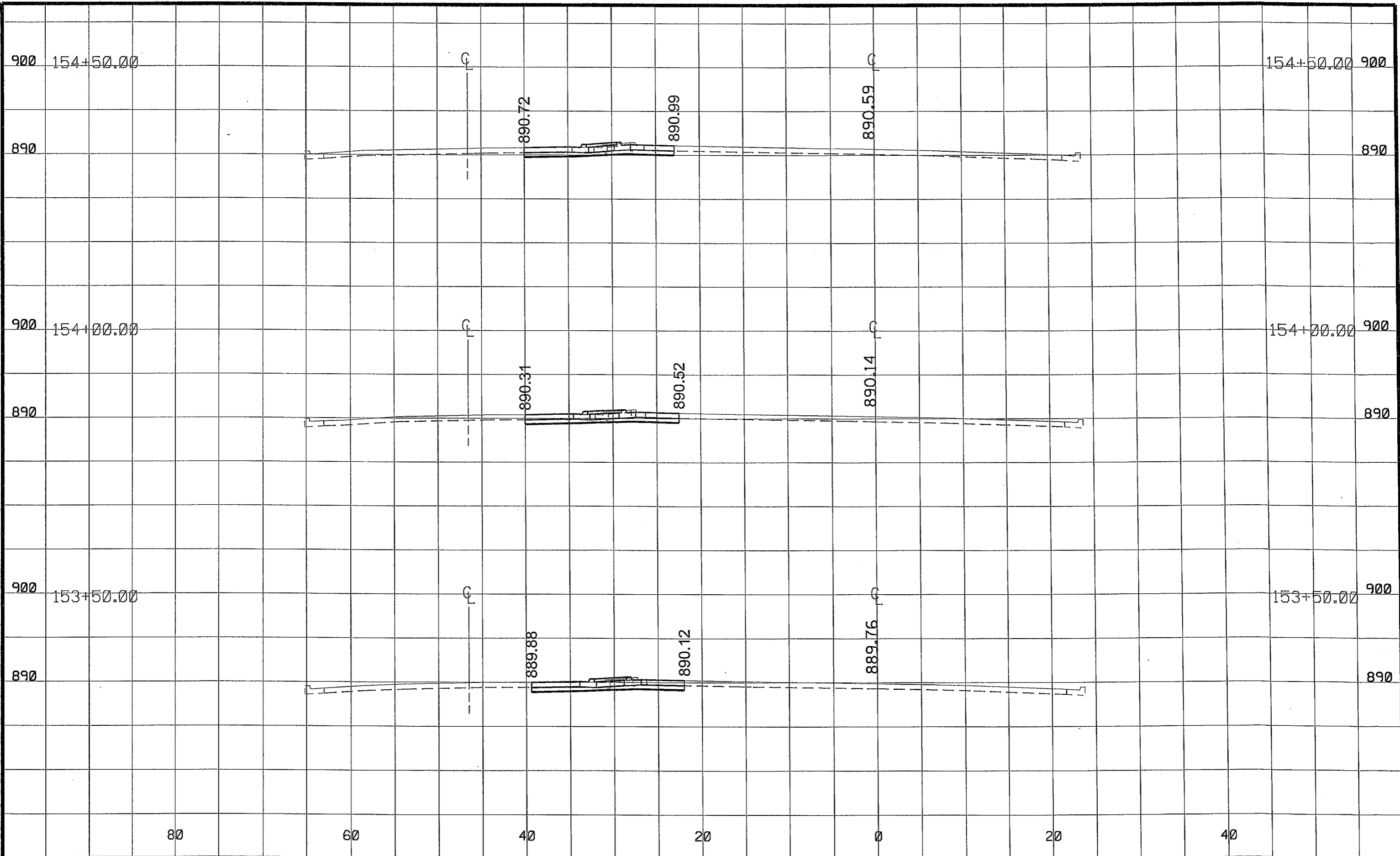
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 DESIGN BY BTU DATE 03/17/22
 CHECKED BY NJD DATE 03/17/22



