MINNESOTA DEPARTMENT OF TRANSPORTATION

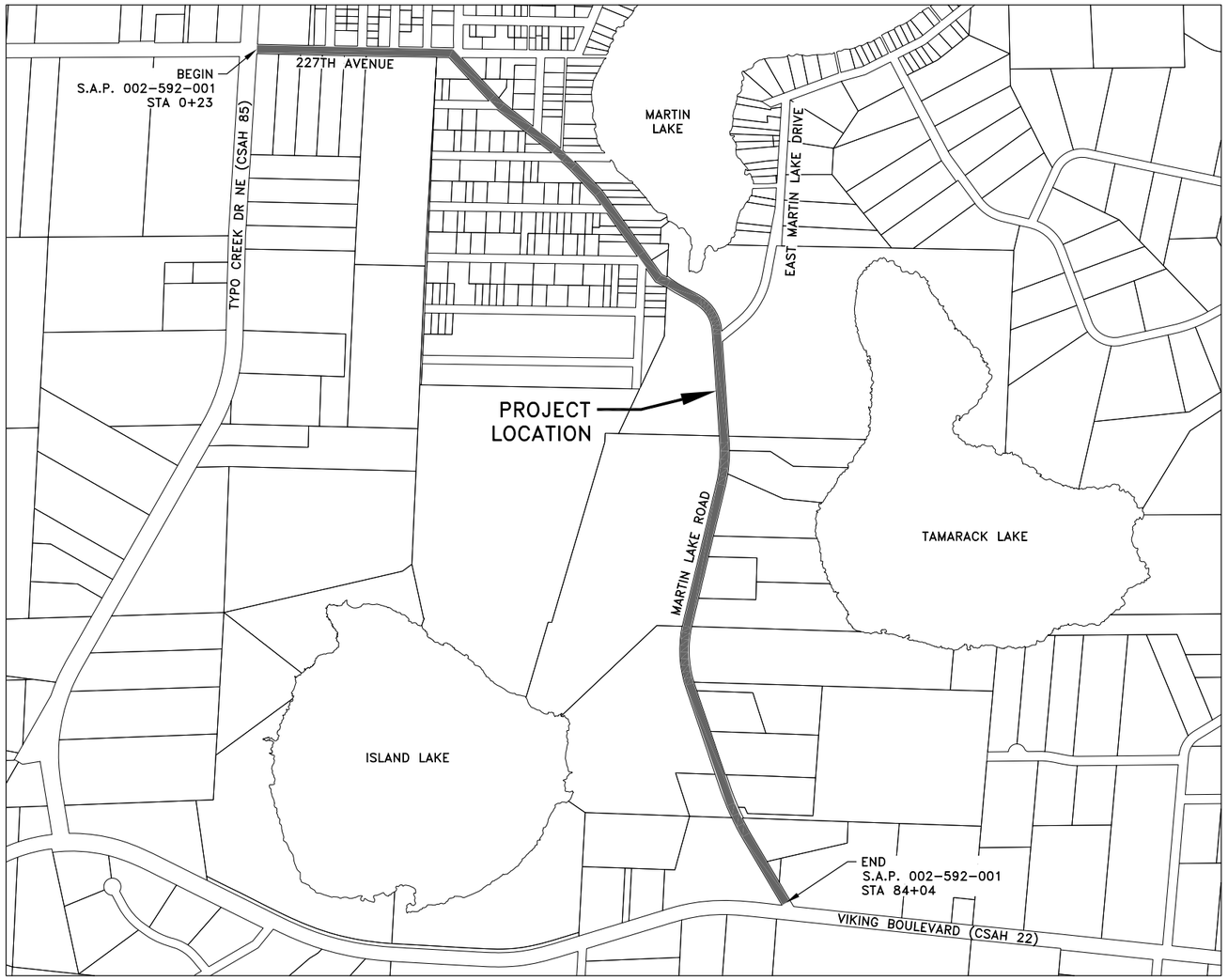
CONSTRUCTION PLANS FOR AGGREGATE BASE, BITUMINOUS SURFACING, CURB & GUTTER, GRADING, STORM SEWER, SIGNING, STRIPING AND MISCELLANEOUS CONSTRUCTION

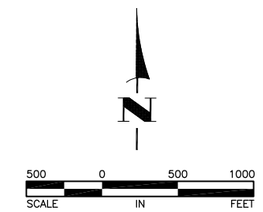
LINWOOD TOWNSHIP, ANOKA COUNTY, MINNESOTA

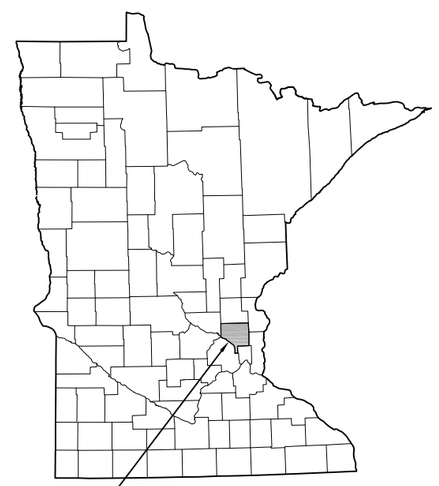
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

S.A.P. 002-592-001 LOCATED ON 227TH AVENUE AND MARTIN LAKE ROAD FROM TYPO CREEK DRIVE (CSAH 85) TO VIKING BOULEVARD (CSAH 22)

SECTIONS 4 AND 9, TOWNSHIP 33, RANGE 22







LINWOOD TOWNSHIP, ANOKA COUNTY, MINNESOTA

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-2, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

PROJECT	STA. TO STA.	GROSS LENGTH (FEET)	BRIDGE LENGTH (FEET)	EXCEPTION LENGTH (FEET)	NET LENGTH (FEET)	NET LENGTH (MILES)	ADT (2025)	ADT (2045)	DESIGN ESAL	R VALUE	TON DESIGN	DESIGN SPEED	NUMBER OF LANES	NUMBER OF PARKING LANES	FUNCTIONAL CLASSIFICATION
S.A.P. 002-592-001 227TH AVENUE	0+23 TO 13+26	1303	0	0	1303	0.247	1380	1465	180000	70	10	40	2	0	RURAL-COLLECTOR
S.A.P. 002-592-001 MARTIN LAKE ROAD	13+26 TO 41+25	2799	0	0	2799	0.530	1380	1465	180000	70	10	30	2	0	URBAN-COLLECTOR
S.A.P. 002-592-001 MARTIN LAKE ROAD	41+25 TO 84+04	4279	0	0	4279	0.810	1380	1465	180000	70	10	40	2	0	RURAL-COLLECTOR

STOPPING SIGHT DISTANCE BASED ON:
3.5 FT – HEIGHT OF EYE
2.0 FT – HEIGHT OF OBJECT

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520

Dec 04, 2025 – 1:26pm
K:\MUNICIPAL\W378\ENGINEERING\PLAN DWG\LW378_TITLE.dwg

GOVERNING SPECIFICATIONS

THE 2025 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL APPLY.

ALL FEDERAL, STATE AND LOCAL LAWS, REGULATIONS, AND ORDINANCES SHALL BE COMPLIED WITH IN THE CONSTRUCTION OF THIS PROJECT.

ALL TRAFFIC CONTROL DEVICES AND SIGNING 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.

ALL REQUIREMENTS OF THE PROJECT MANUAL FOR THE MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT.

SHEET INDEX

THIS PLAN CONTAINS 112 SHEETS

APPROVED: ANOKA COUNTY ENGINEER — DATE

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

FOR STATE AID ENGINEER: APPROVED FOR STATE AID FUNDING — DATE

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
HAKANSON ANDERSON
DESIGN ENGINEER

LIC. NO. 23461 DATE 12/1/25

DATE	REVISION

ESTIMATED QUANTITIES

ITEM NO.	REF. NOTES	SPEC. REF.	DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITY	S.A.P. 002-592-001 227TH AVENUE AND MARTIN LAKE ROAD ROADWAY ESTIMATED QUANTITY	STORM SEWER ESTIMATED QUANTITY
1		2021.501	MOBILIZATION	LUMP SUM	1	0.93	0.07
2		2101.505	CLEARING	ACRE	0.15	0.15	
3		2101.505	GRUBBING	ACRE	0.15	0.15	
4		2104.502	REMOVE CONCRETE APRON	EACH	2	2	
5		2104.502	REMOVE MISCELLANEOUS STRUCTURES	EACH	2	2	
6		2104.502	REMOVE WOOD POST	EACH	1	1	
7		2104.502	REMOVE MANHOLE OR CATCH BASIN	EACH	8	8	
8		2104.502	REMOVE CASTING	EACH	1	1	
9		2104.502	REMOVE SIGN	EACH	74	74	
10	2, 7	2104.502	REMOVE MAILBOX SUPPORT	EACH	5	5	
11		2104.502	SALVAGE CASTING	EACH	2	2	
12		2104.502	SALVAGE PRECAST CONCRETE COVER	EACH	1	1	
13		2104.502	SALVAGE SIGN PANEL	EACH	10	10	
14	7	2104.502	SALVAGE MAILBOX SUPPORT	EACH	41	41	
15		2104.503	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LIN FT	107	107	
16		2104.503	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	817	817	
17		2104.503	REMOVE SEWER PIPE (STORM)	LIN FT	219	219	
18		2104.503	REMOVE CONCRETE CURB	LIN FT	118	118	
19		2104.503	SALVAGE WOOD RAIL FENCE	LIN FT	40	40	
20		2104.504	REMOVE BITUMINOUS PAVEMENT	SQ YD	334	334	
21		2104.507	REMOVE RIPRAP	CU YD	3	3	
22		2104.518	REMOVE CONCRETE PAVEMENT	SQ FT	1010	1010	
23		2106.507	EXCAVATION - COMMON	CU YD	3889	3889	
24		2106.507	COMMON EMBANKMENT (CV)	CU YD	1069	1069	
25		2112.519	SUBGRADE PREPARATION	ROAD STATION	83.8	83.8	
26	5	2211.509	AGGREGATE BASE CLASS 5	TON	300	300	
27		2215.504	FULL DEPTH RECLAMATION	SQ YD	29394	29394	
28	8	2215.507	HAUL FULL DEPTH RECLAMATION (LV)	CU YD	3935	3935	
29		2232.504	MILL BITUMINOUS SURFACE (1.5")	SQ YD	59	59	
30		2357.506	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	1583	1583	
31		2360.504	TYPE SP 9.5 WEARING COURSE MIXTURE (2,B) 3" THICK	SQ YD	788	788	
32		2360.509	TYPE SP 9.5 WEARING COURSE MIXTURE (2,B)	TON	2731	2731	
33		2360.509	TYPE SP 12.5 NON WEARING COURSE MIXTURE (2,B)	TON	4552	4552	
34		2501.502	18" RC PIPE APRON	EACH	1	1	
35		2501.502	21" RC PIPE APRON	EACH	1		1
36		2501.503	18" RC PIPE CULVERT DESIGN 3006 CLASS V	LIN FT	8	8	
37		2501.602	TRASH GUARD FOR 21" PIPE APRON	EACH	1		1
38		2503.503	12" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	91		91
39		2503.503	15" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	212		212
40		2503.503	18" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	22		22
41		2503.503	21" RC PIPE SEWER DESIGN 3006 CLASS III	LIN FT	22		22
42		2503.602	CONNECT TO EXISTING STORM SEWER	EACH	5		5
43		2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN H	EACH	1		1
44	9	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL	EACH	4		4
45		2506.502	CASTING ASSEMBLY	EACH	12		12
46		2506.502	INSTALL CASTING	EACH	2		2
47		2506.503	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020	LIN FT	32.4		32.4
48	6	2506.602	INSTALL STRUCTURE	EACH	1		1
49		2506.602	CONNECT INTO EXISTING MANHOLE	EACH	1		1
50	10	2506.603	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL	LIN FT	1		1
51		2511.504	GEOTEXTILE FILTER TYPE 4	SQ YD	65.3	41.2	24.1
52		2511.507	RANDOM RIPRAP CLASS II	CU YD	12.3	7.6	4.7
53		2521.518	4" CONCRETE WALK	SQ FT	25	25	
54		2531.503	CONCRETE CURB AND GUTTER DESIGN B418	LIN FT	5950	5950	
55	11	2531.503	CONCRETE CURB AND GUTTER DESIGN D418 (MODIFIED)	LIN FT	196	196	
56		2531.504	6" CONCRETE DRIVEWAY PAVEMENT	SQ YD	130	130	
57		2531.604	CONCRETE DRAINAGE FLUME	SQ YD	57	57	
58		2531.604	8" CONCRETE VALLEY GUTTER	SQ YD	79	79	
59	7	2540.602	INSTALL MAILBOX SUPPORT	EACH	41	41	
60	2, 7	2540.602	MAILBOX	EACH	5	5	

ESTIMATED QUANTITIES

ITEM NO.	REF. NOTES	SPEC. REF.	DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITY	S.A.P. 002-592-001 227TH AVENUE AND MARTIN LAKE ROAD ROADWAY ESTIMATED QUANTITY	STORM SEWER ESTIMATED QUANTITY
61	1, 2, 7	2540.602	MAILBOX SUPPORT	EACH	5	5	
62		2557.603	INSTALL WOOD RAIL FENCE	LIN FT	40	40	
63		2563.601	TRAFFIC CONTROL SUPERVISOR	LUMP SUM	1	0.93	0.07
64		2563.601	TRAFFIC CONTROL	LUMP SUM	1	0.93	0.07
65		2564.502	INSTALL SIGN PANEL	EACH	10	10	
66		2564.502	DELINEATOR/MARKER	EACH	7	7	
67	12	2564.518	SIGN PANEL	SQ FT	269.2	269.2	
68	13	2564.618	SIGN PANEL SPECIAL	SQ FT	192.1	192.1	
69	4	2572.510	PRUNE TREES	HOUR	10	10	
70		2573.501	STABILIZED CONSTRUCTION EXIT	LUMP SUM	1	0.93	0.07
71	3	2573.501	EROSION CONTROL SUPERVISOR	LUMP SUM	1	0.93	0.07
72		2573.502	STORM DRAIN INLET PROTECTION	EACH	15		15
73		2573.502	CULVERT END CONTROLS	EACH	8	8	
74		2573.503	SILT FENCE; TYPE MS	LIN FT	12398	12398	
75		2573.503	FLOTATION SILT CURTAIN TYPE MOVING WATER	LIN FT	65	65	
76		2573.503	SEDIMENT CONTROL LOG TYPE STRAW	LIN FT	1590	1590	
77		2574.507	COMMON TOPSOIL BORROW	CU YD	705	705	
78		2574.508	FERTILIZER TYPE 1	POUND	1230	1230	
79		2575.504	ROLLED EROSION PREVENTION CATEGORY 20	SQ YD	1086	1086	
80		2575.504	ROLLED EROSION PREVENTION CATEGORY 72	SQ YD	315	315	
81		2575.505	SEEDING	ACRE	4.1	4.1	
82		2575.508	HYDRAULIC BONDED FIBER MATRIX	POUND	13335	13335	
83		2575.608	SEED SANDY INSLOPE	POUND	534	534	
84		2582.503	4" SOLID LINE MULTI-COMPONENT	LIN FT	15594	15594	
85		2582.503	4" DOUBLE SOLID LINE MULTI-COMPONENT	LIN FT	7426	7426	

REFERENCE NOTES:

① MAILBOX SUPPORTS SHALL MEET THE REQUIREMENTS OF MN/DOT STANDARD PLATE 9350.

② ITEMS 2104–REMOVE MAILBOX SUPPORT, 2540–MAILBOX AND 2540–MAILBOX SUPPORT WILL ONLY BE USED IF THE EXISTING MAILBOX CANNOT BE SALVAGED.

③ ALL LABOR, MATERIAL AND EQUIPMENT COSTS NECESSARY TO MANAGE EROSION AND SEDIMENT IN ACCORDANCE WITH THE MN/DOT STANDARD SPECIFICATIONS, MN/DOT EROSION CONTROL HANDBOOK AND ALL REQUIREMENTS INCLUDED IN THE PROJECT MANUAL SHALL BE PAID PER ITEM 2573–EROSION CONTROL SUPERVISOR, UNLESS OTHERWISE INCLUDED IN THE PROJECT BID FORM.

④ CONTRACTOR SHALL PRUNE TREES AS NECESSARY TO COMPLETE THE WORK. PRUNING TREES MAY BE IN LIEU OF CLEARING AND GRUBBING. THIS WILL BE DETERMINED IN THE FIELD PRIOR TO CONSTRUCTION.

⑤ IMPORTING AGGREGATE BASE CLASS 5 IS NOT ANTICIPATED AND USE OF THIS ITEM MUST BE APPROVED BY THE ENGINEER.

⑥ ITEM INCLUDES PAYMENT FOR INSTALLING THE SALVAGED MANHOLE COVER LOCATED AT THE INTERSECTION OF 227TH AVENUE AND ELBE STREET.

⑦ THE CONTRACTOR SHALL PROVIDE TEMPORARY MAILBOX BANKS IN AT LEAST THREE SEPARATE LOCATIONS. IN GENERAL, THE MAILBOX BANKS SHALL BE PLACED AT EACH END AND NEAR THE MIDDLE OF THE PROJECT. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING NOTICE TO THE RESIDENTS AND THE POST OFFICE REGARDING THE LOCATION OF THE TEMPORARY MAILBOXES. THIS WORK SHALL BE INCIDENTAL.

⑧ ITEM SHALL INCLUDE ALL WORK REQUIRED TO EXCAVATE, HAUL AND TEMPORARILY STOCKPILE RECLAMATION MATERIAL TO ALLOW FOR OTHER WORK TO BE COMPLETED (I.E. SUBGRADE EXCAVATION). THIS ITEM SHALL ALSO INCLUDE ALL WORK REQUIRED TO EXCAVATE, HAUL, WATER AND COMPACT THE SALVAGED RECLAMATION MATERIAL TO THE PROFILE OR CROSS SECTION SHOWN ON THE PLANS AND AS DESCRIBED IN THE STANDARD SPECIFICATIONS.

⑨ ITEM INCLUDES PAYMENT FOR 2'X3' CATCH BASIN STRUCTURES.

⑩ ITEM INCLUDES PAYMENT FOR THE MANHOLE RISER SECTION LOCATED AT THE INTERSECTION OF 227TH AVENUE AND ELBE STREET.

⑪ ITEM INCLUDES PAYMENT FOR CURB CONSTRUCTION AT DRIVEWAYS THAT DRAIN AWAY FROM THE ROAD.

⑫ ITEM INCLUDES PAYMENT FOR ALL SIGNS EXCEPT STREET NAME SIGNS.

⑬ ITEM INCLUDES PAYMENT FOR ALL STREET NAME SIGNS.

STANDARD PLATES

THESE STANDARD PLATES AS APPROVED BY THE FHWA SHALL APPLY

PLATE NO.	DESCRIPTION
3000M	REINFORCED CONCRETE PIPE (6 SHEETS)
3100G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
3129A	METAL APRON FOR CORRUGATED POLYETHYLENE PIPE (USE AT ENTRANCES AND DRIVEWAYS.)
3133D	RIPRAP AT RCP OUTLETS
3145G	CONCRETE PIPE OR PRECAST BOX CULVERT TIES
4010I	CONCRETE ADJUSTING RINGS
4020J	MANHOLE OR CATCH BASIN - FOR USE WITH OR WITHOUT TRAFFIC LOADS (2 SHEETS)
4022A	MANHOLE OR CATCH BASIN COVER - 3' X 2' OPENING - FOR USE WITH OR WITHOUT TRAFFIC LOADS
4026B	CONCRETE ENCASED CONCRETE ADJUSTING RINGS
4143E	STOOL GRATE & CONCRETE FRAME (MEDIAN DRAINS) - CASTING NO. 731
7100H	CONCRETE CURB AND GUTTER (DESIGN B AND DESIGN V)
8000K	TEMPORARY CHANNELIZERS (3 SHEETS)
9350C	MAILBOX SUPPORT - SWING-AWAY TYPE (3 SHEETS)

PUBLIC UTILITIES TABULATION

CONNEXUS ENERGY
FRONTIER COMMUNICATIONS
MIDCONTINENT COMMUNICATIONS
XCEL ENERGY
ZAYO BANDWIDTH

BASIS OF ESTIMATED QUANTITIES

AGGREGATE BASE CLASS 5	100 lbs/yd^2/in
NON WEARING BITUMINOUS COURSE MIXTURE	110 lbs/yd^2/in
WEARING COURSE BITUMINOUS MIXTURE	110 lbs/yd^2/in
BITUMINOUS MATERIAL FOR TACK COAT	0.05 gal/yd^2
SEED SANDY INSLOPE	130 lbs/acre
HYDRAULIC BONDED FIBER MATRIX	3500 lbs/acre
TYPE 1 COMMERCIAL FERTILIZER	300 lbs/acre

S.A.P. 002–592–001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763–427–5860 FAX 763–427–0520
www.hakanson–anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

ESTIMATED QUANTITIES AND TABULATIONS

LINWOOD TOWNSHIP, MINNESOTA

LW378

EARTHWORK TABLE

STATION	EXCAVATION - COMMON (CV) ⑧ AREA (SF)	EXCAVATION - COMMON (CV) ⑧ CUM VOL (CF)	SALVAGED AGGREGATE (CV) AREA (SF)	SALVAGED AGGREGATE (CV) CUM VOL (CF)	EMBANKMENT - COMMON (CV) ⑨ AREA (SF)	EMBANKMENT - COMMON (CV) ⑨ CUM VOL (CF)	TOPSOIL (CV) AREA (SF)	TOPSOIL (CV) CUM VOL (CF)
100	0.98						0.28	
200	1.35	116.5		0.0		0.0	0.55	41.5
300	0.62	215.0		0.0		0.0	2.26	182.0
400	1.13	302.5		0.0		0.0	1.45	367.5
500	1.06	412.0		0.0		0.0	1.63	521.5
600	1.31	530.5		0.0		0.0	0.85	645.5
700	1.80	686.0		0.0		0.0	0.79	727.5
800	22.61	1906.5		0.0		0.0	0.22	778.0
900	1.98	3136.0		0.0		0.0	0.57	817.5
1000	2.33	3351.5		0.0		0.0	0.36	864.0
1100	1.67	3551.5		0.0		0.0	2.09	986.5
1200	1.10	3690.0		0.0		0.0	1.94	1188.0
1300	15.43	4516.5	16.63	831.5		0.0	2.16	1393.0
1400	24.71	6523.5	17.08	2517.0	0.65	32.5	4.14	1708.0
1450	21.36	7675.3	34.90	3816.5	0.55	62.5	1.71	1854.3
1500	8.36	8418.3	17.85	5135.3	5.16	205.3	4.51	2009.8
1600	18.21	9746.8	17.59	6907.3	2.43	584.8	6.54	2562.3
1700	17.84	11549.3	17.41	8657.3	0.65	738.8	3.76	3077.3
1800	18.34	13358.3	17.35	10395.3	0.65	803.8	3.48	3439.3
1900	9.67	14758.8	19.90	12257.8	3.28	1000.3	3.88	3807.3
2000	11.08	15796.3	17.57	14131.3	0.68	1198.3	3.66	4184.3
2100	37.97	18248.8	17.27	15873.3	0.52	1258.3	7.03	4718.8
2200	6.33	20463.8	20.05	17739.3	4.52	1510.3	4.37	5288.8
2300	4.73	21016.8		18741.8	0.67	1769.8	2.84	5649.3
2400	6.38	21572.3	17.55	19619.3	0.89	1847.8	2.03	5892.8
2500	9.38	22360.3	17.59	21376.3	0.42	1913.3	6.45	6316.8
2600	5.56	23107.3	17.38	23124.8	0.75	1971.8	2.74	6776.3
2700	14.97	24133.8	17.40	24863.8	0.55	2036.8	5.18	7172.3
2800	13.33	25548.8	17.65	26616.3	1.14	2121.3	3.61	7611.8
2900	18.80	27155.3	17.53	28375.3	0.53	2204.8	3.67	7975.8
3000	22.12	29201.3	17.83	30143.3	0.71	2266.8	3.65	8341.8
3100	17.23	31168.8	18.08	31938.8	0.68	2336.3	1.62	8605.3
3200	3.66	32213.3		32842.8	0.97	2418.8	6.49	9010.8
3300	16.63	33227.8	17.73	33729.3	0.60	2497.3	4.89	9579.8
3400	11.59	34638.8	22.65	35748.3	0.66	2560.3	4.35	10041.8
3500	15.27	35981.8	17.34	37747.8	0.65	2625.8	3.86	10452.3
3600	17.33	37611.8	17.79	39504.3	2.75	2795.8	4.19	10854.8
3700	12.64	39110.3	17.49	41268.3	0.70	2968.3	0.79	11103.8
3800	7.55	40119.8	17.45	43015.3	1.37	3071.8	1.80	11233.3
3900	12.11	41102.8	21.77	44976.3	0.32	3156.3	1.33	11389.8
4000	41.21	43768.8	17.43	46936.3	0.33	3188.8	6.10	11761.3
4100	8.80	46269.3	17.25	48670.3	2.10	3310.3	3.31	12231.8
4201.13	6.34	47034.9	25.92	50853.2	0.56	3444.8	4.87	12645.4
4300	4.28	47559.9	17.50	52999.7	5.85	3761.7	5.33	13149.6
4400	1.00	47823.9		53874.7		4054.2	1.18	13475.1
4500	1.20	47933.9		53874.7		4054.2	0.40	13554.1
4600	1.11	48049.4		53874.7		4054.2	1.28	13638.1
4700	3.21	48265.4		53874.7	38.83	5995.7	15.11	14457.6
4800	1.06	48478.9		53874.7		7937.2	3.30	15378.1
4900	0.53	48558.4		53874.7		7937.2	1.67	15626.6
5000	7.63	48966.4	17.24	54736.7	0.55	7964.7	0.19	15719.6
5100	21.50	50422.9	16.89	56443.2	9.84	8484.2	8.86	16172.1
5200	8.32	51913.9	17.54	58164.7	20.81	10016.7	10.69	17149.6
5300	5.12	52585.9	17.29	59906.2	3.73	11243.7	8.49	18108.6
5400	8.57	53270.4	17.49	61645.2		11430.2	4.71	18768.6
5500	13.05	54351.4	17.54	63396.7		11430.2		19004.1
5600	3.52	55179.9	17.51	65149.2		11430.2	0.23	19015.6
5700	0.79	55395.4		66024.7	8.44	11852.2	5.94	19324.1
5800	2.25	55547.4		66024.7	1.44	12346.2	5.61	19901.6
5900	1.18	55718.9		66024.7		12418.2	1.92	20278.1
6000	4.12	55983.9		66024.7		12418.2	4.73	20610.6
6100	1.00	56239.9		66024.7	7.25	12780.7	9.82	21338.1
6199.39	0.70	56324.4		66024.7	6.05	13441.6	7.90	22218.7
6300	1.25	56422.5		66024.7		13745.9	1.30	22681.5
6400	3.93	56681.5		66024.7		13745.9	2.72	22882.5
6500	2.86	57021.0		66024.7		13745.9	3.85	23211.0
6600	1.06	57217.0		66024.7	0.99	13795.4	3.93	23600.0
6700	0.60	57300.0		66024.7		13844.9	2.30	23911.5

EARTHWORK TABLE

STATION	EXCAVATION - COMMON (CV) ⑧ AREA (SF)	EXCAVATION - COMMON (CV) ⑧ CUM VOL (CF)	SALVAGED AGGREGATE (CV) AREA (SF)	SALVAGED AGGREGATE (CV) CUM VOL (CF)	EMBANKMENT - COMMON (CV) ⑨ AREA (SF)	EMBANKMENT - COMMON (CV) ⑨ CUM VOL (CF)	TOPSOIL (CV) AREA (SF)	TOPSOIL (CV) CUM VOL (CF)
6800	0.93	57376.5		66024.7		13844.9	0.69	24061.0
6900	1.05	57475.5		66024.7		13844.9	1.66	24178.5
7000	1.20	57588.0		66024.7		13844.9	5.04	24513.5
7100	1.10	57703.0		66024.7		13844.9	0.61	24796.0
7200	0.93	57804.5		66024.7		13844.9	3.19	24986.0
7300	12.18	58460.0	17.45	66897.2	0.30	13859.9	0.93	25192.0
7400	44.54	61296.0	17.45	68642.2	0.85	13917.4	4.86	25481.5
7500	52.17	66131.5	16.96	70362.7	0.66	13992.9	4.20	25934.5
7600	66.20	72050.0	17.44	72082.7	0.53	14052.4	6.96	26492.5
7700	57.77	78248.5	17.58	73833.7	0.33	14095.4	4.94	27087.5
7800	36.61	82967.5	17.37	75581.2	0.33	14128.4	2.45	27457.0
7900	59.21	87758.5	17.50	77324.7	0.33	14161.4	5.42	27850.5
8000	66.92	94065.0	17.68	79083.7	0.20	14187.9	11.07	28675.0
8100	6.61	97741.5	17.70	80852.7		14197.9	0.13	29235.0
8200	1.11	98127.5		81737.7		14197.9	0.39	29261.0
8300	1.14	98240.0		81737.7		14197.9	0.40	29300.5
	CUBIC YD	3639		3027		526		1085

SUMMARY OF EARTHWORK MATERIAL

		REF NOTES
SUMMARY OF EXCAVATION - COMMON		
COMMON EXCAVATION FROM TABLE (CV)	3639	1, 2
COMMON EXCAVATION - DRIVEWAYS (CV)	153	
COMMON EXCAVATION - DITCH GRADING SHEETS 29, 45, 46 (CV)	97	
TOTAL EXCAVATION - COMMON (CV)	3889	
SUMMARY OF COMMON EMBANKMENT		
EMBANKMENT - COMMON FROM TABLE (CV)	526	1
EMBANKMENT (SALVAGED) - TOPSOIL (CV)	543	1, 3
TOTAL COMMON EMBANKMENT (CV)	1069	
SUMMARY OF EXCESS MATERIAL		
TOTAL COMMON EXCAVATION (CV)	3889	
TOTAL EMBANKMENT (CV)	-1069	
TOTAL EXCESS MATERIAL (CV)	2820	4
SUMMARY OF TOPSOIL BORROW		
TOTAL TOPSOIL (CV)	1085	1
TOTAL EMBANKMENT - TOPSOIL (CV)	-543	3
TOTAL TOPSOIL - BORROW (CV)	542	3
CONVERSION TO (LV) * 1.3	705	
SUMMARY OF AGREGATE BASE (RECLAIM MATERIAL)		
TOTAL SALVAGED AGGREGATE BASE (CV)	3027	1
CONVERSION TO (LV) * 1.3	3935	5, 6
CONVERSION TO (TON) * 1.4	5509	
TOTAL CALCULATED AGGREGATE BASE REQUIRED - STREET CONSTRUCTION (TON)	5264	
EXCESS AGGREGATE BASE (TON)	245	7

REFERENCE NOTES:

① SEE EARTHWORK TABLE ON THIS SHEET.

② MEASUREMENT AND PAYMENT FOR ITEM 2106-EXCAVATION-COMMON, INCLUDES EXCAVATION OF TOPSOIL, SUBGRADE AND COMMON MATERIAL.

③ AS SHOWN ON THE EARTHWORK TABLE, THE REQUIRED TOPSOIL IS 1085 CY. THE QUANTITIES SHOWN ON THE ESTIMATED QUANTITIES TABULATION ARE BASED ON SALVAGING THE TOP TWO INCHES OF BOULEVARD MATERIAL (543 CY) AND REUSING THIS MATERIAL AS TOPSOIL. THE REMAINING 542 CY WILL BE TOPSOIL BORROW.

④ EXCESS MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND BE DISPOSED OF OFF SITE. THIS WORK SHALL BE INCIDENTAL.

⑤ TO BE PAID PER ITEM 2215-HAUL FULL DEPTH RECLAMATION.

⑥ SEE REFERENCE NOTE 8 ON SHEET 2.

⑦ EXCESS AGGREGATE BASE SHALL BE USED IN OTHER AREAS OF THE PROJECT. IF THERE IS EXCESS AGGREGATE BASE AFTER ALL WORK IS COMPLETED, THE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND BE DISPOSED OF OFF SITE.

⑧ THIS QUANTITY INCLUDES ALL EXCAVATION WITHIN AND OUTSIDE THE ROAD CORE, INCLUDING TOPSOIL, SUBGRADE AND COMMON MATERIAL. THE QUANTITY ALSO INCLUDES A FOUR INCH SUBCUT IN ALL DISTURBED AREAS OUTSIDE THE ROAD CORE FOR TOPSOIL PLACEMENT.

⑨ THIS INCLUDES THE EMBANKMENT (FILL) REQUIRED BELOW THE TOPSOIL. THIS MATERIAL SHALL MEET THE REQUIREMENTS OF MN/DOT 2106.3.B.1.

S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

EARTHWORK SUMMARY

LINWOOD TOWNSHIP, MINNESOTA

GENERAL CONSTRUCTION AND SOILS NOTES:

1. STRIP ALL INPLACE TOPSOIL IN AREAS TO BE DISTURBED BY CONSTRUCTION AND REUSE AS SLOPE DRESSING. IN AREAS OF STREET CONSTRUCTION, THE EXPOSED SAND SHALL BE SURFACE COMPACTED TO AT LEAST 100% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY, ASTM D698, IN AT LEAST THE UPPER 3 FEET. THE ESTIMATED QUANTITIES ASSUME THAT THE TOP TWO INCHES OF MATERIAL WILL BE SUITABLE FOR REUSE AS TOPSOIL.
2. CONTRACTOR SHALL REVIEW THE REPORT OF GEOTECHNICAL EXPLORATION, PREPARED BY INDEPENDENT TESTING TECHNOLOGIES AND DATED OCTOBER 22, 2024, FOR ADDITIONAL SITE PREPARATION REQUIREMENTS.
3. ALL EXCESS SOIL AND RECLAIM MATERIAL THAT CANNOT BE INCORPORATED INTO THE WORK SHALL BECOME PROPERTY OF THE CONTRACTOR AND BE DISPOSED OF OFF SITE. THIS WORK SHALL BE INCIDENTAL.
4. WHEN PLACING NEW PAVEMENT ADJACENT TO INPLACE PAVEMENT CUT VERTICALLY TO THE BOTTOM OF INPLACE SURFACING OR TOP OF GRADING SUBGRADE WHICHEVER IS DEEPER AT A 1(V):2(H) TO THE BOTTOM OF EXCAVATION.
5. PROVIDE A SAW CUT WHEN PLACING NEW PAVEMENT ADJACENT TO INPLACE PAVEMENT AND AT TERMINI OF CONSTRUCTION TO ENSURE A UNIFORM JOINT.
6. BITUMINOUS AND CONCRETE ITEMS DISTURBED BY CONSTRUCTION SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF IN ACCORDANCE WITH MN/DOT SPEC. 2104.
7. USE TACK COAT BETWEEN ALL BITUMINOUS MIXTURES. THE BITUMINOUS TACK COAT MATERIAL SHALL BE APPLIED AT A UNIFORM RATE OF 0.04 GAL/SY TO 0.06 GAL/SY BETWEEN BITUMINOUS LAYERS. THE APPLICATION RATES ARE FOR UNDILUTED EMULSIONS.
8. ASPHALT BINDER GRADE 58S-28 SHALL BE USED FOR ALL BITUMINOUS MIXES ON THIS PROJECT.
9. THE BITUMINOUS MIXTURES SHALL MEET THE REQUIREMENTS OF SPECIFICATIONS 2360 AND 3139.
10. IF NECESSARY, THE UTILITY COMPANIES WILL RELOCATE THEIR FACILITIES CONCURRENTLY WITH THE CONSTRUCTION OPERATIONS UNDER THIS CONTRACT. CONTRACTOR SHALL COORDINATE THE UTILITY RELOCATION AND SCHEDULE THEIR CONSTRUCTION IN CONJUNCTION WITH THE UTILITY RELOCATION.
11. EROSION CONTROL SHALL CONFORM TO THE MN/DOT EROSION CONTROL HANDBOOK.
12. CONTRACTOR SHALL PLACE TOPSOIL AT ALL DRIVEWAYS TO MATCH THE NEW SURFACE.
13. IF NECESSARY, SALVAGING AND INSTALLING PAPER BOXES AND POSTS SHALL BE INCIDENTAL.
14. CONTRACTOR SHALL REMOVE AND DISPOSE OF MISCELLANEOUS LANDSCAPE AND OTHER ITEMS IN THE RIGHT-OF-WAY THAT WILL BE DISTURBED BY THE CONSTRUCTION AND AS DIRECTED BY THE ENGINEER. THIS WORK SHALL BE INCIDENTAL.
15. ANY DEWATERING REQUIRED FOR CONSTRUCTION SHALL MEET REGULATORY REQUIREMENTS AND BEST MANAGEMENT PRACTICES SUCH THAT THE RECEIVING WATER IS NOT ADVERSELY AFFECTED. ALL DEWATERING SHALL BE INCIDENTAL.
16. CONTRACTOR SHALL SALVAGE AND REINSTALL MAILBOXES AND MAILBOX SUPPORTS AS NECESSARY TO COMPLETE THE WORK. THIS WORK SHALL BE PAID PER ITEMS 2104-SALVAGE MAILBOX SUPPORT AND 2540-INSTALL MAILBOX SUPPORT. CONTRACTOR SHALL ALSO SALVAGE AND REINSTALL PAPER BOXES AND PAPER BOX SUPPORTS. THIS WORK SHALL BE INCIDENTAL. ALSO, SEE REFERENCE NOTE 7 ON SHEET 2.
17. CONTRACTOR SHALL ACQUIRE AN ANOKA COUNTY HIGHWAY DEPARTMENT PERMIT PRIOR TO WORKING IN THE COUNTY RIGHT-OF-WAY.

GENERAL EROSION CONTROL NOTES:

1. PRIOR TO ANY CONSTRUCTION ACTIVITIES THE CONTRACTOR SHALL ACQUIRE THE MPCA CONSTRUCTION STORMWATER GENERAL PERMIT. A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) HAS BEEN PREPARED COVERING CONSTRUCTION ACTIVITIES. THE SWPPP IS INCLUDED IN THE PROJECT MANUAL.
2. THE CONTRACTOR SHALL INSTALL EROSION AND SEDIMENT CONTROL FACILITIES (BMP'S) PRIOR TO GRADING AND REMOVAL ACTIVITIES. BMP'S SHALL BE MAINTAINED FOR THE DURATION OF CONSTRUCTION ACTIVITIES AND POTENTIAL FOR EROSION HAS PASSED.
3. THE CONTRACTOR SHALL SCHEDULE THEIR OPERATIONS TO MINIMIZE THE AMOUNT OF DISTURBED AREA AT ANY GIVEN TIME.
4. BMP'S SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND DOCUMENTED IN AN INSPECTION LOG. WEEKLY LOGS MUST BE FORWARDED TO THE ENGINEER FOR REVIEW.
5. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PROPERLY DISPOSED OF WITHIN THIRTY (30) DAYS AFTER FINAL SITE STABILIZATION IS APPROVED BY THE ENGINEER.
6. THE CONTRACTOR SHALL FILE NOTICE OF TERMINATION WITH THE MPCA AFTER FINAL STABILIZATION IS APPROVED BY THE ENGINEER.
7. WHEN SEDIMENTS DEPOSIT IN A WATER OF THE STATE, THE MATERIAL MUST BE REMOVED WITHIN 7 DAYS.
8. ALL EXPOSED SOIL AREAS MUST BE STABILIZED AS SOON AS POSSIBLE TO LIMIT SOIL EROSION BUT IN NO CASE LATER THAN SEVEN DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED.
9. ALL TEMPORARY STABILIZATION REQUIRED TO COMPLY WITH ANY PERMITS AND THE SPECIFICATIONS SHALL BE INCIDENTAL.
10. PRIOR TO SEEDING, SOIL SHALL BE PREPARED PER MN/DOT SPEC 2574.3.A.3.
11. ALL DISTURBED AREAS REQUIRE 4" OF TOPSOIL, MN/DOT SEED SANDY INSLOPE, TYPE 1 FERTILIZER AND EITHER HYDRAULIC BONDED FIBER MATRIX OR ROLLED EROSION PREVENTION AS SHOWN ON THE PLANS. SEED SHALL BE PLACED BY HYDROSEEDING AND SHALL BE IN ACCORDANCE WITH MN/DOT SPEC. 2575. APPLICATION OF THE HYDRAULIC BONDED FIBER MATRIX SHALL BE COMPLETED SEPARATELY FROM THE HYDROSEEDING. PLACE HYDRAULIC BONDED FIBER MATRIX PER MN/DOT SPEC 2575.3.E.2.d. RATES OF SEED, FERTILIZER AND HYDRAULIC BONDED FIBER MATRIX PLACEMENT SHALL BE IN ACCORDANCE WITH THE BASIS OF ESTIMATED QUANTITIES SCHEDULE SHOWN ON SHEET 2.
12. ALL PERMANENT AND TEMPORARY EROSION CONTROL AND RESTORATION ITEMS REQUIRED BY THE SPECIFICATIONS AND NOT PROVIDED FOR IN THE ESTIMATED QUANTITIES SHALL BE INCIDENTAL.

LEGEND

- EXISTING PROPERTY/RIGHT-OF-WAY LINE
- PROPOSED TEMPORARY EASEMENT
- SECTION LINE
- EASEMENT LINE
- CONSTRUCTION LIMITS
- XXX — EXISTING CONTOUR
- W — W — DELINEATED WETLAND LINE
- P-OH — OVERHEAD UTILITY LINE
- T-BUR — BURIED TELEPHONE LINE
- G — BURIED GAS LINE
- FO-BUR — BURIED FIBER OPTIC LINE
- TV-BUR — BURIED CABLE OR FIBER OPTIC LINE
- x — x — EXISTING FENCE
- >> — >> — EXISTING STORM SEWER
- EXISTING CONCRETE CURB AND GUTTER
- EXISTING BITUMINOUS PAVEMENT
- EXISTING CONCRETE PAVEMENT
- EXISTING GRAVEL SURFACE
- EXISTING RIPRAP
- UTILITY PEDESTAL
- UTILITY POLE
- GUY WIRE
- MAILBOX OR PAPER BOX
- EXISTING SIGNS
- EXISTING CATCH BASINS
- EXISTING STORM SEWER APRON
- EXISTING STORM SEWER MANHOLE
- EXISTING SANITARY MANHOLE
- EXISTING WELL
- CONIFEROUS AND DECIDUOUS TREES
- SHRUB
- EDGE OF WOODS/TREE DRIPLINE
- >> — >> — PROPOSED STORM SEWER
- PROPOSED CATCH BASIN
- PROPOSED STORM MANHOLE
- PROPOSED CONCRETE CURB AND GUTTER
- B-X SOIL BORING LOCATION
- C-X BITUMINOUS CORE LOCATION
- X/X — DETAIL NUMBER / SHEET NUMBER

S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

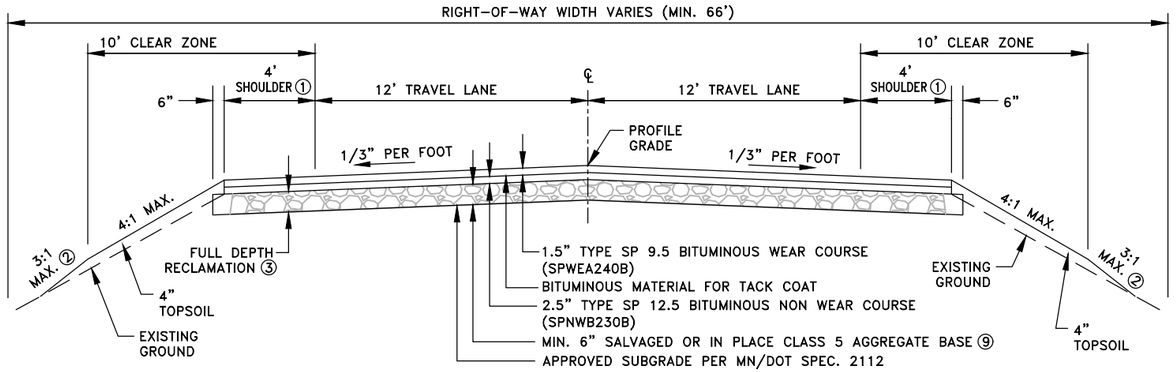
Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

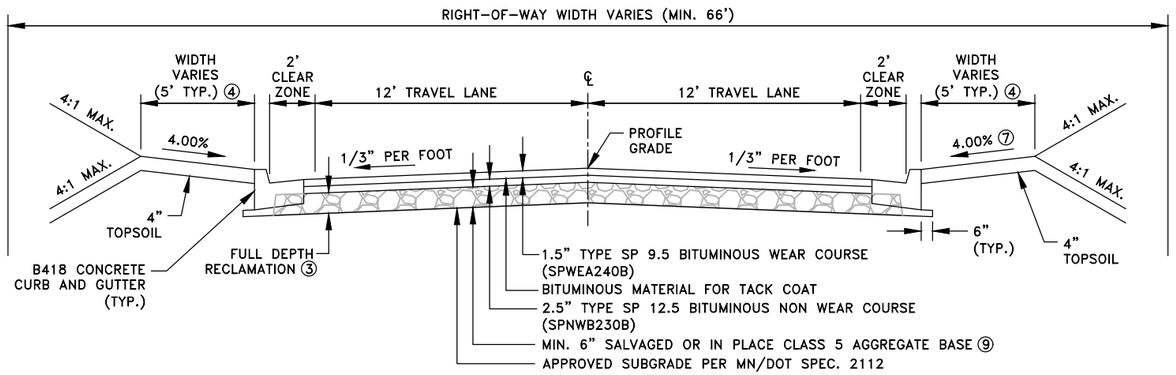
CONSTRUCTION NOTES AND PROJECT LEGEND

LINWOOD TOWNSHIP, MINNESOTA

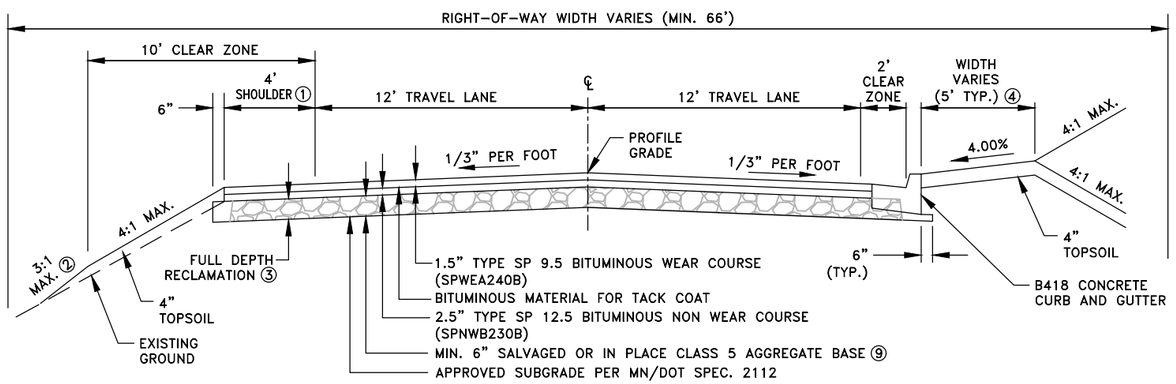
LW378



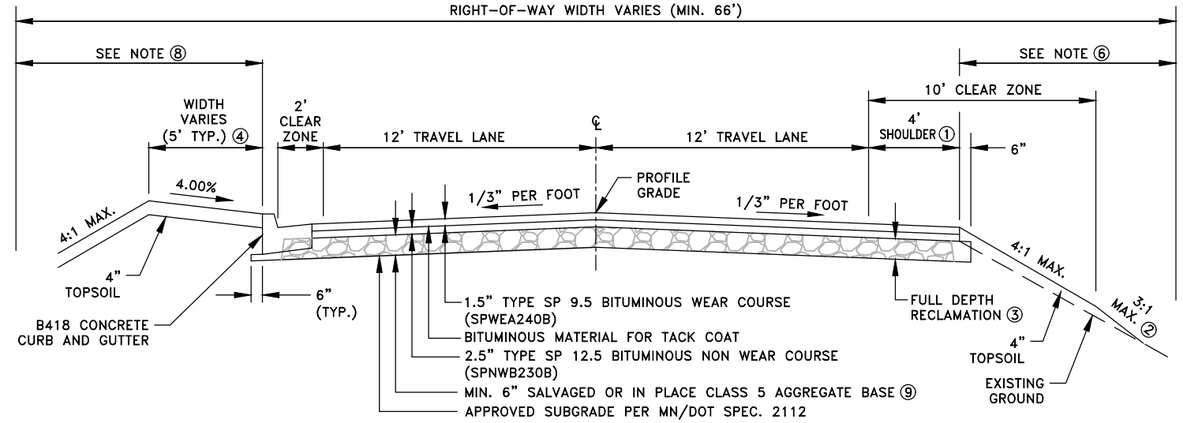
1/5 TYPICAL SECTION
0+23 TO 13+26.30, 41+25 TO 73+00 AND 80+90 TO 84+05



2/5 TYPICAL SECTION ⑤
13+26.30 TO 36+62 AND 73+80 TO 76+68



3/5 TYPICAL SECTION
36+62 TO 41+25



4/5 TYPICAL SECTION
73+00 TO 73+80 AND 76+68 TO 80+90

REFERENCE NOTES:

① SEE 4/5 FOR CONSTRUCTION OF THE SHOULDER IN FILL AREAS. PREPARING THE SUBGRADE TO THE REQUIRED WIDTH SHALL BE PAID PER ITEM 2106-EXCAVATION-COMMON AND 2112-SUBGRADE PREPARATION.

② CONSTRUCT A 3:1 SLOPE IN THE FOLLOWING LOCATIONS:
38+25 TO 38+60 (L), 52+95 TO 53+25 (L) AND 57+10 TO 57+85 (L). ALL OTHER AREAS SHALL BE CONSTRUCTED WITH 4:1 SLOPES.

③ IN AREAS WHERE THE RECLAMATION MATERIAL IS BEING SALVAGED, CONTRACTOR SHALL SALVAGE UP TO AN ADDITIONAL INCH OF RECLAMATION MATERIAL TO USE IN DRIVEWAYS, STREET AND FLUME CONSTRUCTION IN OTHER AREAS OF THE PROJECT.

④ CONSTRUCT NON-TYPICAL BOULEVARD WIDTHS IN THE FOLLOWING LOCATIONS:
22+25 TO 24+05 (R), 25+56 TO 26+45 (R), 30+00 TO 30+46 (R), 30+56 TO 30+81 (L), 30+95 TO 31+54 (R), 31+50 TO 32+75 (L) 32+22 TO 32+45 (R), 34+50 TO 36+08 (L), 34+51 TO 38+70 (R), 36+46 TO 36+55 (L), 39+13 TO 39+44 (R), 73+00 TO 78+05 (L) 73+80 TO 76+68 (R) AND 78+78 TO 80+90 (L). SEE CROSS SECTIONS FOR PROPOSED BOULEVARD WIDTHS IN THESE LOCATIONS.

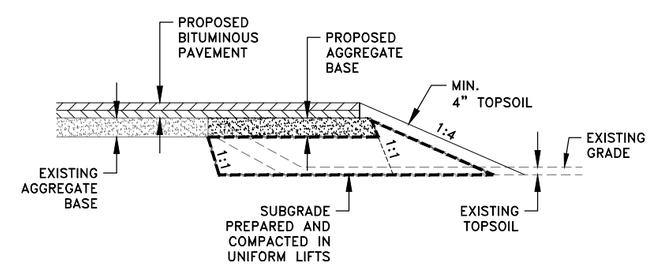
⑤ CONTRACTOR WILL ONLY BE ALLOWED TO CONSTRUCT THE CURB AND GUTTER ON ONE SIDE OF MARTIN LAKE ROAD, NORTH OF EAST MARTIN LAKE DRIVE, AT A TIME. CONTRACTOR SHALL COMPLETE THE CURB AND GUTTER AND HALF OF EACH VALLEY GUTTER LOCATED ON THE SOUTHWEST SIDE OF MARTIN LAKE ROAD FIRST. THE CURB AND GUTTER ON THE NORTHEAST SIDE OF MARTIN LAKE ROAD AND THE OTHER HALF OF THE VALLEY GUTTERS SHALL NOT BE CONSTRUCTED UNTIL FULL ACCESS IS PROVIDED TO THE PROPERTIES ON THE SOUTHWEST SIDE OF MARTIN LAKE ROAD.

⑥ CONSTRUCT DITCH FROM 76+68 TO 76+86 AND FROM 78+78 TO 80+50. SEE CROSS SECTIONS FOR PROPOSED DITCH ELEVATIONS AND LOCATIONS.

⑦ CONSTRUCT NON-TYPICAL BOULEVARD SLOPE FROM 73+80 TO 76+68. SEE CROSS SECTIONS FOR PROPOSED BOULEVARD SLOPES.

⑧ CONSTRUCT SPECIAL BOULEVARD SECTION FROM 78+05 TO 78+78. SEE CROSS SECTIONS FOR PROPOSED BOULEVARD WIDTHS AND SLOPES.

⑨ THE CONTRACTOR SHALL RECLAIM THE EXISTING BITUMINOUS AND AGGREGATE BASE TO THE MAXIMUM ALLOWED DEPTH BASED ON THE EXISTING THICKNESSES TO PROVIDE A RECLAIM MATERIAL THAT MEETS THE REQUIREMENTS OF MN/DOT SPEC. 2215. IT IS ESTIMATED THAT A RECLAIM DEPTH OF 6 TO 12 INCHES CAN BE ACHIEVED. THE MINIMUM AGGREGATE BASE REQUIRED FOR THE PAVEMENT DESIGN IS 4 INCHES. THE CONTRACTOR SHALL CONSTRUCT A 6 INCH MINIMUM AGGREGATE BASE LAYER UNLESS OTHERWISE APPROVED BY THE ENGINEER.