**ANOKA COUNTY
HIGHWAY DEPT.**

SAP 002-716-023

CROSS SECTIONS
 STA 152+00.00 TO 153+00.00
 Sheet 25 of 30 Sheets



NO	DATE	BY	CKD	APPR	REVISION
NAME: P:\22-01-00\CSAH_116_(BUNKER_AT_MARTIN)\Plan\002-716-023_XP.dgn 03/17/2022 2:26:20 PM					

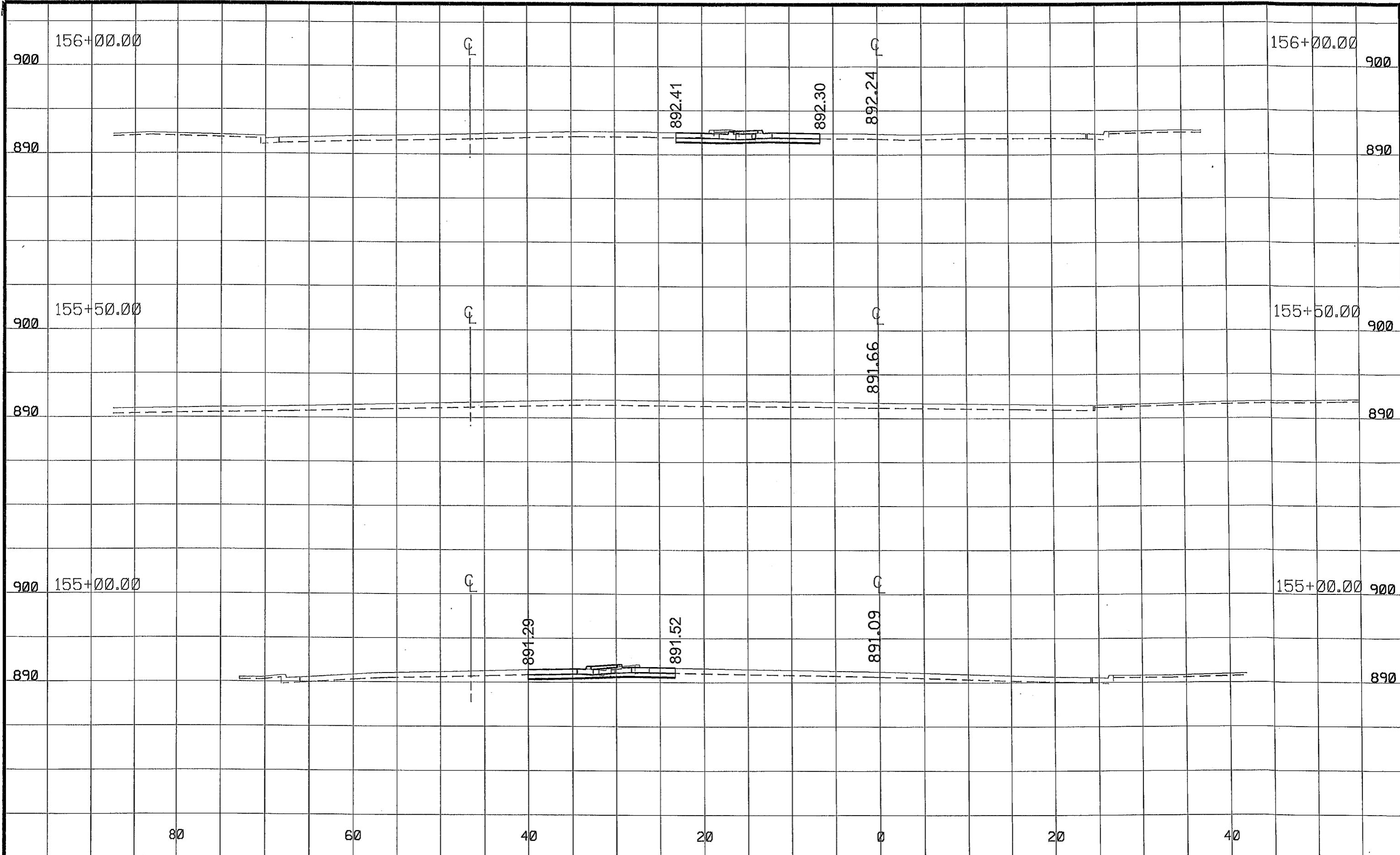
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 DESIGN BY BTU DATE 03/17/22
 CHECKED BY NJD DATE 03/17/22