4/5 TYPICAL BENCHING SECTION
NOT TO SCALE

S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

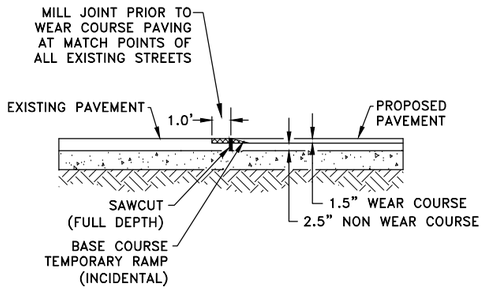
Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

DETAILS

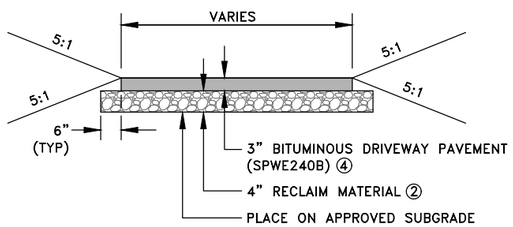
LINWOOD TOWNSHIP, MINNESOTA

LW378



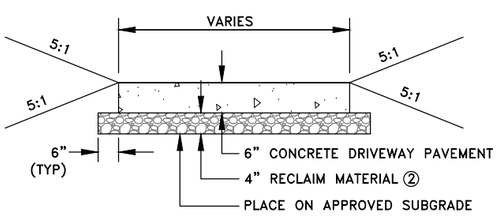
1/6 WEAR COURSE JOINT MILLING

NOT TO SCALE



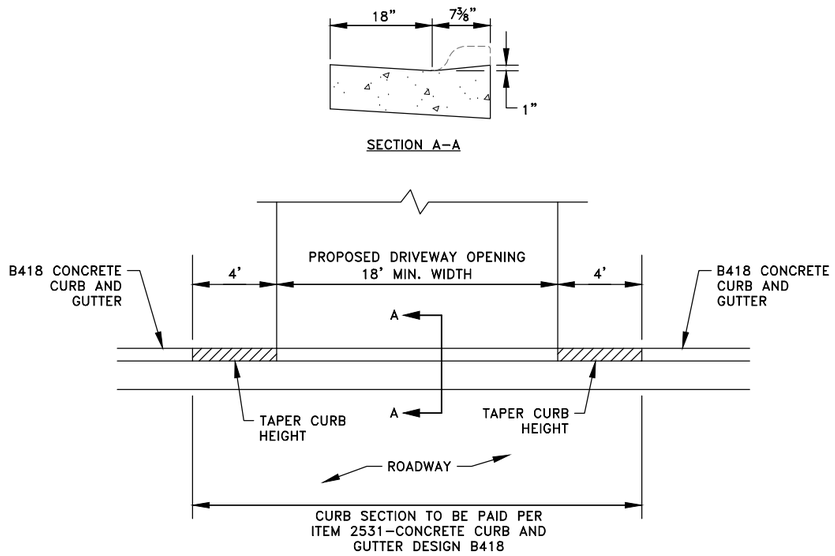
2/6 BITUMINOUS DRIVEWAY SECTION

NOT TO SCALE



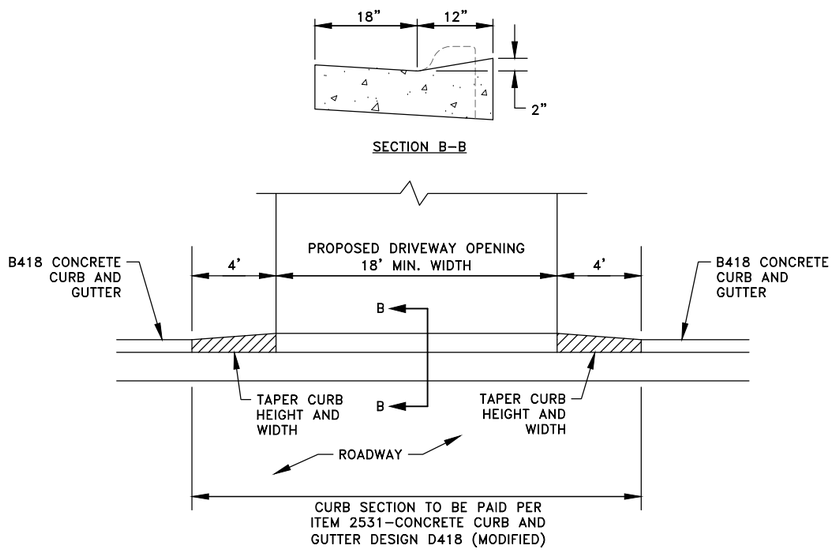
3/6 CONCRETE DRIVEWAY SECTION

NO SCALE



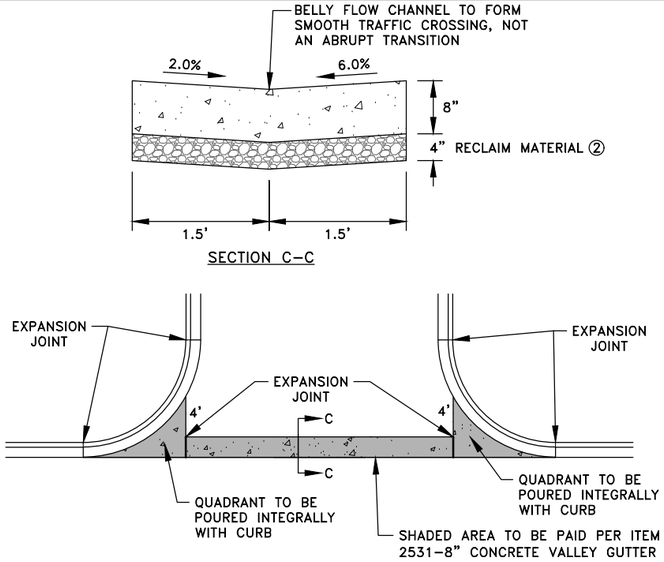
4/6 CURB CONSTRUCTION AT UPHILL DRIVEWAY LOCATIONS

NO SCALE



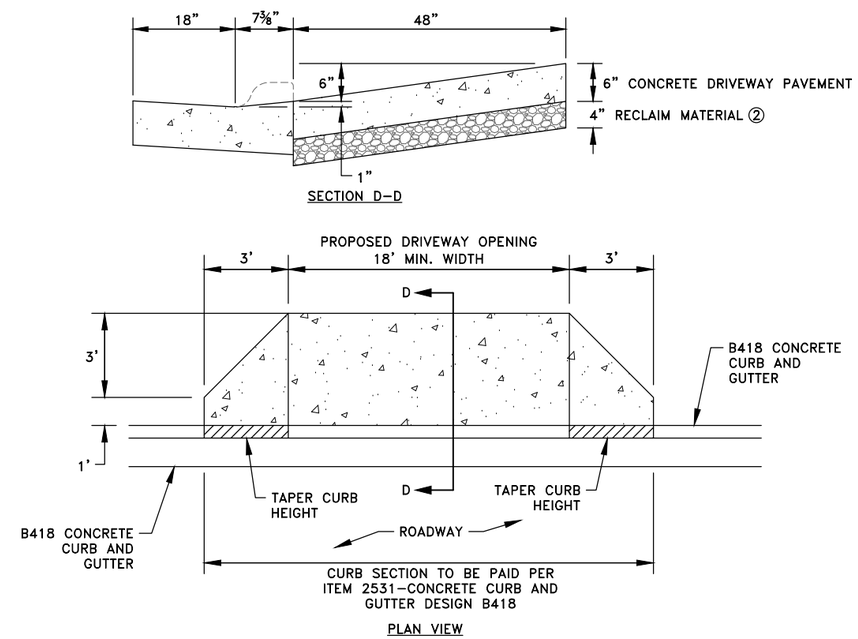
5/6 CURB CONSTRUCTION AT DOWNHILL DRIVEWAY LOCATIONS

NO SCALE



6/6 CONCRETE VALLEY GUTTER ①③

N.T.S.



7/6 CONCRETE DRIVEWAY APRON

NO SCALE

REFERENCE NOTES:

① CONCRETE VALLEY GUTTERS SHALL BE CONSTRUCTED IN TWO PHASES TO ALLOW FOR TRAFFIC TO PASS. CONTRACTOR SHALL PROTECT CONCRETE WITH BARRICADES AND FLASHERS AS NECESSARY FOR A MINIMUM OF 7 DAYS PRIOR TO ALLOWING TRAFFIC ON THE NEW CONCRETE.

② PLACEMENT OF RECLAIM MATERIAL SHALL BE INCIDENTAL.

③ ALL CURB CONSTRUCTED AS PART OF THE CONCRETE VALLEY GUTTER SHALL BE PAID PER ITEM 2531–CONCRETE CURB AND GUTTER DESIGN B418.

④ BITUMINOUS PAVEMENT SHALL BE PAID PER ITEM 2360–TYPE SP 9.5 WEARING COURSE MIXTURE (2,B) 3" THICK.

S.A.P. 002–592–001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.

Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763–427–5860 FAX 763–427–0520
www.hakanson–anderson.com

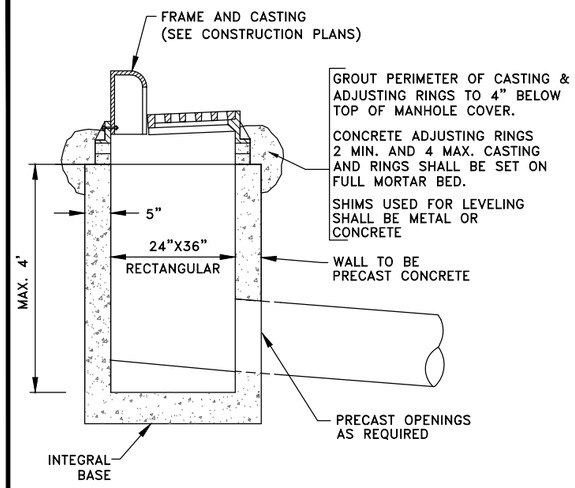
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

DETAILS

LINWOOD TOWNSHIP, MINNESOTA

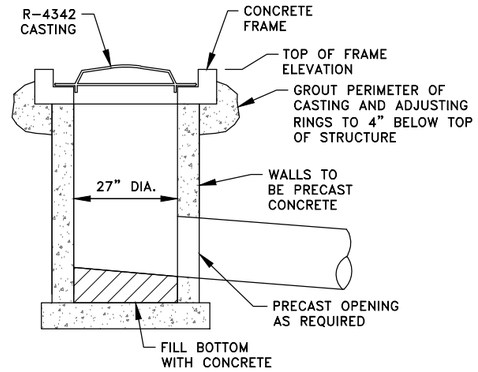
LW378

Dec 04, 2025 – 1:13pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_DETAILS.dwg



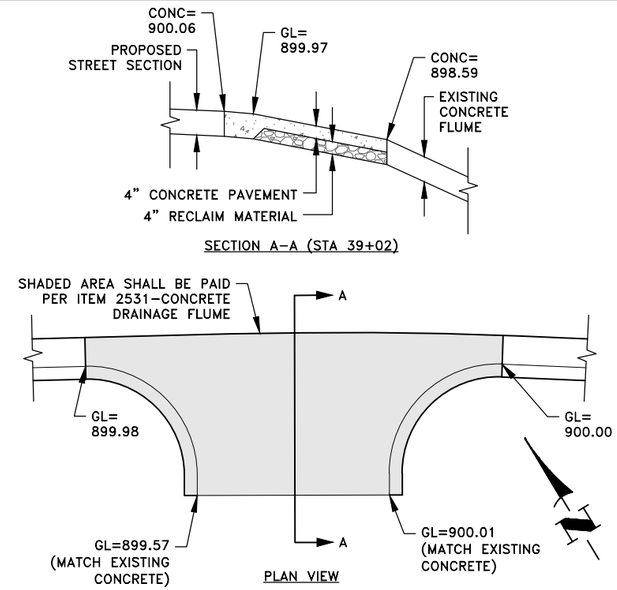
1/7 24"X36" CATCH BASIN ①

NOT TO SCALE



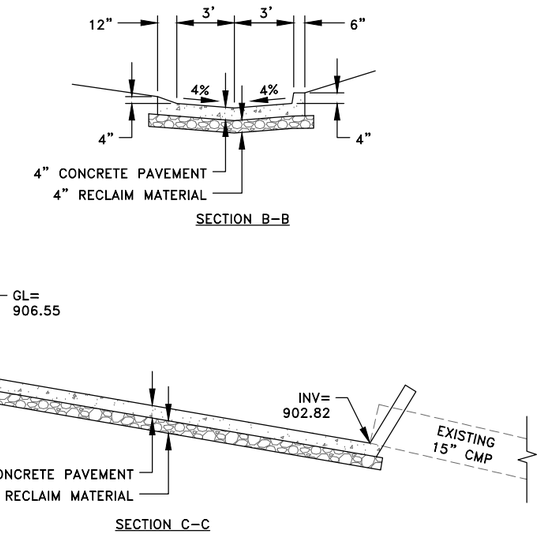
6/7 27" DIA. CATCH BASIN ③

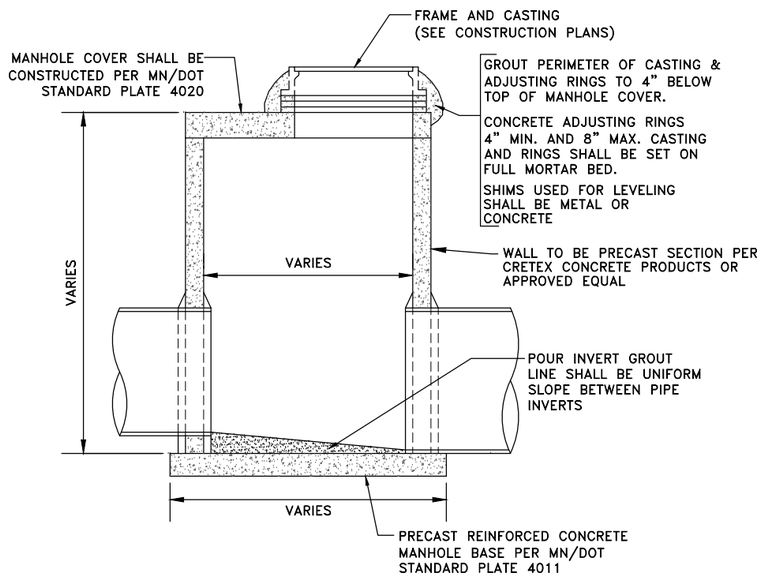
NOT TO SCALE



3/7 CONCRETE FLUME DETAIL

NOT TO SCALE

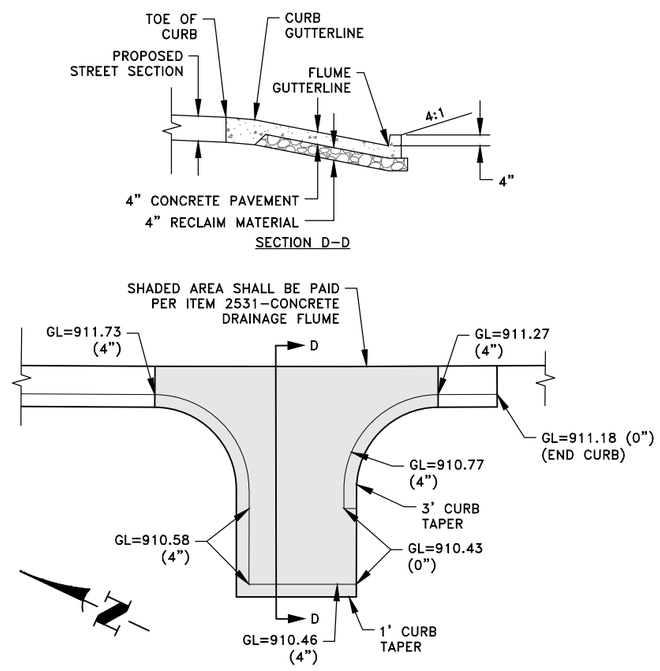




MANHOLE STEPS SHALL BE TYPICAL REINFORCED PLASTIC STEPS PER MN/DOT STANDARD PLATE 4180. STEPS SHALL BE REQUIRED ON ALL STRUCTURES GREATER THAN 5 FEET IN DEPTH.

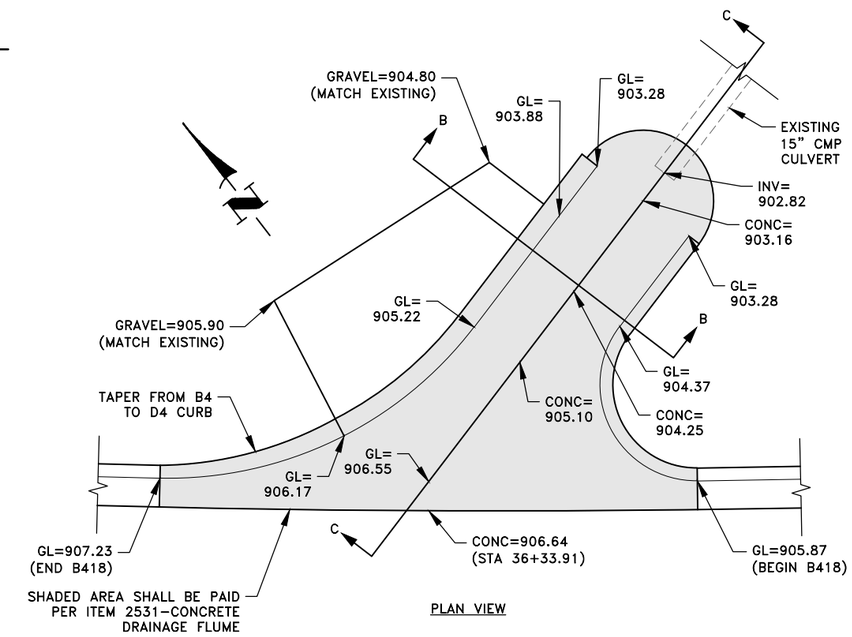
2/7 SLAB TOP MANHOLE ②

NOT TO SCALE



5/7 CONCRETE FLUME DETAIL

NOT TO SCALE



4/7 CONCRETE FLUME DETAIL

NOT TO SCALE

REFERENCE NOTES:

① STRUCTURE SHALL BE PAID PER ITEM 2506-CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL (EACH).

② STRUCTURE SHALL BE PAID PER ITEM 2506-CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020.

③ STRUCTURE SHALL BE PAID PER ITEM 2506-CONSTRUCT DRAINAGE STRUCTURE DESIGN H.

S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.

Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

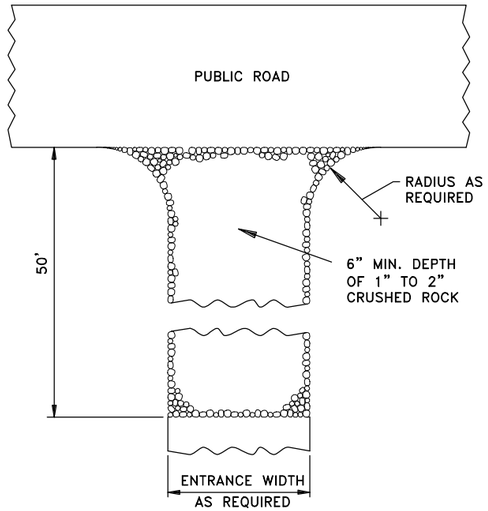
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

DETAILS

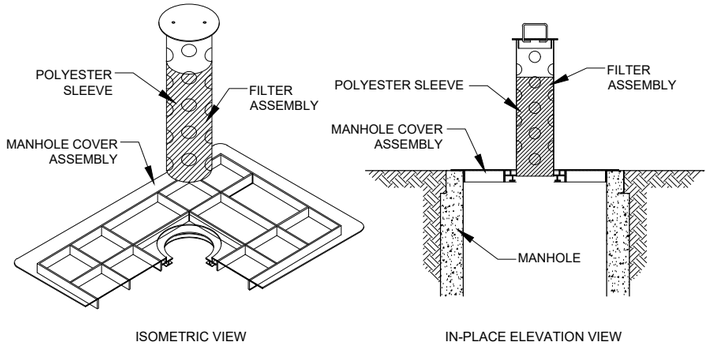
LINWOOD TOWNSHIP, MINNESOTA

LW378

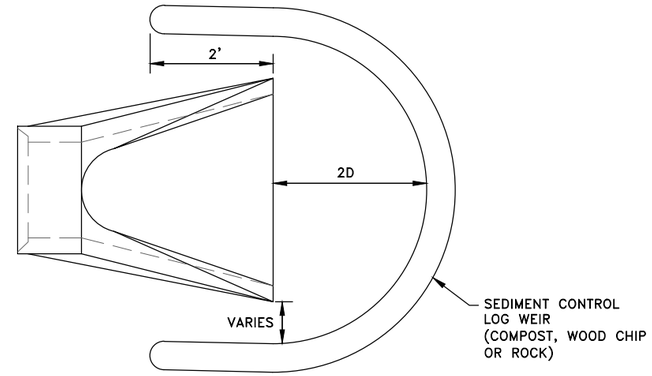
Dec 04, 2025 – 1:13pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_DETAILS.dwg



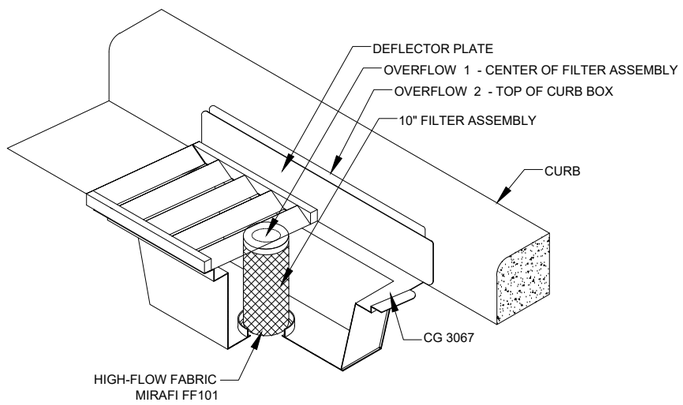
1/8 CRUSHED ROCK STABILIZED CONSTRUCTION EXIT ①②



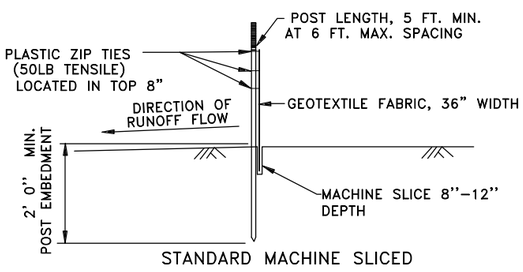
4/8 STORM DRAIN INLET PROTECTION
PRE-CURB



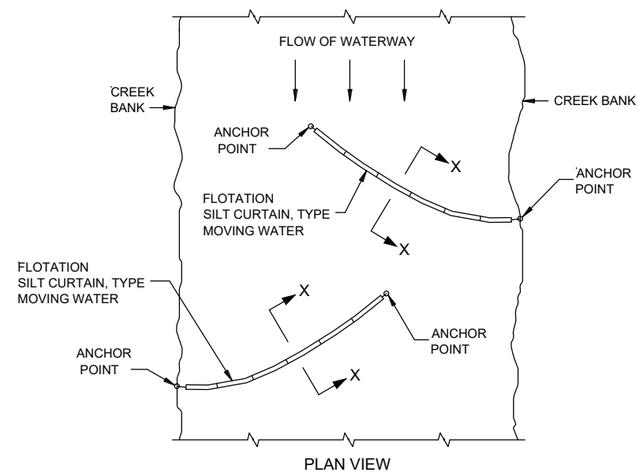
7/8 CULVERT END CONTROLS ⑤

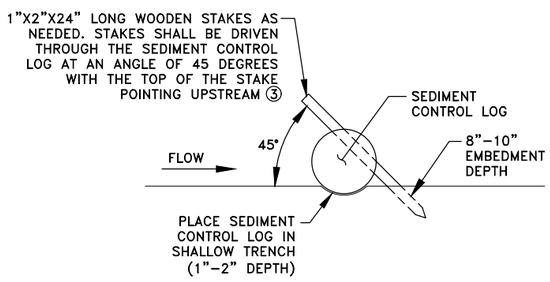


5/8 STORM DRAIN INLET PROTECTION
POST-CURB

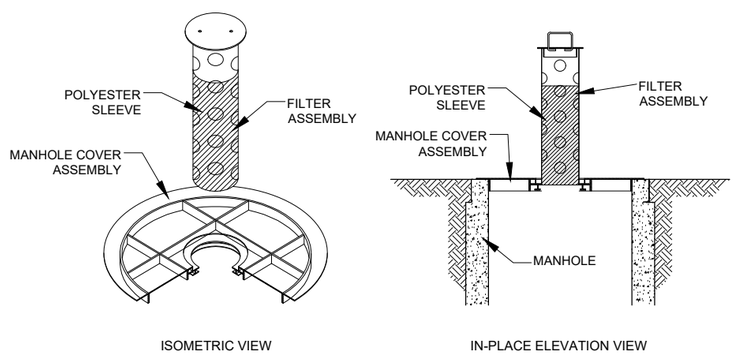


2/8 SILT FENCE DETAILS
TO PROTECT AREAS FROM SHEET FLOW (SEE SPEC. 3886)





3/8 SEDIMENT CONTROL LOG TYPE STRAW ④



6/8 STORM DRAIN INLET PROTECTION

REFERENCE NOTES:

① PRIOR TO IMPORTING OR EXPORTING MATERIAL TO THE SITE, CONTRACTOR SHALL CONSTRUCT A CRUSHED ROCK STABILIZED CONSTRUCTION EXIT AT ALL POINTS CONSTRUCTION VEHICLES ENTER AND EXIT THE SITE.

② MAINTENANCE OF CONSTRUCTION EXITS SHALL OCCUR WHEN THE EFFECTIVENESS OF SEDIMENT REMOVAL HAS BEEN REDUCED. MAINTENANCE SHALL CONSIST OF REMOVING SEDIMENT AND CLEANING THE MATERIALS OR PLACING ADDITIONAL MATERIAL OVER SEDIMENT FILLED MATERIAL TO RESTORE EFFECTIVENESS.

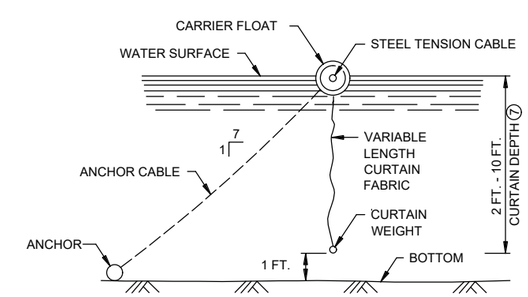
③ PLACE STAKES AS NEEDED TO PREVENT MOVEMENT OF SEDIMENT CONTROL LOGS PLACED ON SLOPES OR AS NEEDED DUE TO OTHER FACTORS. STAKES SHALL BE INCIDENTAL.

④ SEDIMENT CONTROL LOG SHALL MEET THE REQUIREMENTS OF MN/DOT SPEC. 3897.2.A.

⑤ ALTERNATIVE CULVERT END CONTROLS ARE SHOWN ON SHEET 8 OF 8 OF MN/DOT STANDARD PLAN 5-297.405.

⑥ SILT CURTAIN SHALL BE REMOVED WHEN THE AREA CONTRIBUTING DIRECT RUNOFF TO THE CHANNEL HAS BEEN PERMANENTLY STABILIZED. SILT CURTAIN SHALL ALSO BE REMOVED BEFORE WINTER IF ICE UP OR ICE FLOW IS ANTICIPATED.

⑦ MINIMUM WATER DEPTH APPLIES TO THE DEEPEST POINT ALONG THE FLOATATION SILT CURTAIN FOR DETERMINING APPLICABILITY OF FLOATATION SILT CURTAIN.



8/8 FLOATATION SILT CURTAIN TYPE MOVING WATER ⑥

S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

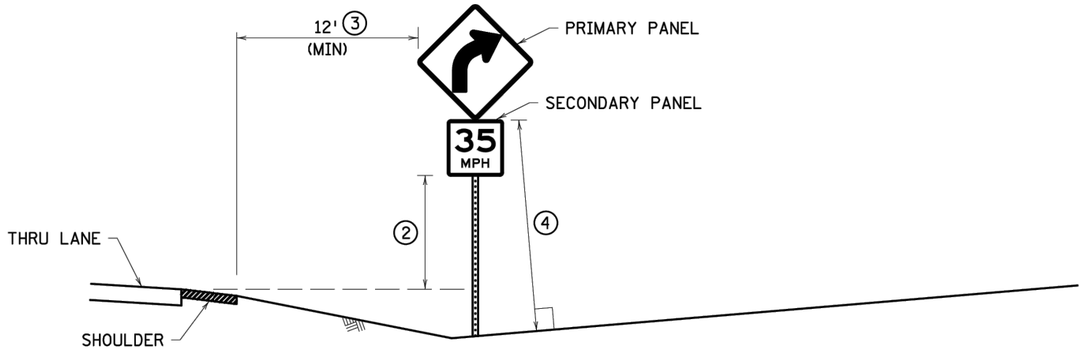
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

DETAILS

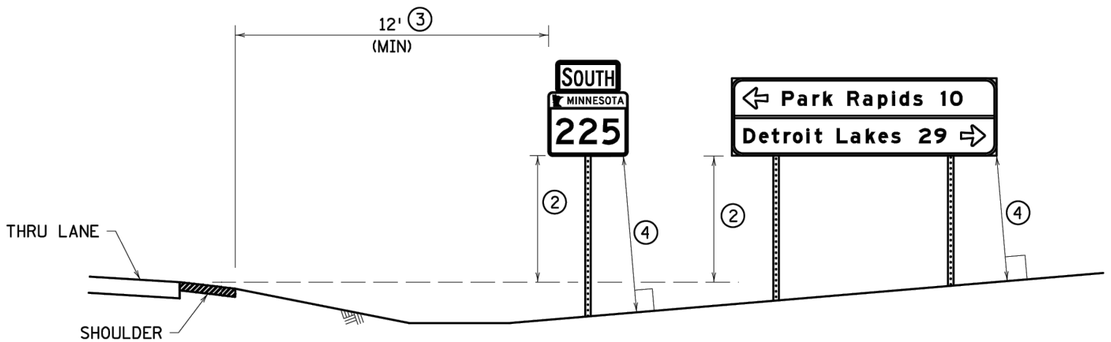
LINWOOD TOWNSHIP, MINNESOTA

LW378

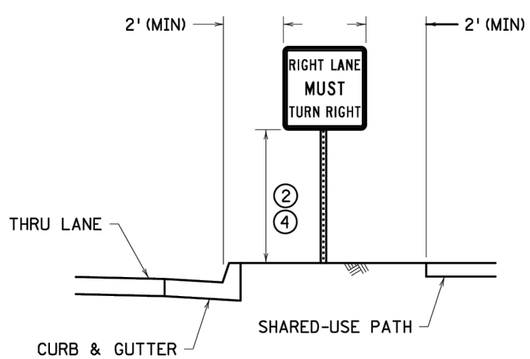
Dec 04, 2025 – 1:13pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_DETAILS.dwg



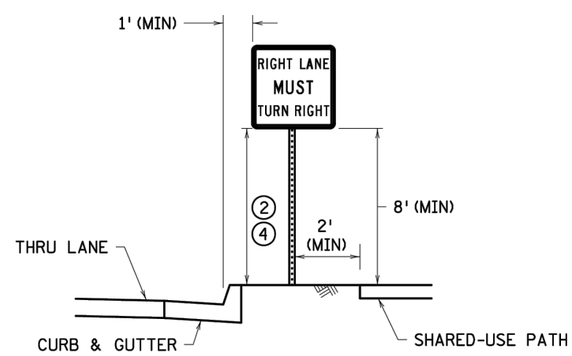
PRIMARY AND SECONDARY PANELS



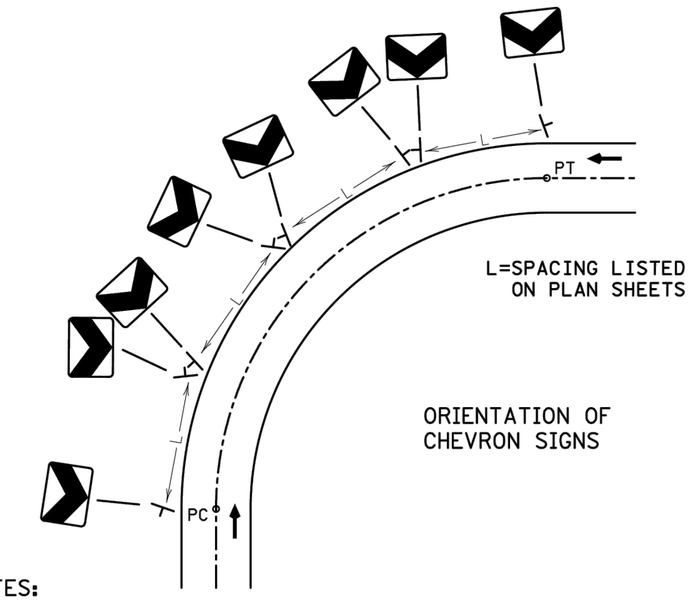
STANDARD LOCATIONS



BOULEVARD LOCATIONS
6' TO 12' WIDE



BOULEVARD LOCATIONS ①
LESS THAN 6' WIDE



NOTES:

PLACE SIGNS AND ORIENT THEM APPROXIMATELY AS SHOWN IN THE PLAN, AT RIGHT ANGLES TO THE DIRECTION OF, AND FACING THE TRAFFIC THEY ARE INTENDED TO SERVE, UNLESS OTHERWISE SPECIFIED. TO AVOID SPECULAR GLARE, TURN SIGNS APPROXIMATELY THREE DEGREES AWAY FROM APPROACHING TRAFFIC.

IF A SIGN NEEDS TO BE REPOSITIONED FROM THE PROPOSED PLAN LOCATION IN ORDER TO AVOID CONFLICTS WITH UTILITIES OR OBSTACLES, CONTACT THE PROJECT ENGINEER.

MOUNT SIGN FACES PLUMB.

LATERAL CLEARANCES GIVEN APPLY TO RIGHT AND/OR LEFT SIDE INSTALLATION.

ERECT OR CONSTRUCT SIGN SUPPORT SO THAT NO PORTION OF THE SIGN PANEL IS WITHIN 15' OF THE RAIL OF A RAILROAD TRACK.

PLACE SIGNS SUCH THAT OBSTACLES DO NOT BLOCK THEM FROM BEING VIEWED BY THE APPROACHING TRAFFIC.

PLACE SIGNS A MINIMUM OF 10' FROM THE NEAREST OBSTACLE. OBSTACLES MAY INCLUDE, BUT ARE NOT LIMITED TO, LIGHT POLES, TREES, SIGNS, AND BUILDINGS. SIGNS MAY BE PLACED CLOSER TO SIGNS IN TIGHT AREAS, BUT NO MORE THAN TWO POSTS IN A 7' DIAMETER CIRCLE.

AVOID PLACING SIGNS IN DITCH BOTTOMS.

① ONLY USE WHEN BOULEVARD IS TOO NARROW TO OBTAIN ADEQUATE CURBED LOCATION SIGN OFFSETS.

② ALL SIGN MOUNTING HEIGHTS ARE MEASURED VERTICALLY FROM THE BOTTOM OF THE LOWEST SIGN PANEL TO THE TOP OF THE CURB, OR IN ABSENCE OF CURB, TO THE NEAR EDGE OF THE THRU-LANE PAVEMENT. SEE SIGN TABULATIONS.

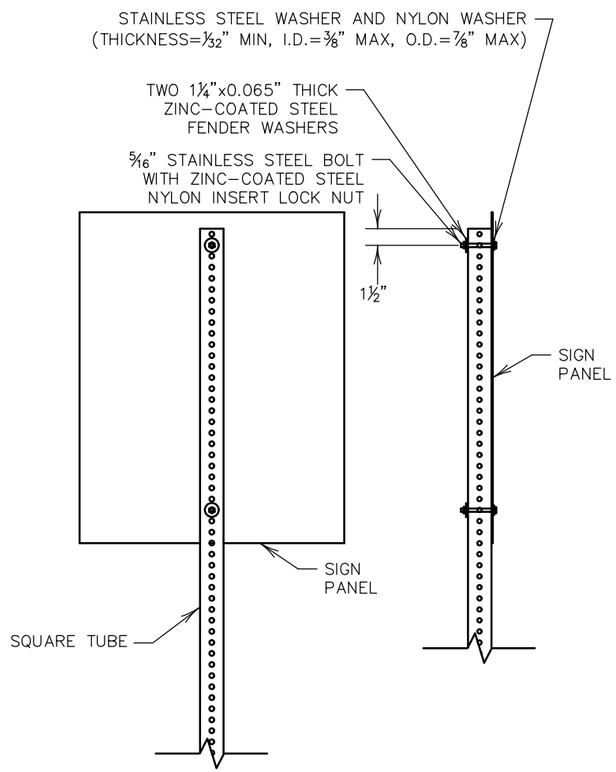
③ MINIMUM OFFSET MAY BE REDUCED TO AT LEAST 6' FROM SHOULDER AND AT LEAST 12' FROM THRU LANE IF SITE CONDITIONS PROHIBIT A 12' OFFSET FROM SHOULDER.

④ CRASHWORTHY HEIGHT IS AT LEAST 7' FOR BREAKAWAY STRUCTURES AND AT LEAST 4' FOR BENDABLE STRUCTURES. SEE SPECIFIC SQUARE TUBE BASE STRUCTURE PLAN FOR CRASH RESPONSE TYPE. THE CRASHWORTHY HEIGHT IS MEASURED TO THE BOTTOM OF THE PRIMARY SIGN PANEL EXCLUDING ANY SECONDARY SIGN PANELS, MARKERS, DELINEATORS, AND REFERENCE LOCATION SIGN PANELS. ANY SECONDARY SIGN PANELS MOUNTED TO MORE THAN ONE POST ARE CONSIDERED PRIMARY SIGN PANELS FOR CRASHWORTHY PURPOSES.

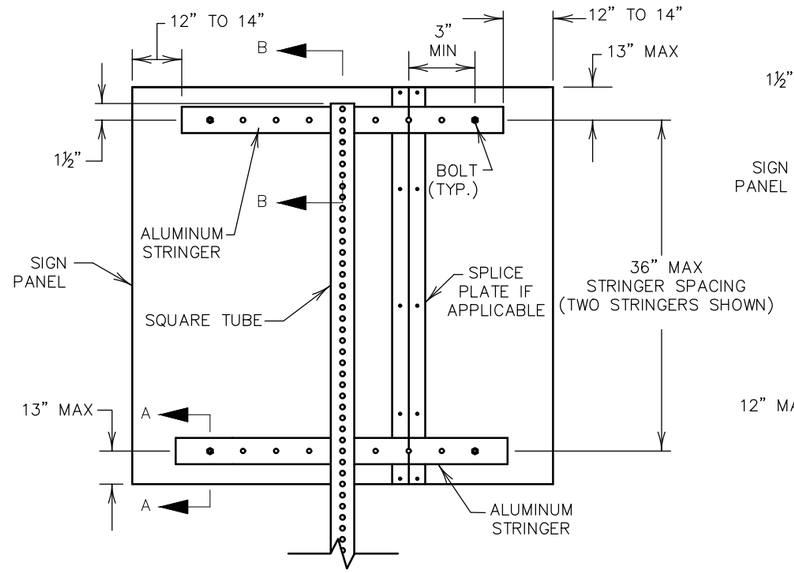
LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING	STANDARD SIGN PLACEMENT	APPROVED: 08-09-2023 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.701	1 OF 1
	DEPARTMENT OF TRANSPORTATION	STANDARD PLAN	STATE PROJ. NO. 002–592–001		SHEET NO. 9	
			TRUNK HWY.		TOTAL SHEETS 76	

Dec 04, 2025 – 1:13pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_DETAILS_MNDOT SIGNS.dwg

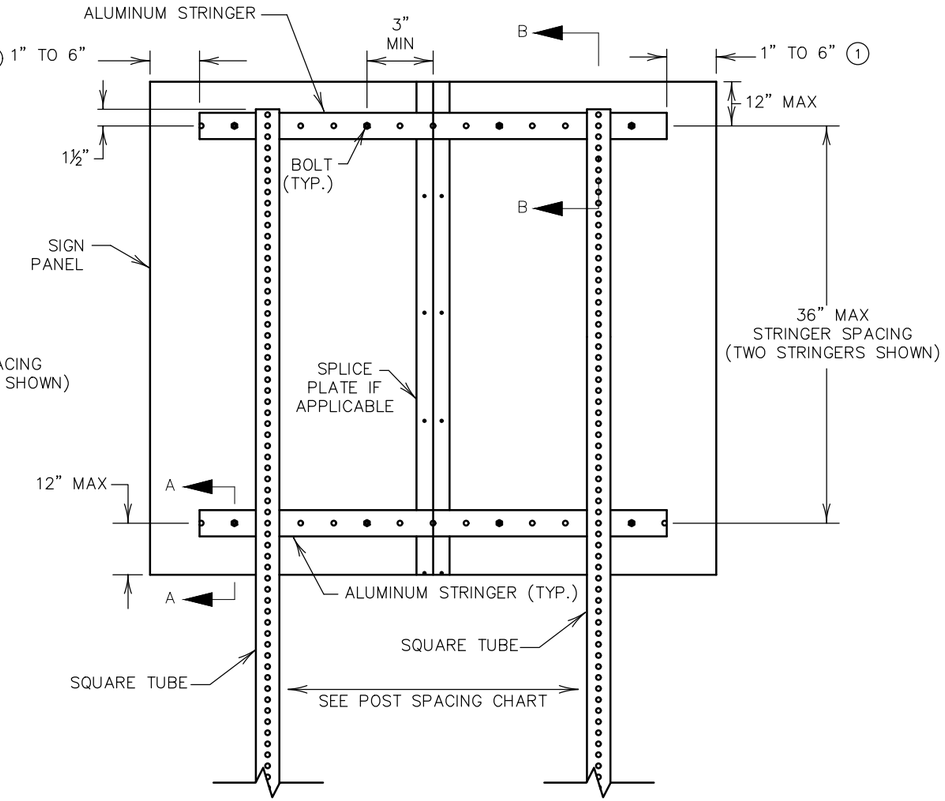
LW378



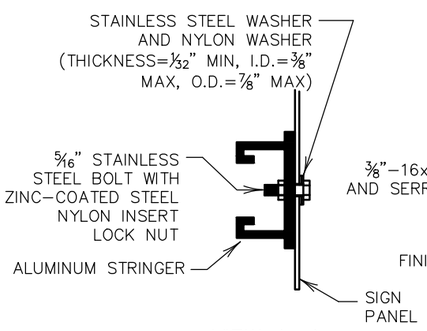
FOR SIGN PANELS UP TO 30" WIDE



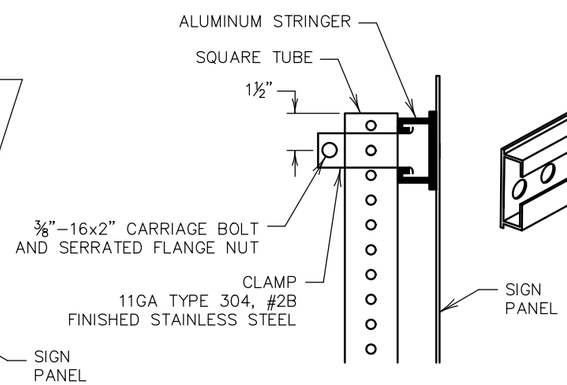
FOR SIGN PANELS 36" WIDE
OR GREATER ON ONE POST



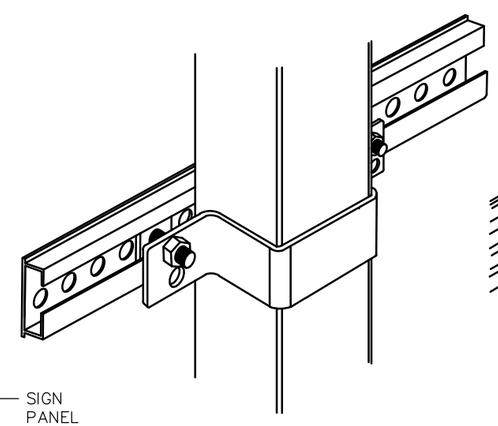
FOR SIGN PANELS ON TWO OR MORE POSTS



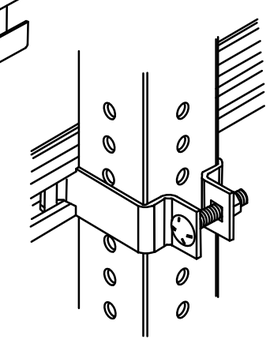
VIEW A–A



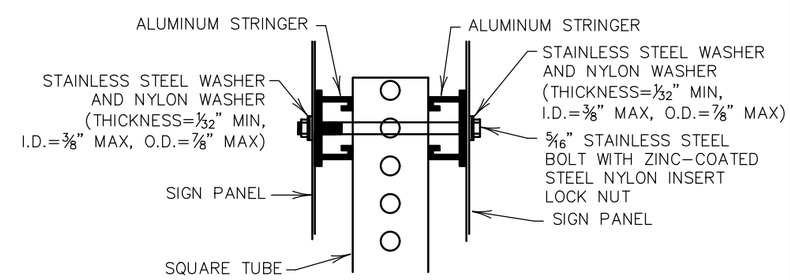
VIEW B–B



CLAMP DETAIL
4" SQUARE TUBE



CLAMP DETAIL
2" AND 2½" 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.

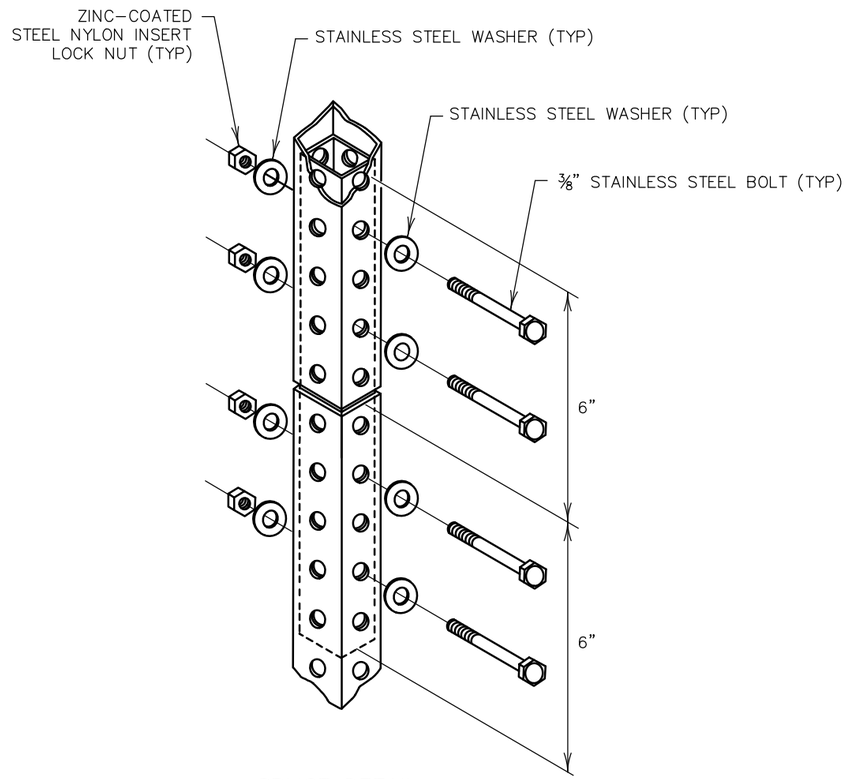
CENTER STRINGERS ON SIGN PANEL.

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

LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING		SQUARE-TUBE SIGN MOUNTING DETAILS	APPROVED: 08-09-2023 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.718	1 OF 3
		DEPARTMENT OF TRANSPORTATION	STANDARD PLAN	STATE PROJ. NO. 002–592–001		SHEET NO. 10	
				TRUNK HWY.		TOTAL SHEETS 76	

LW378

Dec 04, 2025 – 1:14pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_DETAILS_MNDOT SIGNS.dwg



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".

LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING		SQUARE-TUBE SIGN MOUNTING DETAILS	APPROVED: 08-09-2023 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.718	2 OF 3
		DEPARTMENT OF TRANSPORTATION	STANDARD PLAN	STATE PROJ. NO. 002-592-001		SHEET NO.	11
				TRUNK HWY.		TOTAL SHEETS	76

LW378

Dec 04, 2025 – 1:14pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_DETAILS_MNDOT SIGNS.dwg

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	0	4	4	4	4	4					4																																									
114	0	0	0	0	4	4	4	4	4	4				4	4																																								
108	0	0	0	0	4	4	4	4	4	4	4			4	4	4					4	4																																	
102	0	0	0	0	4	4	4	4	4	4	4			4	4	4	4	4			4	4	4	4				4	4	4				4	4																					
96	0	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																		
90	0	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													
84	0	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	3										
78	0	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	3	3	3	3	3	3	3	3			
72	0	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	3	3	3	3	3	3	3	3	3	3	3
66	0	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	3	3	3	3	3	3	3	3	3	3	3
60	0	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	3	3	3	3	3	3	3	3	3	3	3
54	0	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	3	3	3	3	3	3	3	3	3	3	3
48	0	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	2	2	2	2	2	2	2	2	2	2	2
42	0	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	2	2	2	2	2	2	2	2	2	2	2
36	0	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	2	2	2	2	2	2	2	2	2	2	2
30	0	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	2	2	2	2	2	2	2	2	2	2	2
24	0	0	0	0	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	0	0	0	0	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	0	0	0	0	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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	5	5	6	6	5	5	5	5	5	5	6	6	6	6	7	5	5	5	5	6	6	6	6	6	7	5	5	6	6	6	6	6	6	7	7																	
138			5	5	5	5	5	6	6	7	5	5	5	5	5	5	6	6	6	7	7	5	5	5	5	6	6	6	6	6	7	7	5	6	6	6	6	6	6	7	7	7															
132			4	4	4	4	5	5	6	7	7	4	4	5	5	5	5	6	6	6	7	7	5	5	5	5	6	6	6	6	6	7	7	7	5	6	6	6	6	6	6	7	7	7													
126				4	4	4	5	5	6	6	7	7	4	4	5	5	5	5	6	6	6	7	7	7	5	5	5	6	6	6	6	6	6	7	7	5	6	6	6	6	6	6	7	7	7	7	7									
120				4	4	4	4	5	5	6	6	7	7	4	4	5	5	5	5	6	6	6	6	7	7	7	5	5	5	6	6	6	6	6	6	7	7	7	6	6	6	6	6	6	6	7	7	7	7	7						
114					4	4	4	5	5	6	6	7	7	8	4	5	5	5	5	5	6	6	6	6	7	7	7	7	5	5	6	6	6	6	6	6	7	7	7	7	7	7	6	6	6	6	6	6	6	7	7	7	7	7	7
108					4	4	4	5	5	5	6	6	7	7	8	4	5	5	5	5	5	6	6	6	6	7	7	7	7	7	5	5	6	6	6	6	6	6	7	7	7	7	7	7	6	6	6	6	6	6	7	7	7	7	7
102						4	4	4	5	5	6	6	6	7	7	8	4	5	5	5	5	5	6	6	6	6	6	7	7	7	7	8	5	5	6	6	6	6	6	6	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6
96						3	4	4	4	5	5	6	6	6	7	7	8	4	4	5	5	5	5	5	6	6	6	6	6	7	7	7	7	7	8	5	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	8	8	6	6
90						3	3	4	4	5	5	5	6	6	6	7	7	8	4	4	5	5	5	5	5	6	6	6	6	6	6	7	7	7	7	7	8	8	5	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7
84							3	4	4	4	5	5	5	6	6	6	7	7	7	4	4	5	5	5	5	5	6	6	6	6	6	6	7	7	7	7	7	7	5	5	6	6	6	6	6	6	6	6	7	7	7	7	7	7
78							3	3	4	4	4	5	5	5	6	6	6	7	7	4	4	4	4	5	5	5	5	5	5	6	6	6	6	6	6	7	7	7	7	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7
72								3	3	4	4	4	5	5	5	6	6	6	6	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	6	6	6	6	6	6
66									3	4	4	4	4	5	5	5	5	6	6	3	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	4	4	4	5	5	5	5	5	5	5	5	5	5	6	6
60										3	3	4	4	4	4	5	5	5	5	3	3	3	3	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5
54										3	3	3	4	4	4	4	5	5	5	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5
48										3	3	3	3	3	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4
42										2	3	3	3	3	3	3	4	4	4	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4
36										2	2	2	3	3	3	3	3	3	3	2	2	2	2	2	2	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
30										2	2	2	2	2	2	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3
24										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	2	2	2	2	2
18										2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	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
12										2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

4 POST

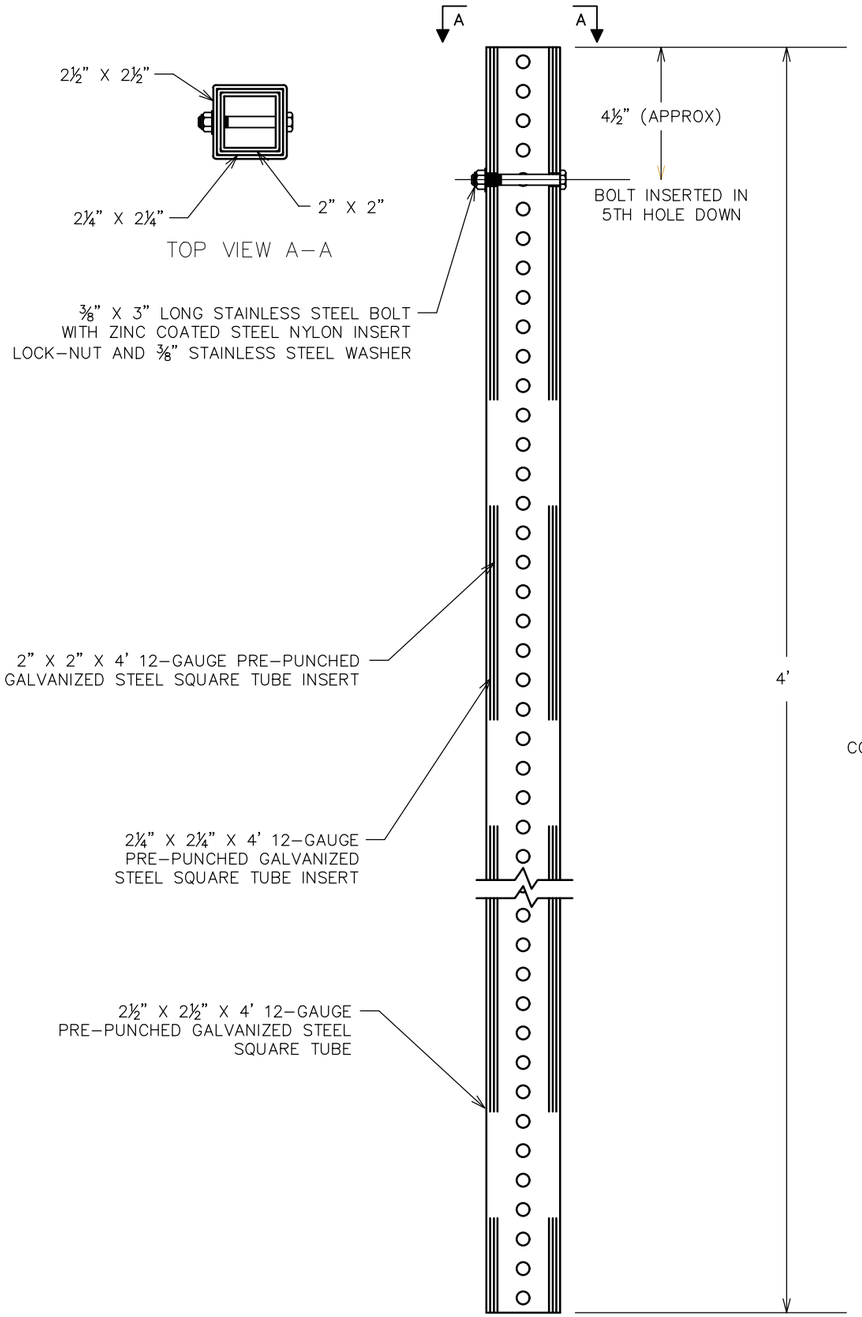
1 POST | 2 POST | 3 POST

PANEL WIDTH (INCHES)

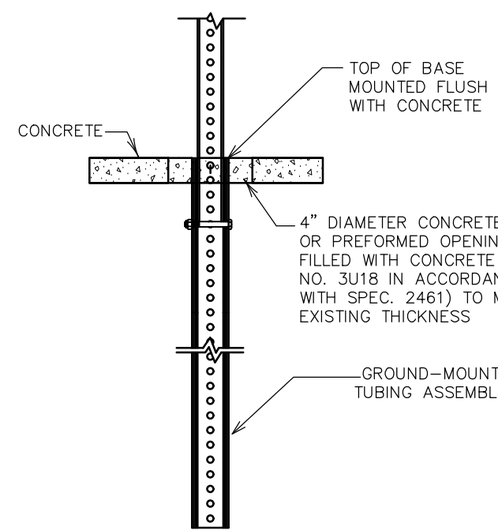
LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING		SQUARE-TUBE SIGN MOUNTING DETAILS	APPROVED: 08-09-2023 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.718	3 OF 3
		DEPARTMENT OF TRANSPORTATION	STANDARD PLAN	STATE PROJ. NO. 002–592–001	SHEET NO. 12		
				TRUNK HWY.	TOTAL SHEETS 76		

LW378

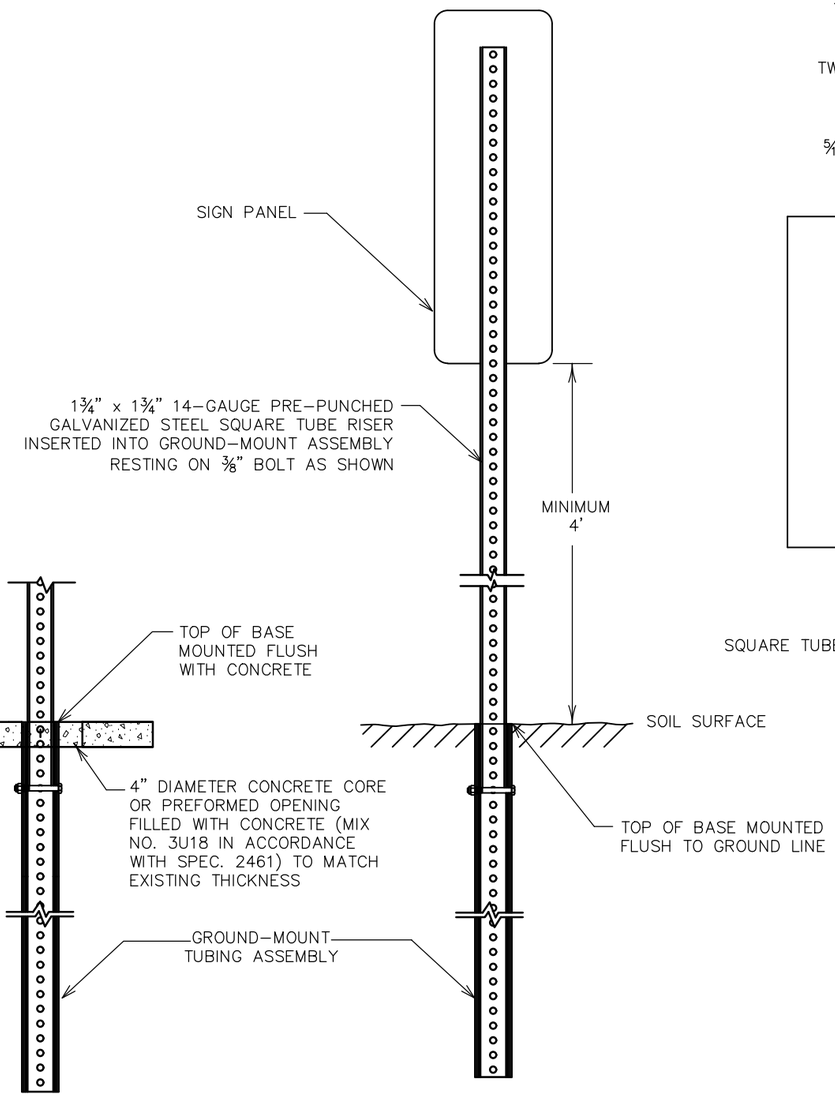
Dec 04, 2025 – 1:14pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_DETAILS_MNDOT SIGNS.dwg



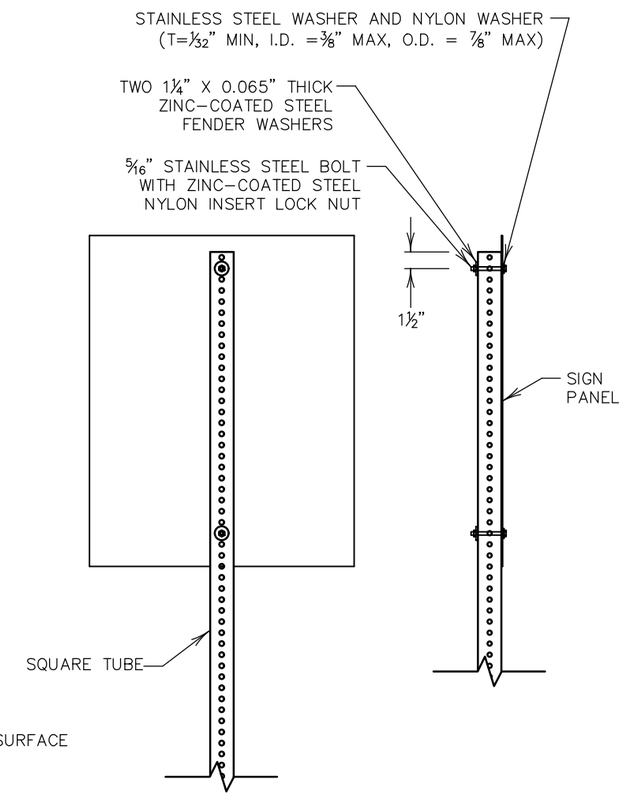
GROUND MOUNT TUBING ASSEMBLY



THREE–WALL BASE CORED
THROUGH CONCRETE



THREE–WALL BASE IN SOIL



MOUNTING DETAIL

NOTES:

THE CRASH RESPONSE FOR THIS STRUCTURE IS BENDABLE.

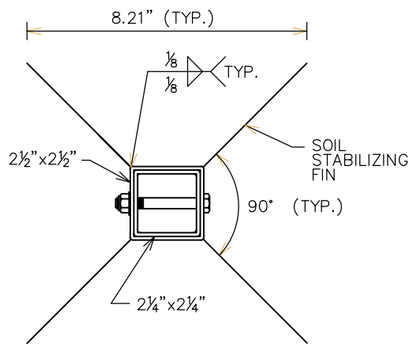
TO MEET CRASHWORTHY REQUIREMENTS THE DISTANCE BETWEEN THE BOTTOM OF THE SIGN PANEL AND THE GROUND SURFACE BELOW ANY PORTION OF THE SIGN PANEL SHALL BE A MINIMUM OF 4'. SEE TABULATIONS FOR MOUNTING HEIGHT.

SQUARE TUBE SIGN POSTS PER MnDOT SPEC. 3402.

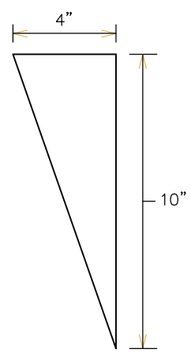
LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING	THREE-WALL BASE FOR $1^{3}/_{4}$" SQUARE-TUBE RISER POST	APPROVED: 11-29-2022 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.721	1 OF 1
	DEPARTMENT OF TRANSPORTATION	STANDARD PLAN	STATE PROJ. NO. 002–592–001		SHEET NO.	13
			TRUNK HWY.		TOTAL SHEETS	76

LW378

Dec 04, 2025 – 1:14pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_DETAILS_MNDOT SIGNS.dwg



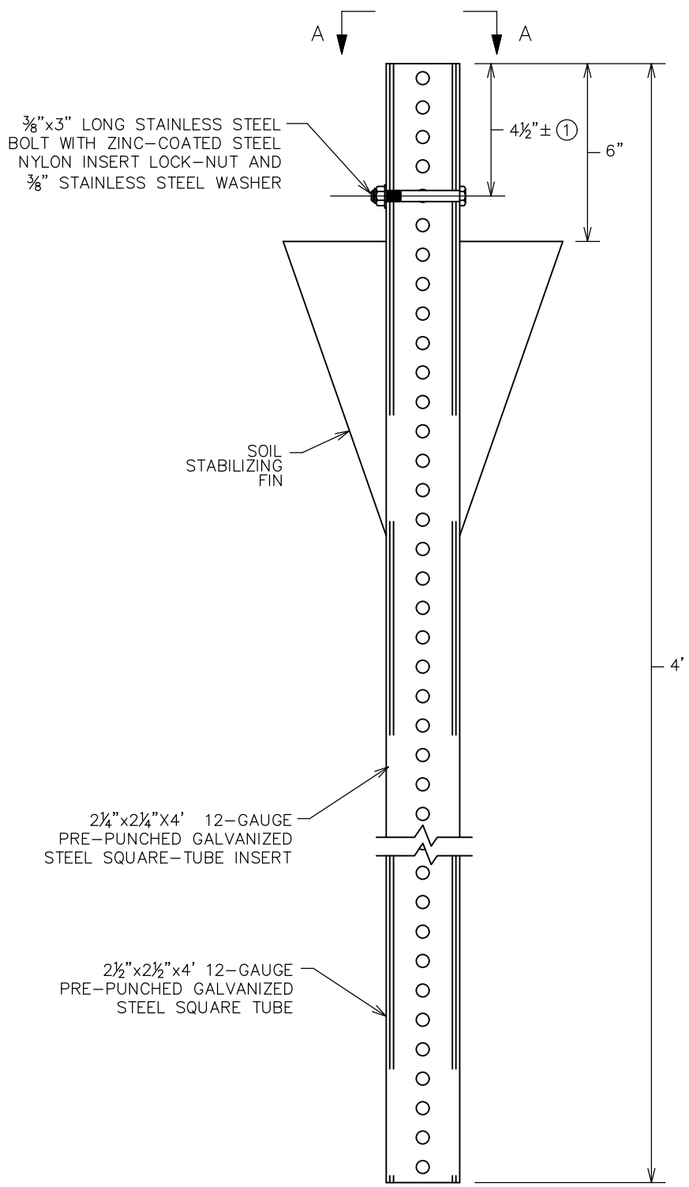
VIEW A–A



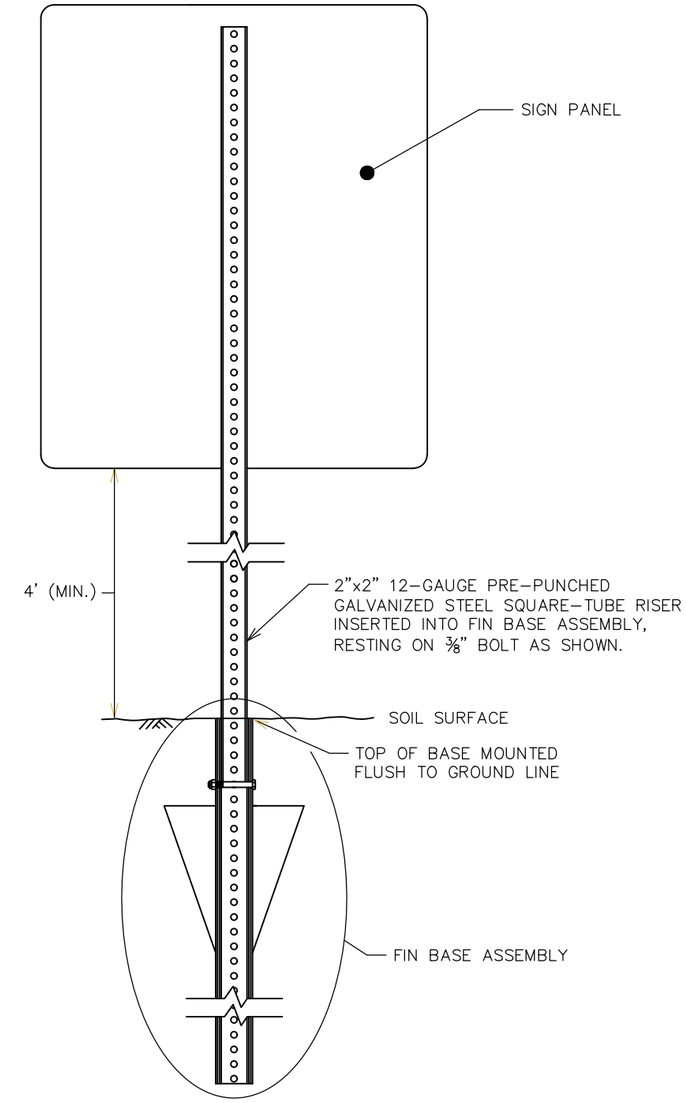
SOIL STABILIZING FIN

FOUR REQUIRED

12–GAUGE PRE–GALVANIZED ASTM A569 STEEL. WELD THE 10" EDGE OF EACH FIN TO EACH CORNER OF THE 2½" SQUARE TUBE. SEE VIEW A–A FOR WELDING DETAILS. WELDS MUST BE ZINC–COATED.



FIN BASE ASSEMBLY



FIN BASE IN SOIL

NOTES:

THE CRASH RESPONSE TYPE 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 MUST BE A MINIMUM OF 4'. SEE TABULATIONS FOR MOUNTING HEIGHT.

SEE STANDARD PLAN 5–297.718 FOR ADDITIONAL MOUNTING DETAILS.

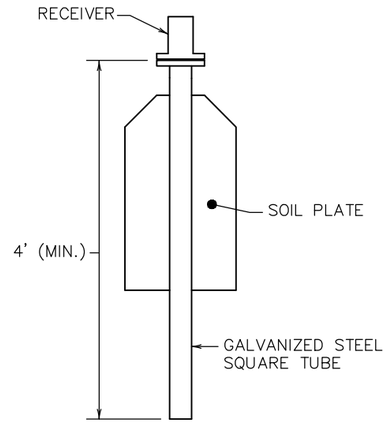
SQUARE–TUBE SIGN POSTS IN ACCORDANCE WITH SPEC. 3402.

① INSERT BOLT IN 5TH HOLE DOWN.

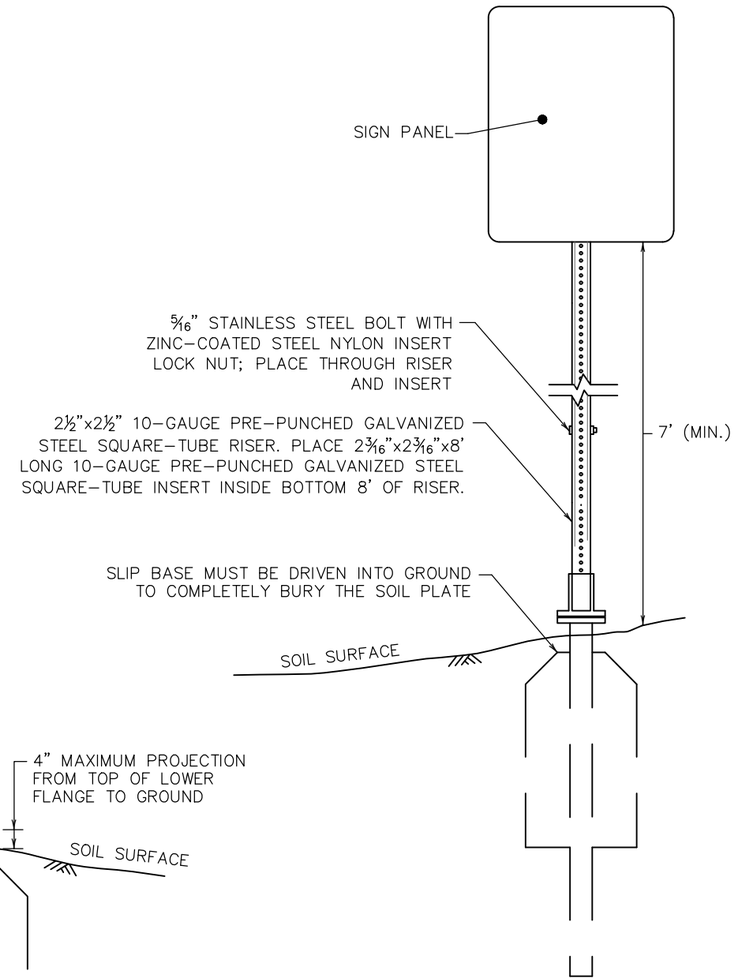
LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING		FIN BASE FOR 2" SQUARE-TUBE RISER POST IN SOIL	APPROVED: 08-09-2023 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.722	1 OF 1
		DEPARTMENT OF TRANSPORTATION	STANDARD PLAN	STATE PROJ. NO. 002–592–001		SHEET NO.	14
				TRUNK HWY.		TOTAL SHEETS	76

LW378

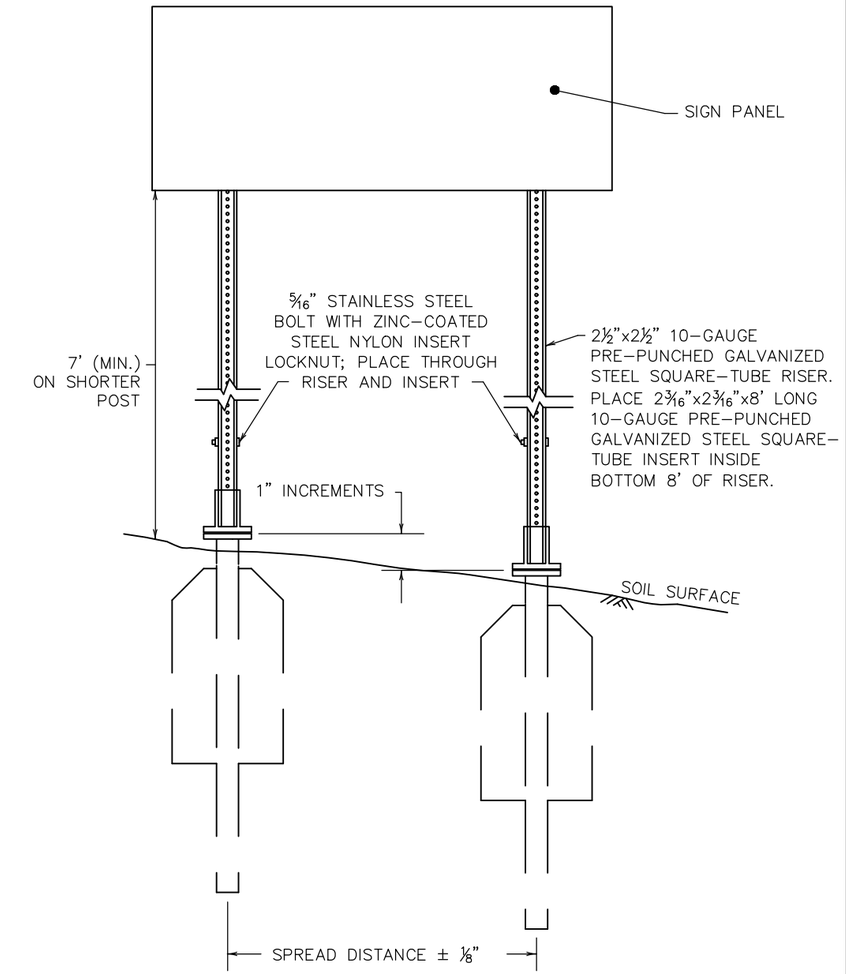
Dec 04, 2025 – 1:14pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_DETAILS_MNDOT SIGNS.dwg



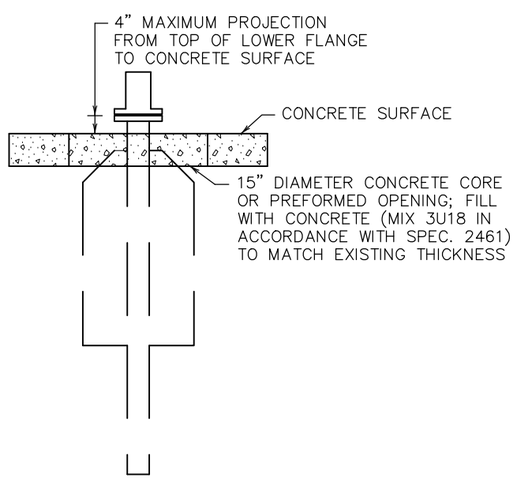
PROPRIETARY SLIP BASE ASSEMBLY ①



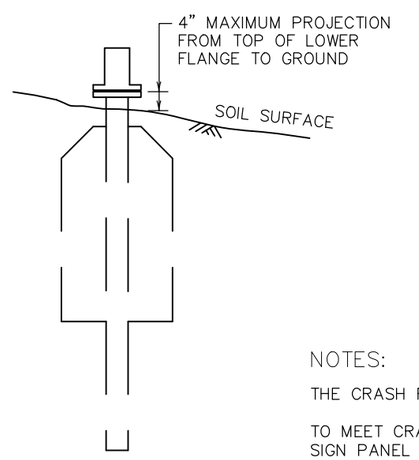
SLIP BASE ASSEMBLY WITH SINGLE-POST SIGN
TYPICAL PLACEMENT IN SOIL



SLIP BASE ASSEMBLY WITH MULTIPLE-POST SIGN ②
TYPICAL PLACEMENT IN SOIL



SLIP BASE ASSEMBLY IN CONCRETE



SLIP BASE ASSEMBLY IN SOIL

NOTES:

THE CRASH RESPONSE TYPE FOR THIS STRUCTURE IS BREAKAWAY.

TO MEET CRASHWORTHY REQUIREMENTS, THE DISTANCE BETWEEN THE BOTTOM OF THE PRIMARY SIGN PANEL AND THE GROUND SURFACE BELOW ANY PORTION OF THE PRIMARY SIGN PANEL MUST BE A MINIMUM OF 7'. SEE SIGNING PLAN TABULATIONS FOR MOUNTING HEIGHT.

1/16"-THICK LEVELING SHIMS MAY BE USED TO PLUMB TOP HALF. PLACE SHIMS UNDER TEFLON-COATED SLIP WASHER. MAXIMUM OF TWO SHIMS PER NOTCH POINT.

FOR SIGN PANEL MOUNTING DETAILS, SEE STANDARD PLAN 5-297.718.

SQUARE TUBE SIGN POST IN ACCORDANCE WITH MnDOT SPEC. 3402.

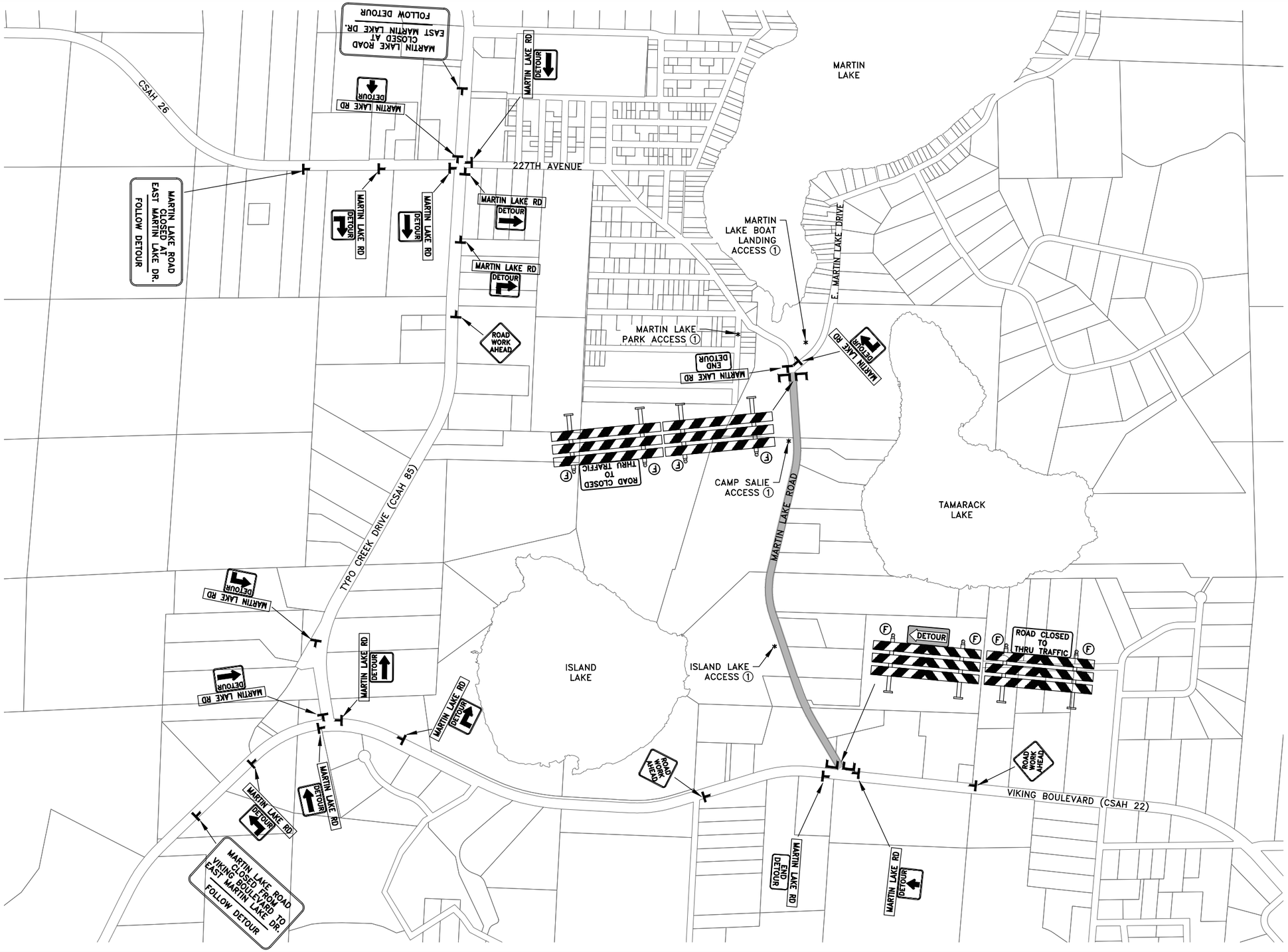
① USE APPROVED PRODUCT FROM THE SIGN STRUCTURES PAGE OF THE SIGNING SECTION OF THE APPROVED PRODUCTS LIST.

② FOR MULTIPLE-POST APPLICATIONS, ENSURE SOIL PLATES ARE COMPLETELY BURIED. IF SOIL SURFACE IS NOT LEVEL, DRIVE THE BASES UNTIL THEY ARE OFFSET IN 1" INCREMENTS. THE BASES MUST BE TRUE AND SQUARE WITH ONE ANOTHER TO ENSURE PROPER UNRESTRICTED INSERTION OF STEEL TUBE RISERS. MOUNT SIGN PANELS LEVEL.

LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING		SLIP BASE ASSEMBLY FOR 2½" SQUARE-TUBE RISER POST	APPROVED: 08-09-2023 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.724	1 OF 1
		DEPARTMENT OF TRANSPORTATION	STANDARD PLAN	STATE PROJ. NO. 002-592-001		SHEET NO. 15	
				TRUNK HWY.		TOTAL SHEETS 76	

LW378

Dec 04, 2025 – 1:14pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_DETAILS_MNDOT SIGNS.dwg



LEGEND

PHASE 1 WORK ZONE

GENERAL NOTES:

1. LOCAL ACCESS TO ALL PROPERTIES THAT ACCESS 227TH AVENUE AND MARTIN LAKE ROAD SHALL BE PROVIDED AT ALL TIMES.

REFERENCE NOTES:

① ACCESS TO ALL COUNTY FACILITIES, INCLUDING MARTIN LAKE PARK, MARTIN LAKE BOAT LANDING, CAMP SALIE AND ISLAND LAKE SHALL BE MAINTAINED AT ALL TIMES.

N

500 0 500 1000
SCALE IN FEET

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

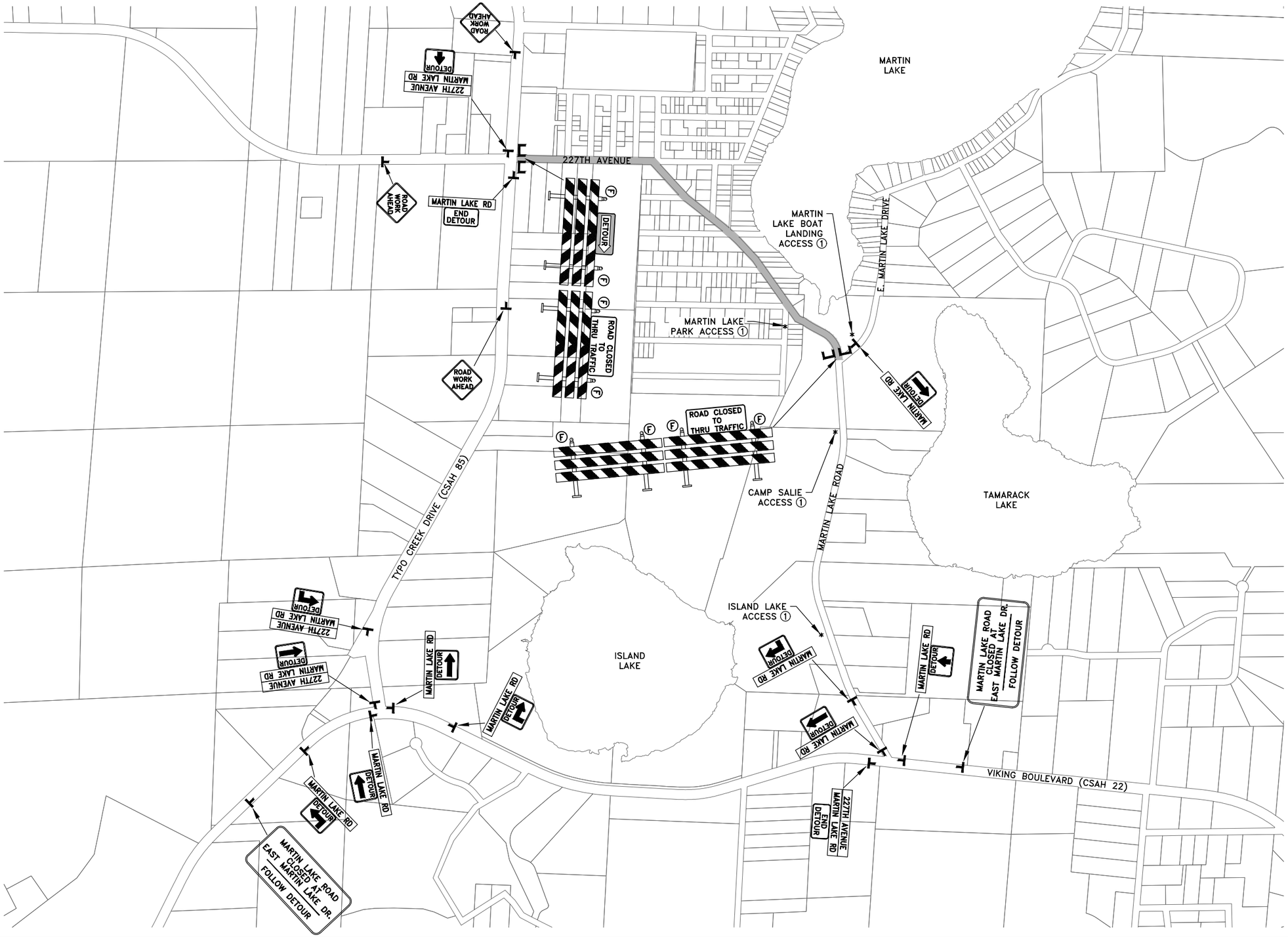
TRAFFIC CONTROL PLAN
PHASE 1

LINWOOD TOWNSHIP, MINNESOTA

SHEET 16 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:14pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_TRAFFIC.dwg



LEGEND

PHASE 2 WORK ZONE

GENERAL NOTES:

1. LOCAL ACCESS TO ALL PROPERTIES THAT ACCESS 227TH AVENUE AND MARTIN LAKE ROAD SHALL BE PROVIDED AT ALL TIMES.

REFERENCE NOTES:

① ACCESS TO ALL COUNTY FACILITIES, INCLUDING MARTIN LAKE PARK, MARTIN LAKE BOAT LANDING, CAMP SALIE AND ISLAND LAKE SHALL BE MAINTAINED AT ALL TIMES.

N

500 0 500 1000

SCALE IN FEET

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.

Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE

DRAWN BY: TAE

CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

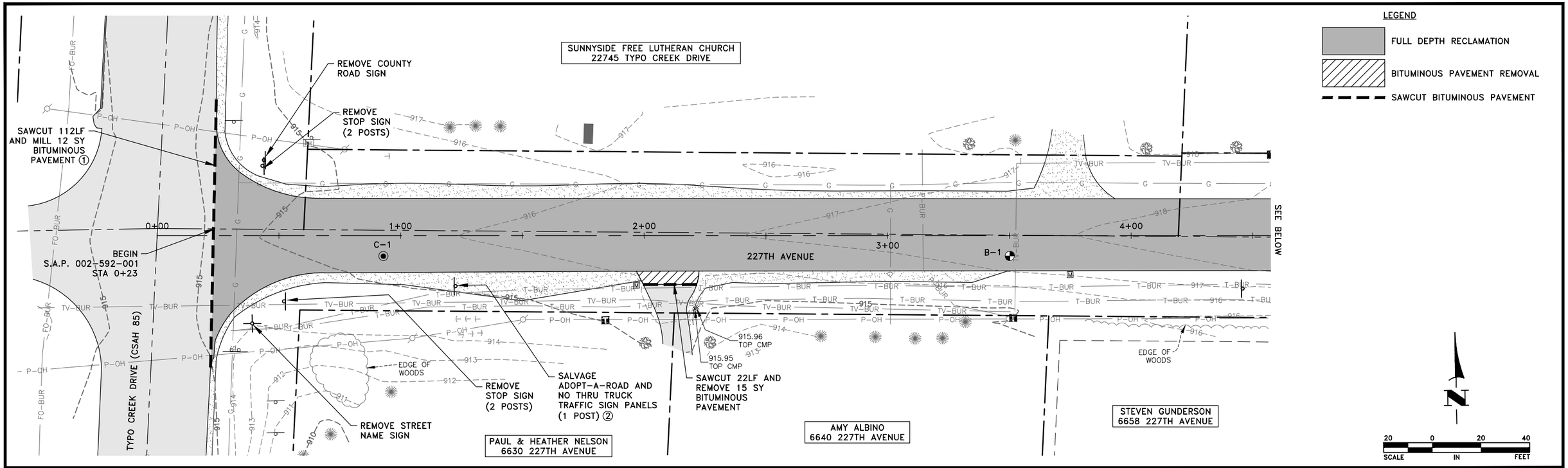
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

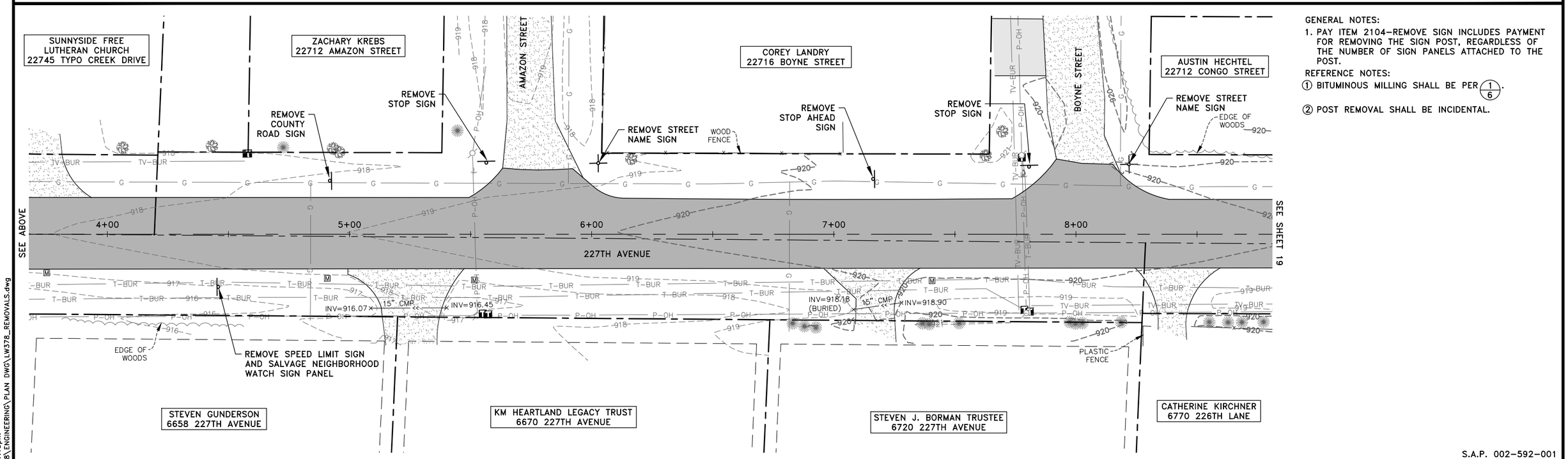
TRAFFIC CONTROL PLAN
PHASE 2

LINWOOD TOWNSHIP, MINNESOTA

LW378

Dec 04, 2025 – 1:14pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_TRAFFIC.dwg





GENERAL NOTES:

1. PAY ITEM 2104-REMOVE SIGN INCLUDES PAYMENT FOR REMOVING THE SIGN POST, REGARDLESS OF THE NUMBER OF SIGN PANELS ATTACHED TO THE POST.

REFERENCE NOTES:

① BITUMINOUS MILLING SHALL BE PER (1/6).

② POST REMOVAL SHALL BE INCIDENTAL.

S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

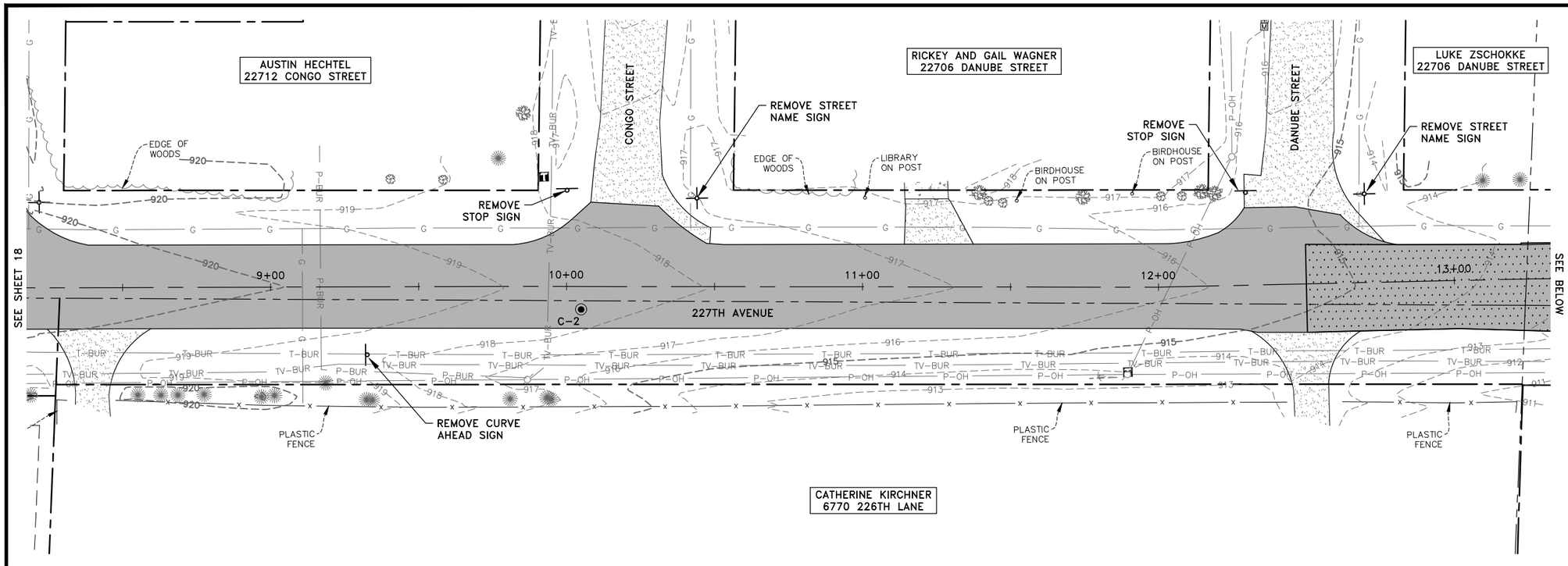
EXISTING TOPOGRAPHY AND REMOVALS PLAN

227TH AVENUE
LINWOOD TOWNSHIP, MINNESOTA

SHEET 18 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:15pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_REMOVALS.dwg

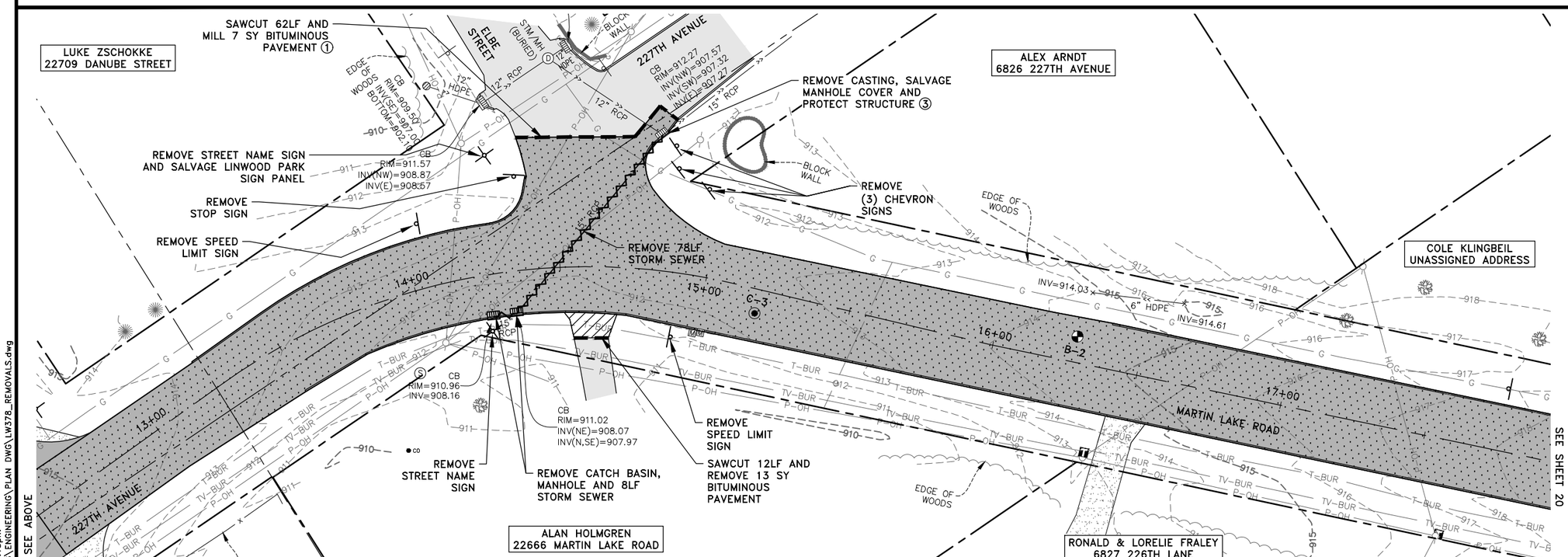


LEGEND

- FULL DEPTH RECLAMATION
- FULL DEPTH RECLAMATION, SALVAGE RECLAMATION MATERIAL, SUBGRADE EXCAVATION ②
- BITUMINOUS PAVEMENT REMOVAL
- SAWCUT BITUMINOUS PAVEMENT
- STORM SEWER REMOVAL

N

20 0 20 40
SCALE IN FEET



GENERAL NOTES:

1. BITUMINOUS CURB REMOVAL SHALL BE INCIDENTAL.
2. PAY ITEM 2104–REMOVE SIGN INCLUDES PAYMENT FOR REMOVING THE SIGN POST, REGARDLESS OF THE NUMBER OF SIGN PANELS ATTACHED TO THE POST.

REFERENCE NOTES:

① BITUMINOUS MILLING SHALL BE PER (1/6).

② THIS WORK SHALL BE PAID PER ITEMS 2215–FULL DEPTH RECLAMATION, 2215–HAUL FULL DEPTH RECLAMATION, AND 2106–EXCAVATION–COMMON. THE ROADWAY SHALL BE RESTORED TO A GRAVEL SURFACE AT THE END OF EACH WORKING DAY.

③ SALVAGING THE MANHOLE COVER SHALL BE PAID PER ITEM 2104–SALVAGE PRECAST CONCRETE COVER.

20 0 20 40
SCALE IN FEET

S.A.P. 002–592–001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763–427–5860 FAX 763–427–0520
www.hakanson–anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

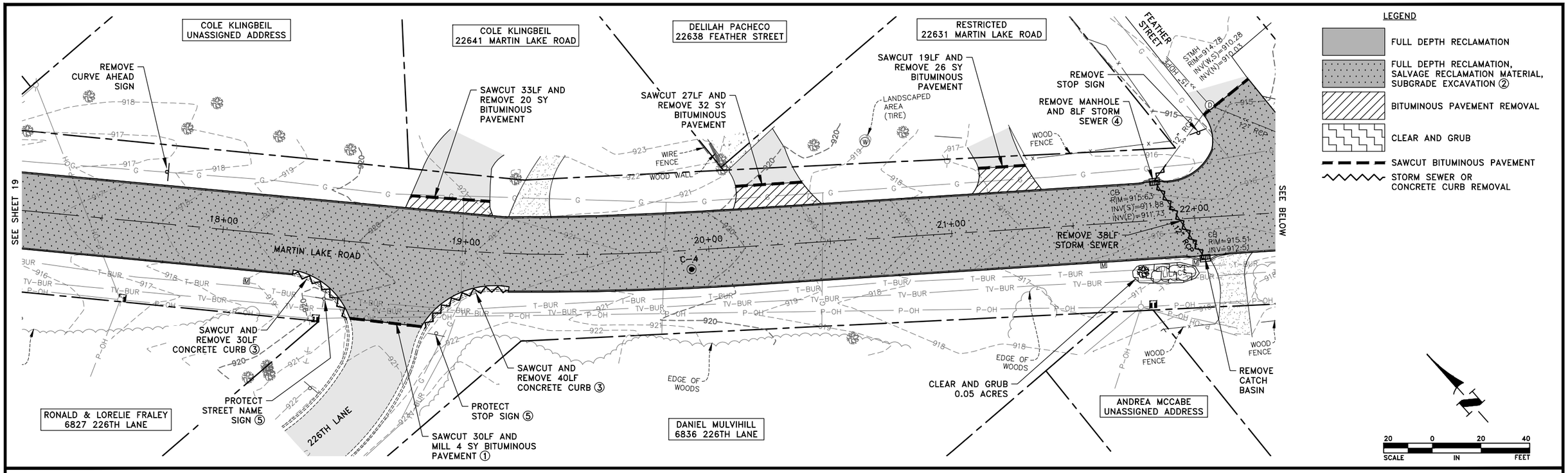
EXISTING TOPOGRAPHY AND REMOVALS PLAN

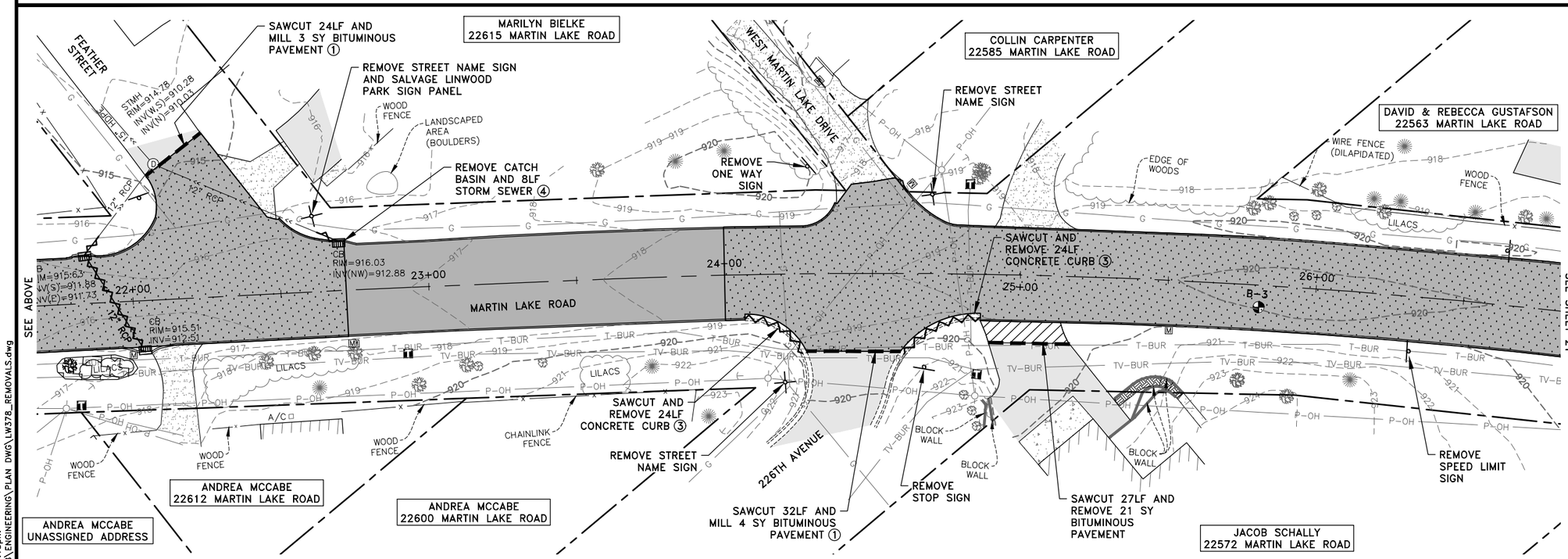
227TH AVENUE AND MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 19 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:15pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_REMOVALS.dwg





GENERAL NOTES:

1. BITUMINOUS CURB REMOVAL SHALL BE INCIDENTAL.
2. PAY ITEM 2104–REMOVE SIGN INCLUDES PAYMENT FOR REMOVING THE SIGN POST, REGARDLESS OF THE NUMBER OF SIGN PANELS ATTACHED TO THE POST.

REFERENCE NOTES:

① BITUMINOUS MILLING SHALL BE PER (1/6).

② THIS WORK SHALL BE PAID PER ITEMS 2215–FULL DEPTH RECLAMATION, 2215–HAUL FULL DEPTH RECLAMATION, AND 2106–EXCAVATION–COMMON. THE ROADWAY SHALL BE RESTORED TO A GRAVEL SURFACE AT THE END OF EACH WORKING DAY.