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SAP 002-716-023

CROSS SECTIONS
 STA 153+50.00 TO 164+50.00
 Sheet 26 of 30 Sheets



NO	DATE	BY	CHKD	APPR	REVISION

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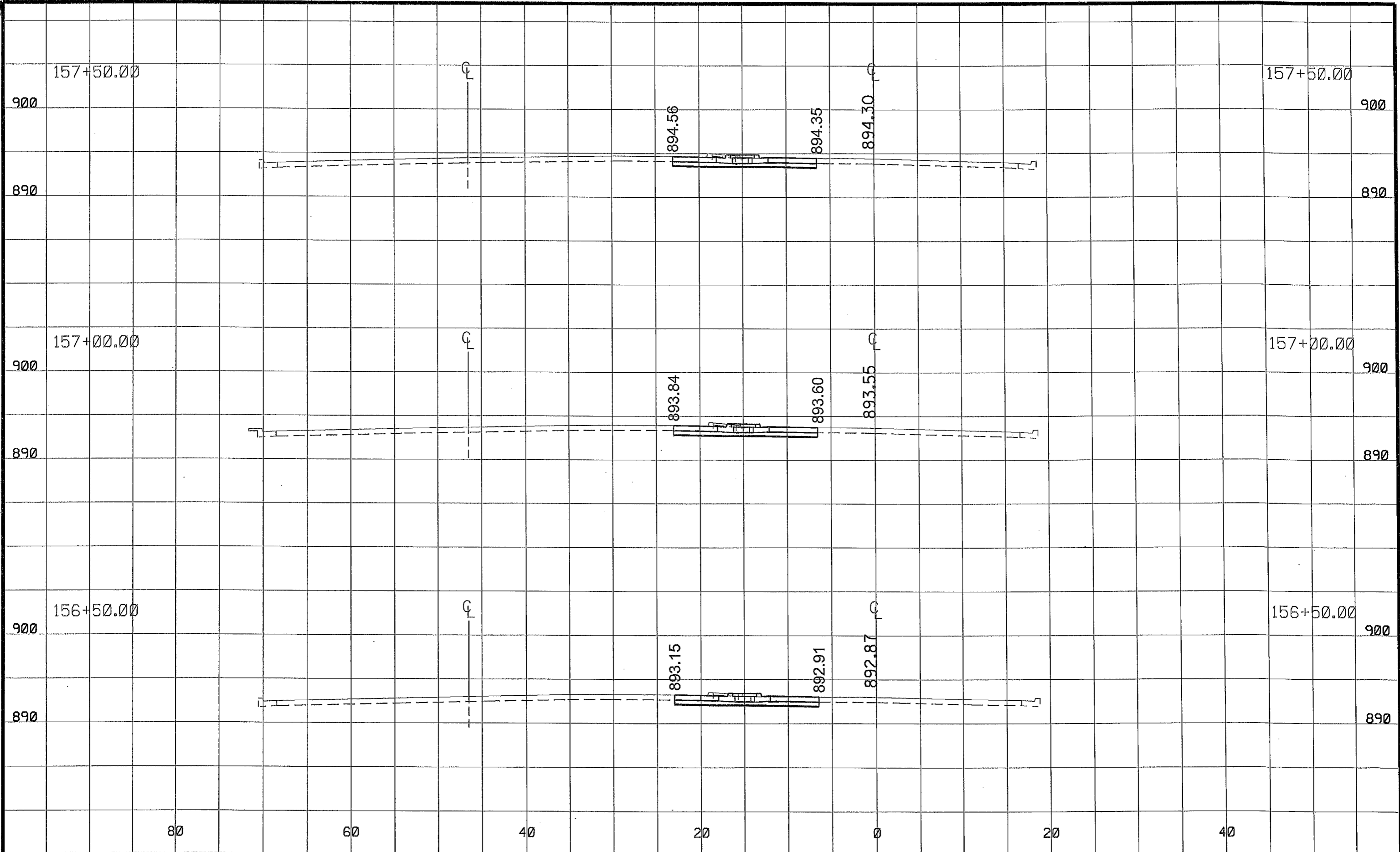
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 CHECKED BY NJD DATE 03/17/22



ANOKA COUNTY
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SAP 002-716-023

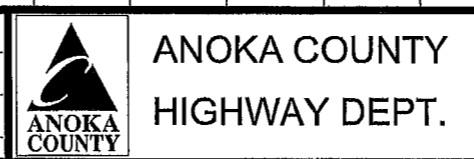
CROSS SECTIONS
 STA 155+00.00 TO 156+00.00
 Sheet 27 of 30 Sheets