③ SAWCUTTING CURB AT MATCH POINT SHALL BE INCIDENTAL.

④ REMOVE STORM SEWER TO FIRST PIPE JOINT DOWNSTREAM OF STRUCTURE.

⑤ THIS WORK SHALL BE INCIDENTAL.

S.A.P. 002–592–001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763–427–5860 FAX 763–427–0520
www.hakanson–anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

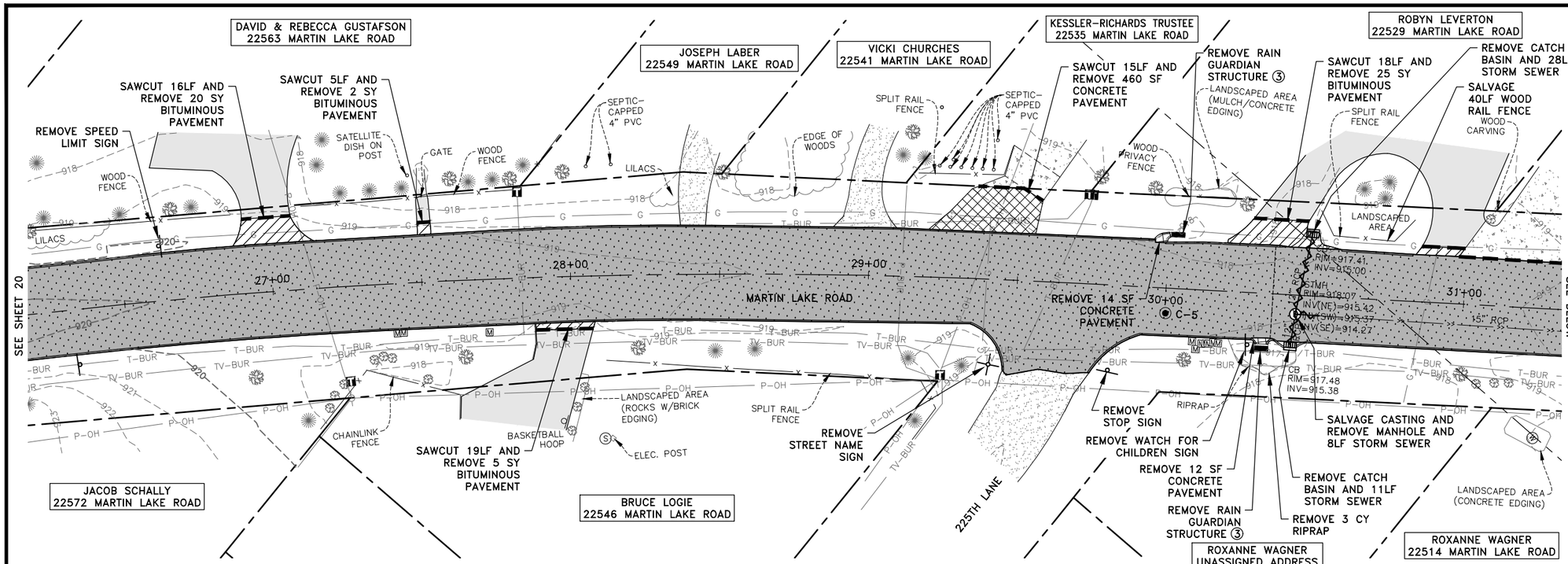
EXISTING TOPOGRAPHY AND REMOVALS PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 20 OF 76 SHEETS

LW378

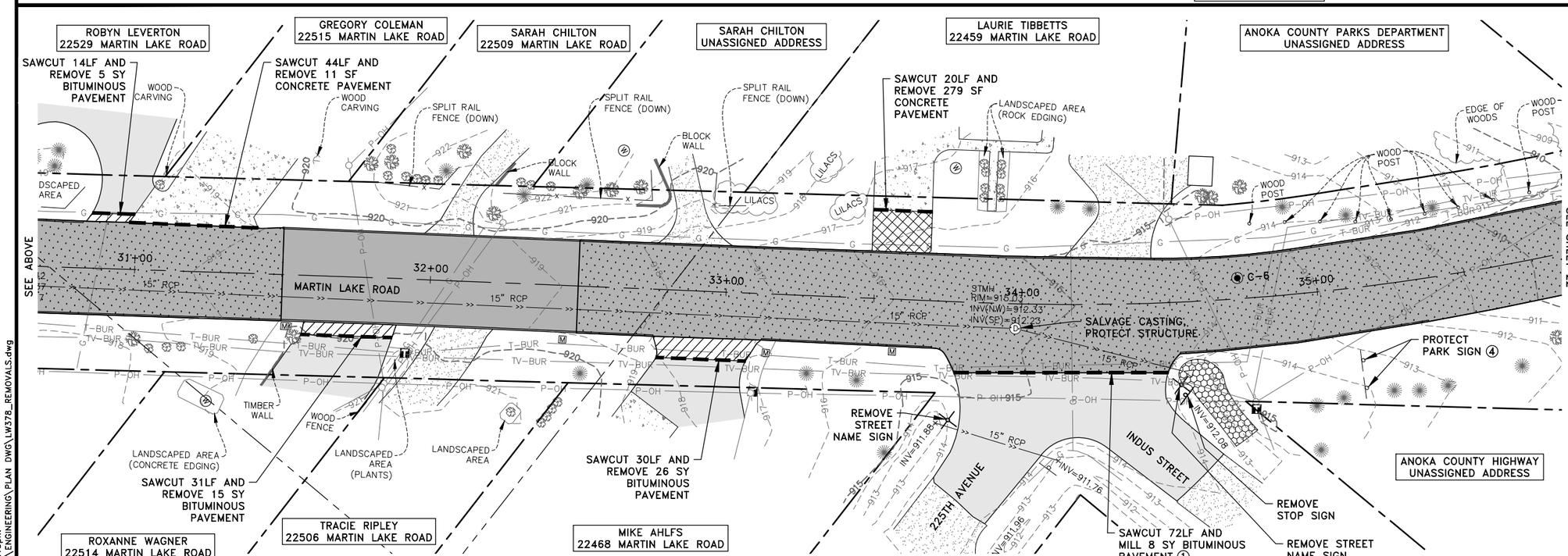
Dec 04, 2025 – 1:15pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_REMOVALS.dwg



LEGEND

- FULL DEPTH RECLAMATION
- FULL DEPTH RECLAMATION, SALVAGE RECLAMATION MATERIAL, SUBGRADE EXCAVATION ②
- BITUMINOUS PAVEMENT REMOVAL
- CONCRETE PAVEMENT REMOVAL
- SAWCUT BITUMINOUS OR CONCRETE PAVEMENT
- STORM SEWER REMOVAL

20 0 20 40
SCALE IN FEET



GENERAL NOTES:

1. BITUMINOUS CURB REMOVAL SHALL BE INCIDENTAL.
2. PAY ITEM 2104-REMOVE SIGN INCLUDES PAYMENT FOR REMOVING THE SIGN POST, REGARDLESS OF THE NUMBER OF SIGN PANELS ATTACHED TO THE POST.

REFERENCE NOTES:

① BITUMINOUS MILLING SHALL BE PER (1/6).

② THIS WORK SHALL BE PAID PER ITEMS 2215-FULL DEPTH RECLAMATION, 2215-HAUL FULL DEPTH RECLAMATION, AND 2106-EXCAVATION-COMMON. THE ROADWAY SHALL BE RESTORED TO A GRAVEL SURFACE AT THE END OF EACH WORKING DAY.

③ THIS WORK SHALL BE PAID PER ITEM 2104-REMOVE MISCELLANEOUS STRUCTURES.

④ THIS WORK SHALL BE INCIDENTAL.

S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

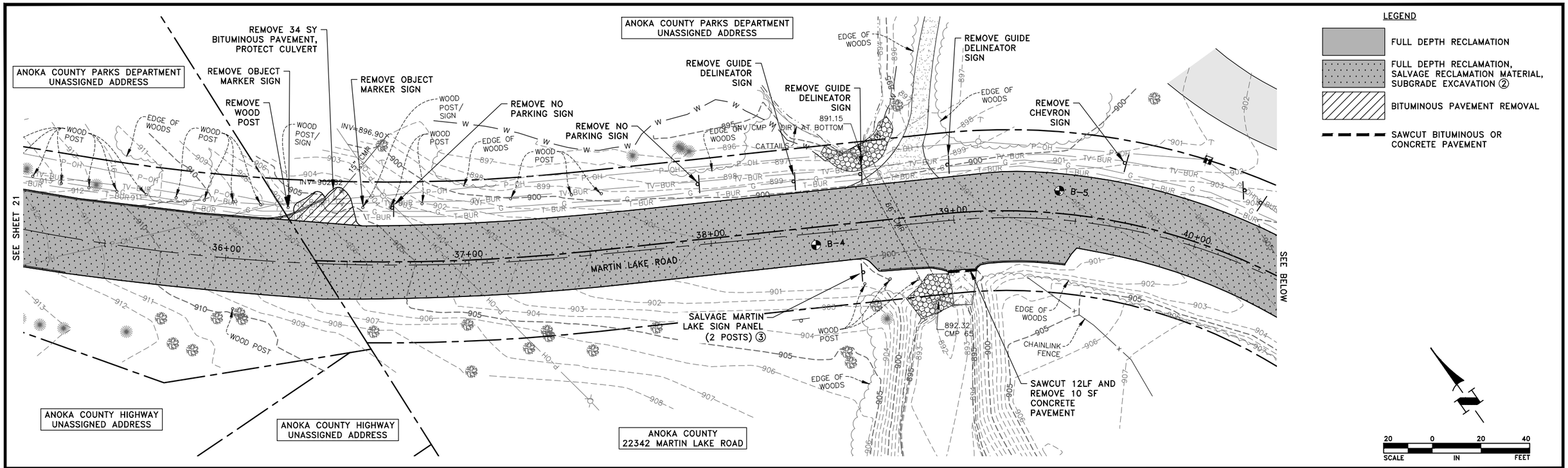
EXISTING TOPOGRAPHY AND REMOVALS PLAN

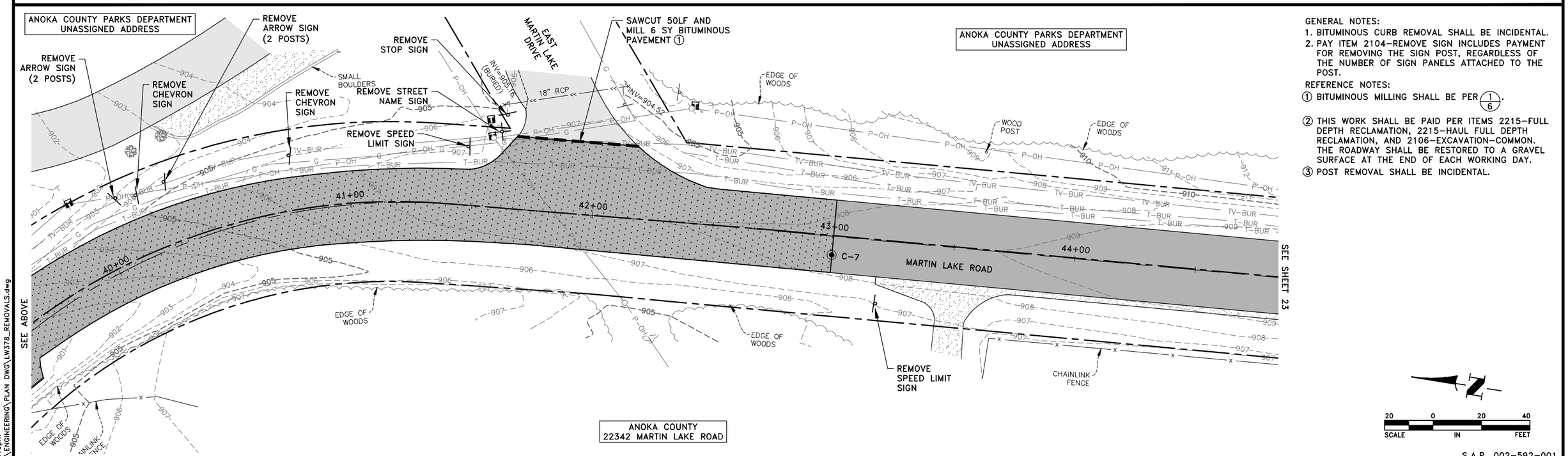
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 21 OF 76 SHEETS

LW378

Dec 04, 2025 - 1:15pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_REMOVALS.dwg





GENERAL NOTES:

1. BITUMINOUS CURB REMOVAL SHALL BE INCIDENTAL.
2. PAY ITEM 2104–REMOVE SIGN INCLUDES PAYMENT FOR REMOVING THE SIGN POST, REGARDLESS OF THE NUMBER OF SIGN PANELS ATTACHED TO THE POST.

REFERENCE NOTES:

① BITUMINOUS MILLING SHALL BE PER (1/6).

② THIS WORK SHALL BE PAID PER ITEMS 2215–FULL DEPTH RECLAMATION, 2215–HAUL FULL DEPTH RECLAMATION, AND 2106–EXCAVATION–COMMON. THE ROADWAY SHALL BE RESTORED TO A GRAVEL SURFACE AT THE END OF EACH WORKING DAY.

③ POST REMOVAL SHALL BE INCIDENTAL.

S.A.P. 002–592–001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763–427–5860 FAX 763–427–0520
www.hakanson–anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

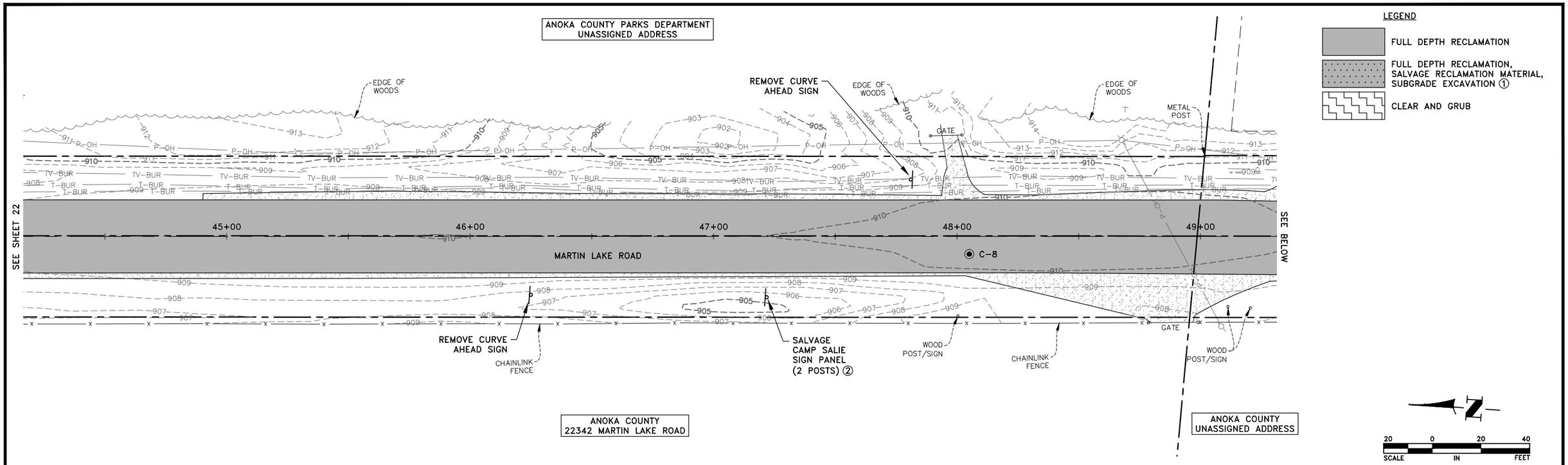
EXISTING TOPOGRAPHY AND REMOVALS PLAN

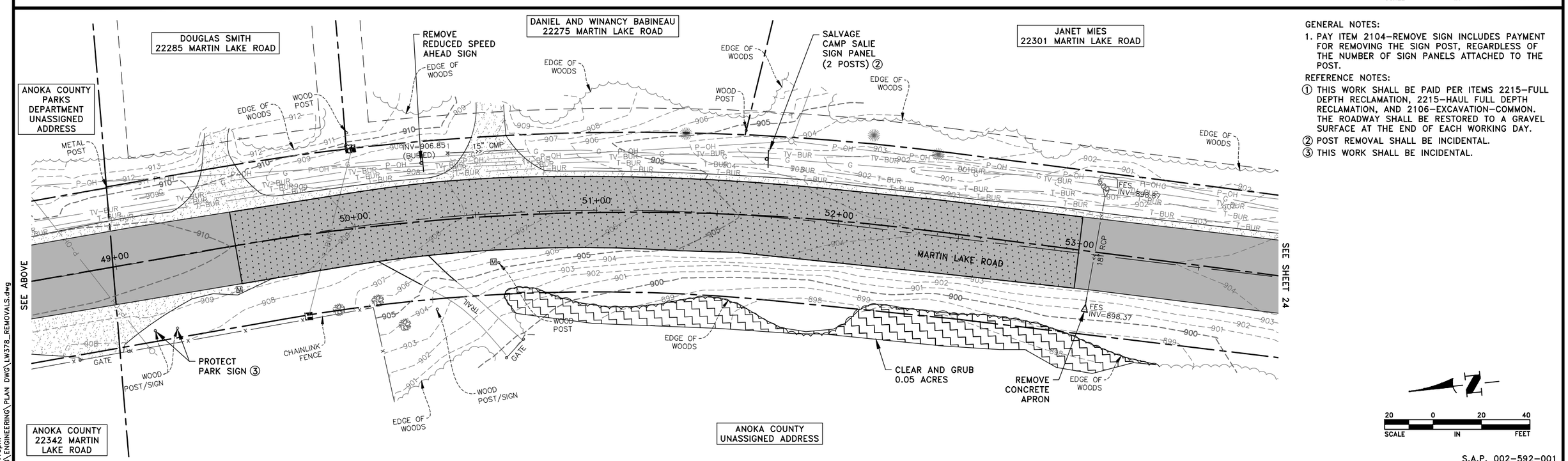
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 22 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:15pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_REMOVALS.dwg





GENERAL NOTES:

1. PAY ITEM 2104–REMOVE SIGN INCLUDES PAYMENT FOR REMOVING THE SIGN POST, REGARDLESS OF THE NUMBER OF SIGN PANELS ATTACHED TO THE POST.

REFERENCE NOTES:

① THIS WORK SHALL BE PAID PER ITEMS 2215–FULL DEPTH RECLAMATION, 2215–HAUL FULL DEPTH RECLAMATION, AND 2106–EXCAVATION–COMMON. THE ROADWAY SHALL BE RESTORED TO A GRAVEL SURFACE AT THE END OF EACH WORKING DAY.

② POST REMOVAL SHALL BE INCIDENTAL.

③ THIS WORK SHALL BE INCIDENTAL.

S.A.P. 002–592–001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763–427–5860 FAX 763–427–0520
www.hakanson–anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

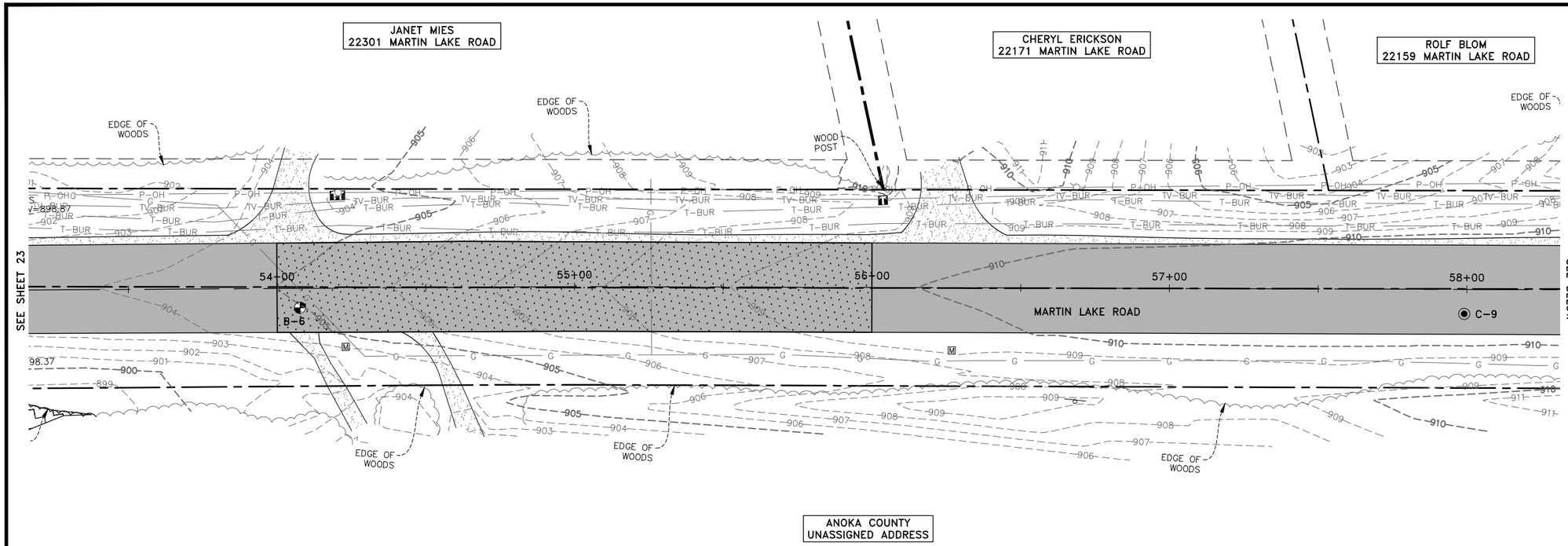
EXISTING TOPOGRAPHY AND REMOVALS PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 23 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:15pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_REMOVALS.dwg

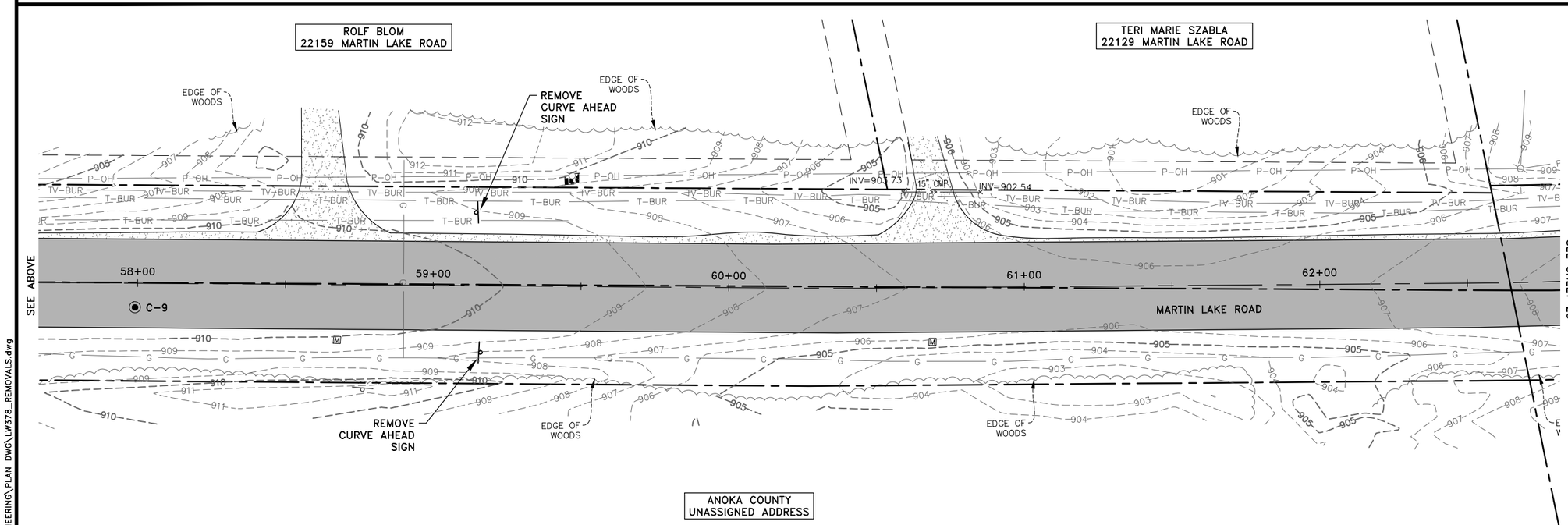


LEGEND

FULL DEPTH RECLAMATION

FULL DEPTH RECLAMATION, SALVAGE RECLAMATION MATERIAL, SUBGRADE EXCAVATION ①

SCALE 20 0 20 40 IN FEET



GENERAL NOTES:

1. PAY ITEM 2104-REMOVE SIGN INCLUDES PAYMENT FOR REMOVING THE SIGN POST, REGARDLESS OF THE NUMBER OF SIGN PANELS ATTACHED TO THE POST.

REFERENCE NOTES:

① THIS WORK SHALL BE PAID PER ITEMS 2215-FULL DEPTH RECLAMATION, 2215-HAUL FULL DEPTH RECLAMATION, AND 2106-EXCAVATION-COMMON. THE ROADWAY SHALL BE RESTORED TO A GRAVEL SURFACE AT THE END OF EACH WORKING DAY.

S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

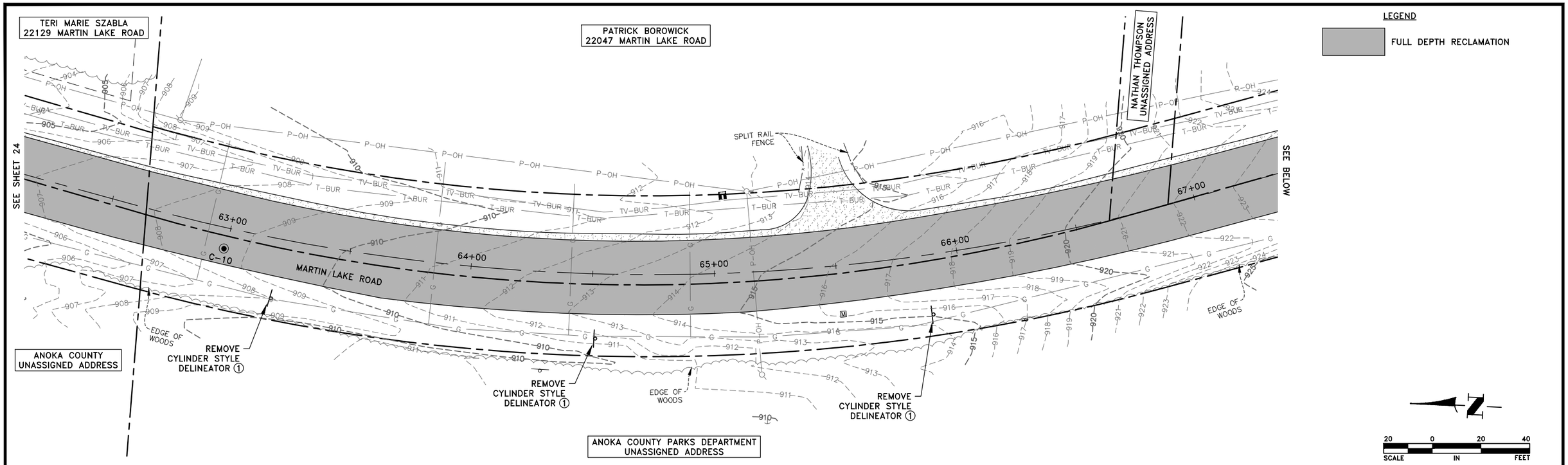
EXISTING TOPOGRAPHY AND REMOVALS PLAN

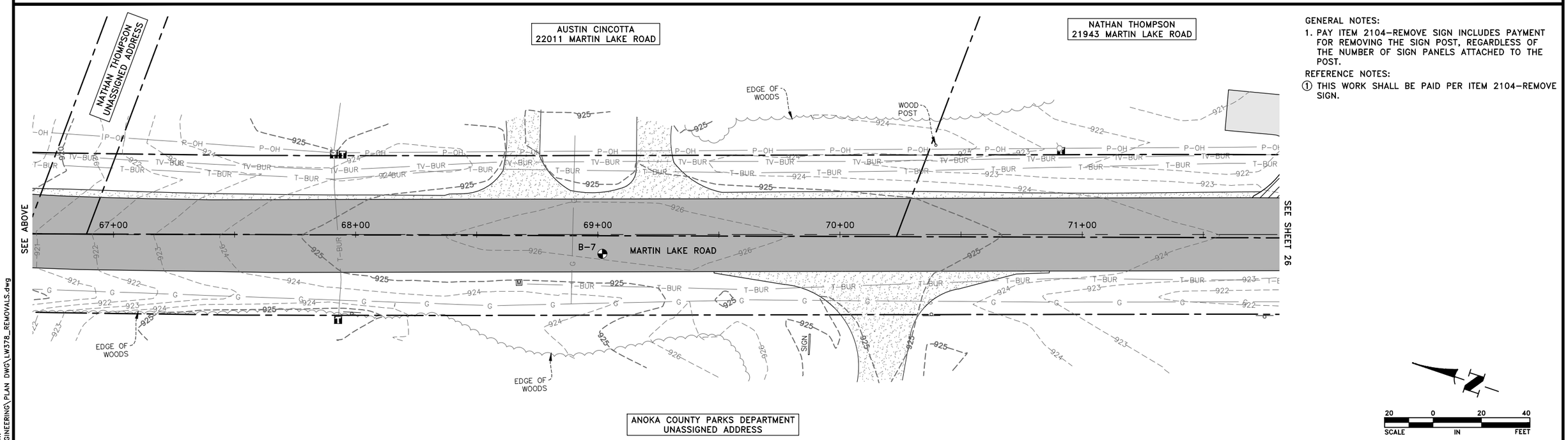
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 24 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:16pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_REMOVALS.dwg





GENERAL NOTES:

1. PAY ITEM 2104-REMOVE SIGN INCLUDES PAYMENT FOR REMOVING THE SIGN POST, REGARDLESS OF THE NUMBER OF SIGN PANELS ATTACHED TO THE POST.

REFERENCE NOTES:

① THIS WORK SHALL BE PAID PER ITEM 2104-REMOVE SIGN.

S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

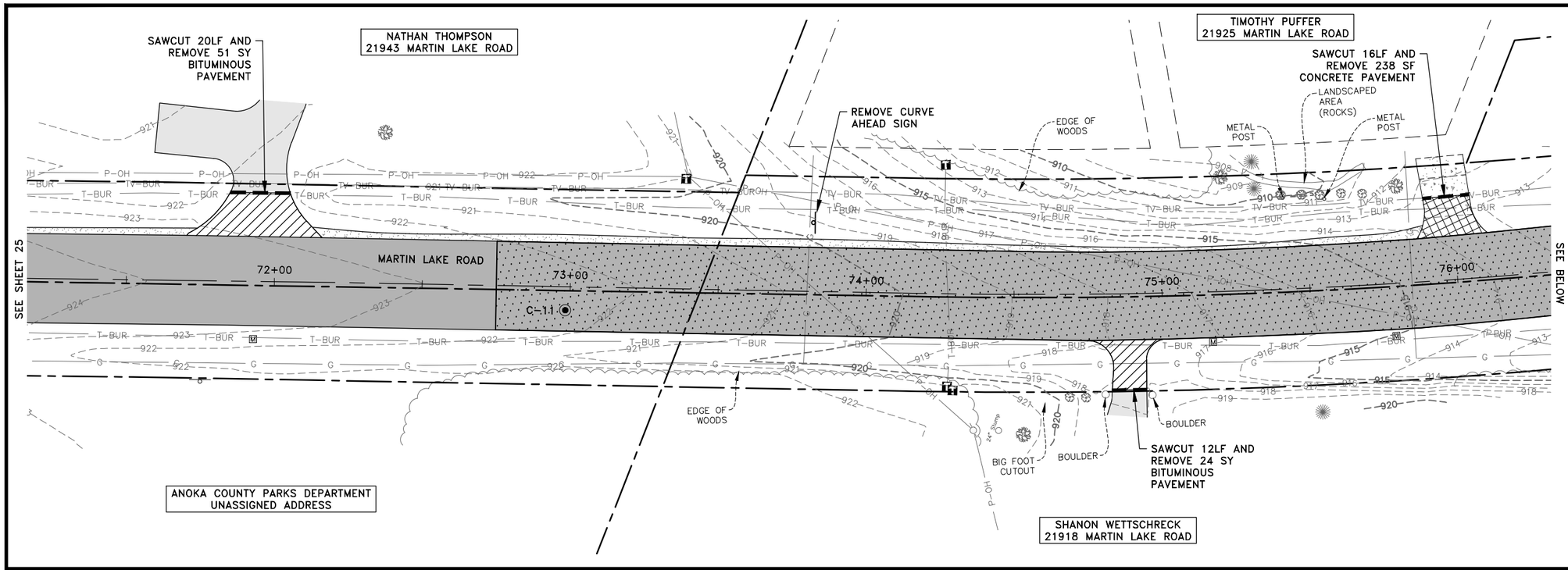
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

EXISTING TOPOGRAPHY AND REMOVALS PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

LW378

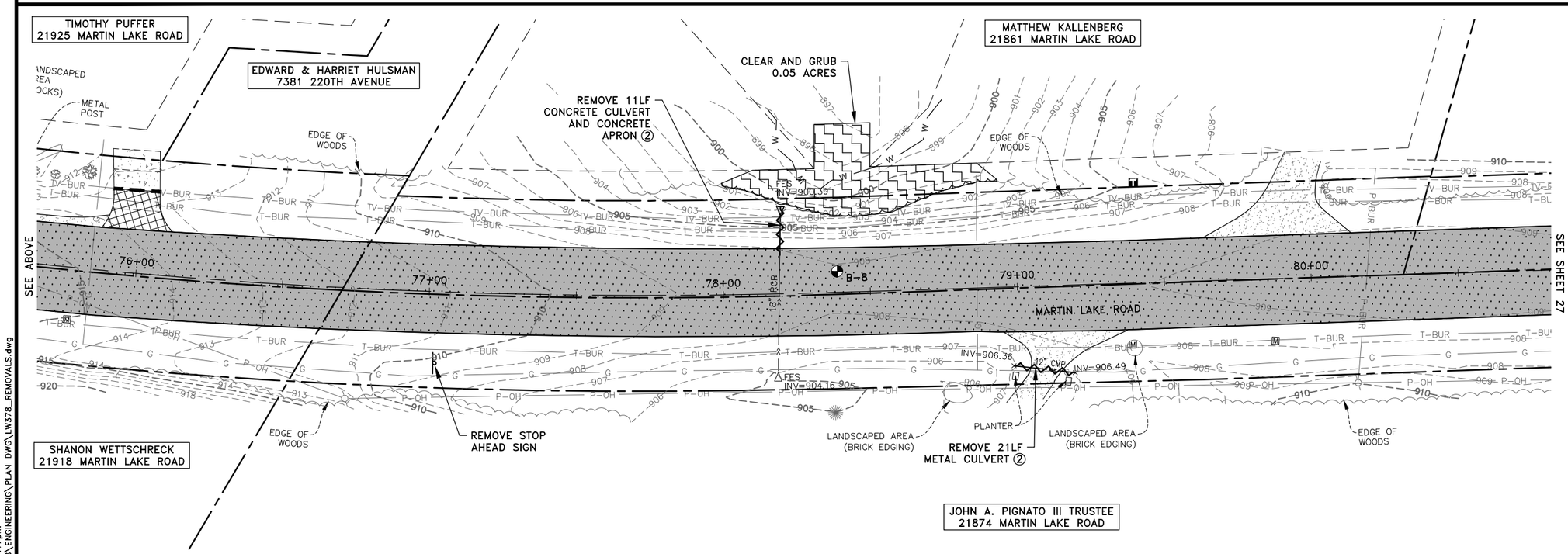
Dec 04, 2025 - 1:15pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_REMOVALS.dwg



LEGEND

- FULL DEPTH RECLAMATION
- FULL DEPTH RECLAMATION, SALVAGE RECLAMATION MATERIAL, SUBGRADE EXCAVATION ①
- BITUMINOUS PAVEMENT REMOVAL
- CONCRETE PAVEMENT REMOVAL
- CLEAR AND GRUB
- SAWCUT BITUMINOUS OR CONCRETE PAVEMENT

SCALE IN FEET 20 0 20 40



GENERAL NOTES:

1. PAY ITEM 2104–REMOVE SIGN INCLUDES PAYMENT FOR REMOVING THE SIGN POST, REGARDLESS OF THE NUMBER OF SIGN PANELS ATTACHED TO THE POST.

REFERENCE NOTES:

① THIS WORK SHALL BE PAID PER ITEMS 2215–FULL DEPTH RECLAMATION, 2215–HAUL FULL DEPTH RECLAMATION, AND 2106–EXCAVATION–COMMON. THE ROADWAY SHALL BE RESTORED TO A GRAVEL SURFACE AT THE END OF EACH WORKING DAY.

② CULVERT REMOVAL SHALL BE PAID PER ITEM 2104–REMOVE SEWER PIPE (STORM).

SCALE IN FEET 20 0 20 40

S.A.P. 002–592–001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763–427–5860 FAX 763–427–0520
www.hakanson–anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

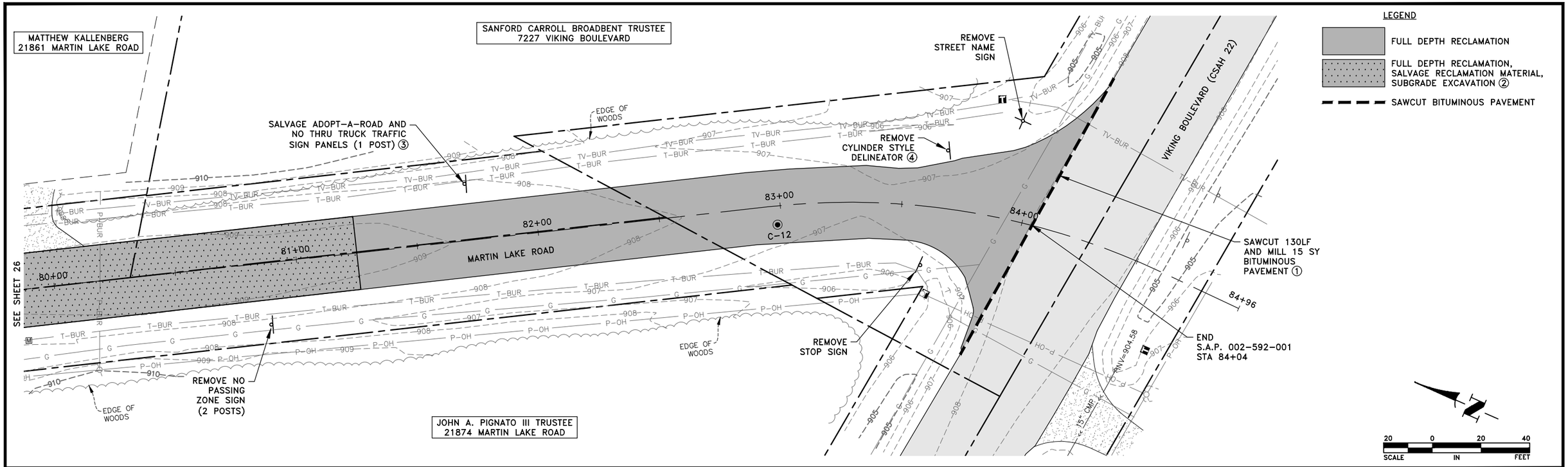
EXISTING TOPOGRAPHY AND REMOVALS PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 26 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:17pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_REMOVALS.dwg



GENERAL NOTES:

1. PAY ITEM 2104-REMOVE SIGN INCLUDES PAYMENT FOR REMOVING THE SIGN POST, REGARDLESS OF THE NUMBER OF SIGN PANELS ATTACHED TO THE POST.

REFERENCE NOTES:

① BITUMINOUS MILLING SHALL BE PER (1/6).

② THIS WORK SHALL BE PAID PER ITEMS 2215-FULL DEPTH RECLAMATION, 2215-HAUL FULL DEPTH RECLAMATION, AND 2106-EXCAVATION-COMMON. THE ROADWAY SHALL BE RESTORED TO A GRAVEL SURFACE AT THE END OF EACH WORKING DAY.

③ POST REMOVAL SHALL BE INCIDENTAL.

④ THIS WORK SHALL BE PAID PER ITEM 2104-REMOVE SIGN.

S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

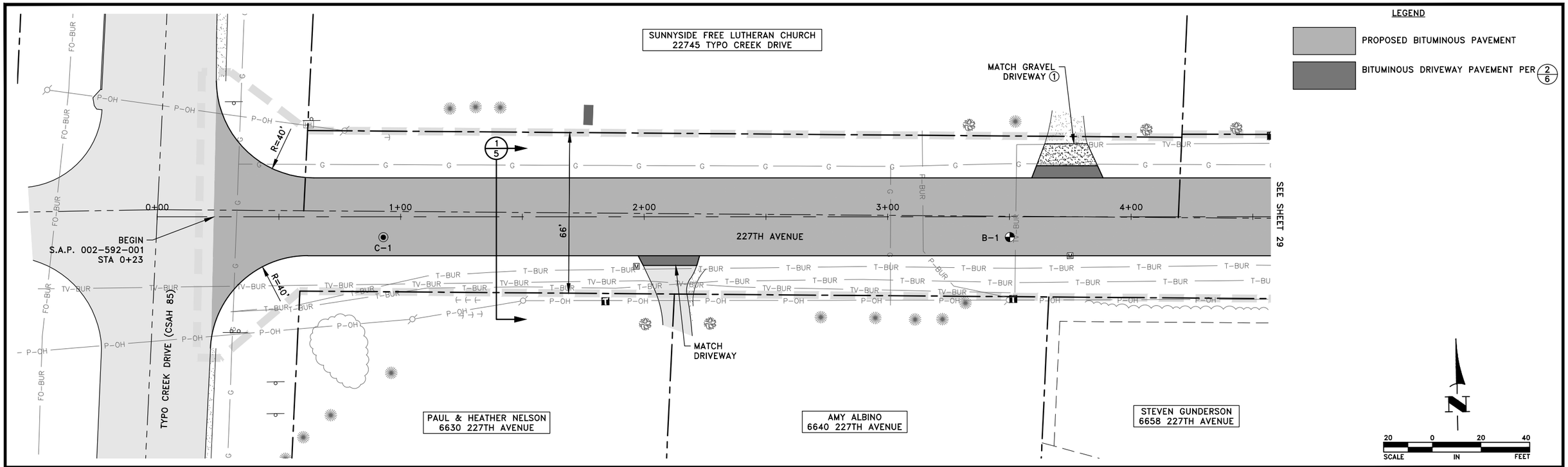
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

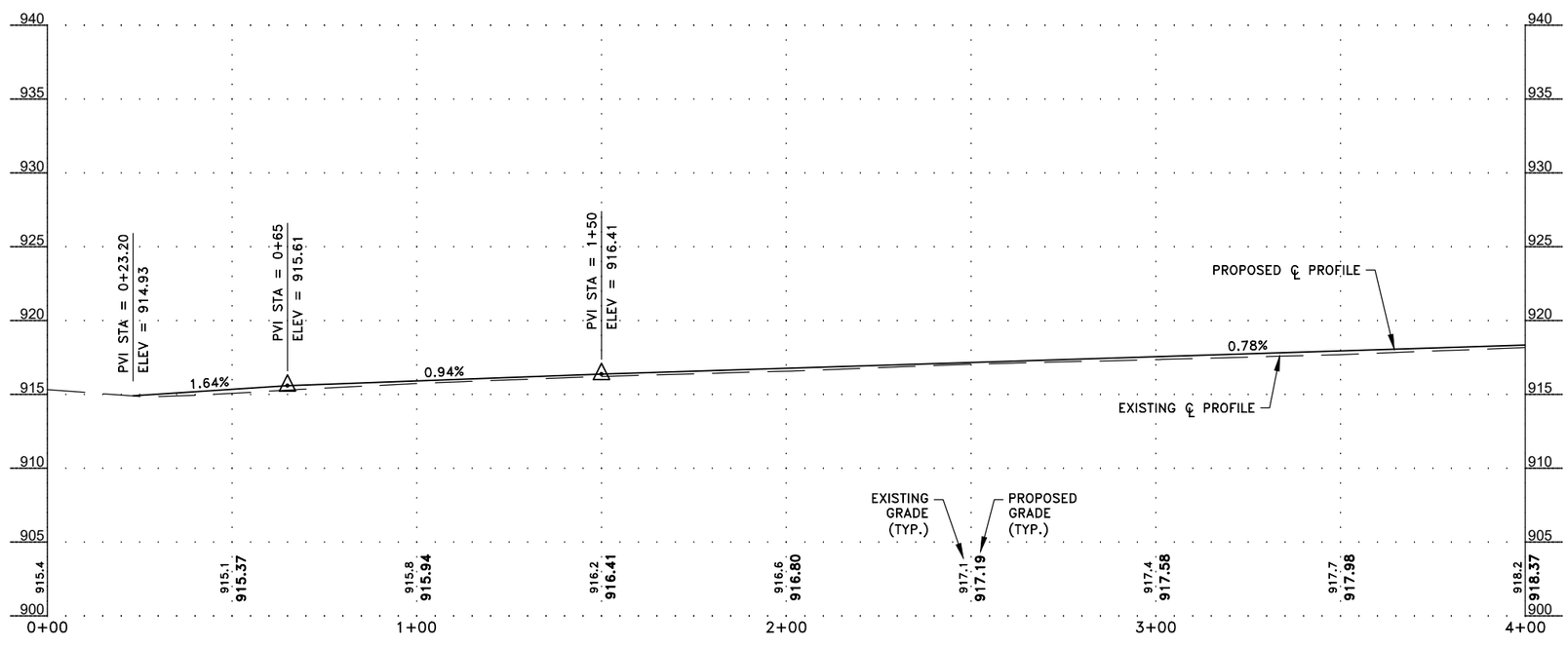
EXISTING TOPOGRAPHY AND REMOVALS PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

LW378

Dec 04, 2025 - 1:17pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_REMOVALS.dwg





GENERAL NOTES:

1. SEE SHEET 52 FOR INTERSECTION CONSTRUCTION DETAILS.

REFERENCE NOTES:

1. CONTRACTOR SHALL SALVAGE THE EXISTING DRIVEWAY SURFACE AGGREGATE, EXCAVATE UNDERLYING SOIL AS NEEDED AND REPLACE THE EXISTING DRIVEWAY SURFACE AGGREGATE. THIS WORK SHALL BE INCIDENTAL.

S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

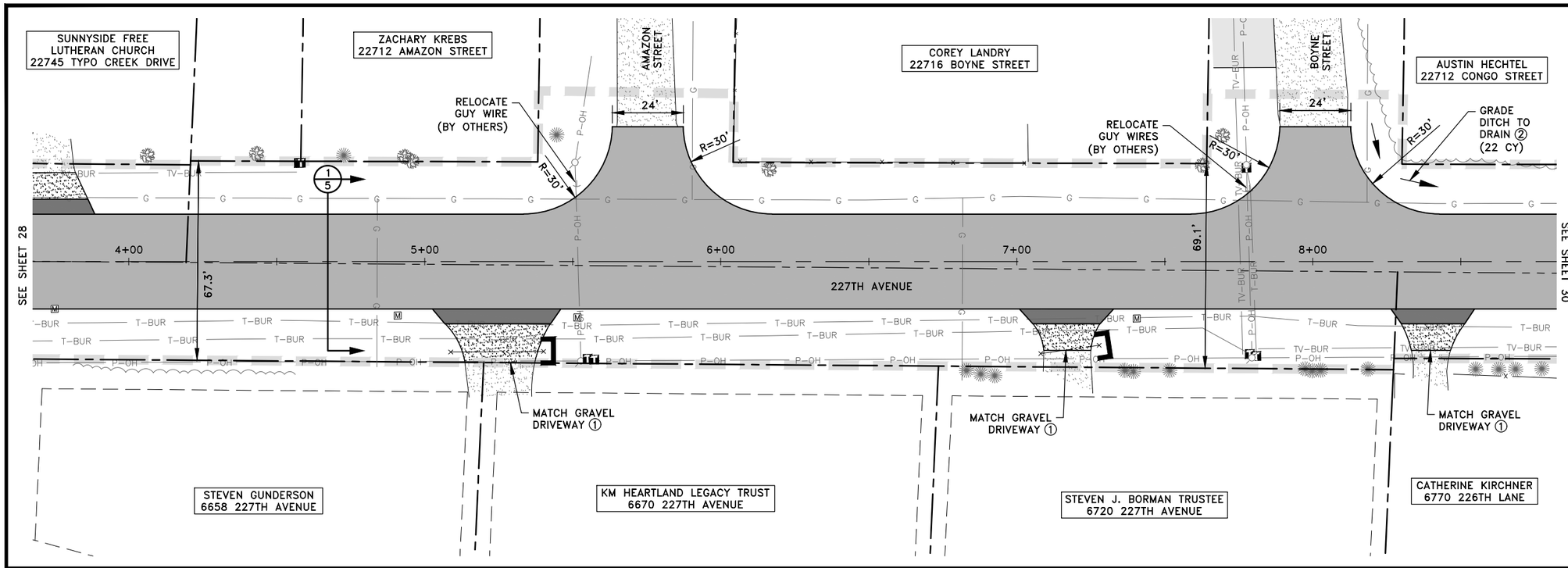
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

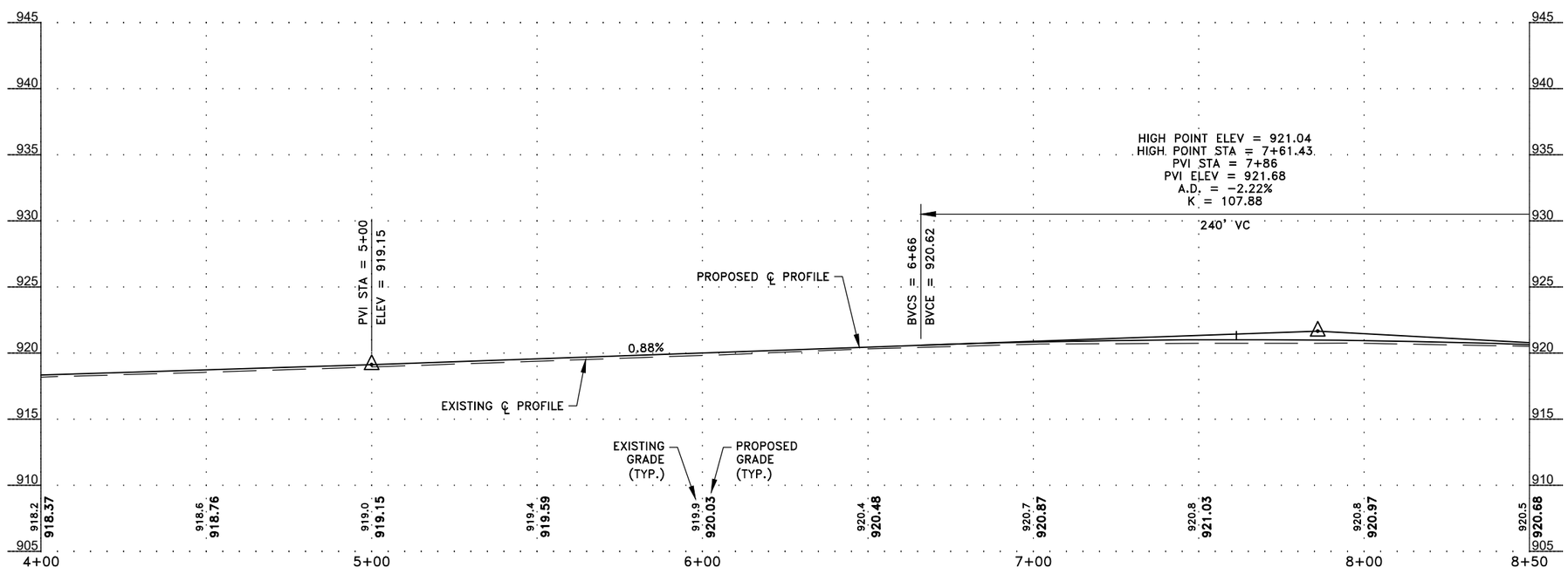
CONSTRUCTION PLAN

227TH AVENUE
LINWOOD TOWNSHIP, MINNESOTA

LW378

Dec 04, 2025 – 1:17pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_PP_227TH.dwg





GENERAL NOTES:

1. SEE SHEET 52 FOR INTERSECTION CONSTRUCTION DETAILS.
2. PAVEMENT SECTION ON AMAZON STREET AND BOYNE STREET SHALL BE PER 1/5.

REFERENCE NOTES:

① CONTRACTOR SHALL SALVAGE THE EXISTING DRIVEWAY SURFACE AGGREGATE, EXCAVATE UNDERLYING SOIL AS NEEDED AND REPLACE THE EXISTING DRIVEWAY SURFACE AGGREGATE. THIS WORK SHALL BE INCIDENTAL.

② THIS WORK SHALL INCLUDE SALVAGING THE EXISTING TOPSOIL, EXCAVATING THE UNDERLYING MATERIAL TO PROVIDE A POSITIVE DITCH SLOPE AND REPLACING THE SALVAGED TOPSOIL. THIS WORK SHALL BE PAID PER ITEM 2106-EXCAVATION-COMMON.

S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

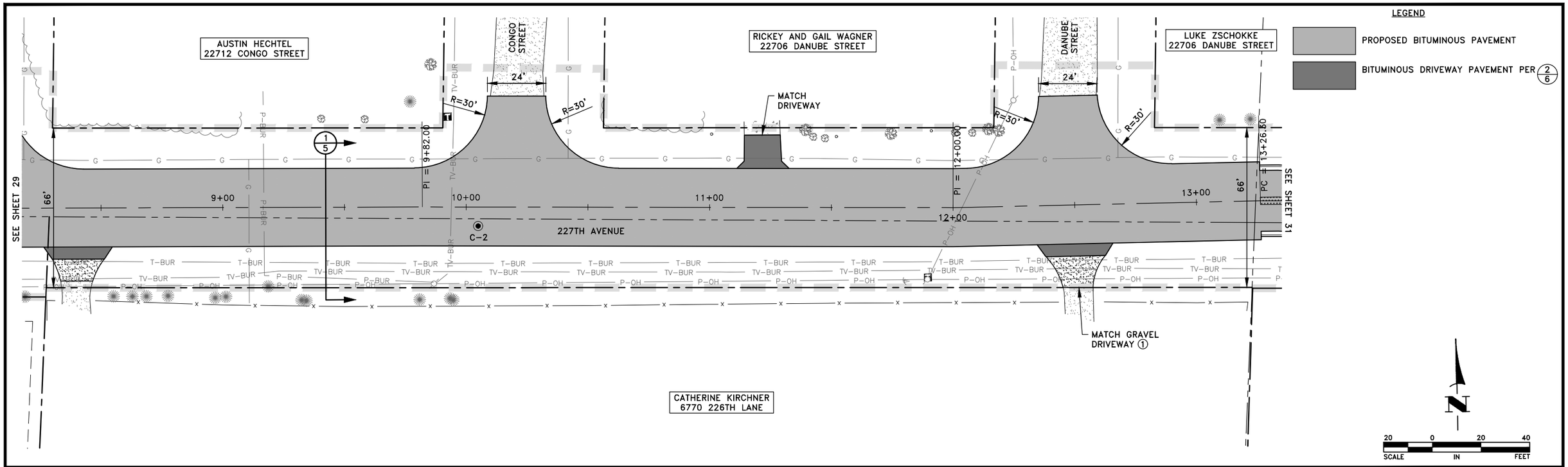
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

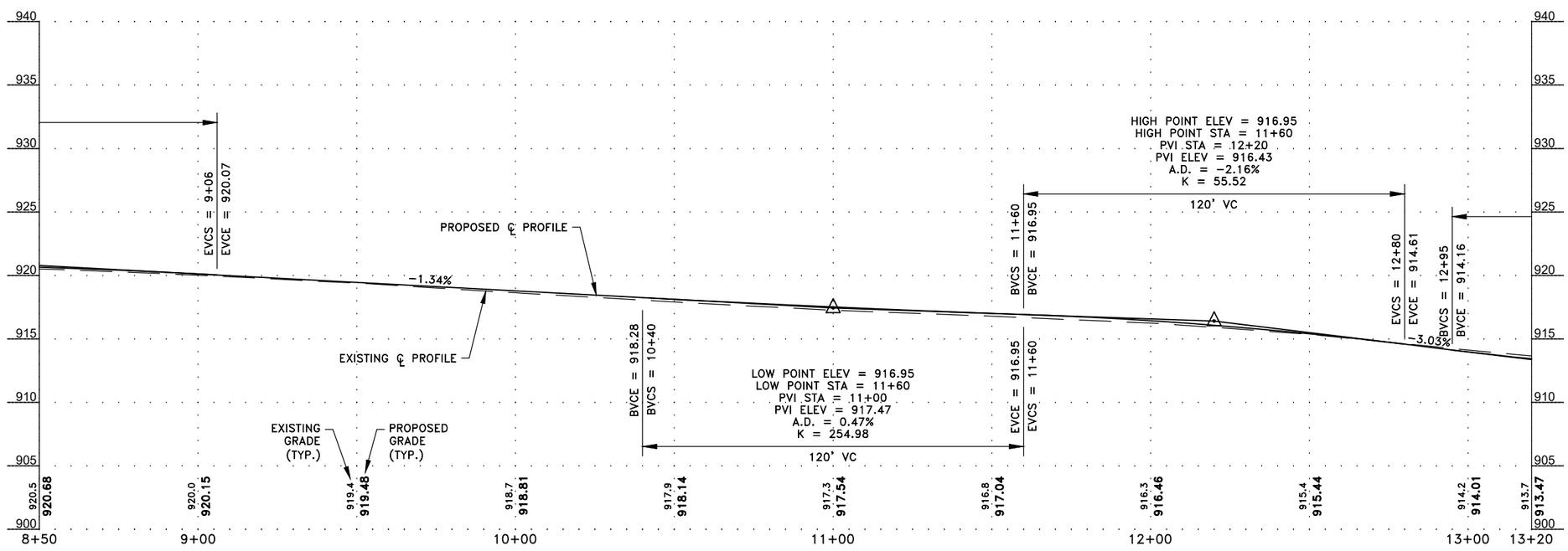
CONSTRUCTION PLAN

227TH AVENUE
LINWOOD TOWNSHIP, MINNESOTA

LW378

Dec 04, 2025 – 1:17pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_PP_227TH.dwg





GENERAL NOTES:

1. SEE SHEETS 52 AND 53 FOR INTERSECTION CONSTRUCTION DETAILS.
2. PAVEMENT SECTION ON CONGO STREET AND DANUBE STREET SHALL BE PER 1/5.

REFERENCE NOTES:

1. CONTRACTOR SHALL SALVAGE THE EXISTING DRIVEWAY SURFACE AGGREGATE, EXCAVATE UNDERLYING SOIL AS NEEDED AND REPLACE THE EXISTING DRIVEWAY SURFACE AGGREGATE. THIS WORK SHALL BE INCIDENTAL.

S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

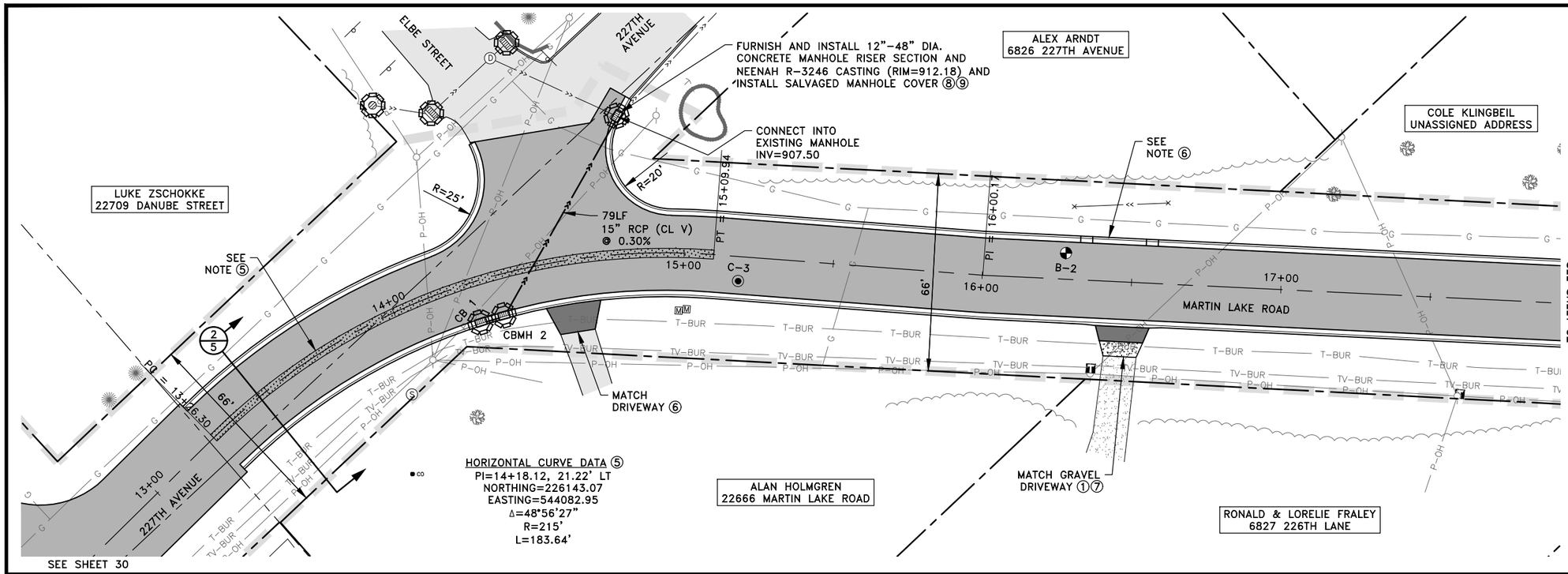
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

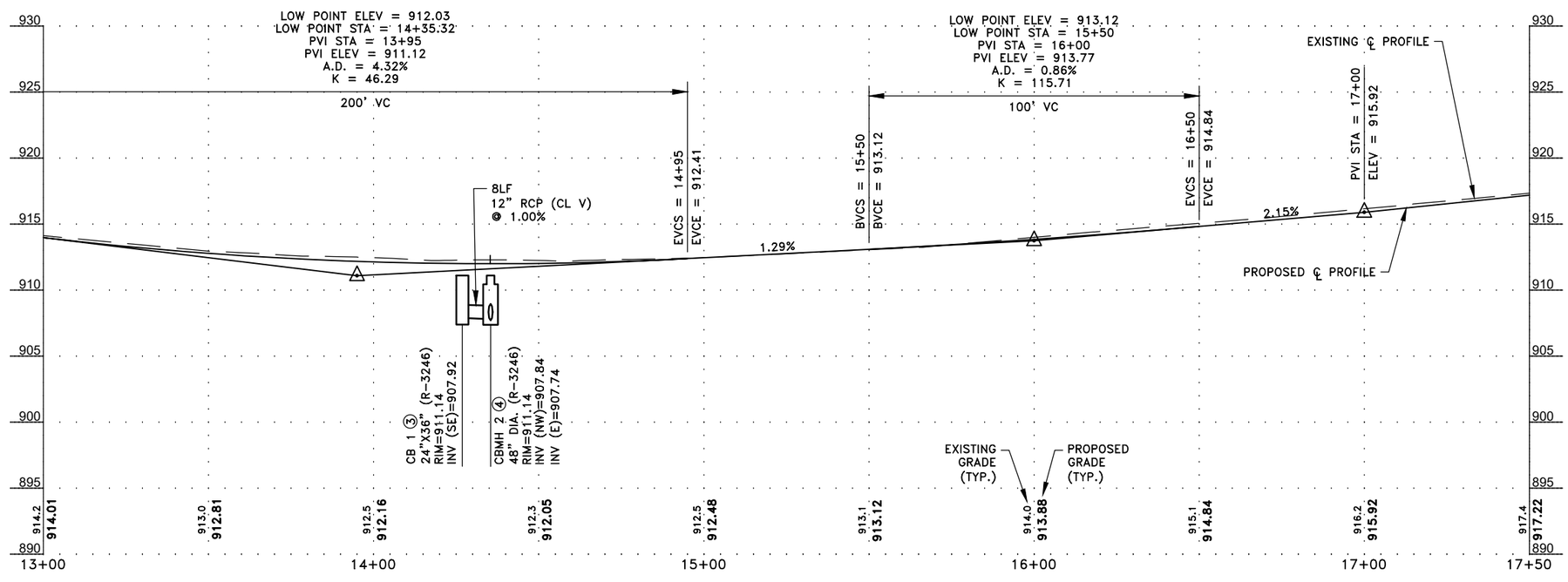
CONSTRUCTION PLAN

227TH AVENUE
LINWOOD TOWNSHIP, MINNESOTA

LW378

Dec 04, 2025 – 1:17pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_PP_227TH.dwg





GENERAL NOTES:

1. PROVIDE A 3 FOOT TRANSITION FROM B418 CURB TO B618 CURB ON BOTH SIDES OF CATCH BASIN CASTINGS. THIS WORK SHALL BE INCIDENTAL.
2. SEE SHEET 53 FOR INTERSECTION CONSTRUCTION DETAILS.
3. PAVEMENT SECTION ON ELBE STREET AND 227TH AVENUE SHALL BE PER 2/5.

REFERENCE NOTES:

① CONTRACTOR SHALL SALVAGE THE EXISTING DRIVEWAY SURFACE AGGREGATE, EXCAVATE UNDERLYING SOIL AS NEEDED AND REPLACE THE EXISTING DRIVEWAY SURFACE AGGREGATE. THIS WORK SHALL BE INCIDENTAL.

② STORM DRAIN INLET PROTECTION SHALL BE PER 4/8, 5/8 AND 6/8 OR APPROVED EQUAL.

③ CONSTRUCT STRUCTURE PER 1/7.

④ CONSTRUCT STRUCTURE PER 2/7.

⑤ CURVE IS SUPERELEVATED. SEE SHEET 47 FOR ADDITIONAL DETAILS.

⑥ CONSTRUCT CURB AT DRIVEWAY PER 4/6.

⑦ CONSTRUCT CURB AT DRIVEWAY PER 5/6. THIS WORK SHALL BE PAID PER ITEM 2531-CONCRETE CURB AND GUTTER DESIGN D418 (MODIFIED).

⑧ INSTALLING THE SALVAGED MANHOLE COVER SHALL BE PAID PER ITEM 2506-INSTALL STRUCTURE.

⑨ MANHOLE RISER SECTION SHALL MEET THE REQUIREMENTS OF MN/DOT STANDARD PLATE 4020. THIS WORK SHALL BE PAID PER ITEM 2506-CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL (LIN FT).

S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

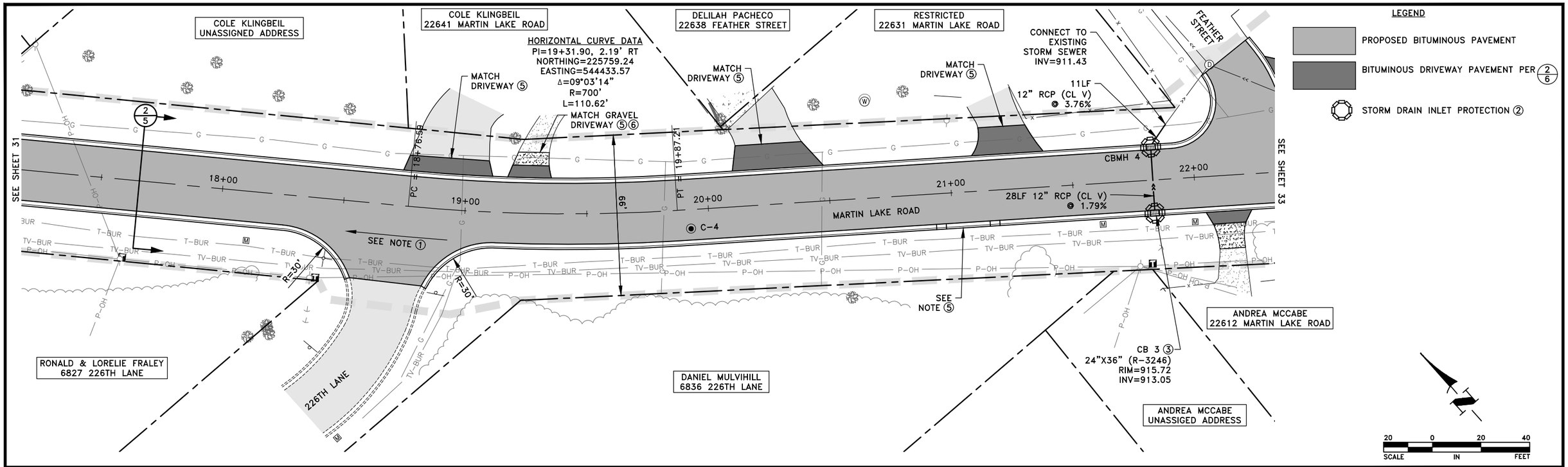
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

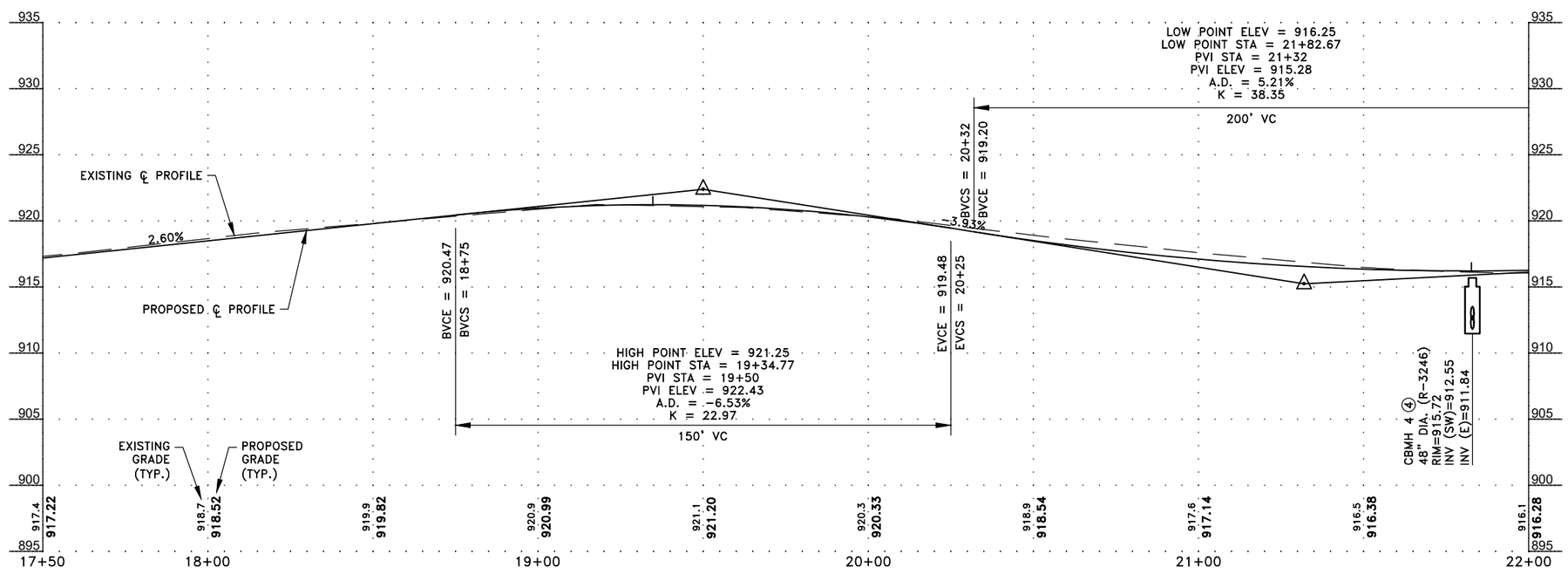
CONSTRUCTION PLAN

227TH AVENUE AND MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

LW378

Dec 04, 2025 – 1:17pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_PP_227TH.dwg





GENERAL NOTES:

1. PROVIDE A 3 FOOT TRANSITION FROM B418 CURB TO B618 CURB ON BOTH SIDES OF CATCH BASIN CASTINGS. THIS WORK SHALL BE INCIDENTAL.
2. PAVEMENT SECTION ON 226TH LANE AND FEATHER STREET SHALL BE PER 2/5.

REFERENCE NOTES:

① CONSTRUCT BITUMINOUS SUCH THAT STORMWATER FLOWS FROM THE SOUTHEAST GUTTER LINE TO THE NORTHWEST GUTTER LINE. THIS WORK SHALL BE INCIDENTAL. SEE SHEET 53 FOR INTERSECTION CONSTRUCTION DETAILS.

② STORM DRAIN INLET PROTECTION SHALL BE PER 4/8 AND 5/8 OR APPROVED EQUAL.

③ CONSTRUCT STRUCTURE PER 1/7.

④ CONSTRUCT STRUCTURE PER 2/7.

⑤ CONSTRUCT CURB AT DRIVEWAY PER 4/6.

⑥ CONTRACTOR SHALL SALVAGE THE EXISTING DRIVEWAY SURFACE AGGREGATE, EXCAVATE UNDERLYING SOIL AS NEEDED AND REPLACE THE EXISTING DRIVEWAY SURFACE AGGREGATE. THIS WORK SHALL BE INCIDENTAL.

S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

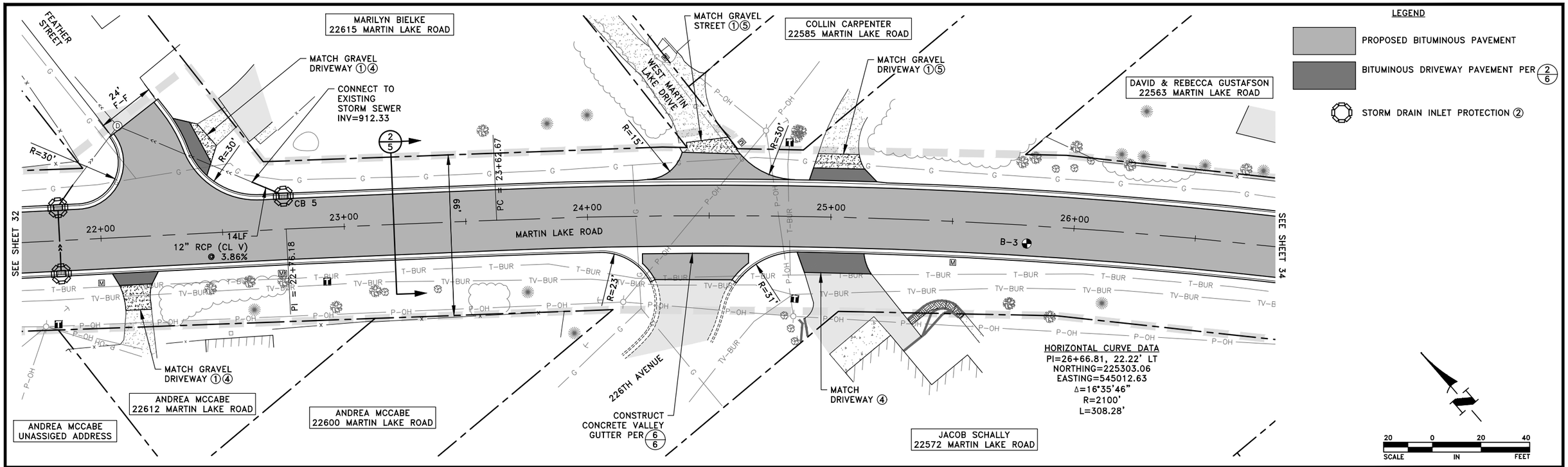
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

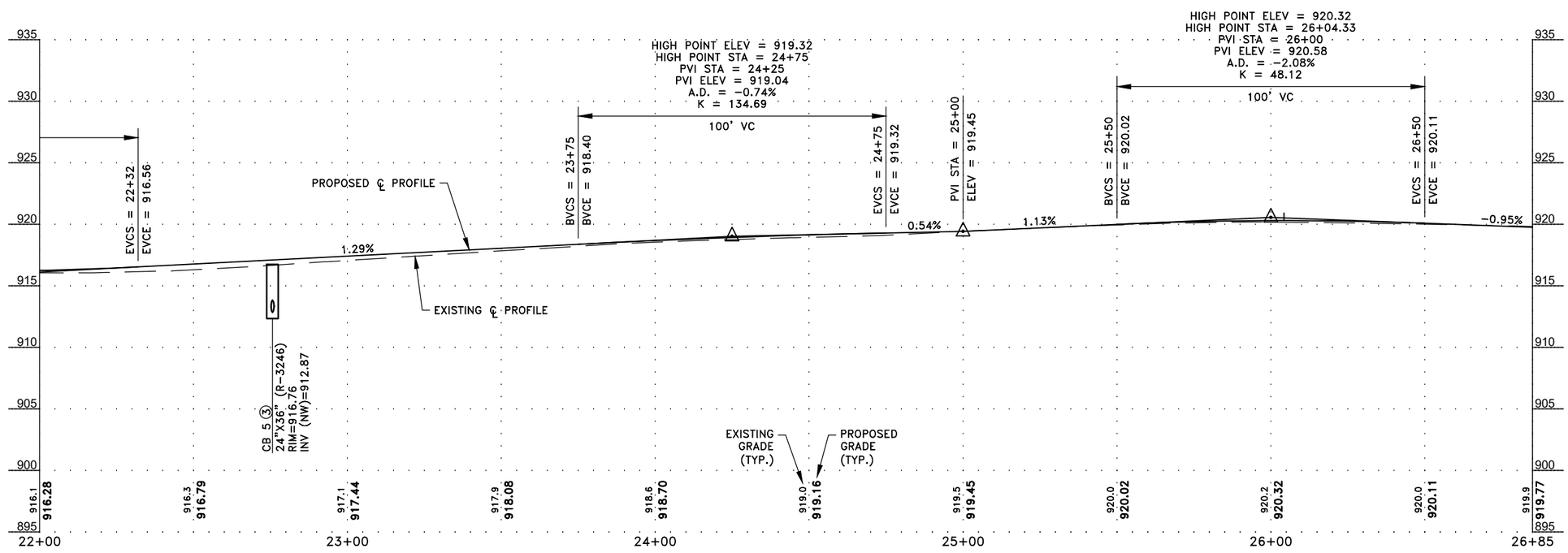
CONSTRUCTION PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

LW378

Dec 04, 2025 – 1:17pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_PP_227TH.dwg





GENERAL NOTES:

1. PROVIDE A 3 FOOT TRANSITION FROM B418 CURB TO B618 CURB ON BOTH SIDES OF CATCH BASIN CASTINGS. THIS WORK SHALL BE INCIDENTAL.
2. SEE SHEETS 53 AND 54 FOR INTERSECTION CONSTRUCTION DETAILS.
3. PAVEMENT SECTION ON FEATHER STREET, WEST MARTIN LAKE DRIVE AND 226TH AVENUE SHALL BE PER 2/5.

REFERENCE NOTES:

① CONTRACTOR SHALL SALVAGE THE EXISTING DRIVEWAY SURFACE AGGREGATE, EXCAVATE UNDERLYING SOIL AS NEEDED AND REPLACE THE EXISTING DRIVEWAY SURFACE AGGREGATE. THIS WORK SHALL BE INCIDENTAL.

② STORM DRAIN INLET PROTECTION SHALL BE PER 4/8 AND 5/8 OR APPROVED EQUAL.

③ CONSTRUCT STRUCTURE PER 1/7.

④ CONSTRUCT CURB AT DRIVEWAY PER 4/6.

⑤ CONSTRUCT CURB AT DRIVEWAY OR STREET PER 5/6.

THIS WORK SHALL BE PAID PER ITEM 2531-CONCRETE CURB AND GUTTER DESIGN D418 (MODIFIED).

S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

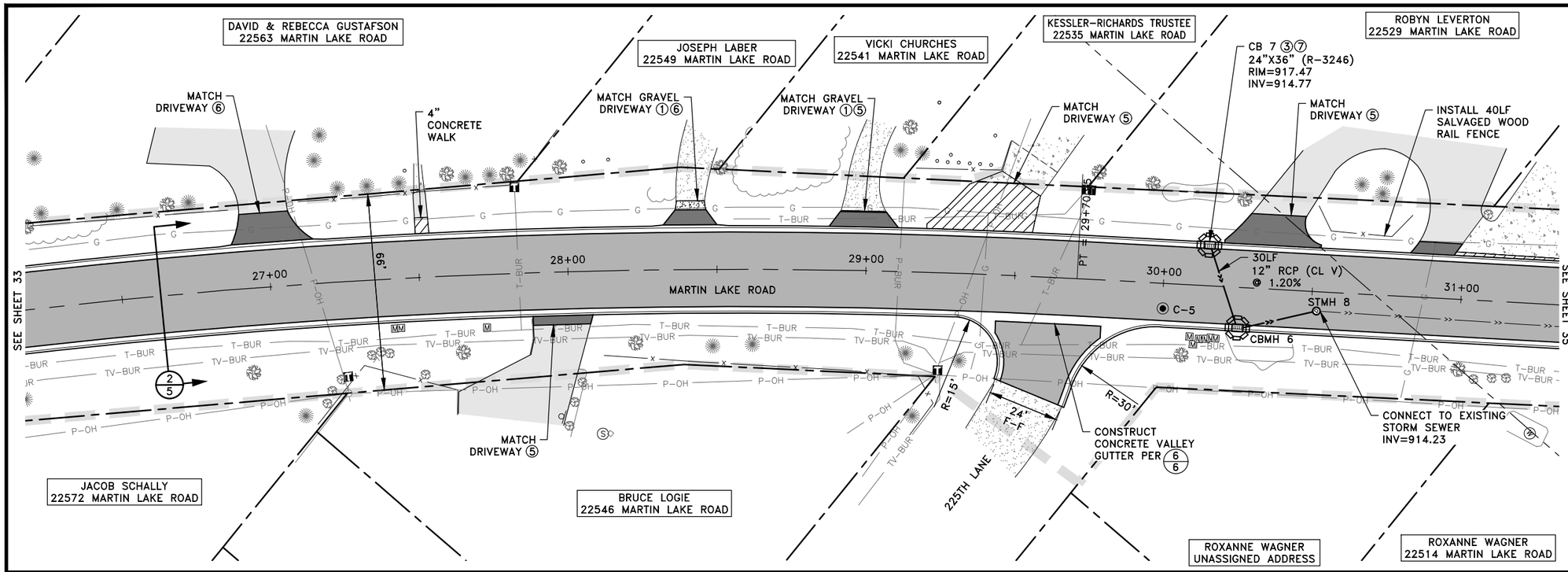
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

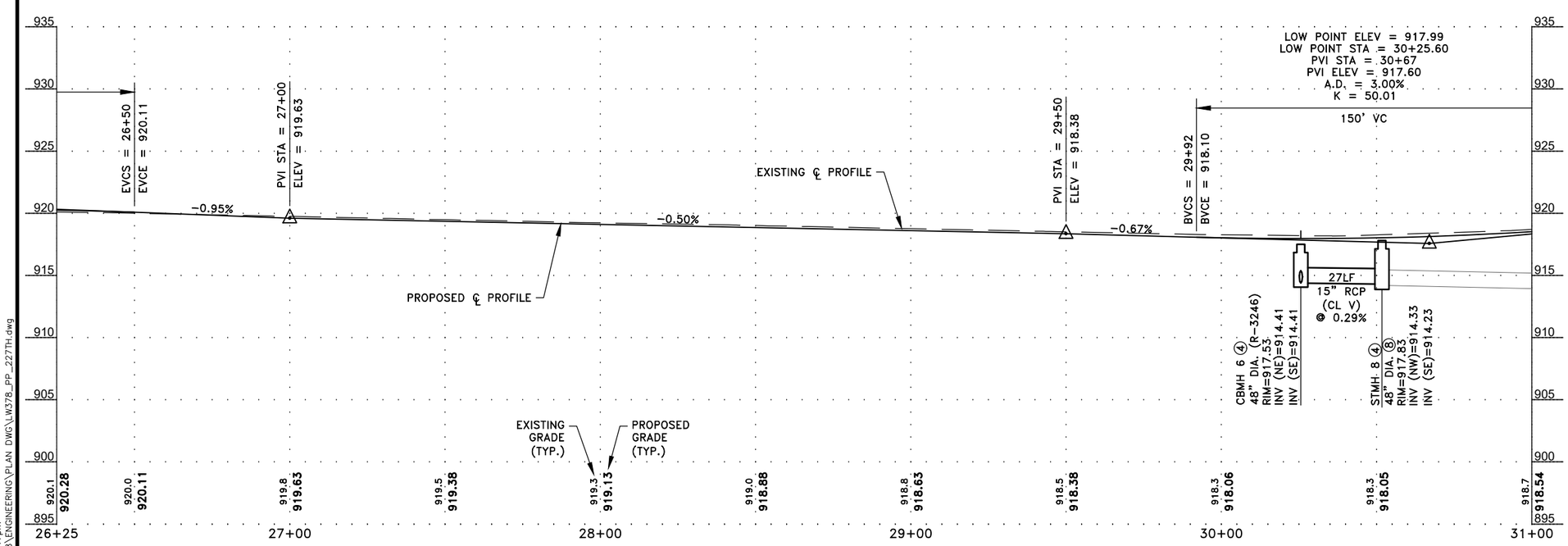
CONSTRUCTION PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

LW378

Dec 04, 2025 – 1:17pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_PP_227TH.dwg





GENERAL NOTES:

1. PROVIDE A 3 FOOT TRANSITION FROM B418 CURB TO B618 CURB ON BOTH SIDES OF CATCH BASIN CASTINGS. THIS WORK SHALL BE INCIDENTAL.
2. SEE SHEET 54 FOR INTERSECTION CONSTRUCTION DETAILS.
3. PAVEMENT SECTION ON 225TH LANE SHALL BE PER 2/5.

REFERENCE NOTES:

① CONTRACTOR SHALL SALVAGE THE EXISTING DRIVEWAY SURFACE AGGREGATE, EXCAVATE UNDERLYING SOIL AS NEEDED AND REPLACE THE EXISTING DRIVEWAY SURFACE AGGREGATE. THIS WORK SHALL BE INCIDENTAL.

② STORM DRAIN INLET PROTECTION SHALL BE PER 4/8 AND 5/8 OR APPROVED EQUAL.

③ CONSTRUCT STRUCTURE PER 1/7.

④ CONSTRUCT STRUCTURE PER 2/7.

⑤ CONSTRUCT CURB AT DRIVEWAY PER 4/6.

⑥ CONSTRUCT CURB AT DRIVEWAY PER 5/6. THIS WORK SHALL BE PAID PER ITEM 2531-CONCRETE CURB AND GUTTER DESIGN D418 (MODIFIED).

⑦ CONSTRUCT A SPECIAL GUTTER SECTION FROM STATION 30+25.60 TO THE CATCH BASIN AT STATION 30+14.84. MINIMUM CURB GRADE SHALL BE 0.50%. THIS WORK SHALL BE INCIDENTAL.

⑧ INSTALL SALVAGED CASTING.

S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

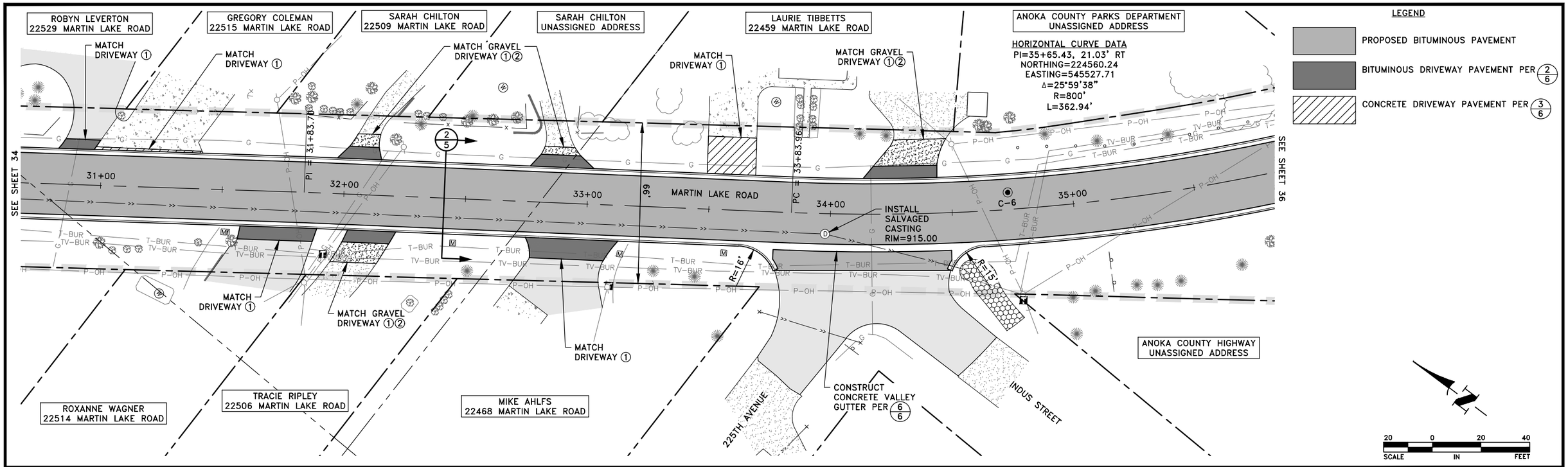
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

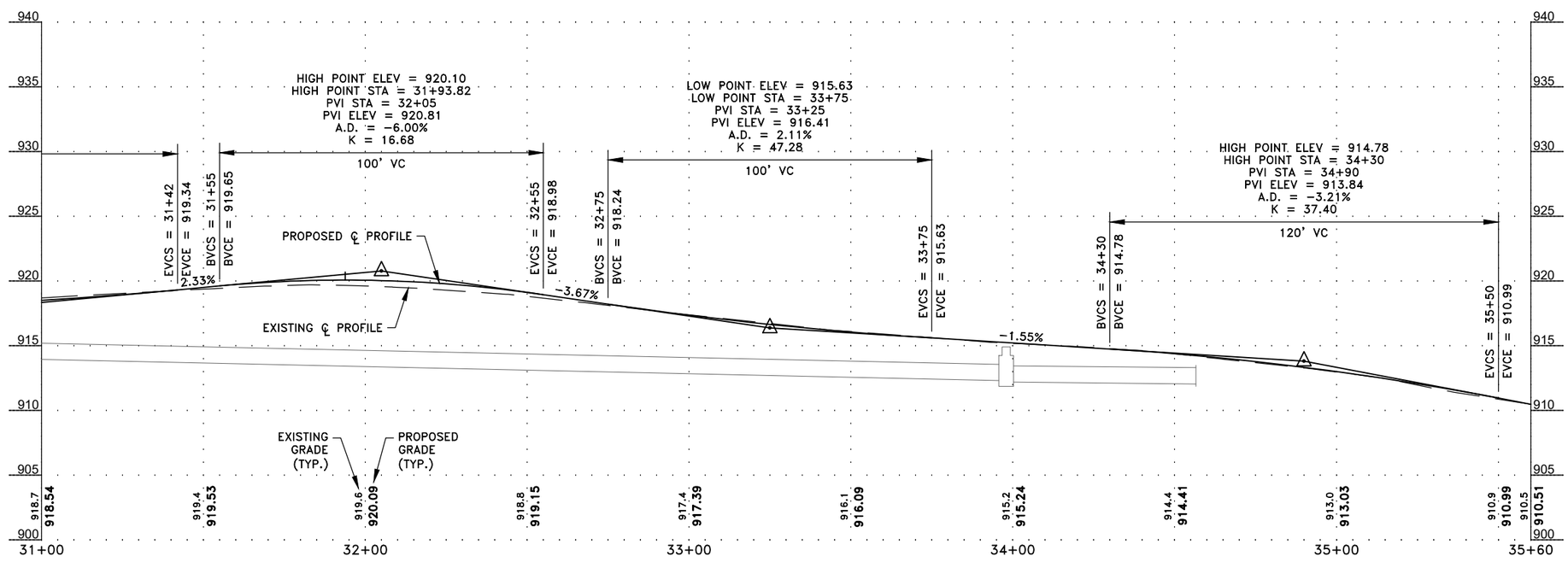
CONSTRUCTION PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

LW378

Dec 04, 2025 – 1:17pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_PP_227TH.dwg





GENERAL NOTES:

1. SEE SHEET 54 FOR INTERSECTION CONSTRUCTION DETAILS.
2. PAVEMENT SECTION ON 225TH AVENUE AND INDUS STREET SHALL BE PER 2/5.

REFERENCE NOTES:

① CONSTRUCT CURB AT DRIVEWAY PER 4/6. THIS WORK SHALL BE INCIDENTAL.

② CONTRACTOR SHALL SALVAGE THE EXISTING DRIVEWAY SURFACE AGGREGATE, EXCAVATE UNDERLYING SOIL AS NEEDED AND REPLACE THE EXISTING DRIVEWAY SURFACE AGGREGATE. THIS WORK SHALL BE INCIDENTAL.

S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

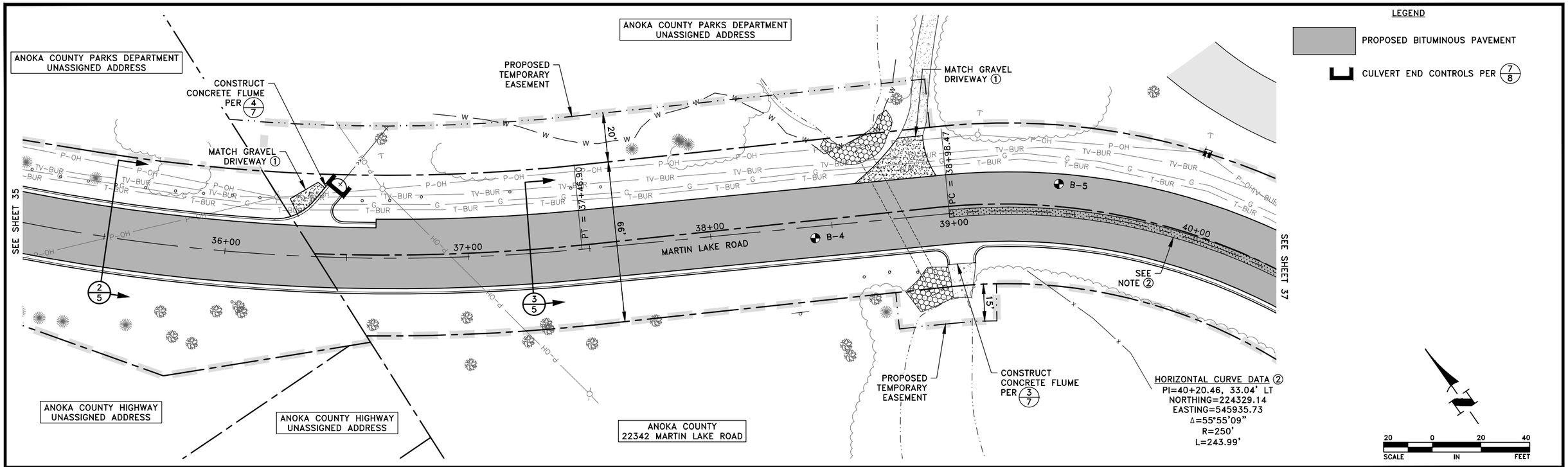
CONSTRUCTION PLAN

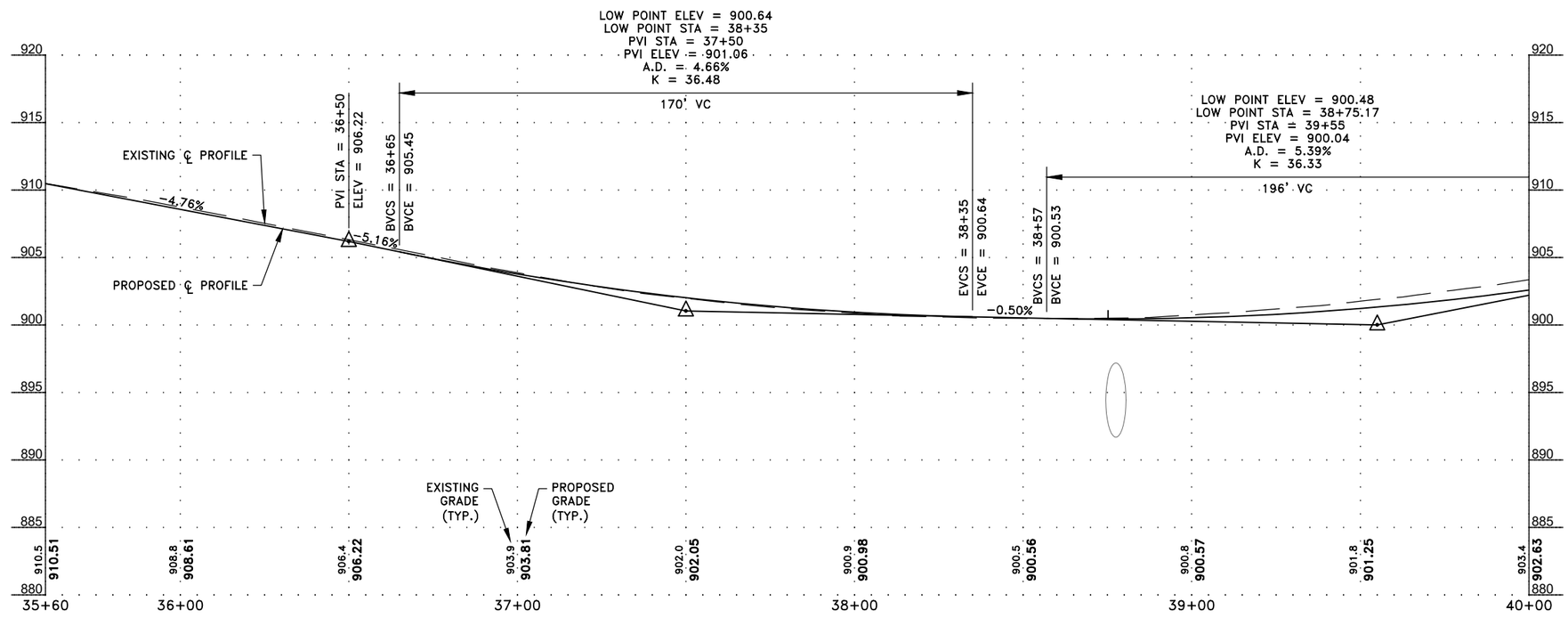
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 35 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:17pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_PP_227TH.dwg





REFERENCE NOTES:

1. CONTRACTOR SHALL SALVAGE THE EXISTING DRIVEWAY SURFACE AGGREGATE, EXCAVATE UNDERLYING SOIL AS NEEDED AND REPLACE THE EXISTING DRIVEWAY SURFACE AGGREGATE. THIS WORK SHALL BE INCIDENTAL.
2. CURVE IS SUPERELEVATED. SEE SHEET 48 FOR ADDITIONAL DETAILS.

S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

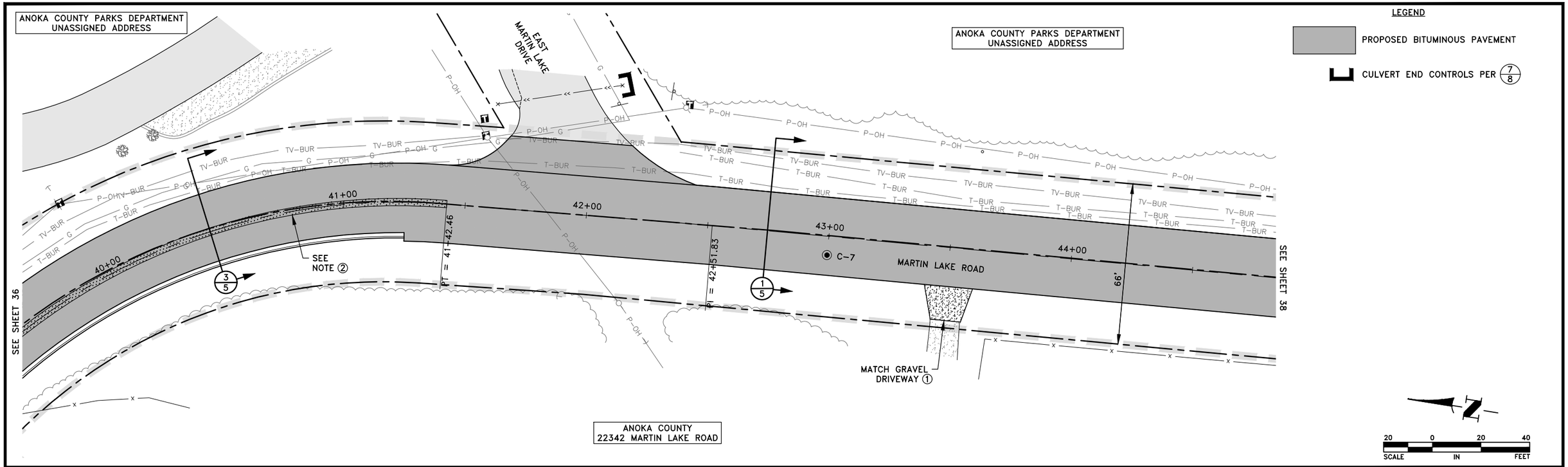
CONSTRUCTION PLAN

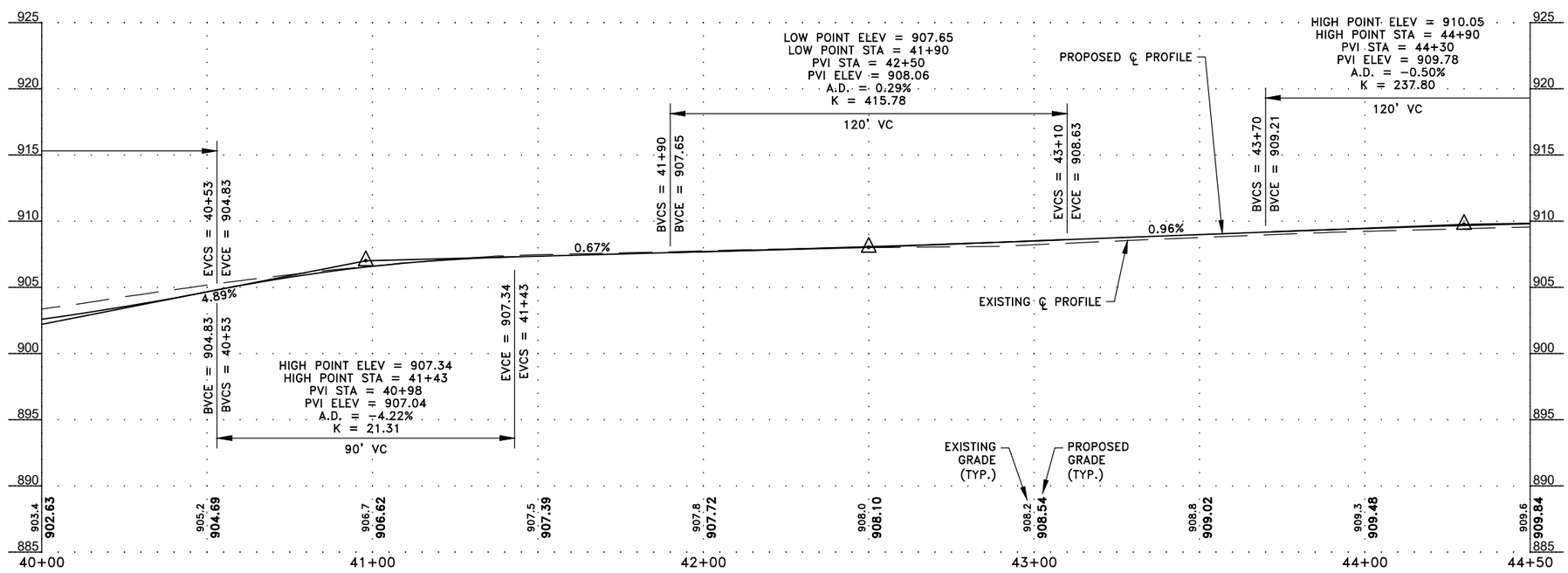
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 36 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:18pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_PP_227TH.dwg





GENERAL NOTES:

1. PAVEMENT SECTION ON EAST MARTIN LAKE DRIVE SHALL BE PER 1/5.

REFERENCE NOTES:

① CONTRACTOR SHALL SALVAGE THE EXISTING DRIVEWAY SURFACE AGGREGATE, EXCAVATE UNDERLYING SOIL AS NEEDED AND REPLACE THE EXISTING DRIVEWAY SURFACE AGGREGATE. THIS WORK SHALL BE INCIDENTAL.

② CURVE IS SUPERELEVATED. SEE SHEET 48 FOR ADDITIONAL DETAILS.