NO	DATE	BY	CHKD	APPR	REVISION

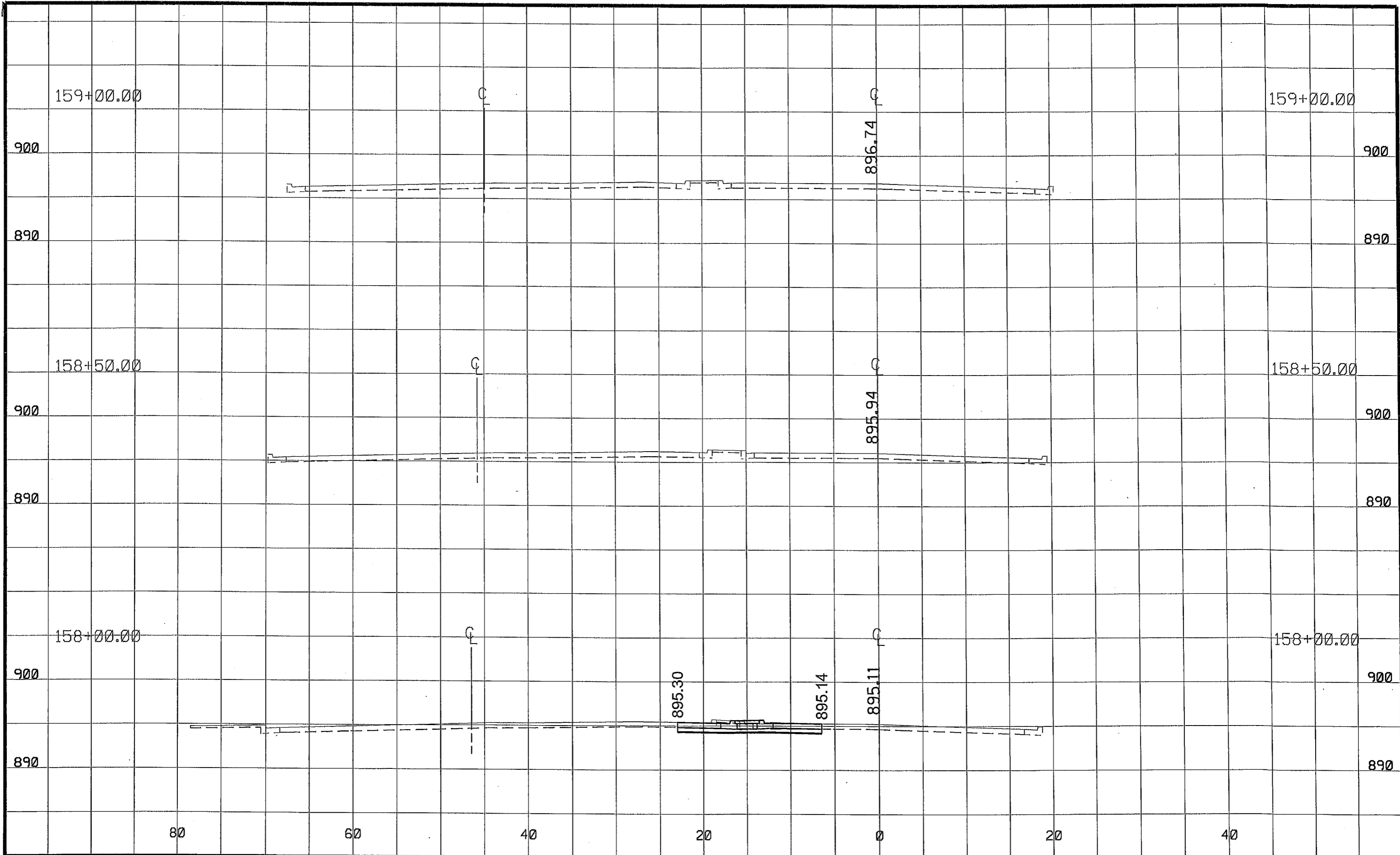
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 DESIGN BY BTU DATE 03/17/22
 CHECKED BY NJD DATE 03/17/22