S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

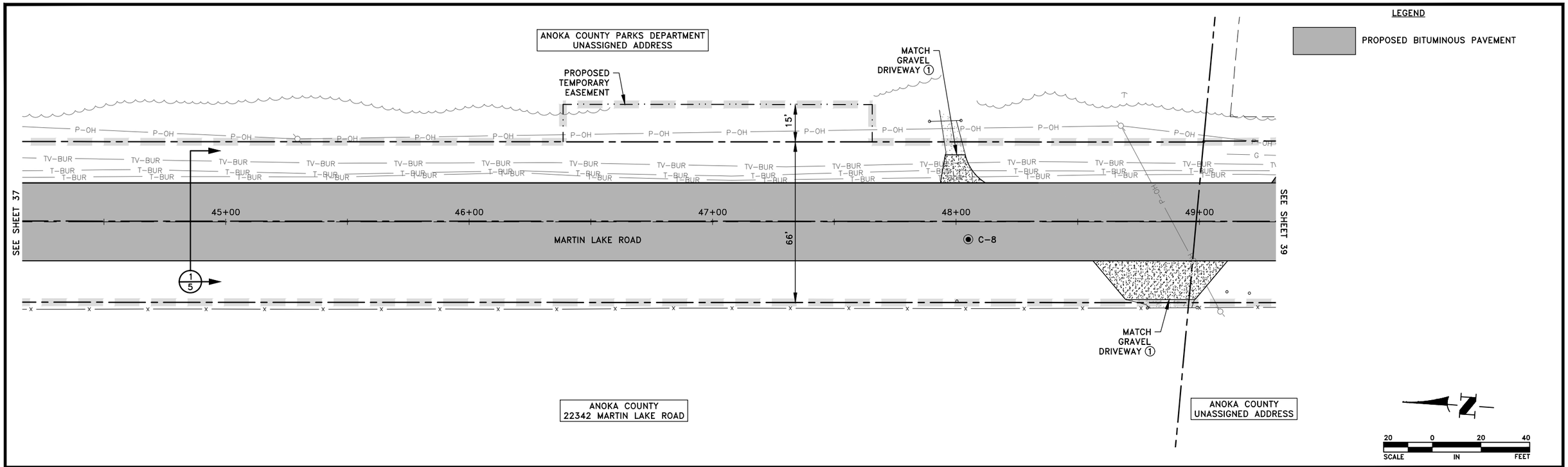
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

CONSTRUCTION PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

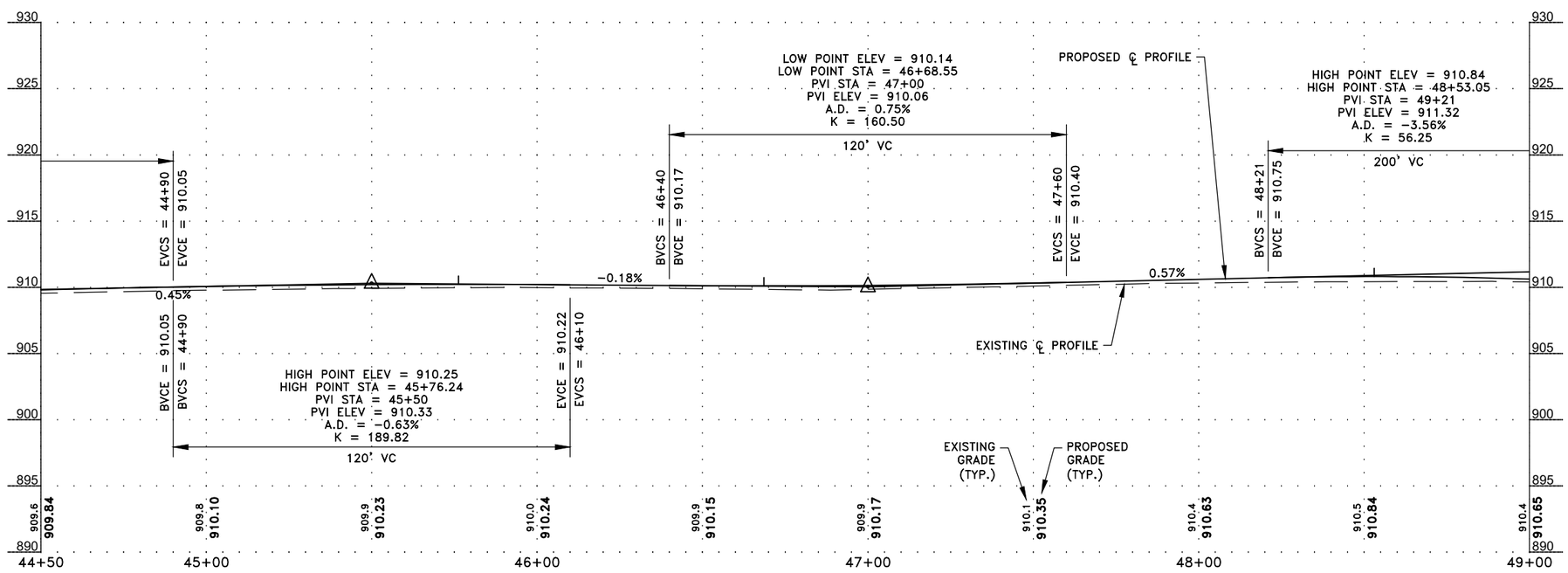
LW378

Dec 04, 2025 – 1:18pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_PP_227TH.dwg



REFERENCE NOTES:

1. CONTRACTOR SHALL SALVAGE THE EXISTING DRIVEWAY SURFACE AGGREGATE, EXCAVATE UNDERLYING SOIL AS NEEDED AND REPLACE THE EXISTING DRIVEWAY SURFACE AGGREGATE. THIS WORK SHALL BE INCIDENTAL.



S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

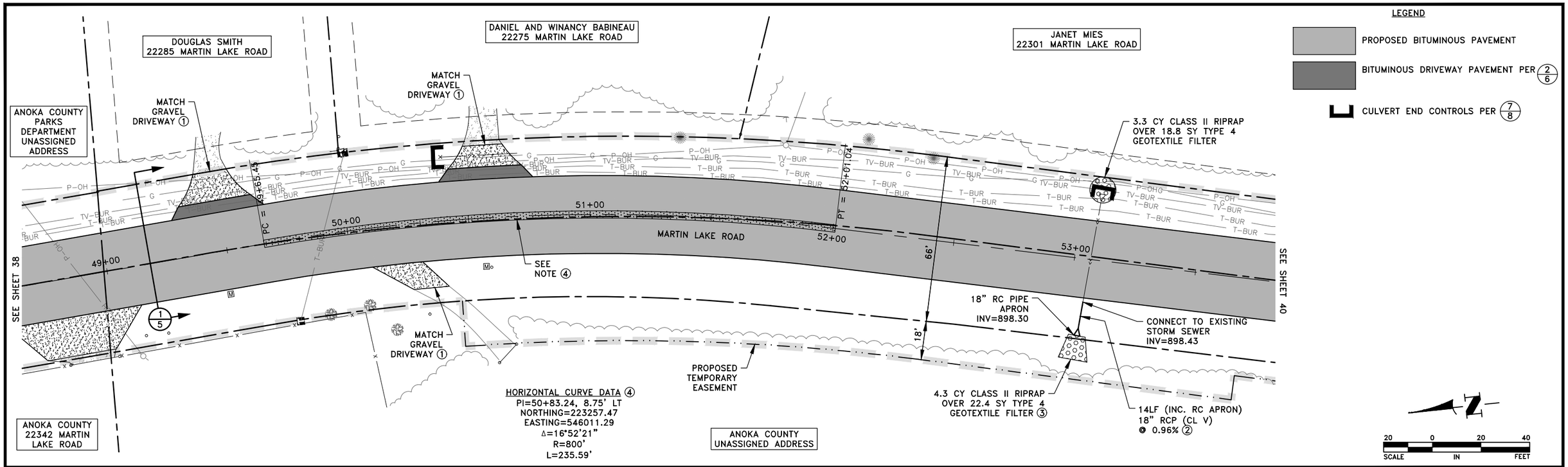
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

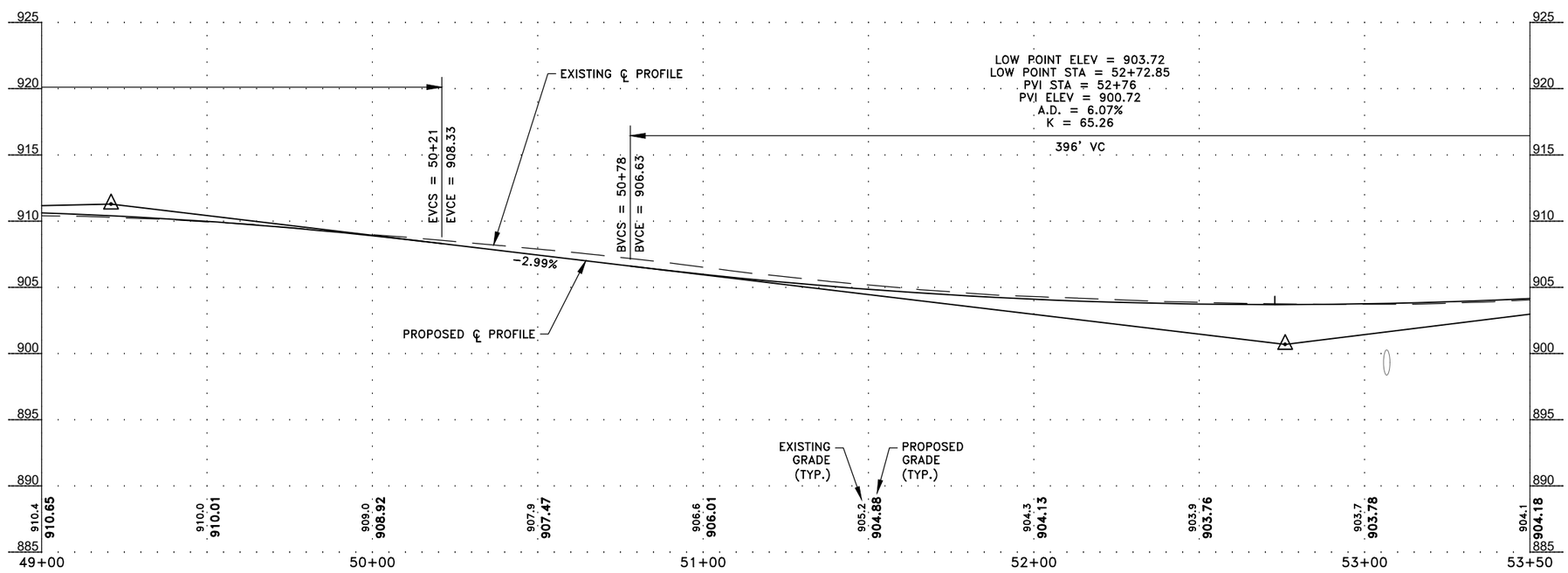
CONSTRUCTION PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

LW378

Dec 04, 2025 – 1:18pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_PP_227TH.dwg





REFERENCE NOTES:

① CONTRACTOR SHALL SALVAGE THE EXISTING DRIVEWAY SURFACE AGGREGATE, EXCAVATE UNDERLYING SOIL AS NEEDED AND REPLACE THE EXISTING DRIVEWAY SURFACE AGGREGATE. THIS WORK SHALL BE INCIDENTAL.

② TIE ALL PIPE JOINTS PER MN/DOT STANDARD PLATE 3145. THIS WORK SHALL BE INCIDENTAL.

③ PLACE RIPRAP PER MN/DOT STANDARD PLATE 3133.

④ CURVE IS SUPERELEVATED. SEE SHEET 49 FOR ADDITIONAL DETAILS.

S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

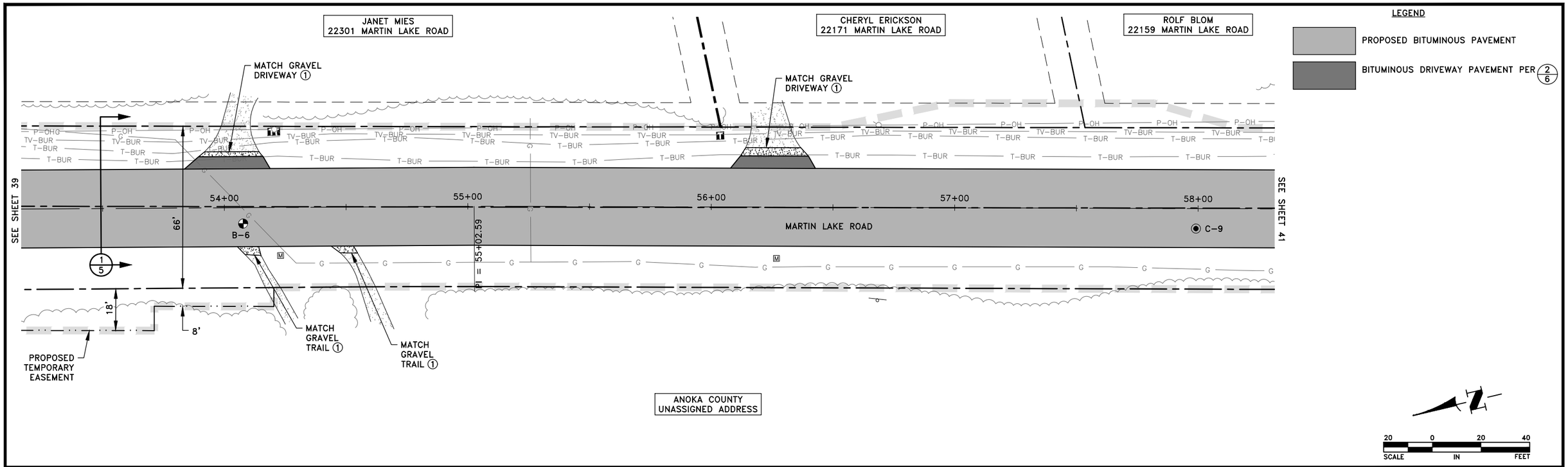
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

CONSTRUCTION PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

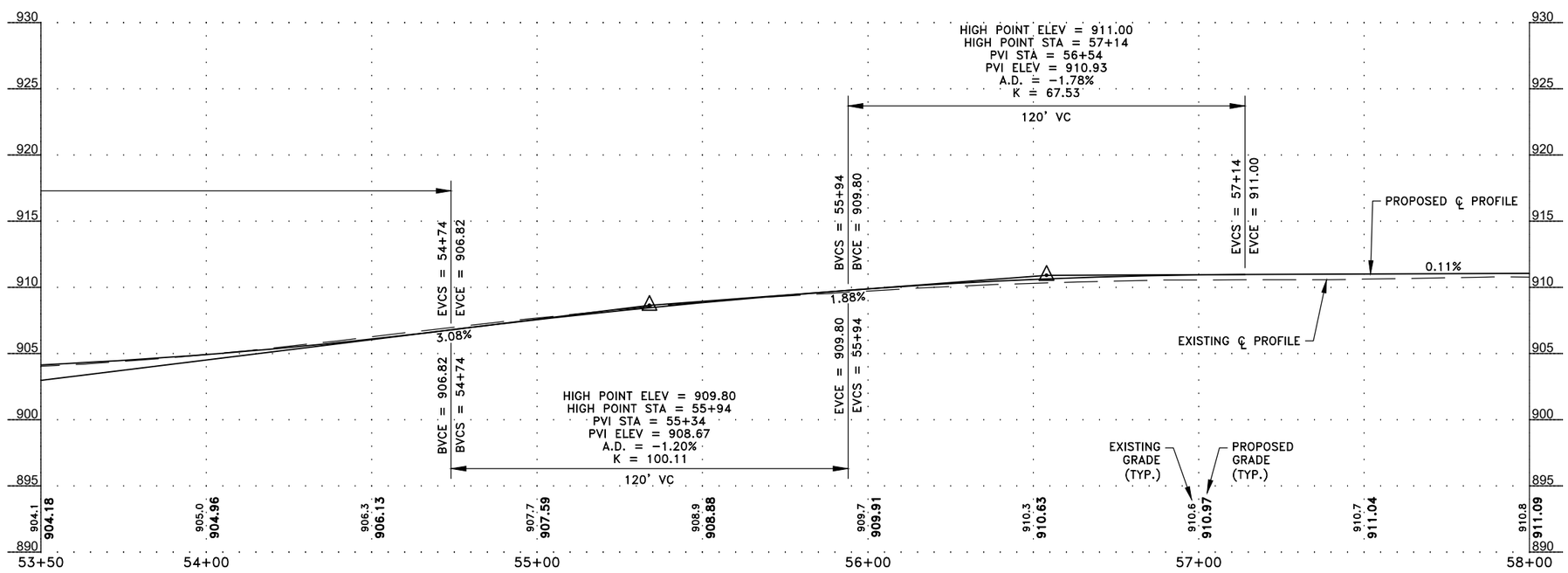
LW378

Dec 04, 2025 – 1:18pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_PP_227TH.dwg



REFERENCE NOTES:

1. CONTRACTOR SHALL SALVAGE THE EXISTING DRIVEWAY SURFACE AGGREGATE, EXCAVATE UNDERLYING SOIL AS NEEDED AND REPLACE THE EXISTING DRIVEWAY SURFACE AGGREGATE. THIS WORK SHALL BE INCIDENTAL.



S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

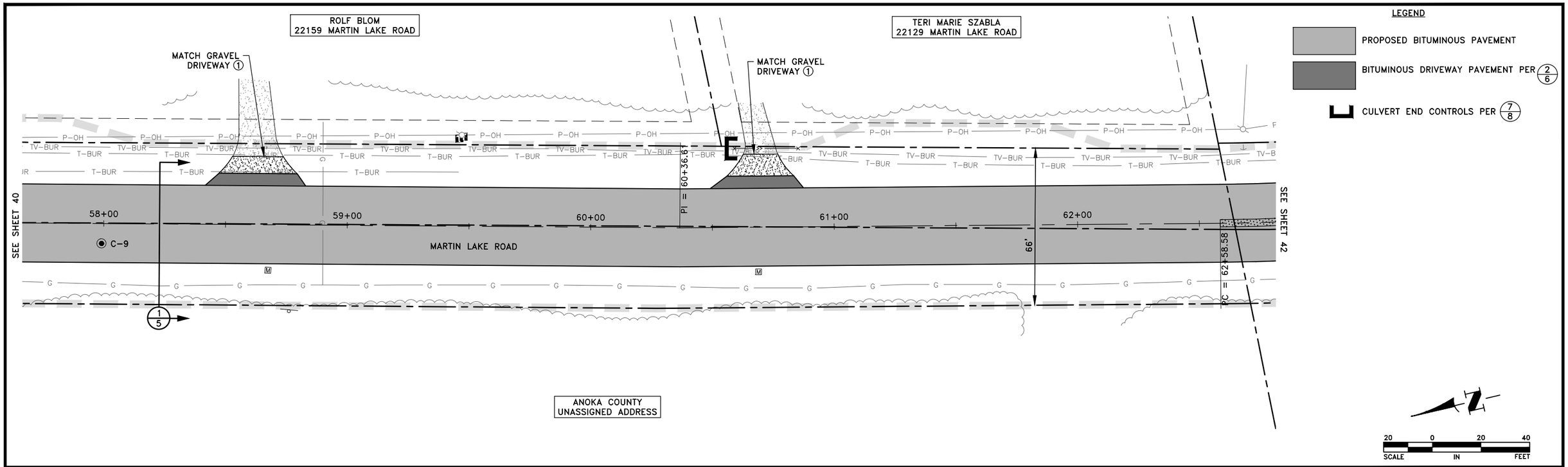
DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

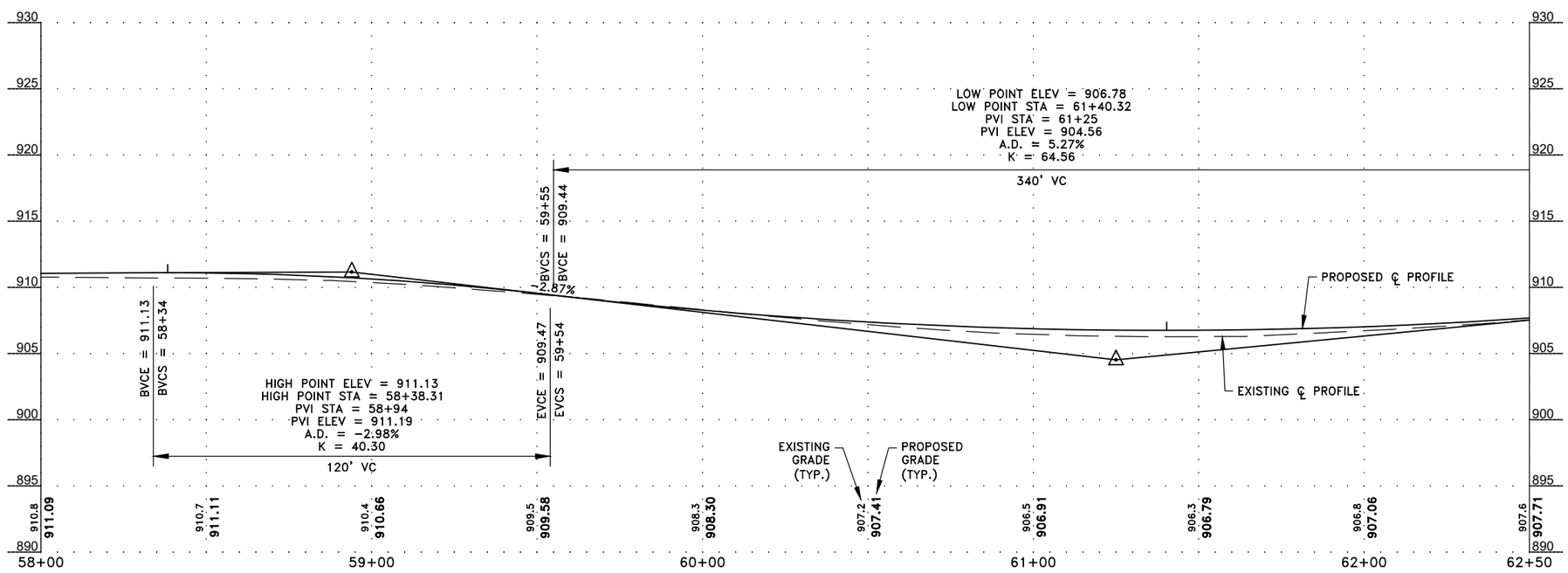
CONSTRUCTION PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA



REFERENCE NOTES:

1. CONTRACTOR SHALL SALVAGE THE EXISTING DRIVEWAY SURFACE AGGREGATE, EXCAVATE UNDERLYING SOIL AS NEEDED AND REPLACE THE EXISTING DRIVEWAY SURFACE AGGREGATE. THIS WORK SHALL BE INCIDENTAL.



S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

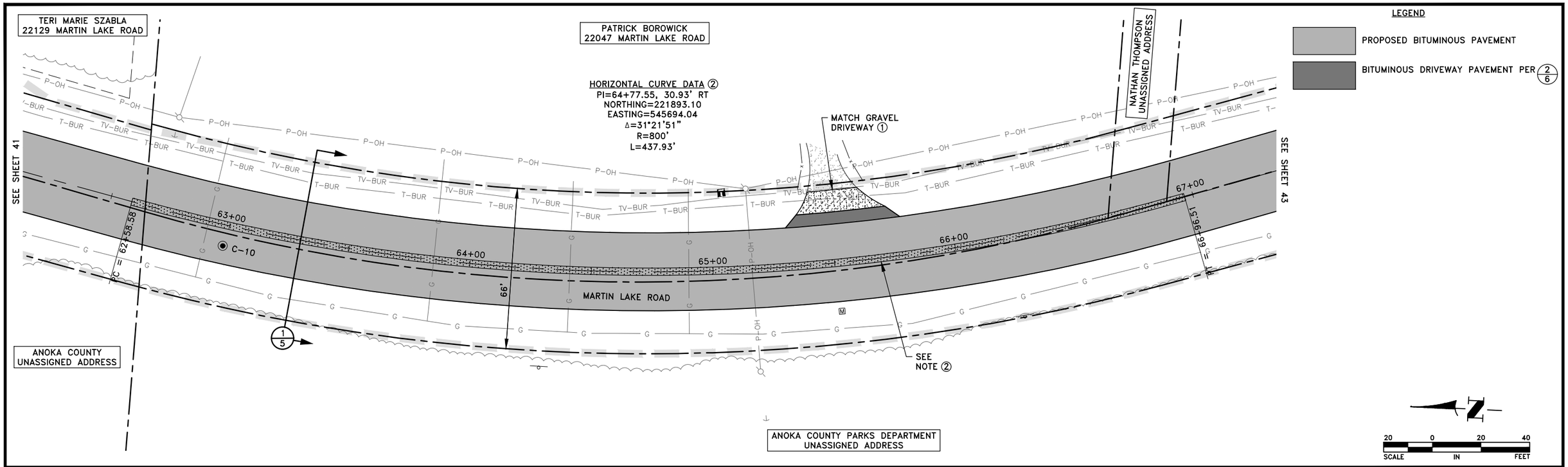
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

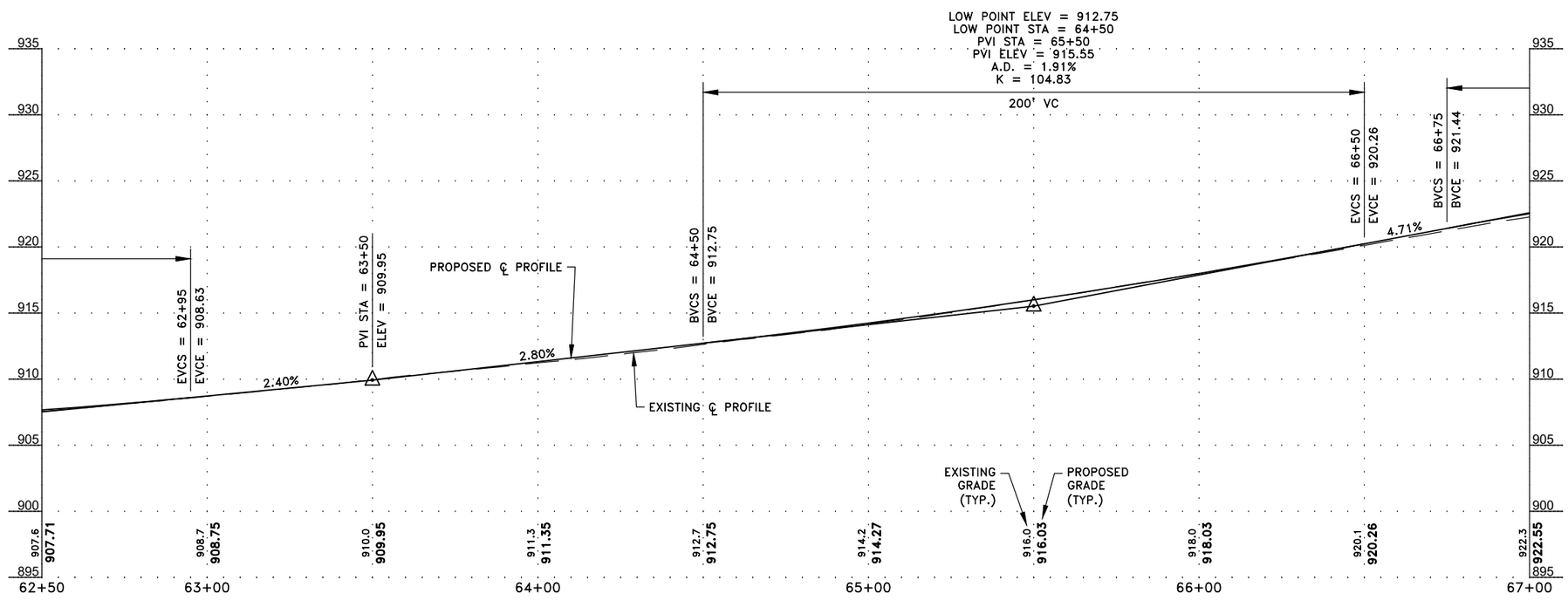
CONSTRUCTION PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

LW378

Dec 04, 2025 – 1:18pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_PP_227TH.dwg





REFERENCE NOTES:

① CONTRACTOR SHALL SALVAGE THE EXISTING DRIVEWAY SURFACE AGGREGATE, EXCAVATE UNDERLYING SOIL AS NEEDED AND REPLACE THE EXISTING DRIVEWAY SURFACE AGGREGATE. THIS WORK SHALL BE INCIDENTAL.

② CURVE IS SUPERELEVATED. SEE SHEET 50 FOR ADDITIONAL DETAILS.

S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

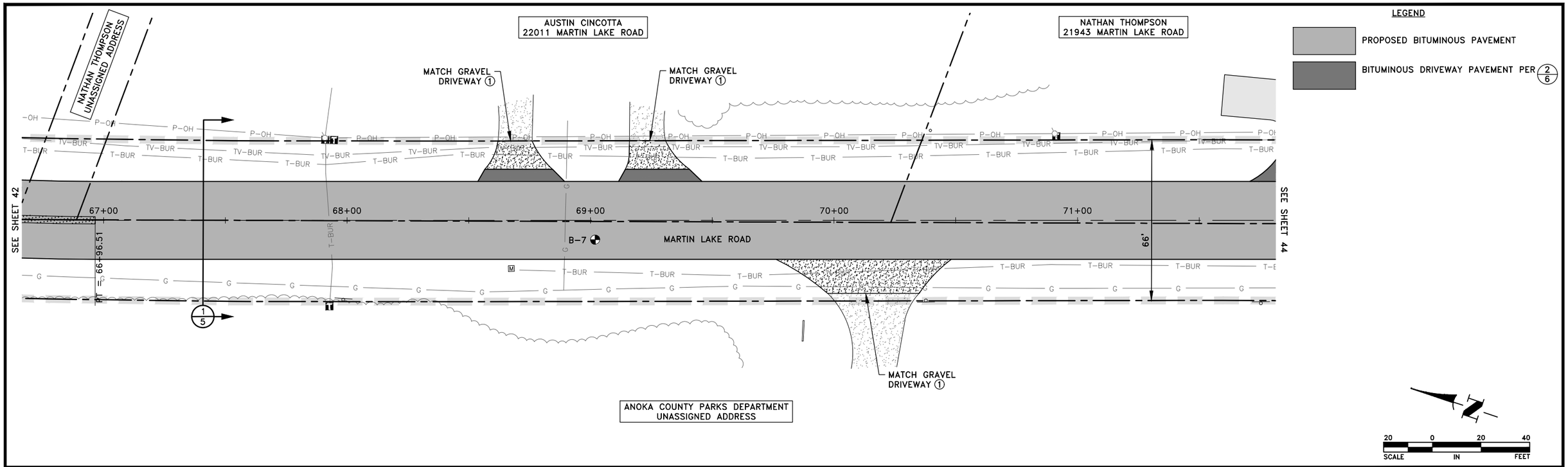
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

CONSTRUCTION PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

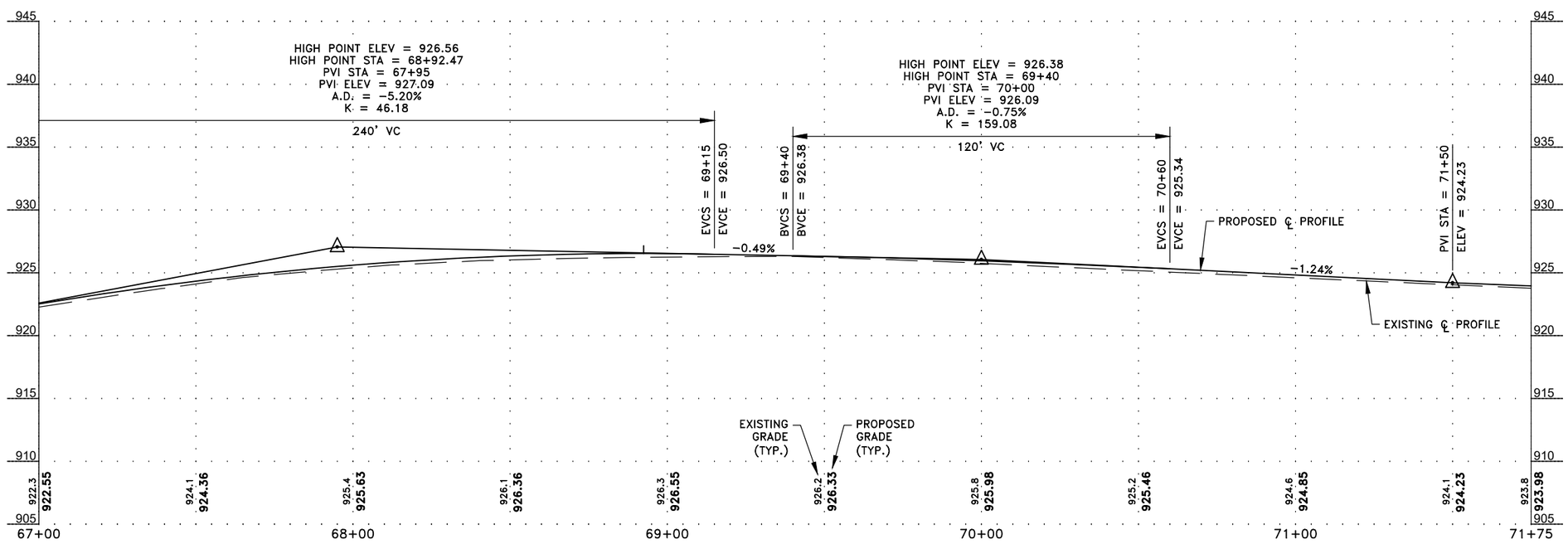
LW378

Dec 04, 2025 – 1:18pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_PP_227TH.dwg



REFERENCE NOTES:

① CONTRACTOR SHALL SALVAGE THE EXISTING DRIVEWAY SURFACE AGGREGATE, EXCAVATE UNDERLYING SOIL AS NEEDED AND REPLACE THE EXISTING DRIVEWAY SURFACE AGGREGATE. THIS WORK SHALL BE INCIDENTAL.



S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

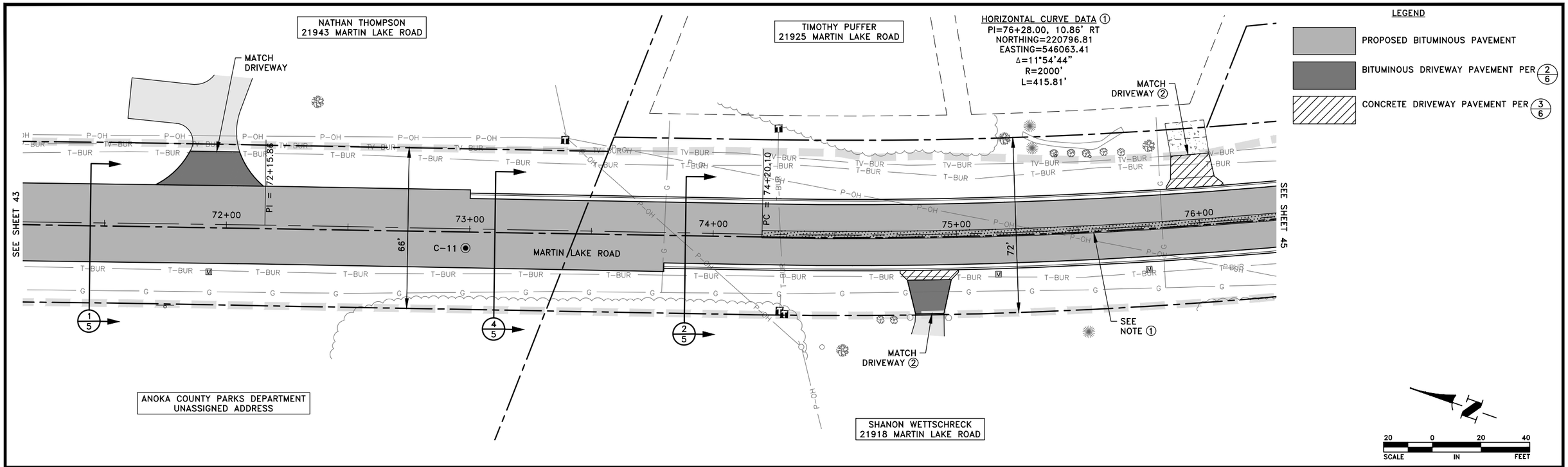
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

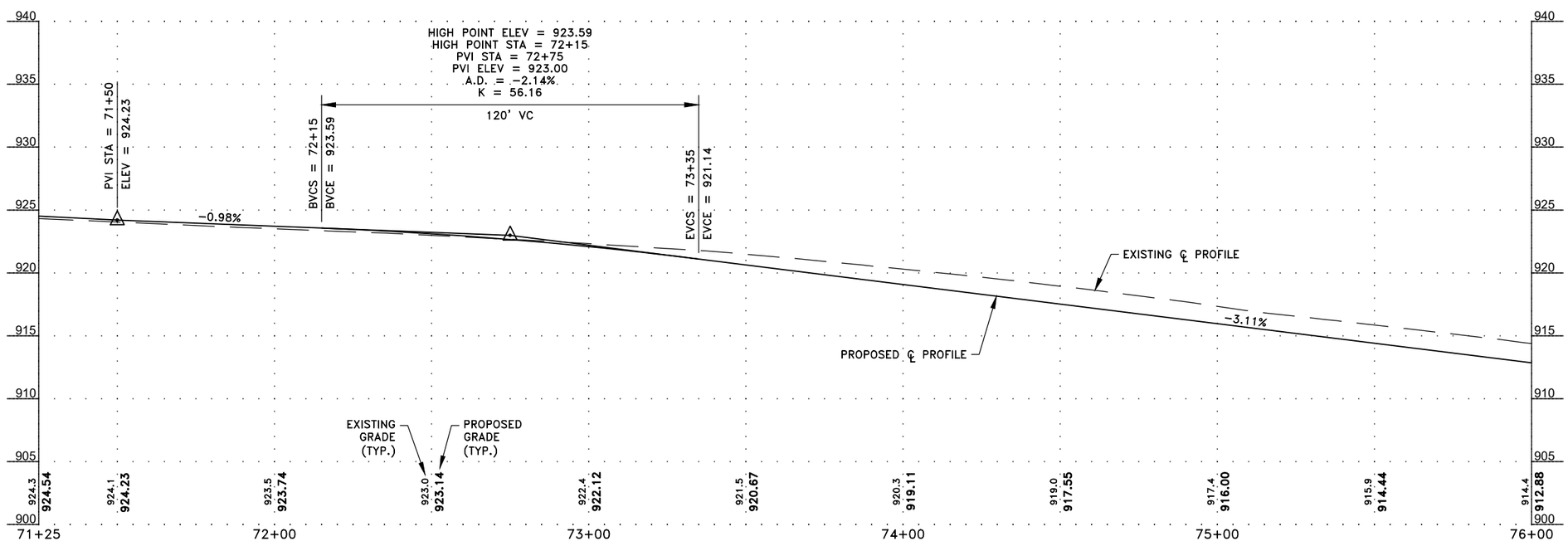
CONSTRUCTION PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

LW378

Dec 04, 2025 – 1:18pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_PP_227TH.dwg





REFERENCE NOTES:

① CURVE IS SUPERELEVATED. SEE SHEET 51 FOR ADDITIONAL DETAILS.

② CONSTRUCT CURB AND DRIVEWAY APRON PER 7/6.

CURB, DRIVEWAY APRON AND CONCRETE DRIVEWAY PAVEMENT SHALL BE CONSTRUCTED IN TWO PHASES TO ALLOW FOR ACCESS TO THE PROPERTY. CONTRACTOR SHALL PROTECT THE CONCRETE WITH BARRICADES AS NECESSARY FOR A MINIMUM OF 7 DAYS PRIOR TO ALLOWING TRAFFIC ON THE NEW CONCRETE.

S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

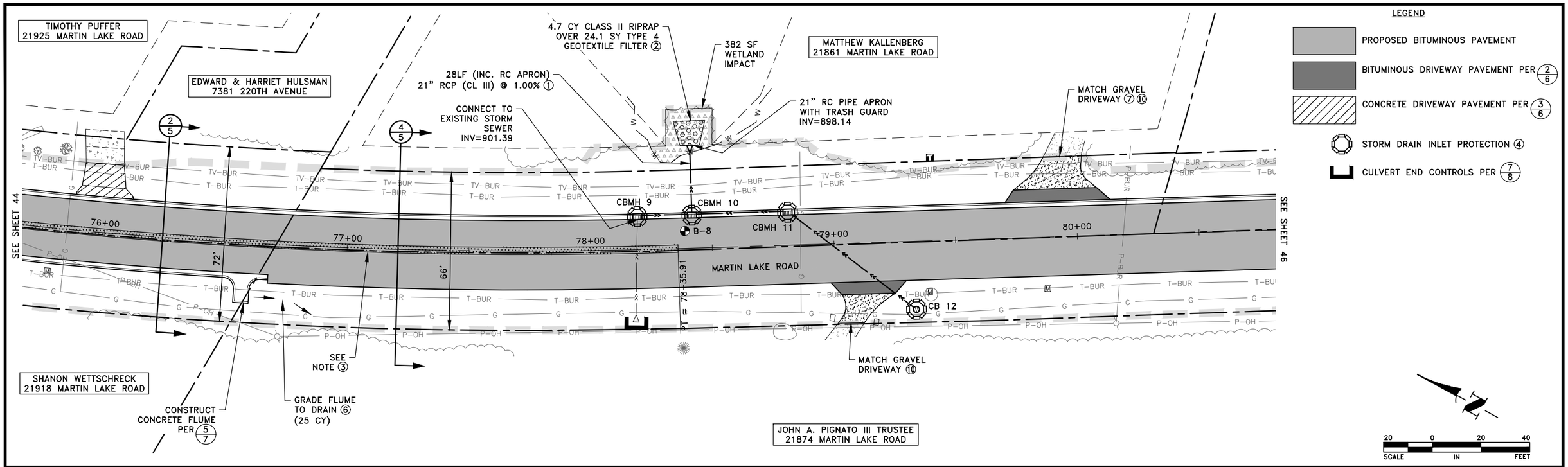
CONSTRUCTION PLAN

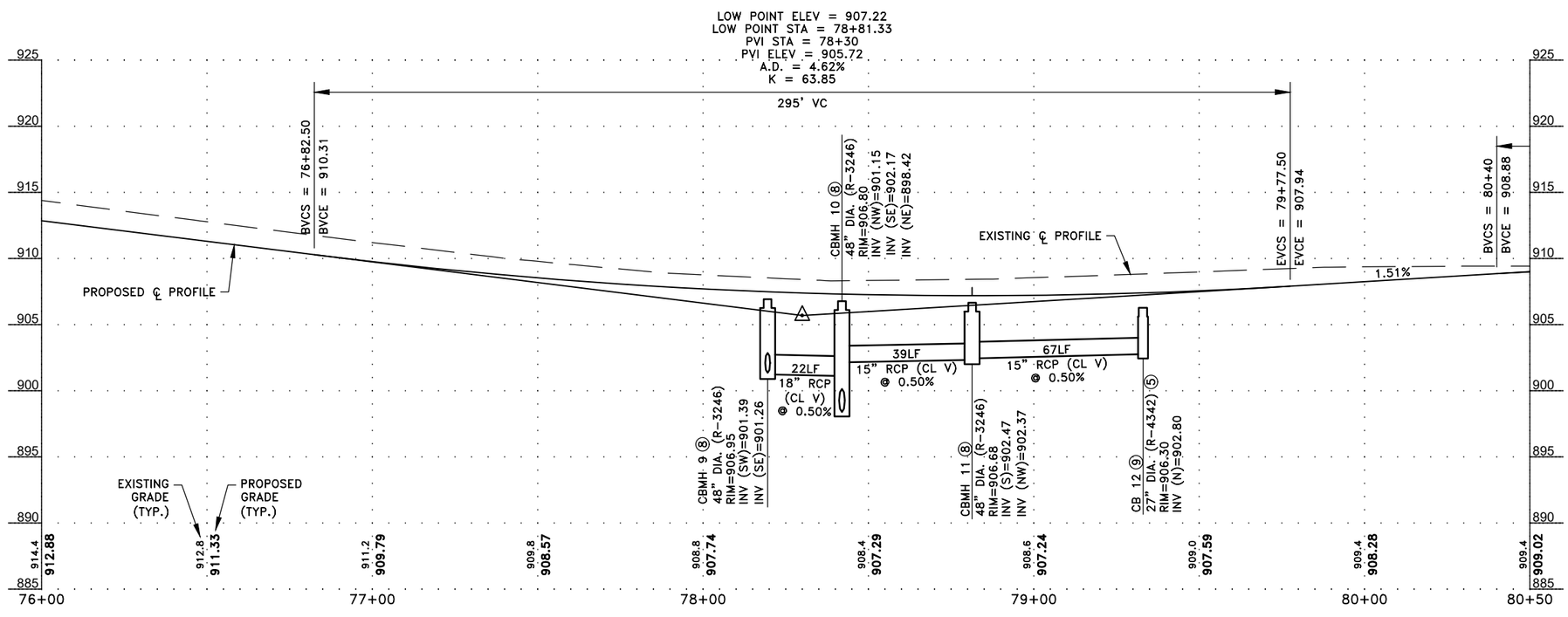
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 44 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:18pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_PP_227TH.dwg





GENERAL NOTES:

1. PROVIDE A 3 FOOT TRANSITION FROM B418 CURB TO B618 CURB ON BOTH SIDES OF THE CATCH BASIN CASTINGS. THIS WORK SHALL BE INCIDENTAL.

REFERENCE NOTES:

① TIE ALL PIPE JOINTS PER MN/DOT STANDARD PLATE 3145. THIS WORK SHALL BE INCIDENTAL.

② PLACE RIPRAP PER MN/DOT STANDARD PLATE 3133.

③ CURVE IS SUPERELEVATED. SEE SHEET 51 FOR ADDITIONAL DETAILS.

④ STORM DRAIN INLET PROTECTION SHALL BE PER 4/8, 5/8 AND 6/8 OR APPROVED EQUAL.

⑤ CASTING SHALL BE PLACED IN A CONCRETE FRAME PER MN/DOT STANDARD PLATE 4143. THIS WORK SHALL BE INCIDENTAL.

⑥ THIS WORK SHALL INCLUDE SALVAGING THE EXISTING TOPSOIL, EXCAVATING THE UNDERLYING MATERIAL TO PROVIDE A POSITIVE DITCH SLOPE AND REPLACING THE SALVAGED TOPSOIL. THIS WORK SHALL BE PAID PER ITEM 2106-EXCAVATION-COMMON. THIS WORK SHALL BE PAID PER ITEM 2106-EXCAVATION-COMMON.

⑦ CONSTRUCT CURB AT DRIVEWAY PER 4/6. CURB SHALL BE CONSTRUCTED IN TWO PHASES TO ALLOW FOR ACCESS TO THE PROPERTY. CONTRACTOR SHALL PROTECT THE CONCRETE WITH BARRICADES AS NECESSARY FOR A MINIMUM OF 7 DAYS PRIOR TO ALLOWING TRAFFIC ON THE NEW CONCRETE.

⑧ CONSTRUCT STRUCTURE PER 2/7.

⑨ CONSTRUCT STRUCTURE PER 6/7.

⑩ CONTRACTOR SHALL SALVAGE THE EXISTING DRIVEWAY SURFACE AGGREGATE, EXCAVATE UNDERLYING SOIL AS NEEDED AND REPLACE THE EXISTING DRIVEWAY SURFACE AGGREGATE. THIS WORK SHALL BE INCIDENTAL.

S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

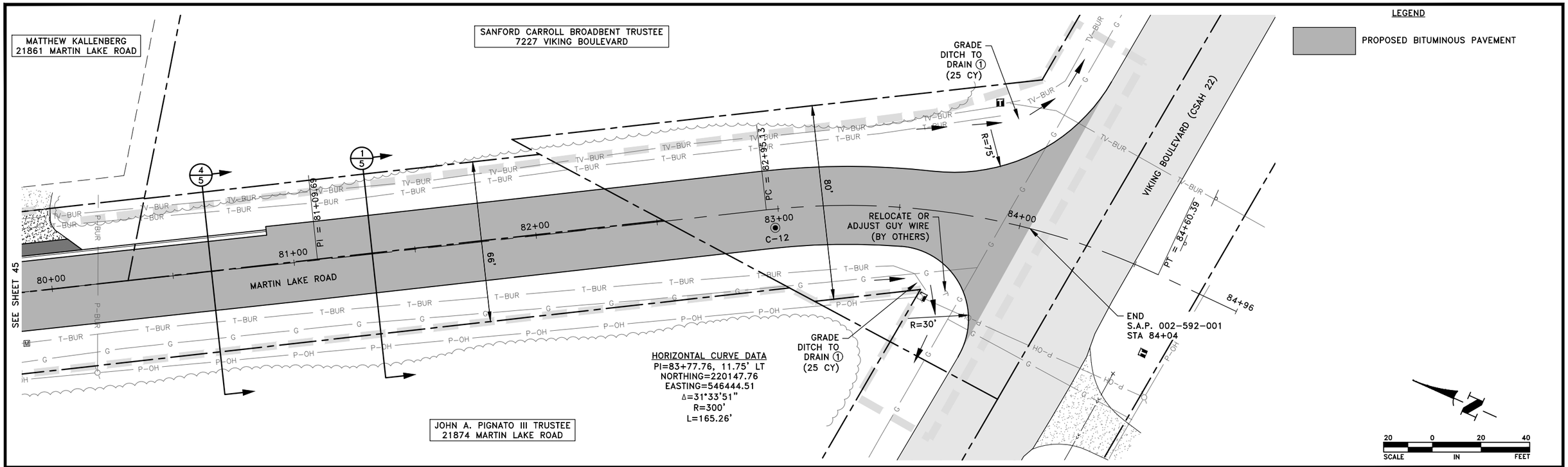
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

CONSTRUCTION PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

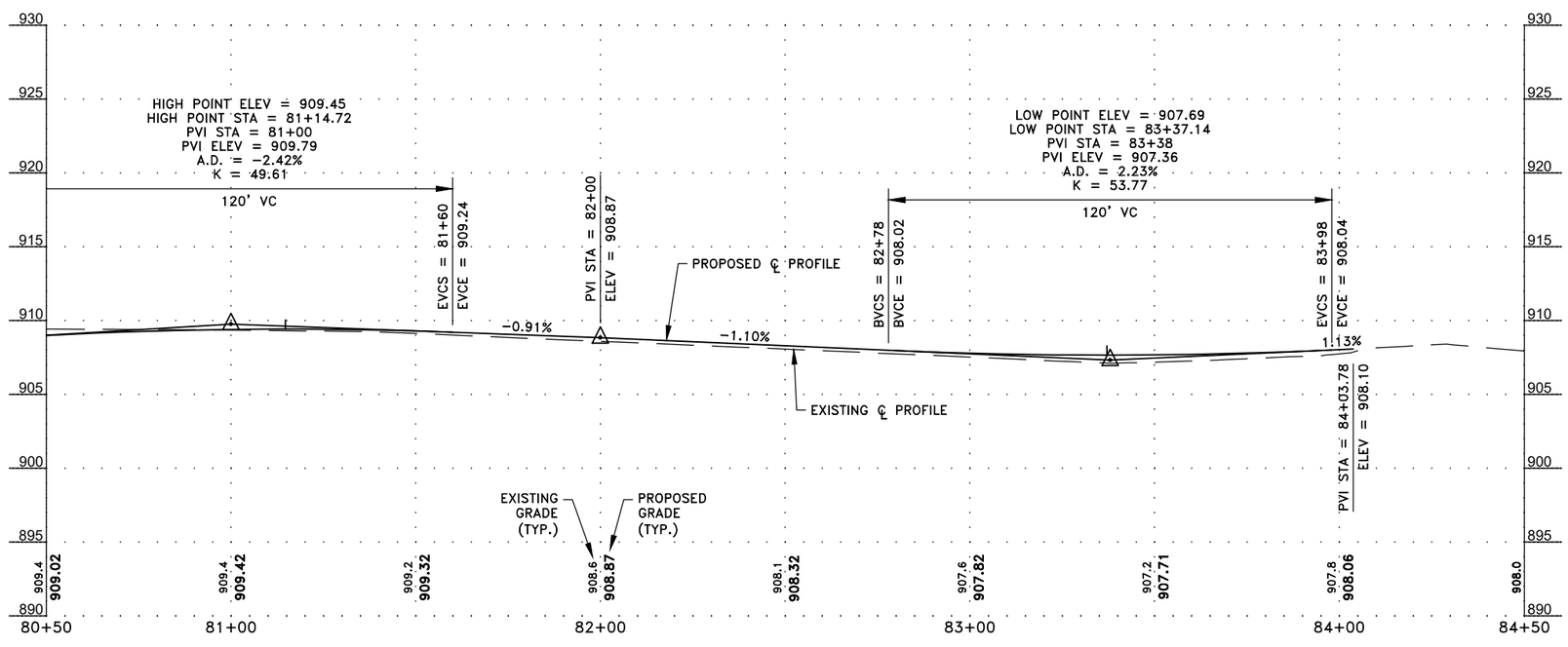
LW378

Dec 04, 2025 – 1:18pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_PP_227TH.dwg



REFERENCE NOTES:

1. THIS WORK SHALL INCLUDE SALVAGING THE EXISTING TOPSOIL, EXCAVATING THE UNDERLYING MATERIAL TO PROVIDE A POSITIVE DITCH SLOPE AND REPLACING THE SALVAGED TOPSOIL. THIS WORK SHALL BE PAID PER ITEM 2106-EXCAVATION-COMMON. THIS WORK SHALL BE PAID PER ITEM 2106-EXCAVATION-COMMON.



S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

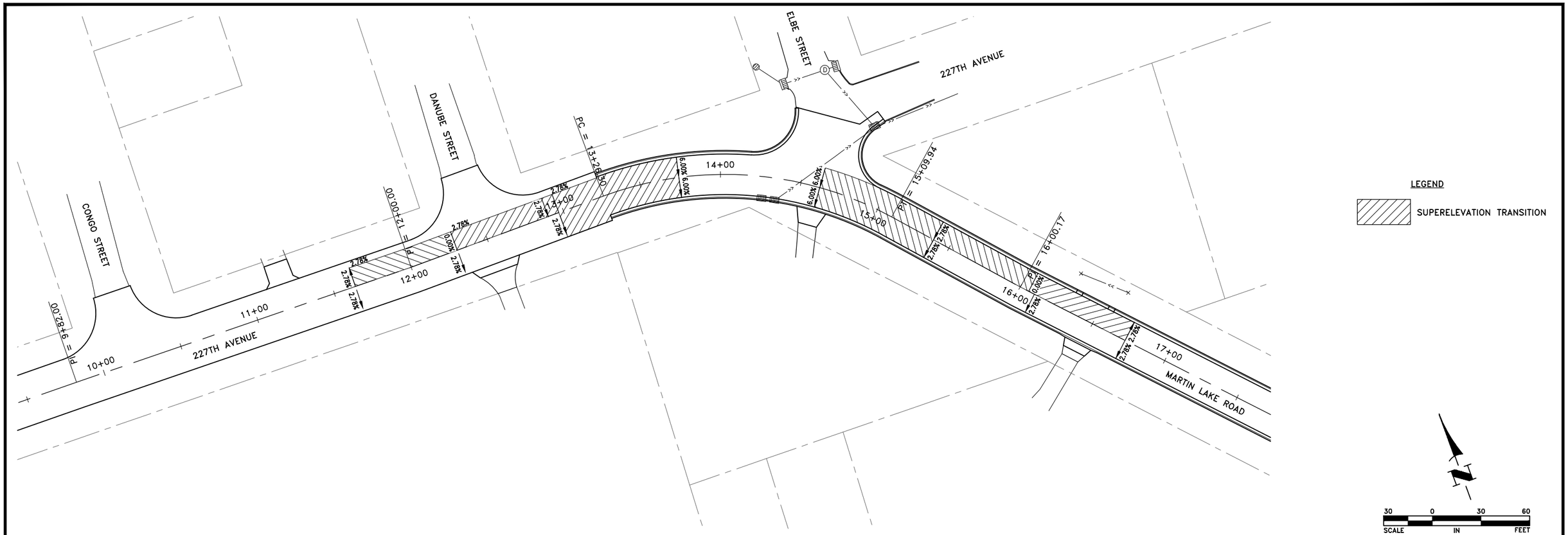
CONSTRUCTION PLAN

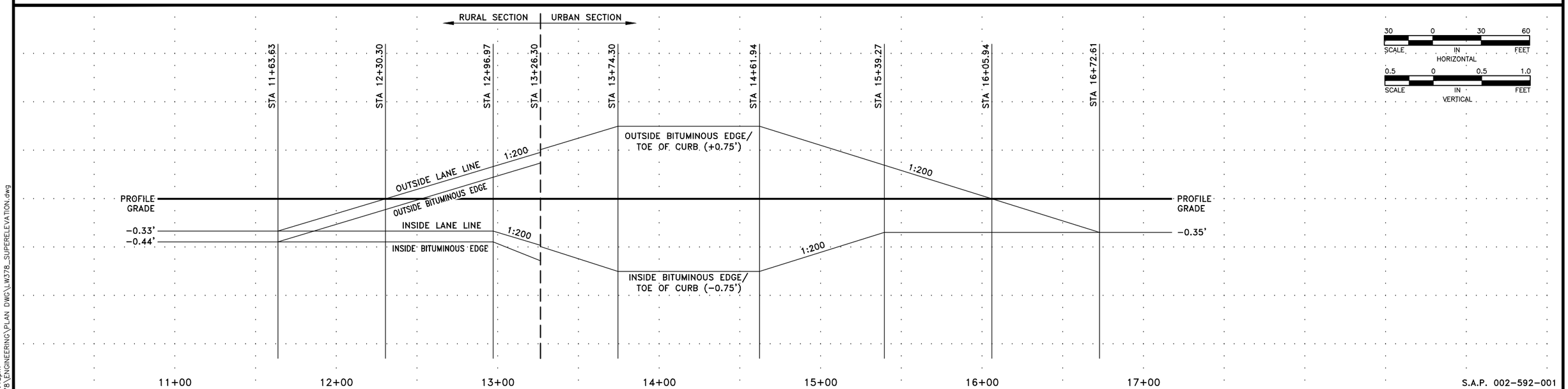
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 46 OF 76 SHEETS

LW378

Dec 04, 2025 – 2:37pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_PP_227TH.dwg





S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

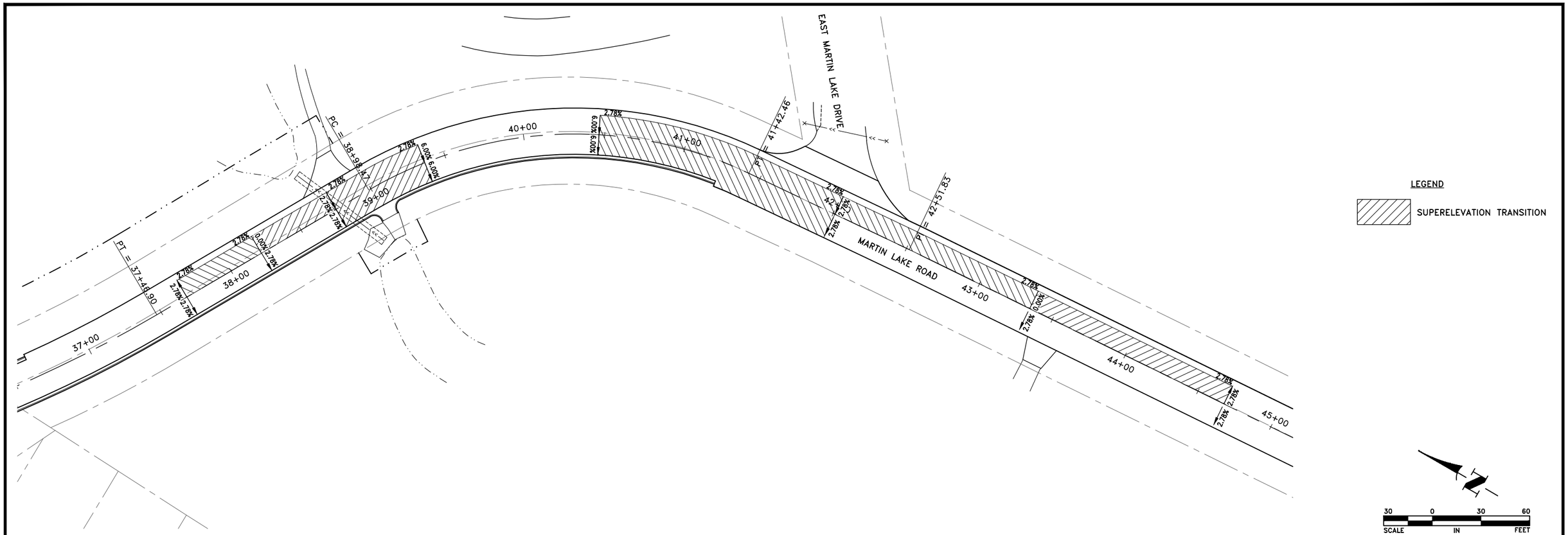
SUPERELEVATION PLAN

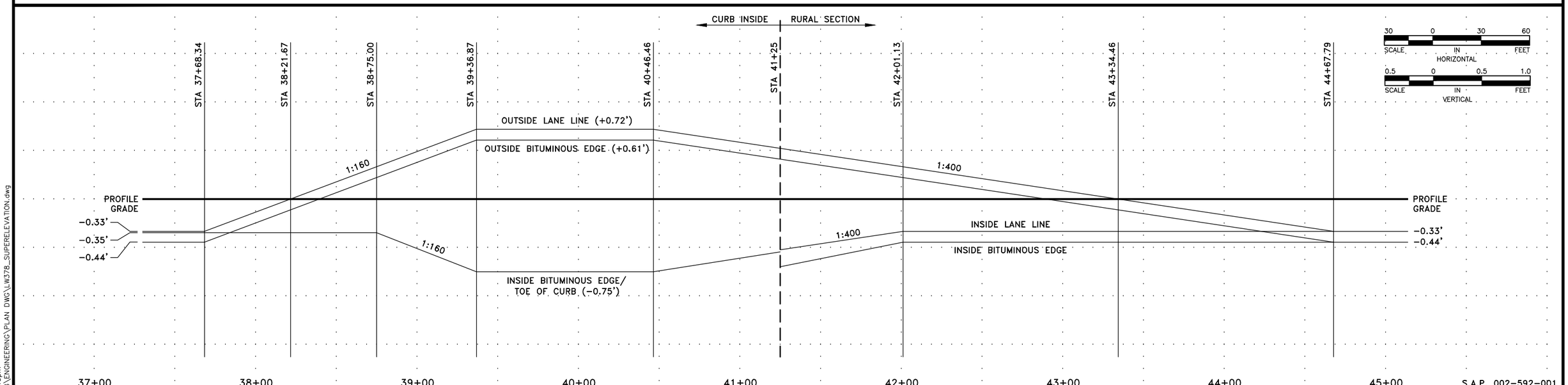
227TH AVENUE AND MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 47 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:18pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_SUPERELEVATION.dwg





S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

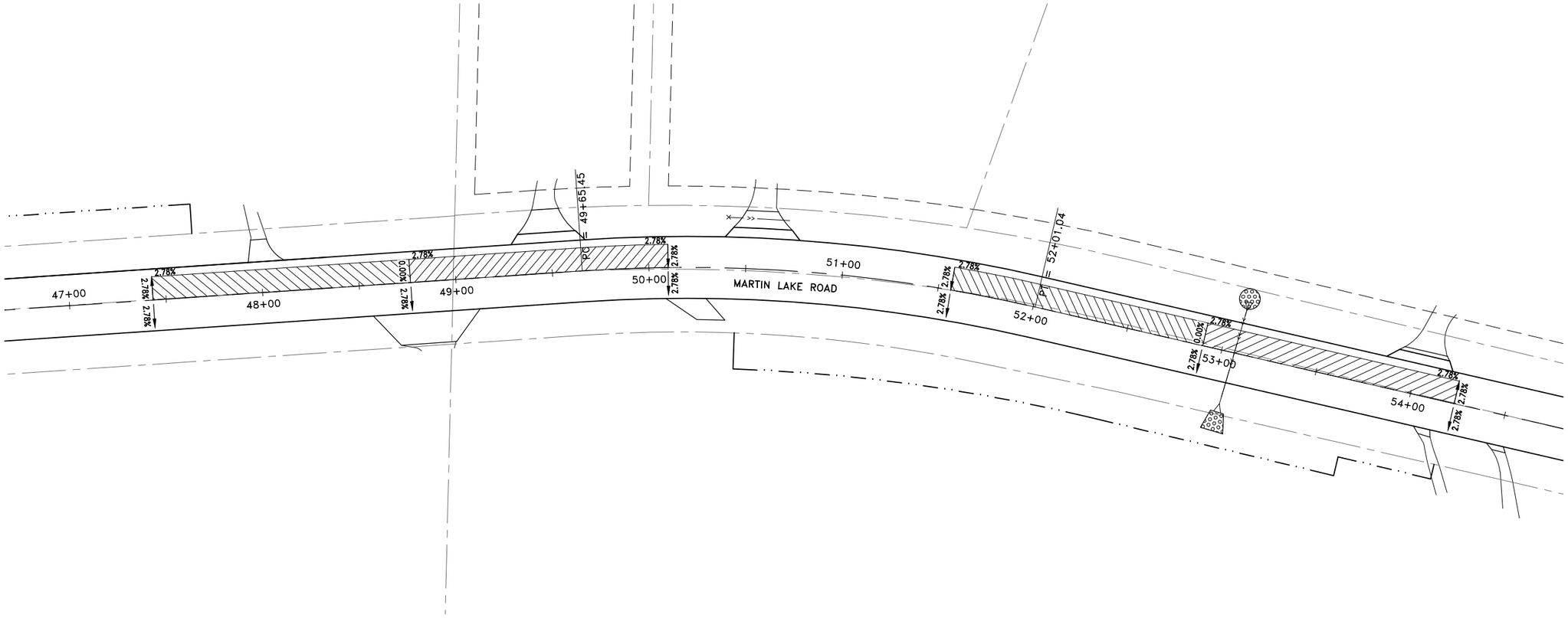
SUPERELEVATION PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 48 OF 76 SHEETS

LW378

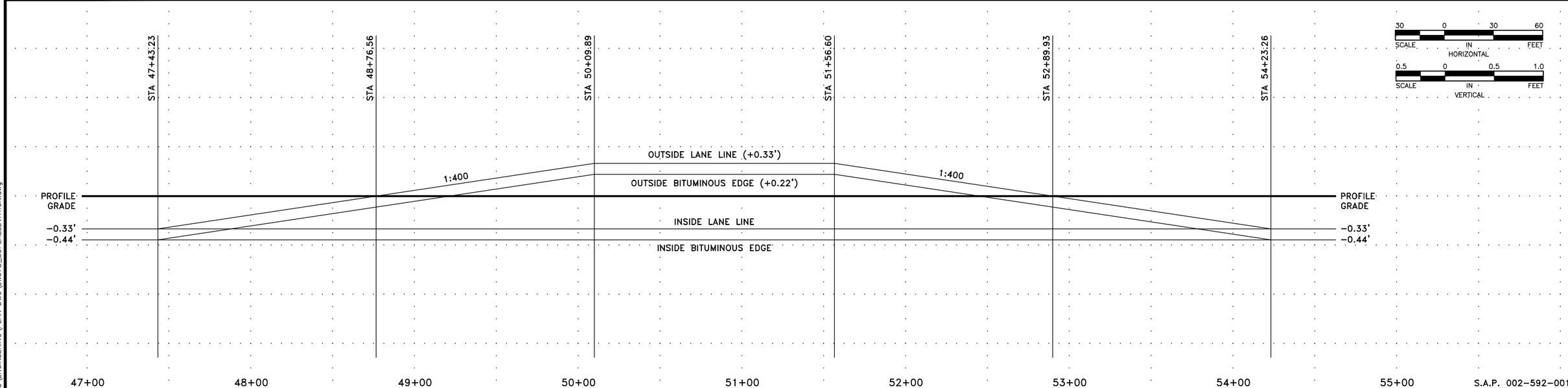
Dec 04, 2025 – 1:19pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_SUPERELEVATION.dwg



LEGEND

SUPERELEVATION TRANSITION

30 0 30 60
SCALE IN FEET



30 0 30 60
SCALE IN FEET
HORIZONTAL

0.5 0 0.5 1.0
SCALE IN FEET
VERTICAL

S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

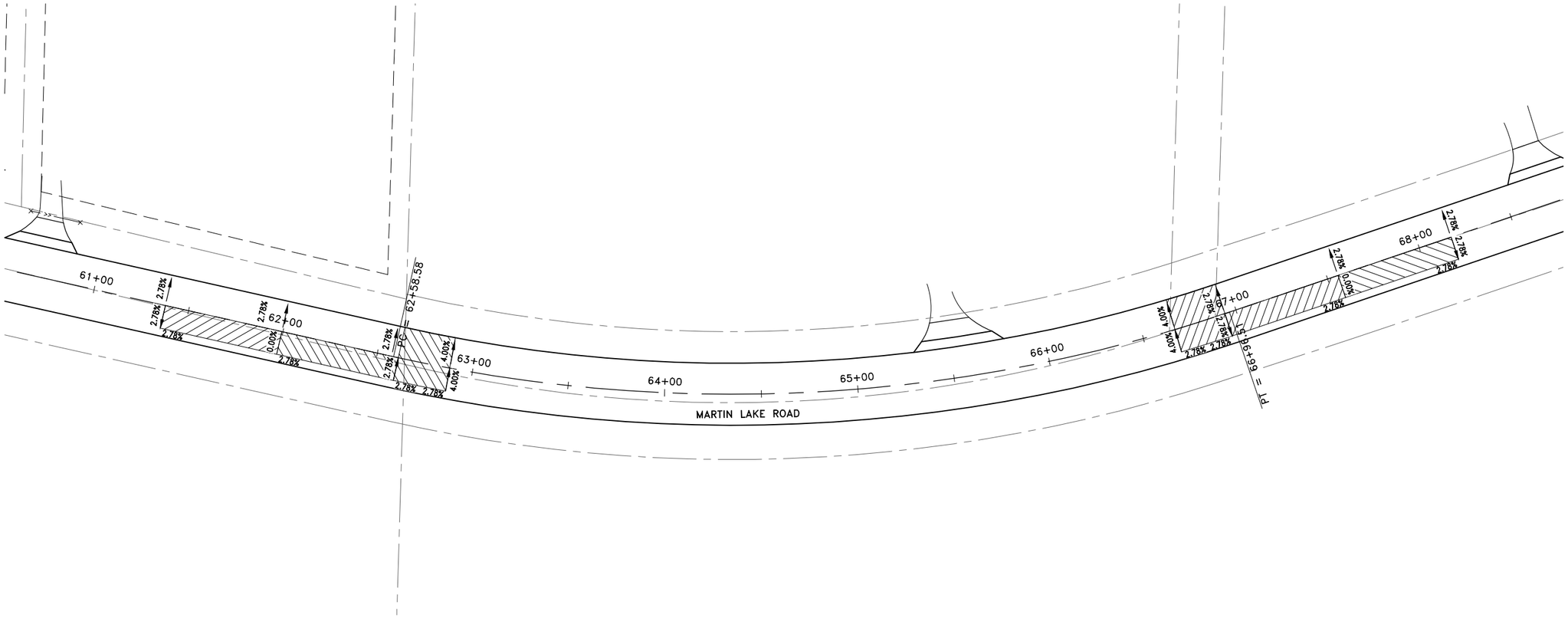
SUPERELEVATION PLAN

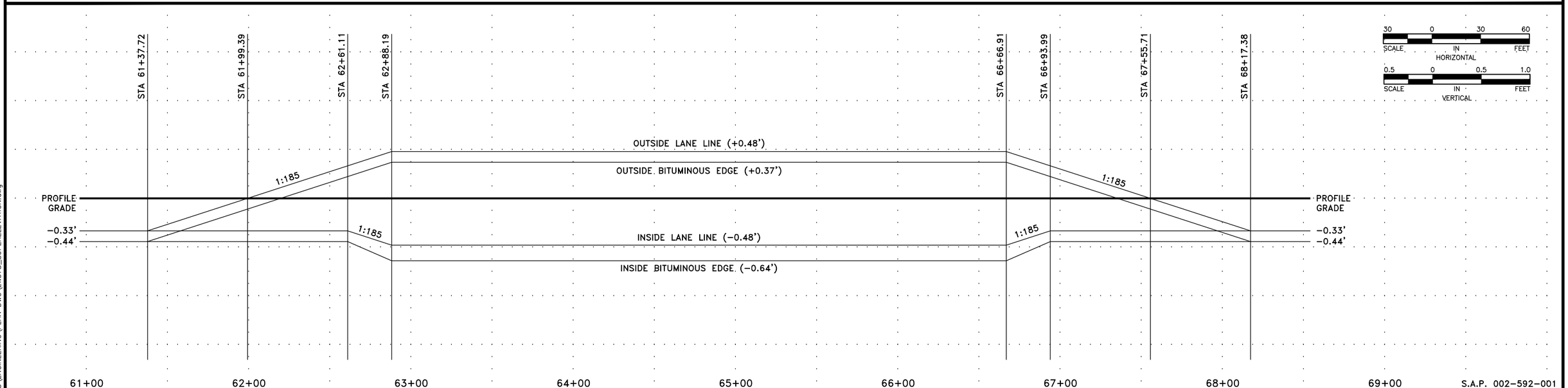
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 49 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:19pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_SUPERELEVATION.dwg





S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

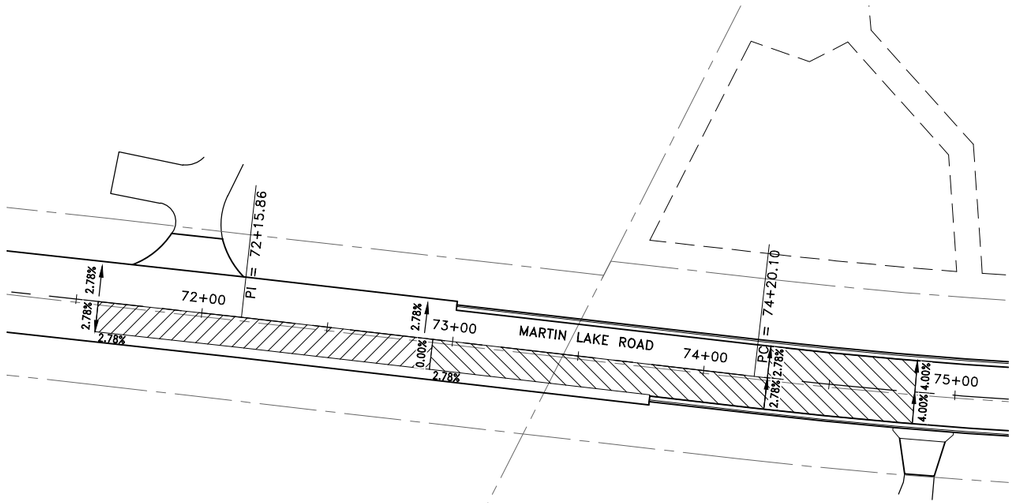
SUPERELEVATION PLAN

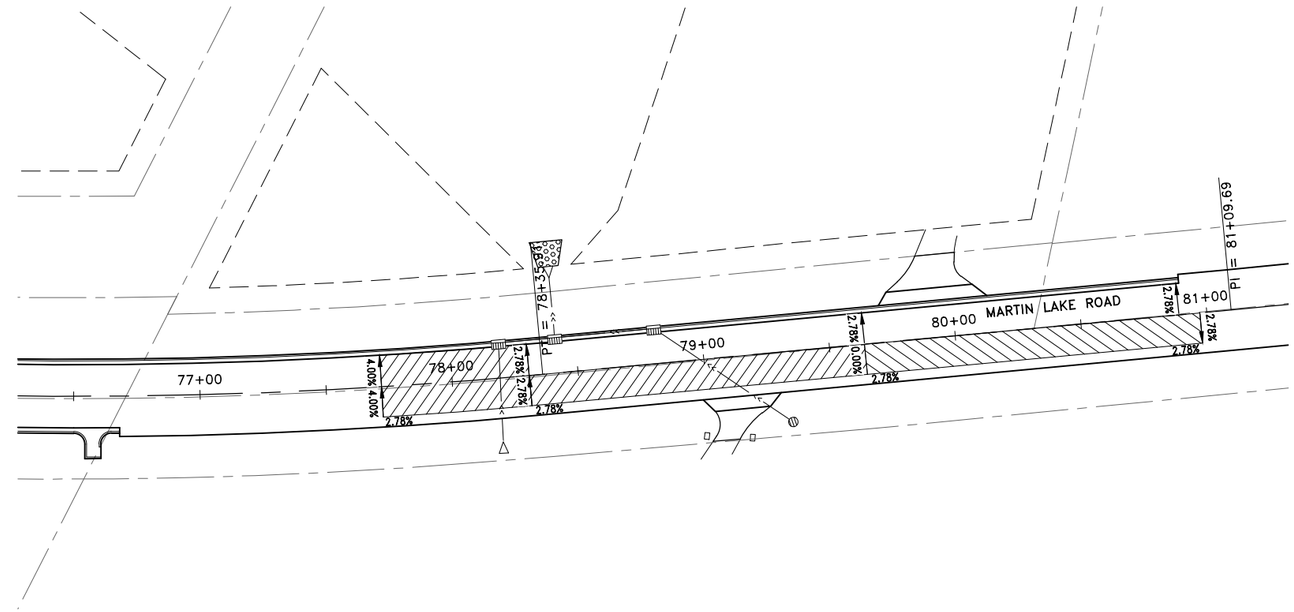
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 50 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:19pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_SUPERELEVATION.dwg

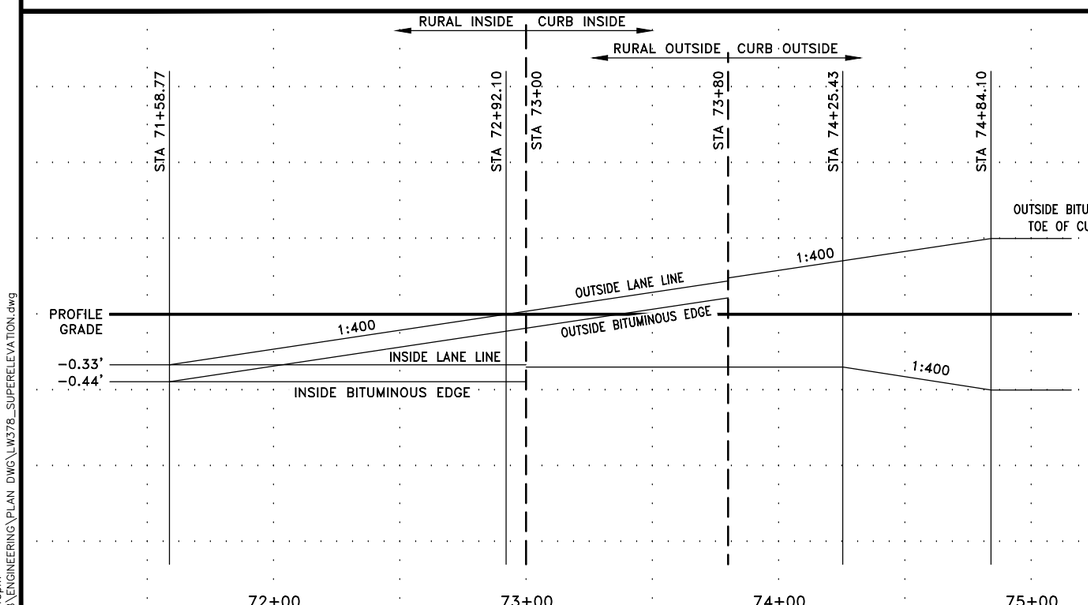


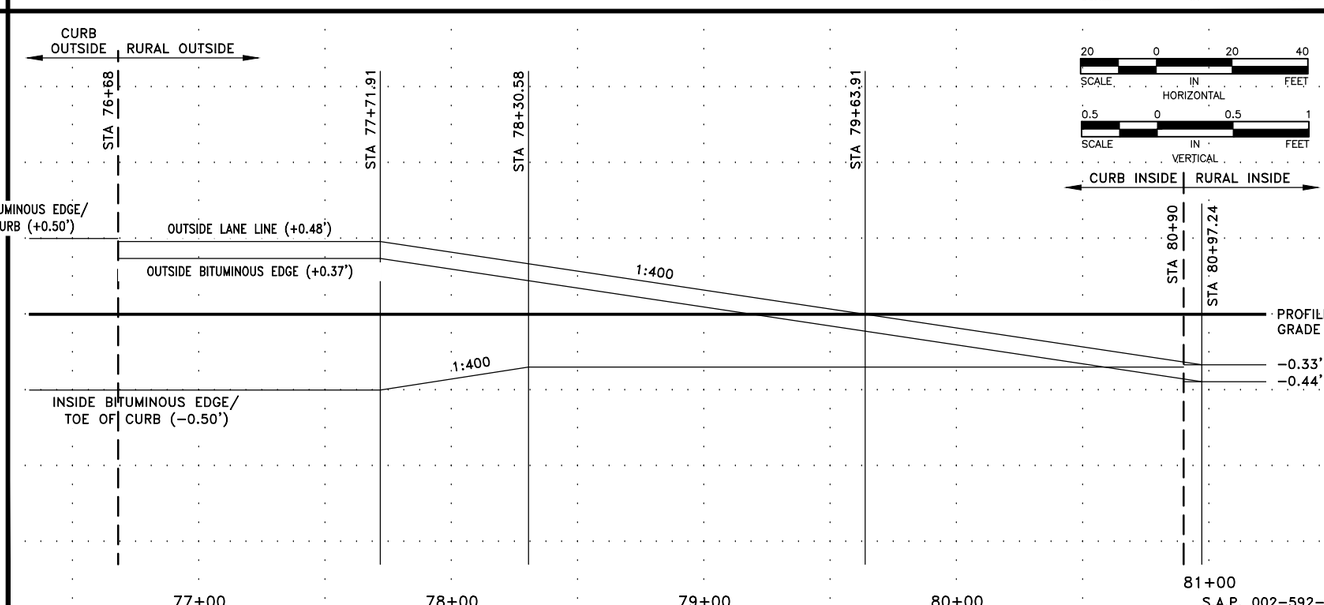


LEGEND

SUPERELEVATION TRANSITION

SCALE 30 0 30 60 IN FEET





SCALE 20 0 20 40 IN FEET HORIZONTAL

SCALE 0.5 0 0.5 1 IN FEET VERTICAL

S.A.P. 002-592-001

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

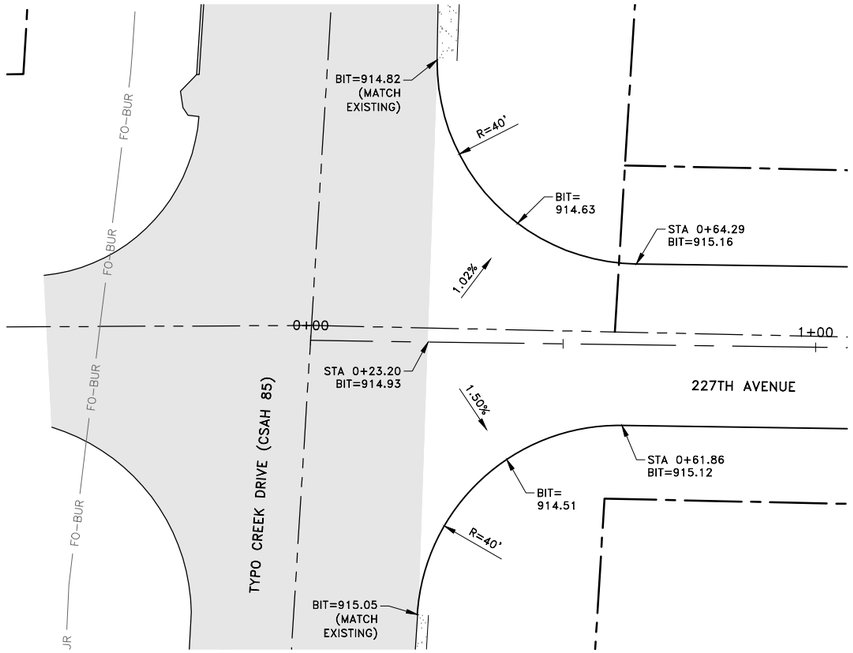
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

SUPERELEVATION PLAN

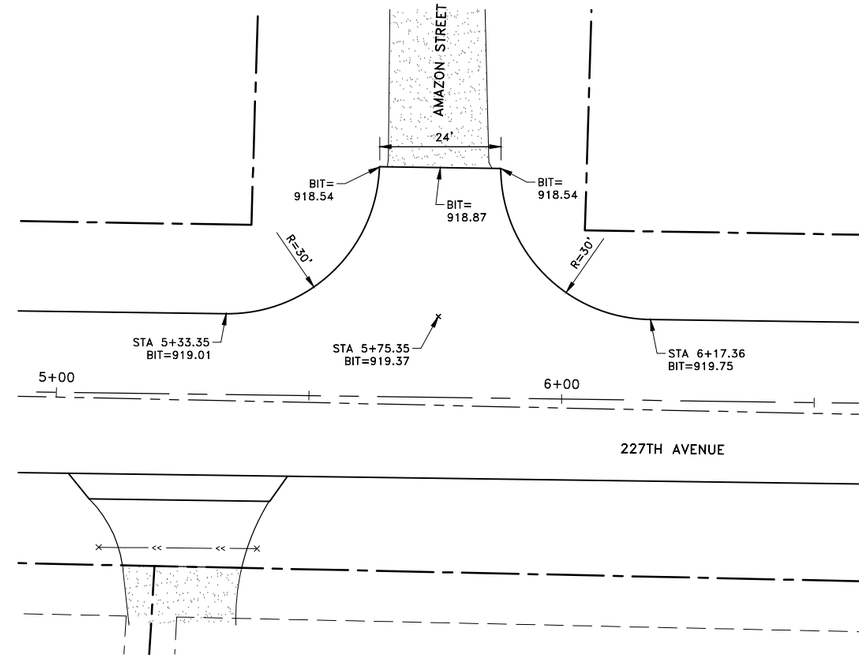
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

LW378

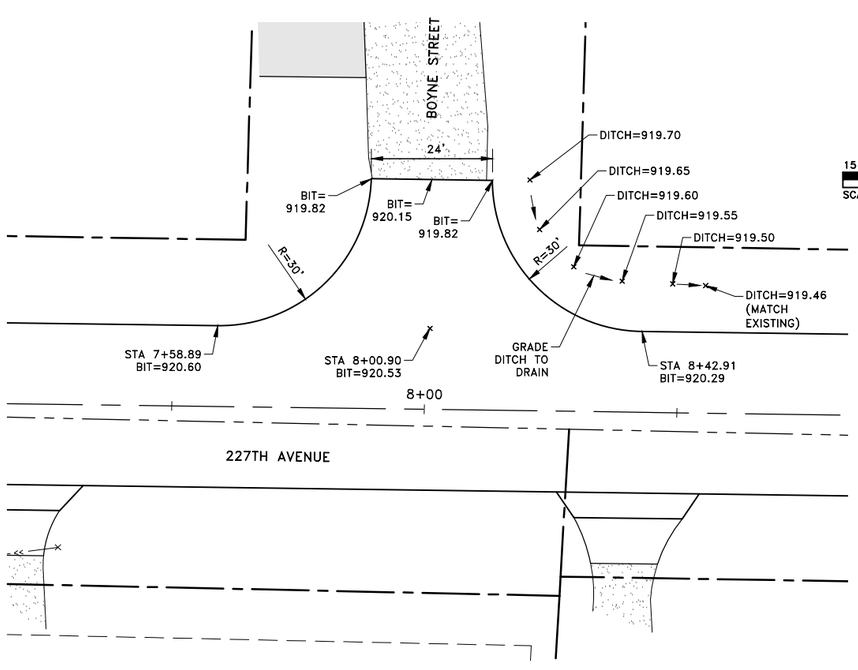
Dec 04, 2025 – 11:19pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_SUPERELEVATION.dwg



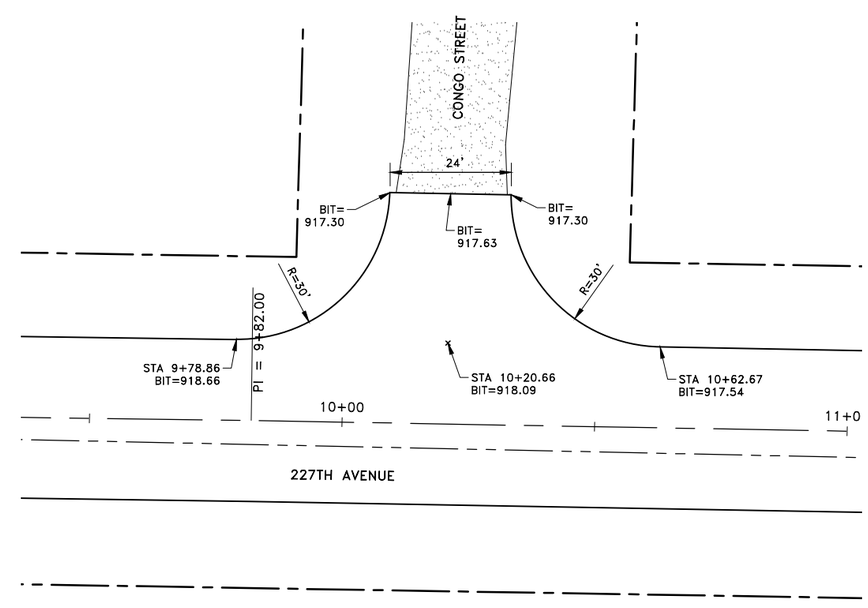
TYPO CREEK DRIVE/227TH AVENUE INTERSECTION



AMAZON STREET/227TH AVENUE INTERSECTION



BOYNE STREET/227TH AVENUE INTERSECTION



CONGO STREET/227TH AVENUE INTERSECTION

N

SCALE 15 0 15 30 IN FEET

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

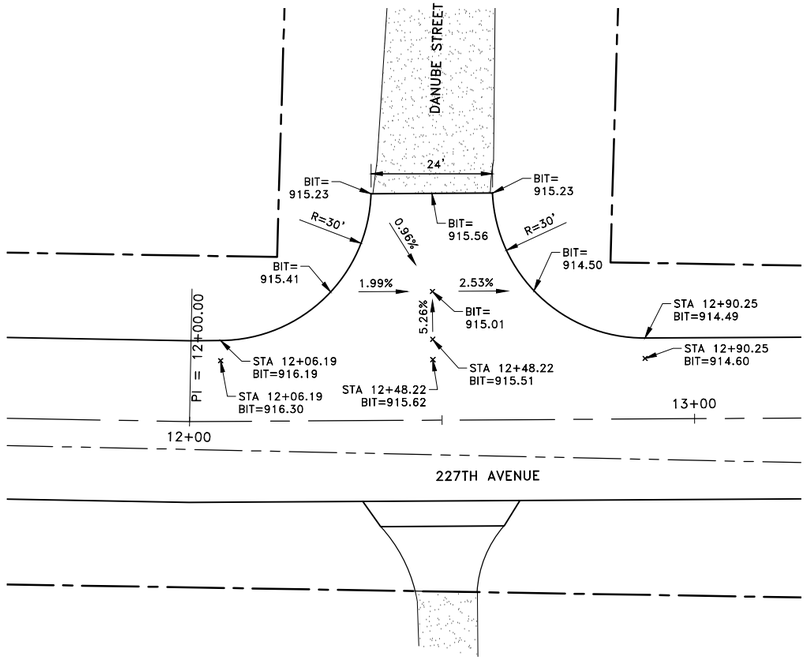
INTERSECTION CONSTRUCTION DETAILS

LINWOOD TOWNSHIP, MINNESOTA

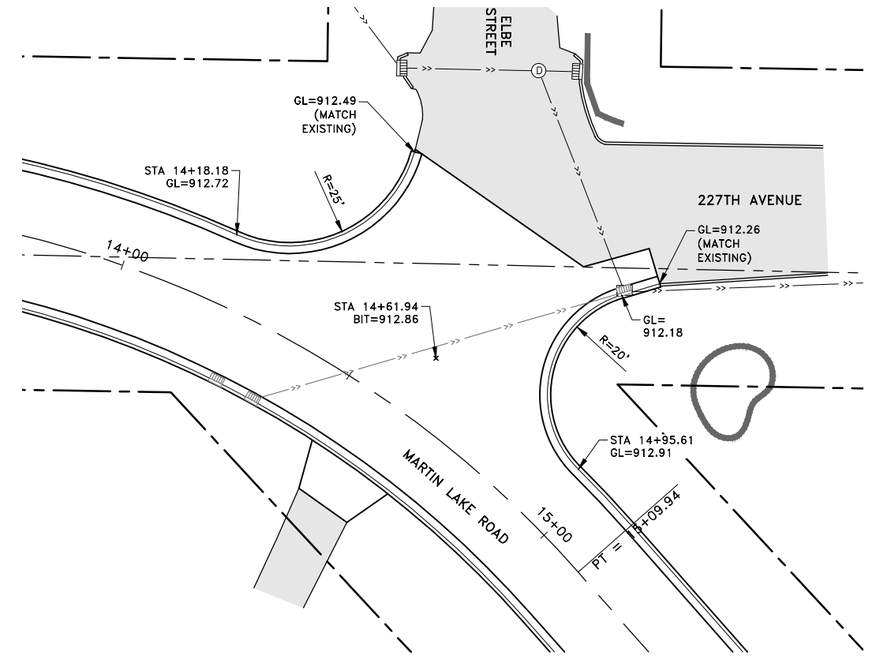
SHEET 52 OF 76 SHEETS

LW378

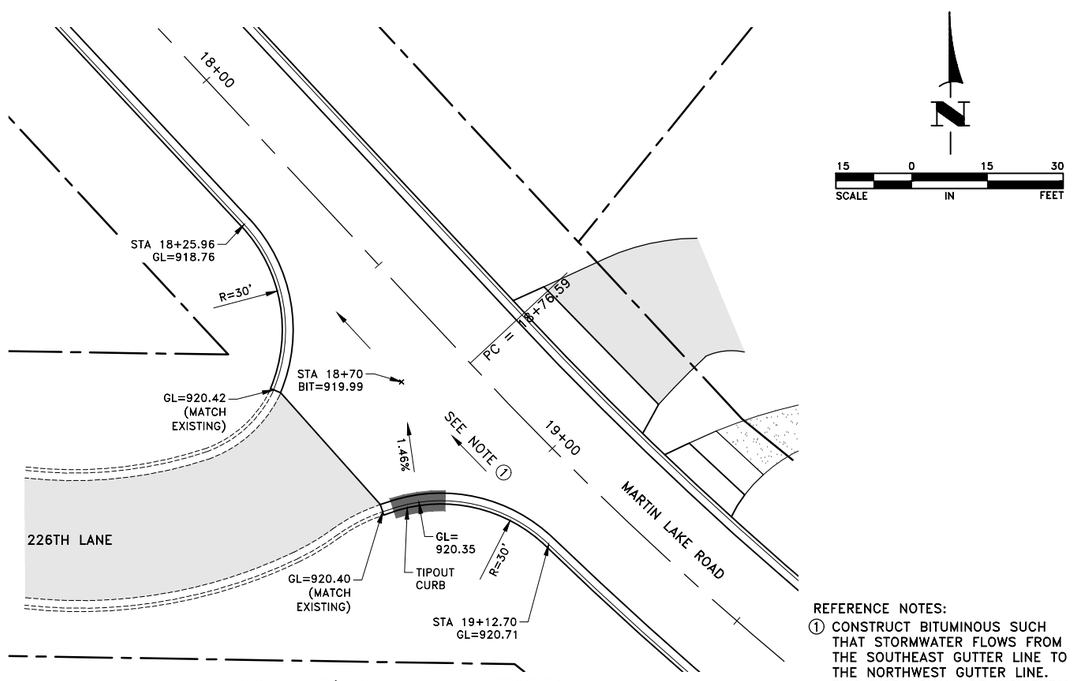
Dec 04, 2025 – 1:19pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_INTERSECTIONS.dwg



DANUBE STREET/227TH AVENUE INTERSECTION



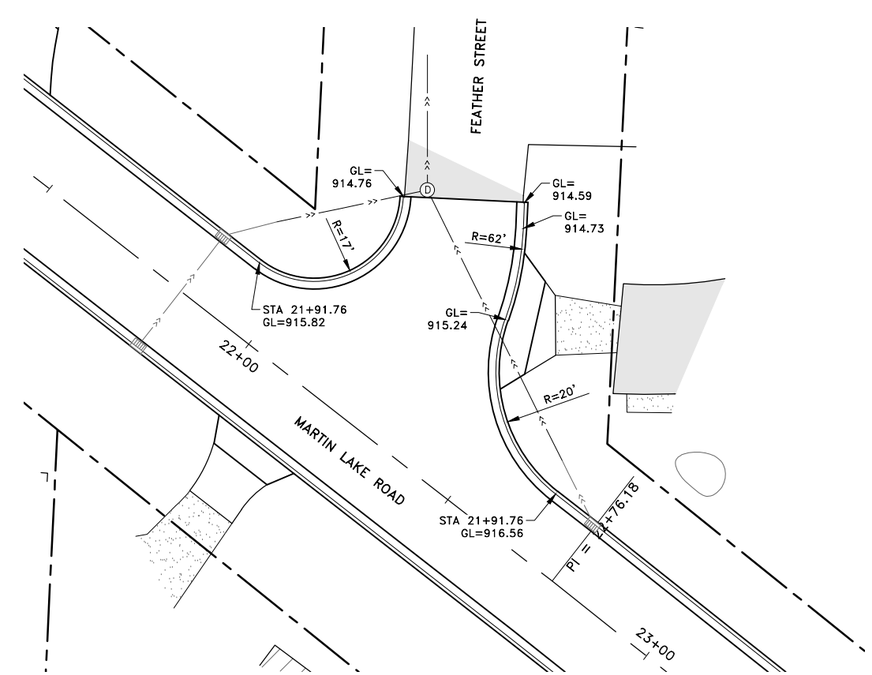
ELBE STREET/MARTIN LAKE ROAD/227TH AVENUE INTERSECTION



226TH LANE/MARTIN LAKE ROAD INTERSECTION

REFERENCE NOTES:

1. CONSTRUCT BITUMINOUS SUCH THAT STORMWATER FLOWS FROM THE SOUTHEAST GUTTER LINE TO THE NORTHWEST GUTTER LINE. THIS WORK SHALL BE INCIDENTAL.



FEATHER STREET/MARTIN LAKE ROAD INTERSECTION

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

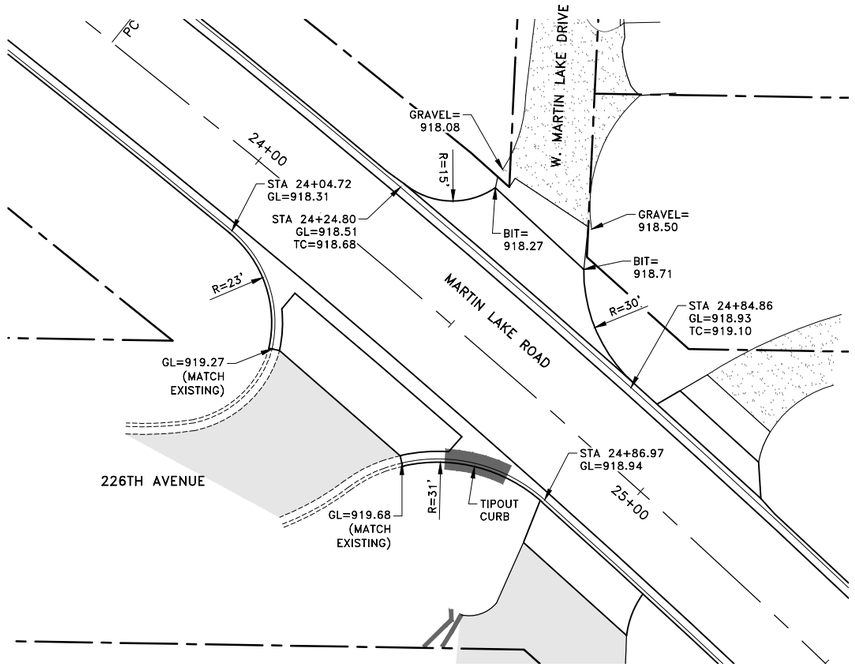
Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

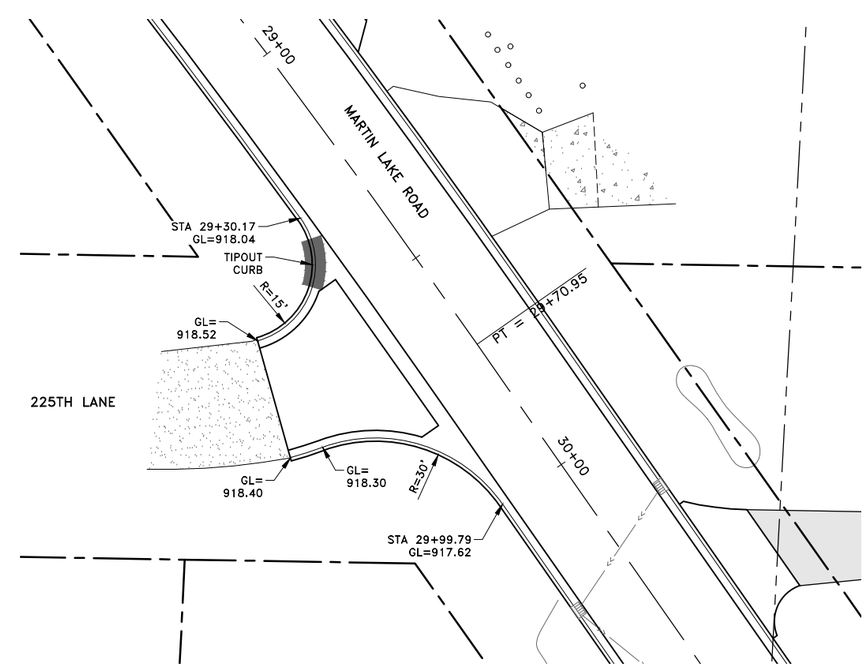
INTERSECTION CONSTRUCTION DETAILS

LINWOOD TOWNSHIP, MINNESOTA

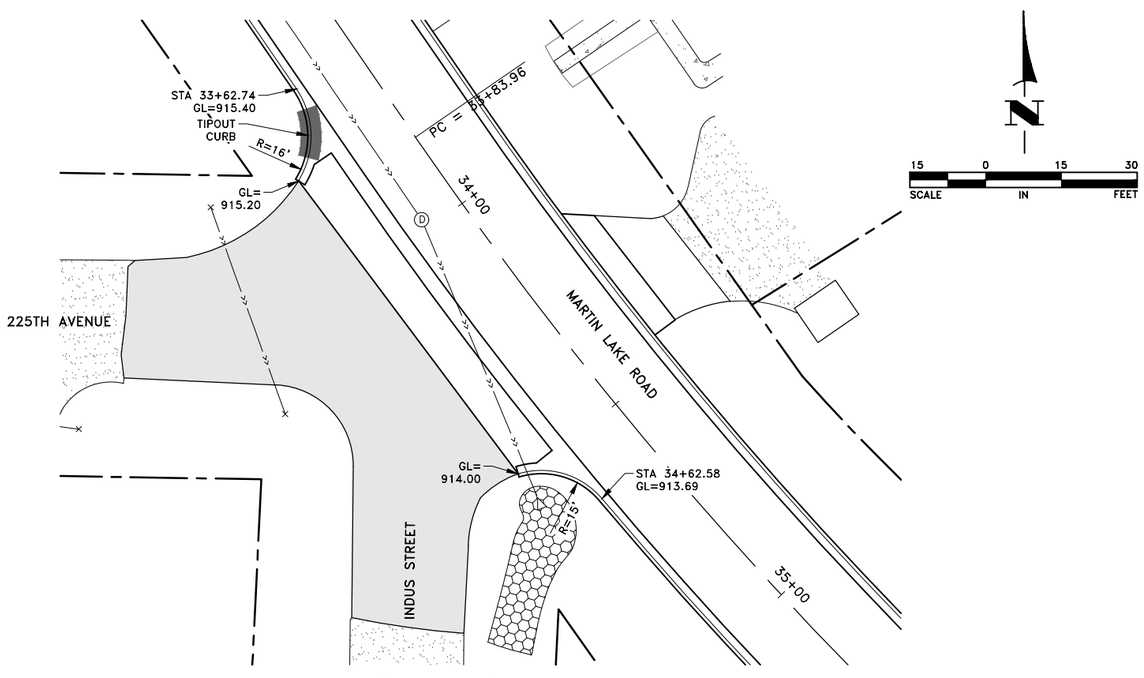
LW378



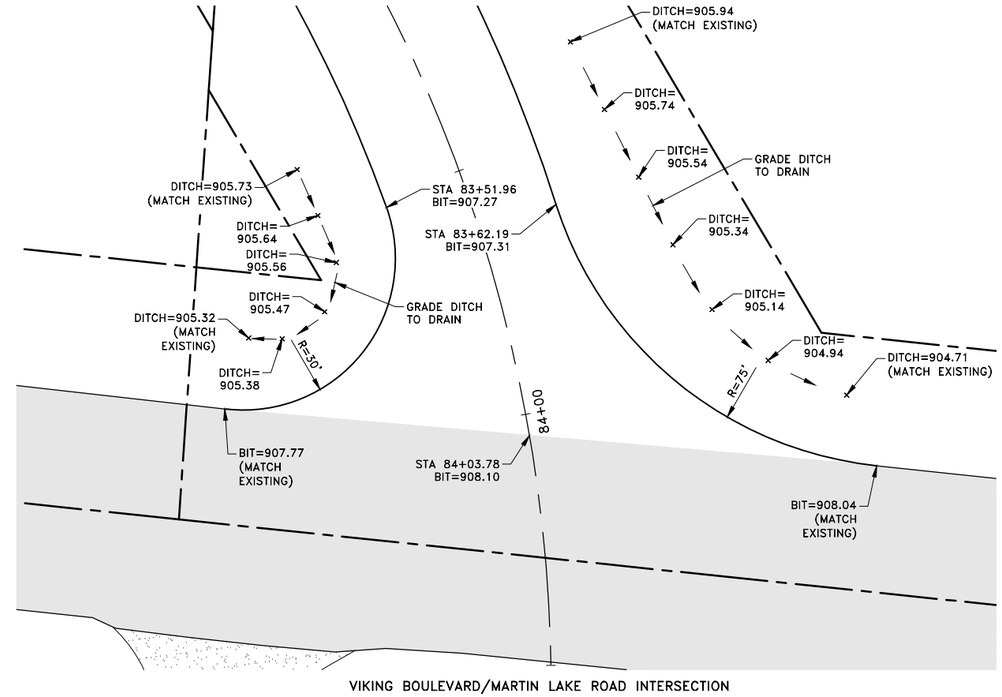
226TH AVENUE/WEST MARTIN LAKE DRIVE/MARTIN LAKE ROAD INTERSECTION



225TH LANE/MARTIN LAKE ROAD INTERSECTION



225TH AVENUE/INDUS STREET/MARTIN LAKE ROAD INTERSECTION



VIKING BOULEVARD/MARTIN LAKE ROAD INTERSECTION

DATE	REVISION

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

Date 12/1/25 CRAIG J. JOCHUM, P.E. Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

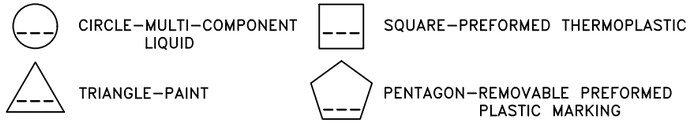
Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

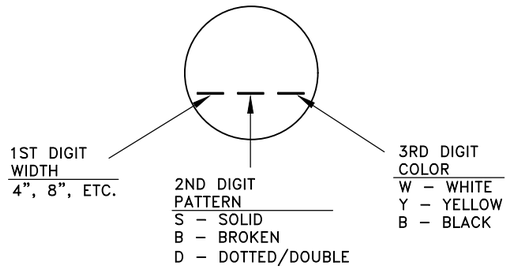
MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

INTERSECTION CONSTRUCTION DETAILS

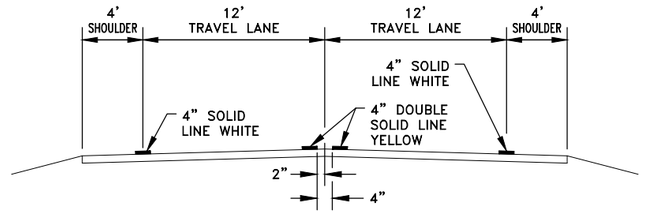
LINWOOD TOWNSHIP, MINNESOTA

STRIPING KEY

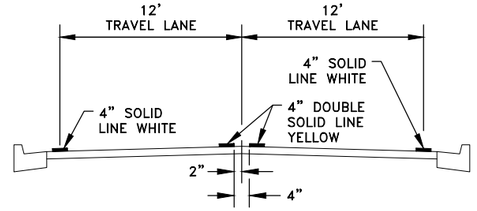




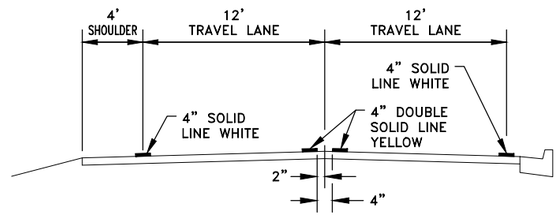
EXAMPLE: (4SW) = 4" SOLID LINE WHITE–MULTI–COMPONENT LIQUID



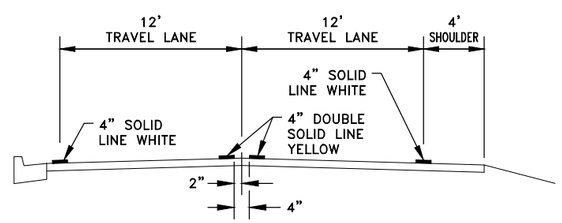
1/55 TYPICAL STRIPING SECTION
0+23 TO 13+26.30, 41+25 TO 73+00 AND 80+90 TO 84+05



2/55 TYPICAL STRIPING SECTION
13+26.30 TO 36+62 AND 73+80 TO 76+68



3/55 TYPICAL STRIPING SECTION
36+62 TO 41+25



4/55 TYPICAL STRIPING SECTION
73+00 TO 73+80 AND 76+68 TO 80+90

PERMANENT PAVEMENT MARKING GENERAL NOTES AND GUIDELINES:

1. THE ENGINEER'S INVOLVEMENT IN THE APPLICATION OF THE MATERIAL SHALL BE LIMITED TO FIELD CONSULTATION AND INSPECTION. THE CONTRACTOR 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.
2. 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.
3. A TOLERANCE OF 1/4 INCH UNDER OR 1/4 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.
4. 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. THIS WORK SHALL BE INCIDENTAL.
5. THE MULTI–COMPONENT LIQUID MARKING APPLICATION SHALL IMMEDIATELY FOLLOW THE PAVEMENT CLEANING. GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE MULTI–COMPONENT LIQUID LINE TO PROVIDE AN IMMEDIATE NO TRACK SYSTEM.
6. OPERATIONS SHALL BE CONDUCTED ONLY WHEN THE ROAD PAVEMENT SURFACE TEMPERATURES ARE 50 DEGREES (°F) OR GREATER.
7. PERMANENT PAVEMENT MARKINGS SHALL NOT BE PLACED OVER TEMPORARY TAPE MARKINGS.