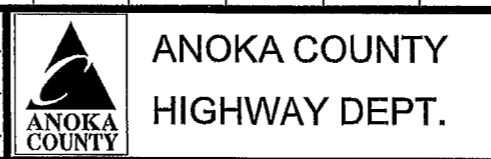
SAP 002-716-023

CROSS SECTIONS
 STA 156+50.00 TO 157+50.00
 Sheet 28 of 30 Sheets



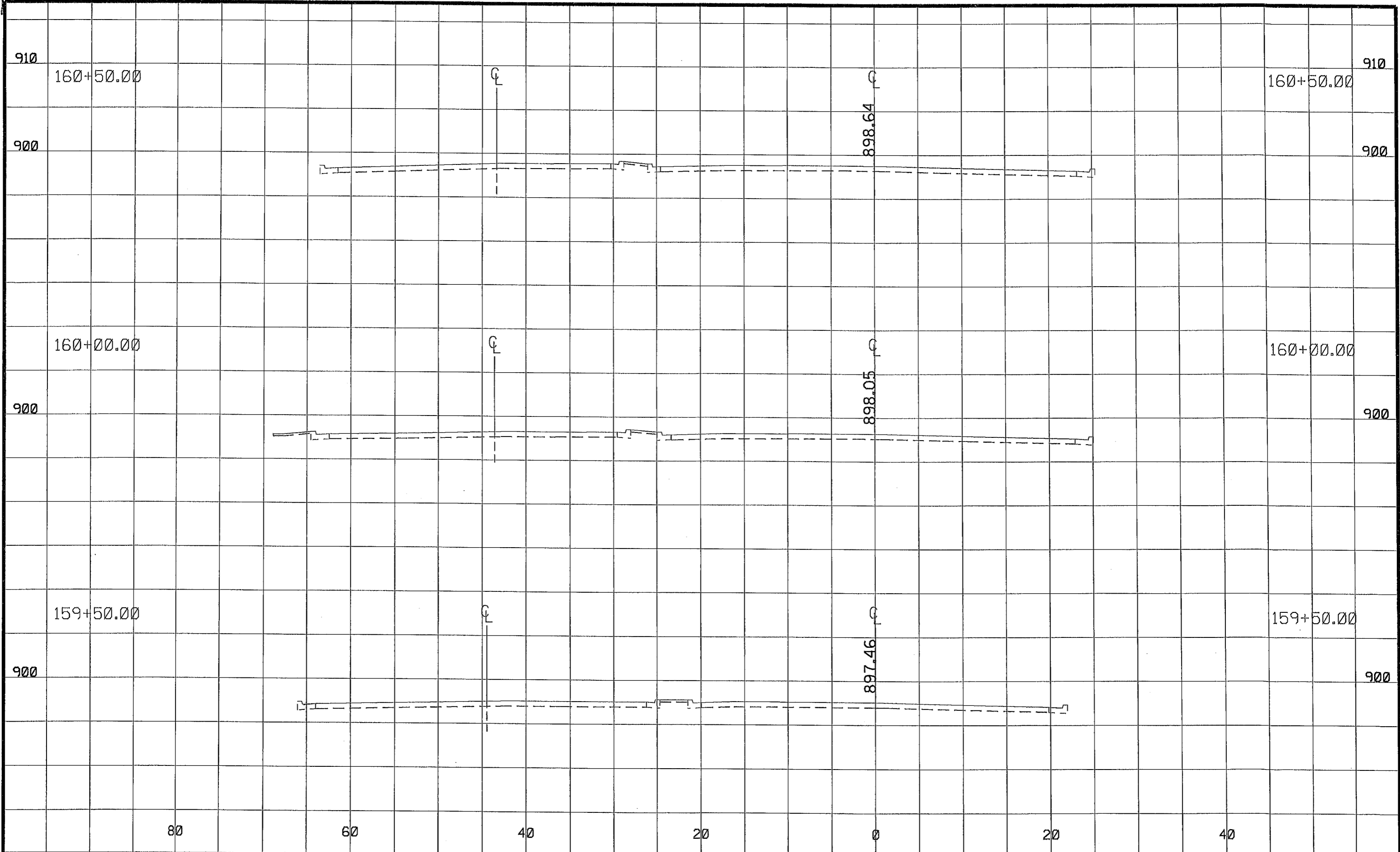
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 CHECKED BY NJD DATE 03/17/22



SAP 002-716-023

CROSS SECTIONS
 STA 158+00.00 TO 159+00.00
 Sheet 29 of 30 Sheets



NO	DATE	BY	CHKD	APPR	REVISION
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CROSS SECTIONS
 STA 159+50.00 TO 160+50.00
 Sheet 30 of 30 Sheets