S.A.P. 002–592–001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763–427–5860 FAX 763–427–0520
www.hakanson–anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

STRIPING NOTES AND DETAILS

LINWOOD TOWNSHIP, MINNESOTA

LW378

Dec 04, 2025 – 1:19pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_STRIPING.dwg

SIGN LEGEND	SIGN NUMBER	SIGN SIZE (INCHES)	SIGN COLOR	ESTIMATED QUANTITY	REFERENCE NOTES
ANOKA 85 COUNTY	M1-6M	24X24	WHITE AND YELLOW ON BLUE	2	
JCT	M2-1	21X15	WHITE ON BLUE	1	④
↔	M6-4	21X15	WHITE ON BLUE	1	④
STOP	R1-1	30X30	WHITE ON RED	13	
ALL WAY	R1-3P	18X6	WHITE ON RED	2	⑤
SPEED LIMIT 10 / SPEED LIMIT 30 / SPEED LIMIT 40	R2-1	24X30	BLACK ON WHITE	8	⑥
← ONE WAY	R6-1L	36X12	BLACK ON WHITE	1	⑦
ONE WAY →	R6-1R	36X12	BLACK ON WHITE	1	⑦
	W1-1L	30X30	BLACK ON YELLOW	2	
	W1-1R	30X30	BLACK ON YELLOW	1	
	W1-2L	30X30	BLACK ON YELLOW	2	
	W1-2R	30X30	BLACK ON YELLOW	2	
	W1-8	18X24	BLACK ON YELLOW	13	
	W3-1	30X30	BALCK AND RED ON YELLOW	2	
SPEED LIMIT 30	W3-5	36X36	BLACK ON YELLOW	1	
NO PASSING ZONE	W14-3	64X64X48	BLACK ON YELLOW	1	

SIGN LEGEND	SIGN NUMBER	SIGN SIZE (INCHES)	SIGN COLOR	ESTIMATED QUANTITY	REFERENCE NOTES
	X3-5	6X12	BLACK ON YELLOW	8	
	X4-1	8X24	BLACK ON YELLOW	2	
	X4-3	9 HIGH 6 DIA.	BLACK ON YELLOW	7	⑧⑨
WATCH FOR CHILDREN		30X30	BLACK ON YELLOW	1	
227TH AVE NE		44X9	WHITE ON GREEN	14	①②③
TYPO CREEK DR NE		48X9	WHITE ON GREEN	2	①②③
AMAZON ST NE		46X9	WHITE ON GREEN	2	①②③
BOYNE ST NE		41X9	WHITE ON GREEN	2	①②③
CONGO ST NE		41X9	WHITE ON GREEN	2	①②③
DANUBE ST NE		45X9	WHITE ON GREEN	2	①②③
ELBE ST NE		36X9	WHITE ON GREEN	2	①②③
MARTIN LAKE RD NE		48X9	WHITE ON GREEN	16	①②③
FEATHER ST NE		46X9	WHITE ON GREEN	2	①②③
226TH AVE NE		44X9	WHITE ON GREEN	4	①②③
W MARTIN LAKE DR NE		48X9	WHITE ON GREEN	2	①②③
225TH LN NE		40X9	WHITE ON GREEN	2	①②③
225TH AVE NE		44X9	WHITE ON GREEN	2	①②③
INDUS ST NE		39X9	WHITE ON GREEN	2	①②③
E MARTIN LAKE DR NE		48X9	WHITE ON GREEN	2	①②③
VIKING BLVD NE		48X9	WHITE ON GREEN	2	①②③

GENERAL SIGN NOTES:

1. ALL SIGN MATERIALS SHALL MEET THE REQUIREMENTS OF MN/DOT SPECIFICATIONS 2564 AND 3352.
2. SIGNS SHALL BE PAID PER ITEM 2564-SIGN PANEL, UNLESS NOTED.
3. ALL STREET NAME SIGNS SHALL HAVE 6", SERIES "B" LETTERING.
4. SEE SHEETS #-## FOR ADDITIONAL SIGN NOTES AND DETAILS.
5. SHOP DRAWINGS FOR STREET NAME SIGNS SHALL BE SUBMITTED FOR REVIEW.

REFERENCE NOTES:

① MOUNTING BRACKETS SHALL BE E-450 FOURWAY BRACKET OR EQUAL.

② MOUNTING POSTS SHALL BE 2.5" O.D. BY 10' GALVANIZED TUBE. POSTS SHALL BE IMBEDDED IN A 12" DIAMETER BY 24" DEEP CONCRETE FOOTING. CONCRETE MIX 3G52 SHALL BE USED FOR THE FOOTING.

③ SIGN PLATES SHALL BE SINGLE FACED CONSTRUCTED OF 0.100 ALUMINUM TYPE XI SHEETING. SIGN SHALL BE PAID PER ITEM 2564-SIGN PANEL SPECIAL.

④ PLACE SIGN ON THE SAME POST AS THE COUNTY ROAD SIGN (M1-6M).

⑤ PLACE SIGN ON THE SAME POST AS THE STOP SIGNS (R1-1) AT THE INTERSECTION OF TYPO CREEK DRIVE AND 227TH AVENUE.

⑥ THE 10 MPH SIGN SHALL BE PLACED ON THE SAME POST AS THE W. MARTIN LAKE DR NE, MARTIN LAKE RD NE AND 226TH AVE NE SIGNS.

⑦ ONE WAYS SIGNS SHALL BE PLACED ON THE SAME POST, BACK-TO-BACK.

⑧ PLACE A SIGN ON THE SAME POST AS THE STOP SIGN (R1-1) AT THE INTERSECTION OF TYPO CREEK DRIVE AND 227TH AVENUE AND THE INTERSECTION OF VIKING BOULEVARD AND MARTIN LAKE ROAD.

⑨ SIGN SHALL BE PAID PER ITEM 2564-DELINEATOR/MARKER.

S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

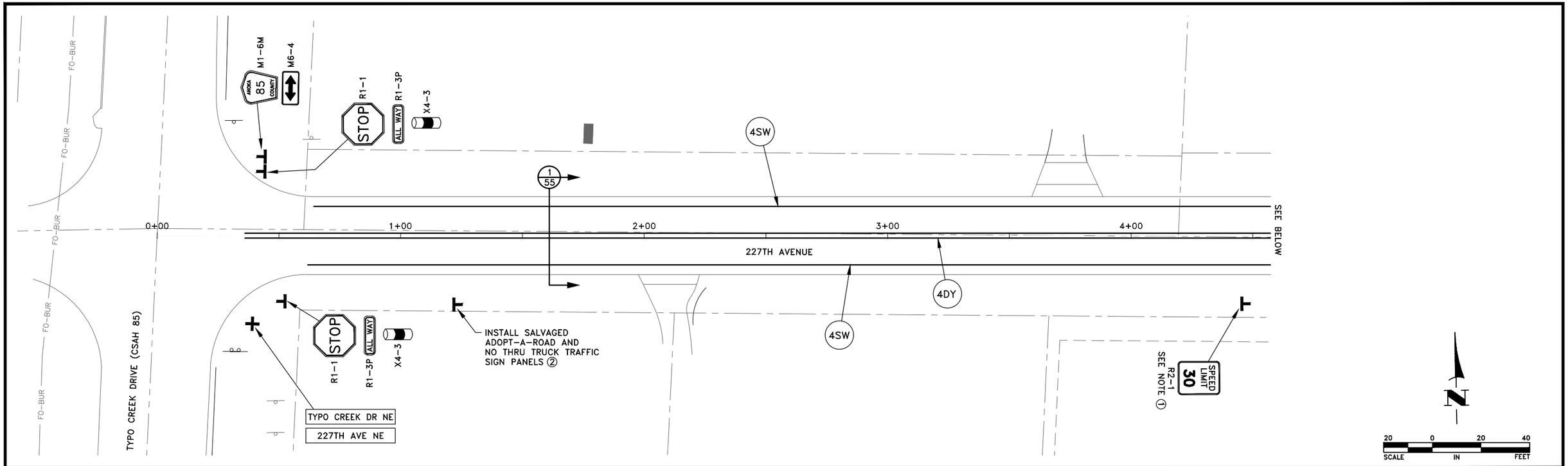
Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

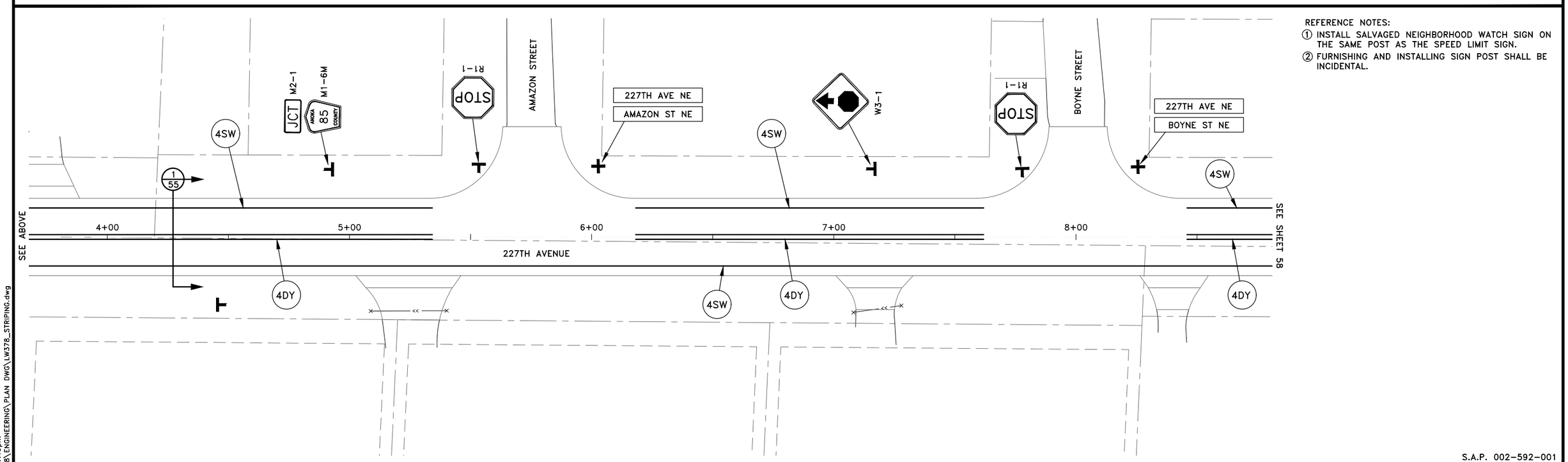
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

SIGN SUMMARY AND NOTES

LINWOOD TOWNSHIP, MINNESOTA

LW378





REFERENCE NOTES:

① INSTALL SALVAGED NEIGHBORHOOD WATCH SIGN ON THE SAME POST AS THE SPEED LIMIT SIGN.

② FURNISHING AND INSTALLING SIGN POST SHALL BE INCIDENTAL.

S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

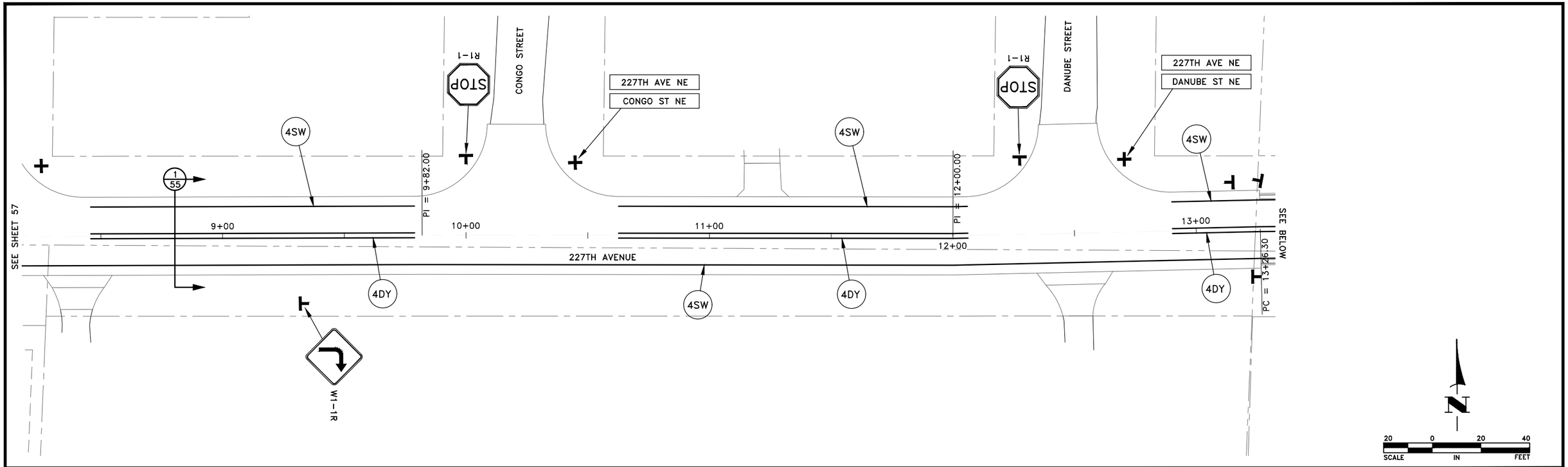
SIGNAGE AND STRIPING PLAN

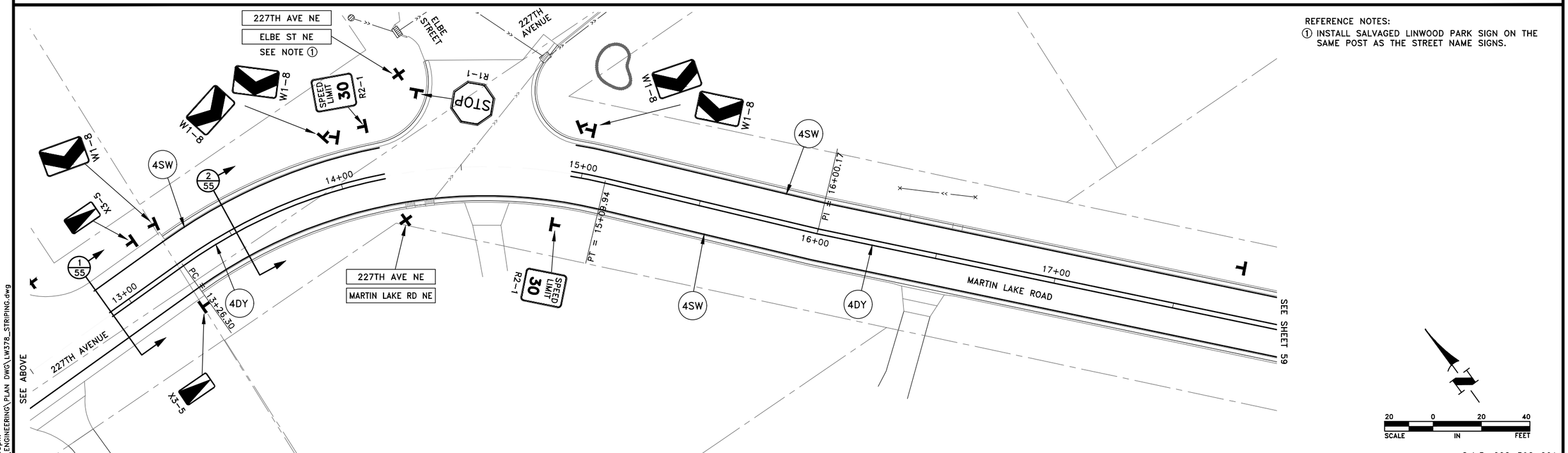
227TH AVENUE
LINWOOD TOWNSHIP, MINNESOTA

SHEET 57 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:19pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_STRIPING.dwg





REFERENCE NOTES:

① INSTALL SALVAGED LINWOOD PARK SIGN ON THE SAME POST AS THE STREET NAME SIGNS.

S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

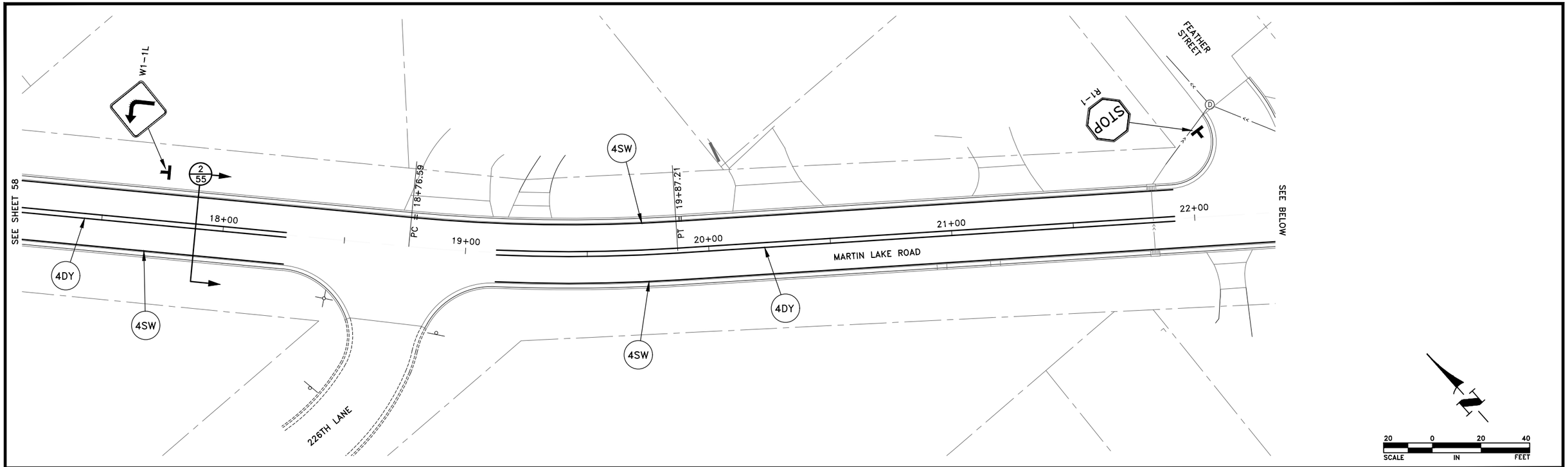
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

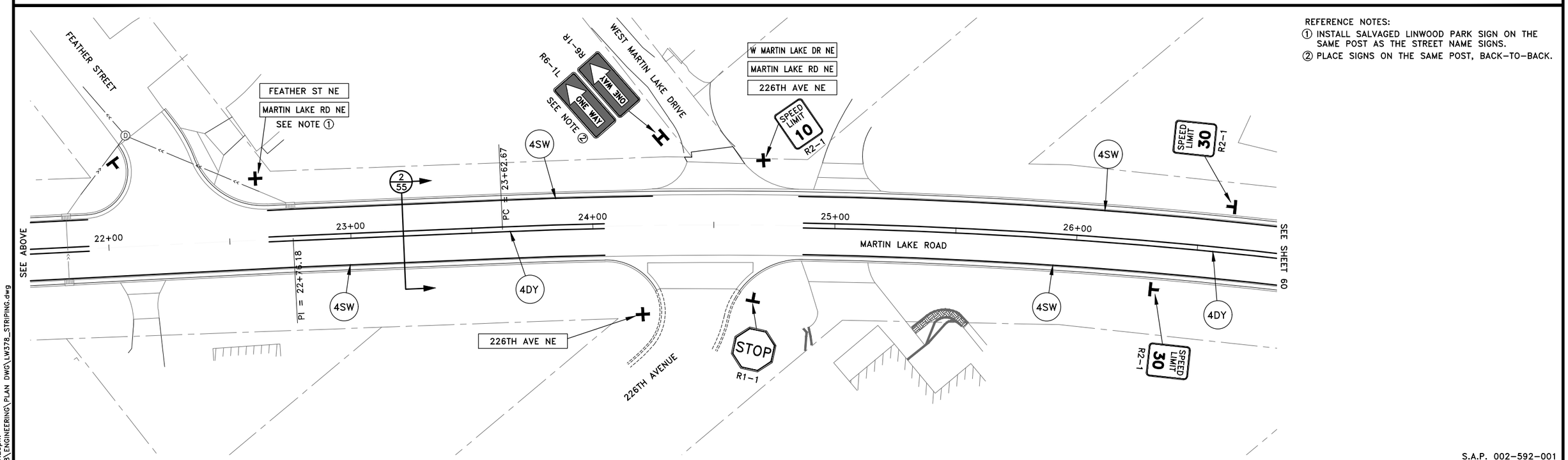
SIGNAGE AND STRIPING PLAN

227TH AVENUE AND MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

LW378

Dec 04, 2025 – 1:19pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_STRIPING.dwg





REFERENCE NOTES:

① INSTALL SALVAGED LINWOOD PARK SIGN ON THE SAME POST AS THE STREET NAME SIGNS.

② PLACE SIGNS ON THE SAME POST, BACK-TO-BACK.

S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

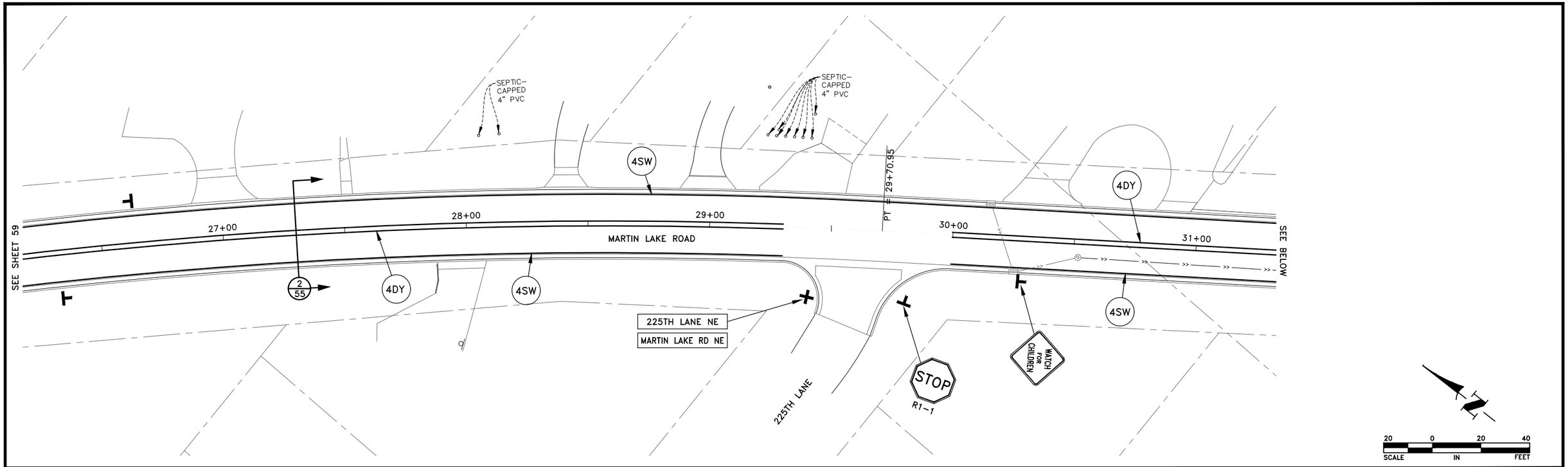
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

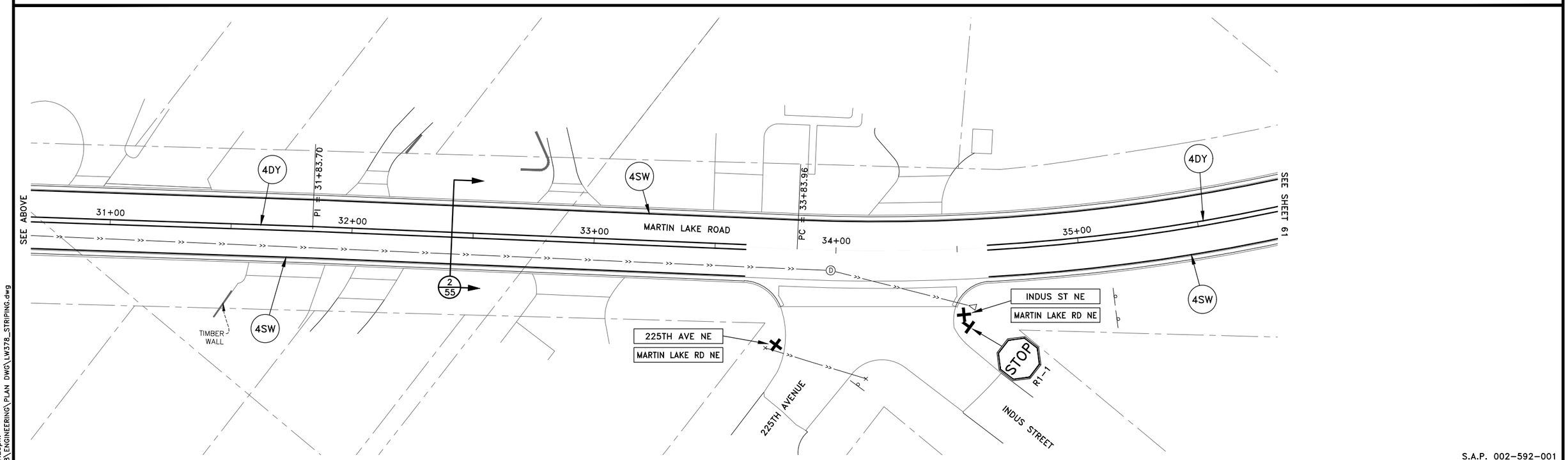
SIGNAGE AND STRIPING PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

LW378

Dec 04, 2025 – 1:20pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_STRIPING.dwg





S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

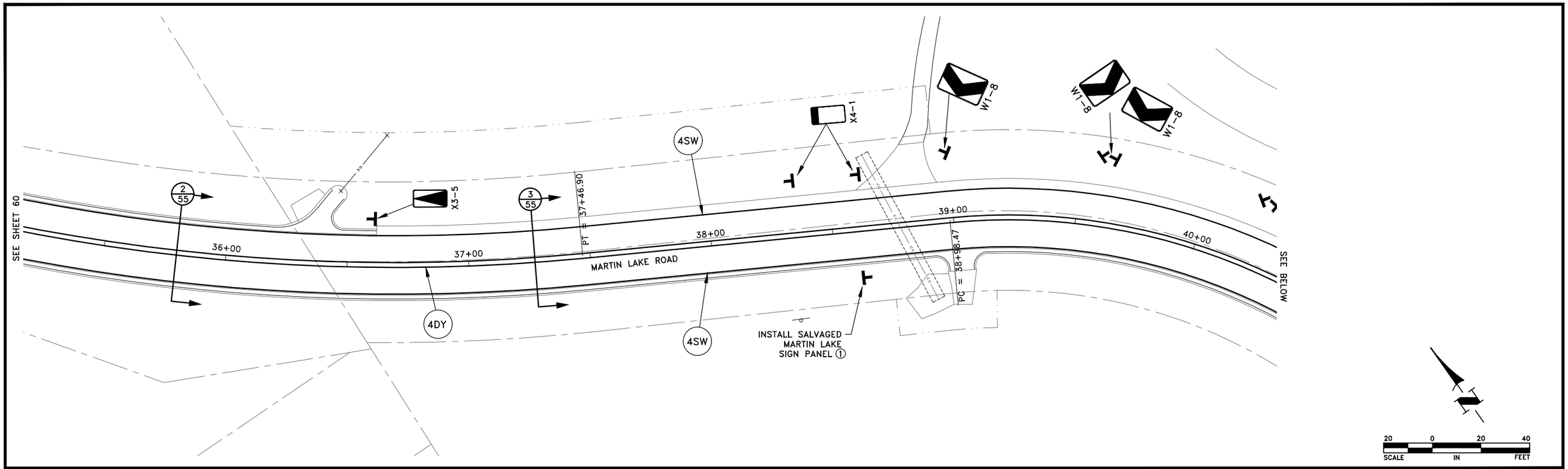
SIGNAGE AND STRIPING PLAN

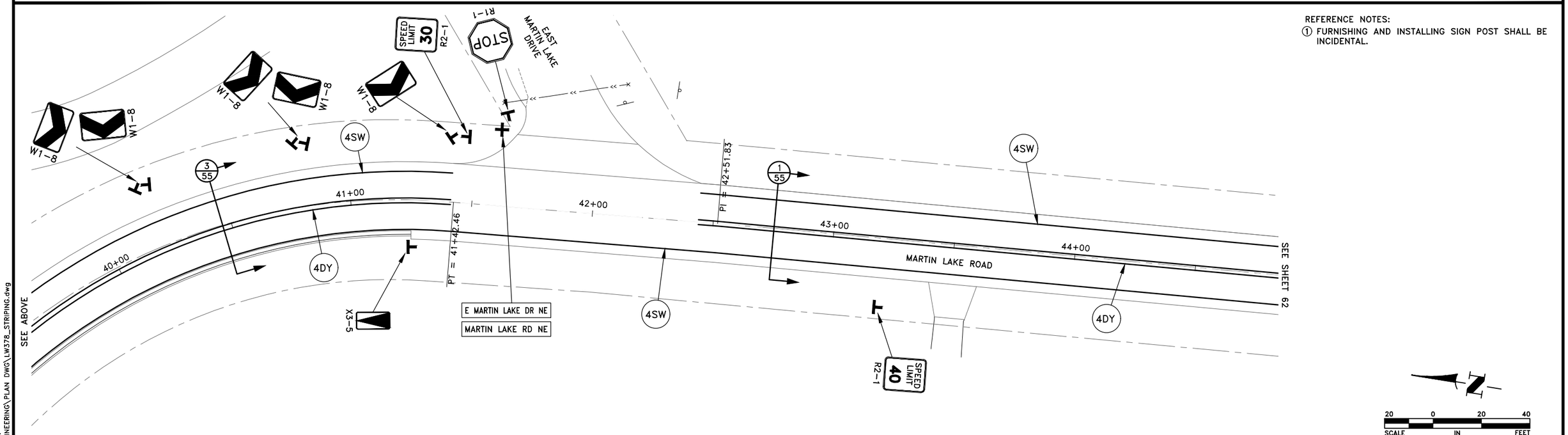
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 60 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:20pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_STRIPING.dwg





REFERENCE NOTES:

① FURNISHING AND INSTALLING SIGN POST SHALL BE INCIDENTAL.

S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

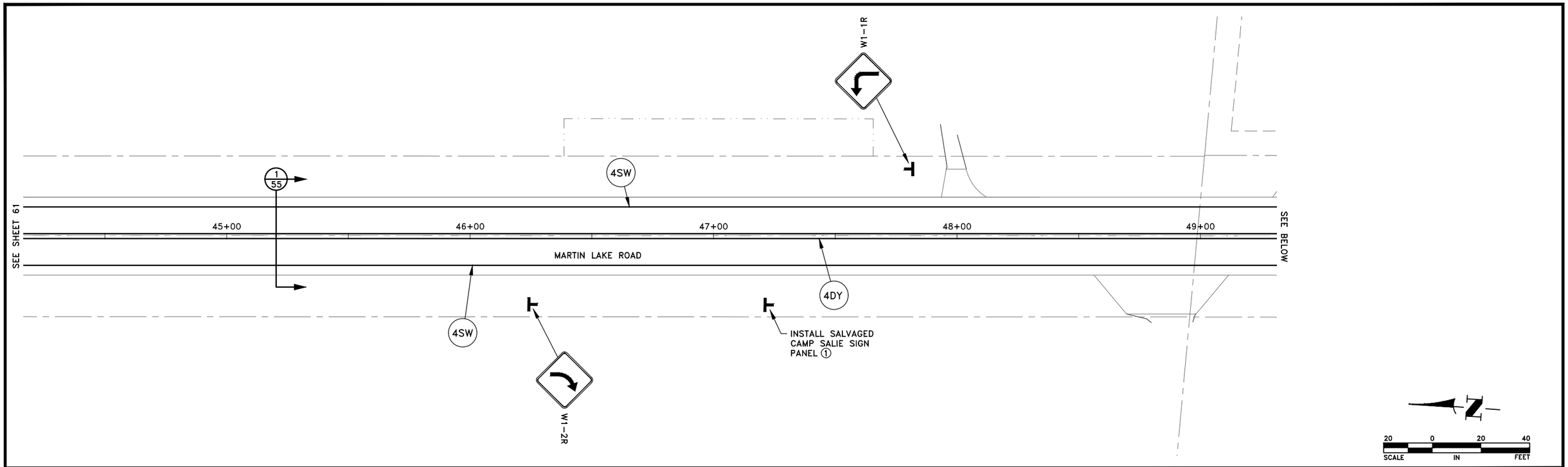
SIGNAGE AND STRIPING PLAN

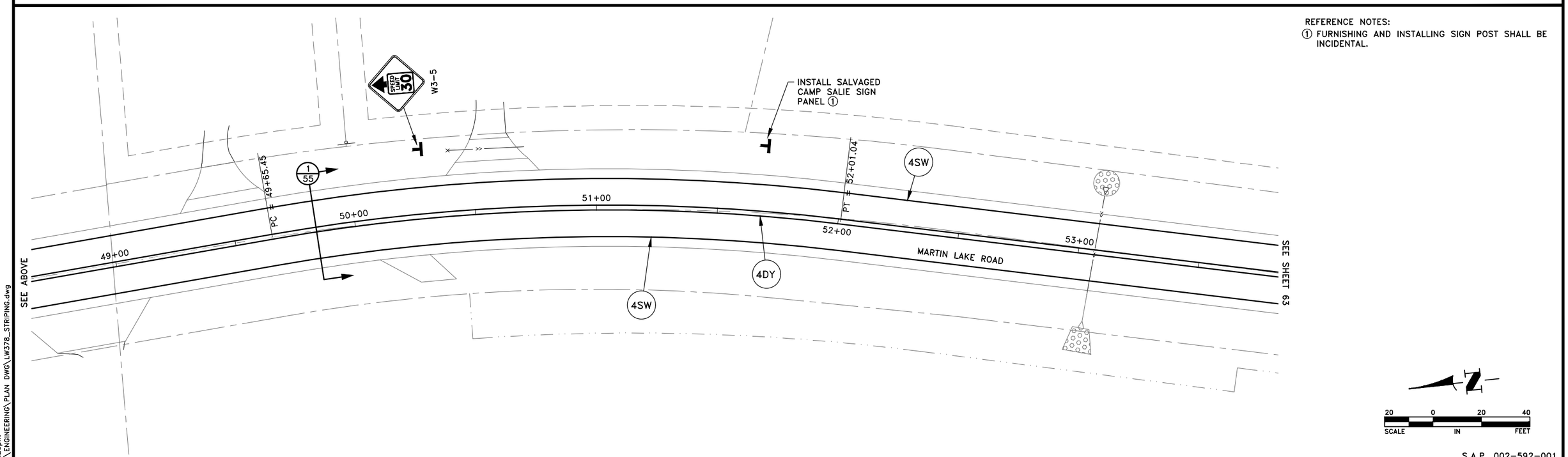
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 61 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:20pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_STRIPING.dwg





S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

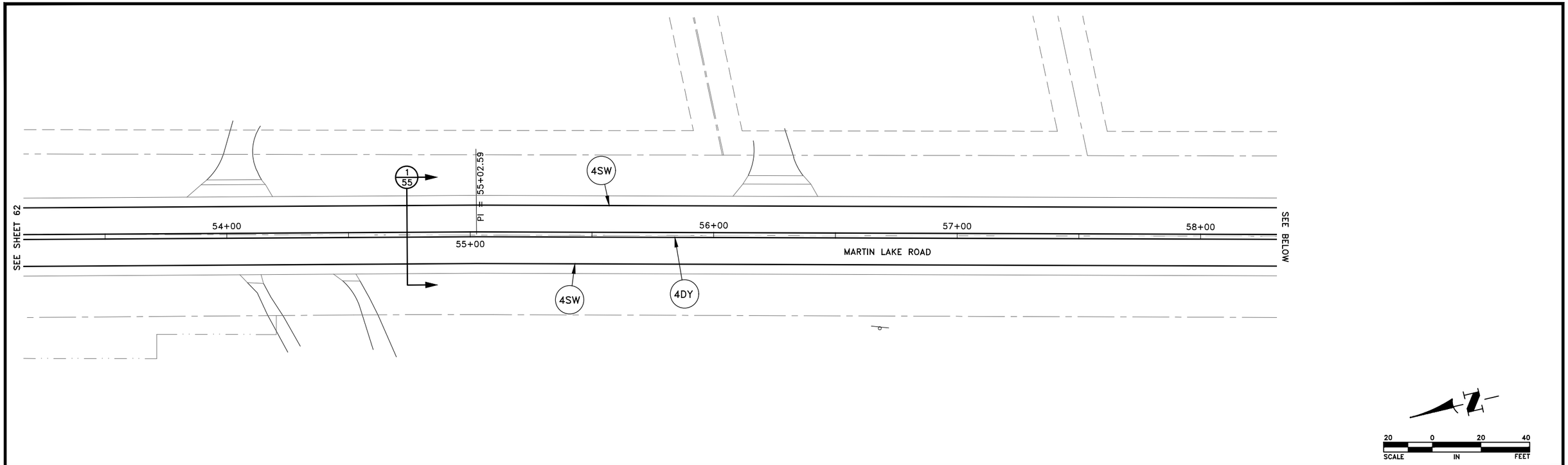
SIGNAGE AND STRIPING PLAN

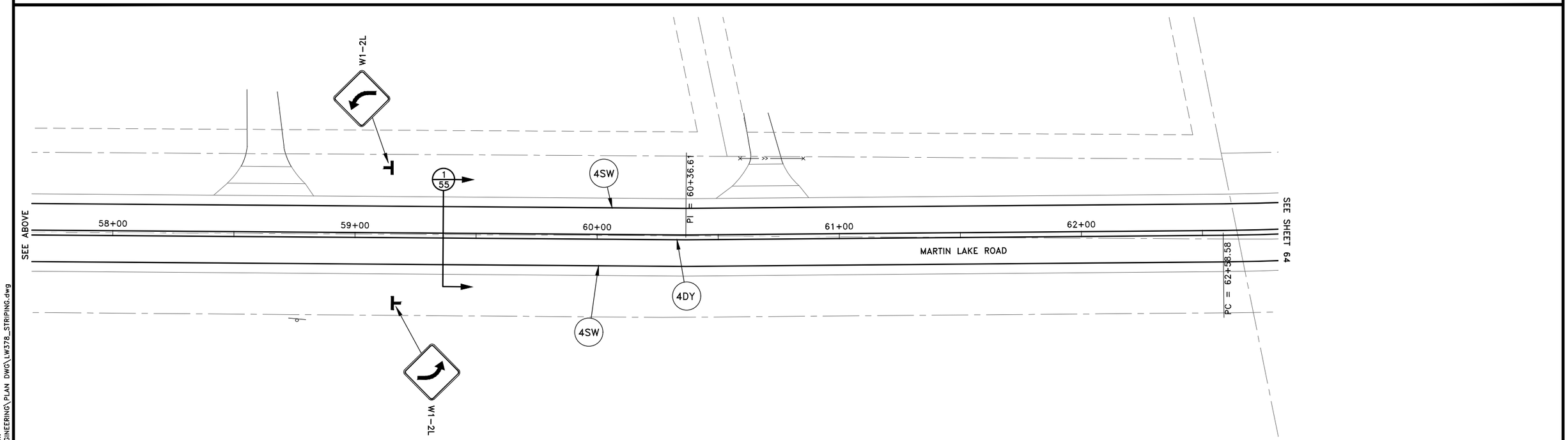
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 62 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:20pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_STRIPING.dwg





S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

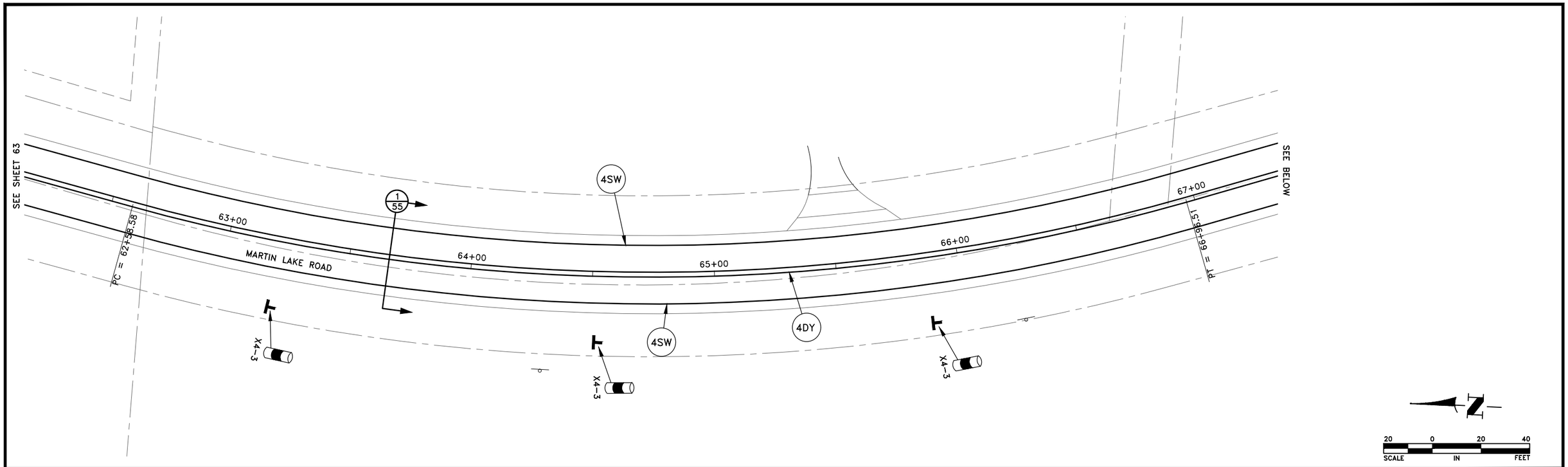
SIGNAGE AND STRIPING PLAN

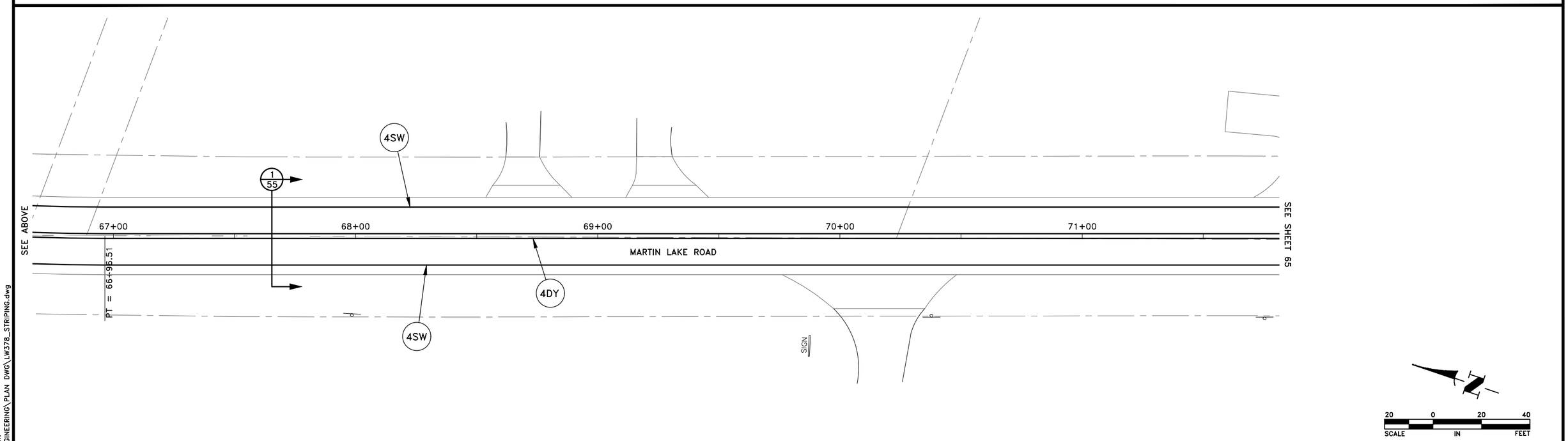
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 63 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:20pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_STRIPING.dwg





S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

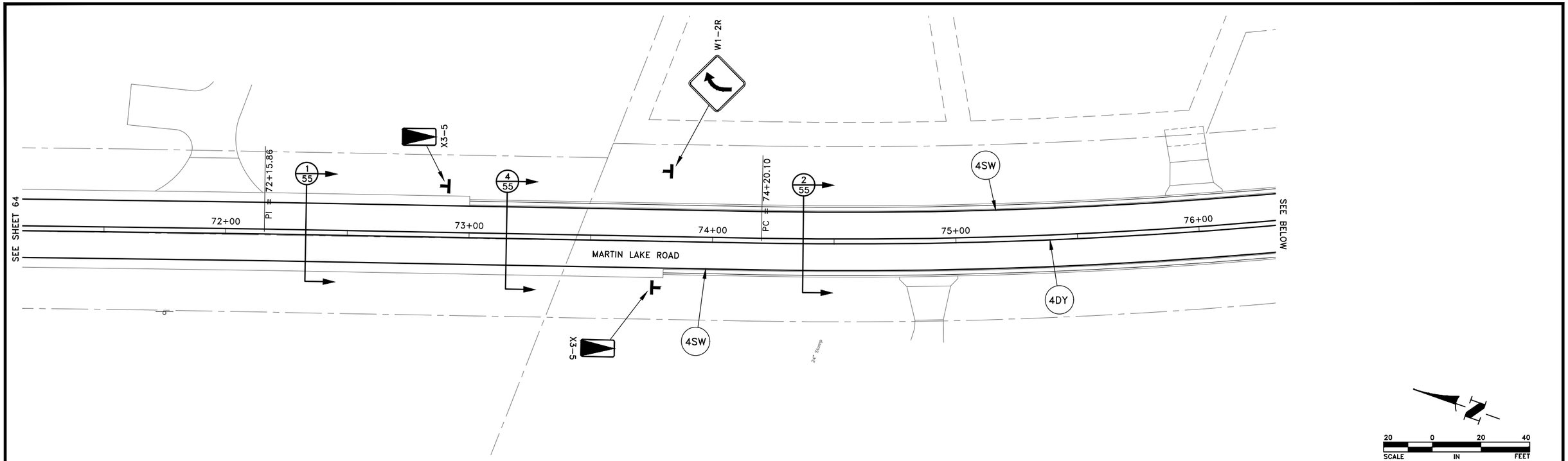
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

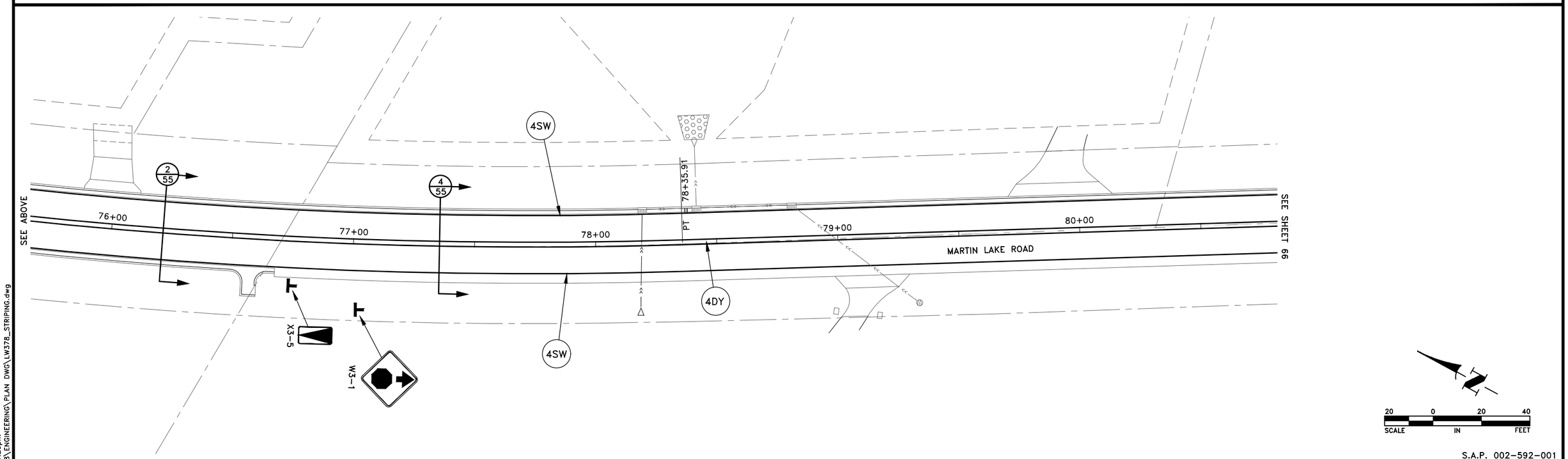
SIGNAGE AND STRIPING PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

LW378

Dec 04, 2025 – 1:20pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_STRIPING.dwg





S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

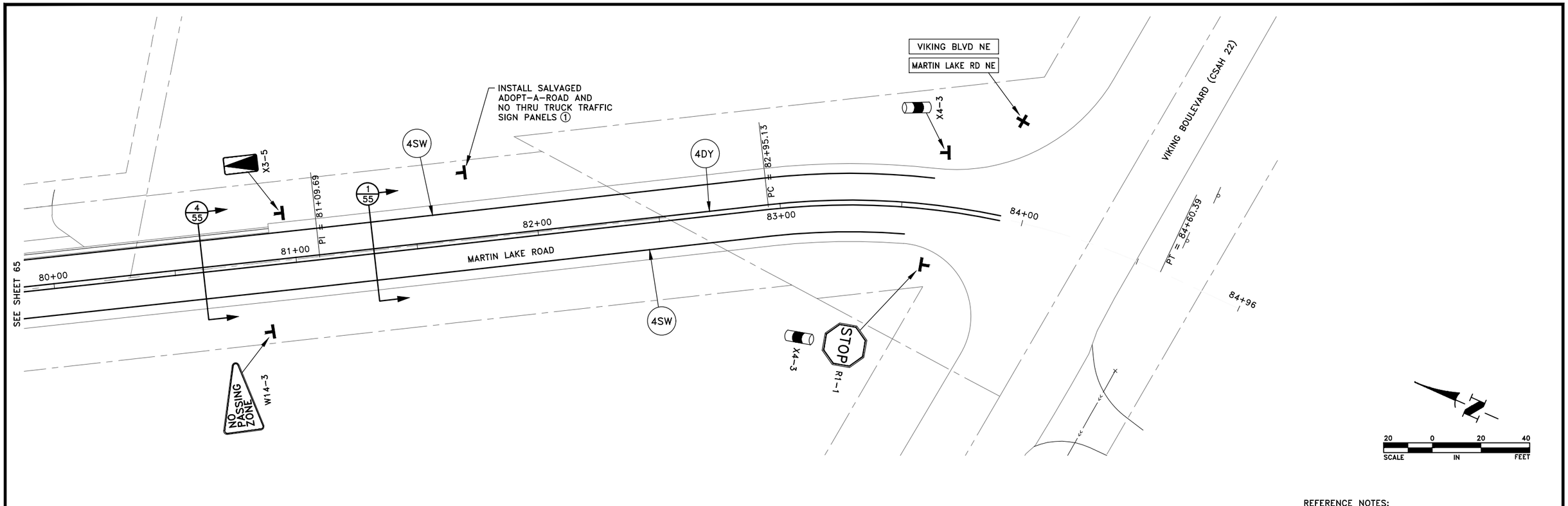
SIGNAGE AND STRIPING PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 65 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:20pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_STRIPING.dwg



REFERENCE NOTES:

① FURNISHING AND INSTALLING SIGN POST SHALL BE INCIDENTAL.

S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

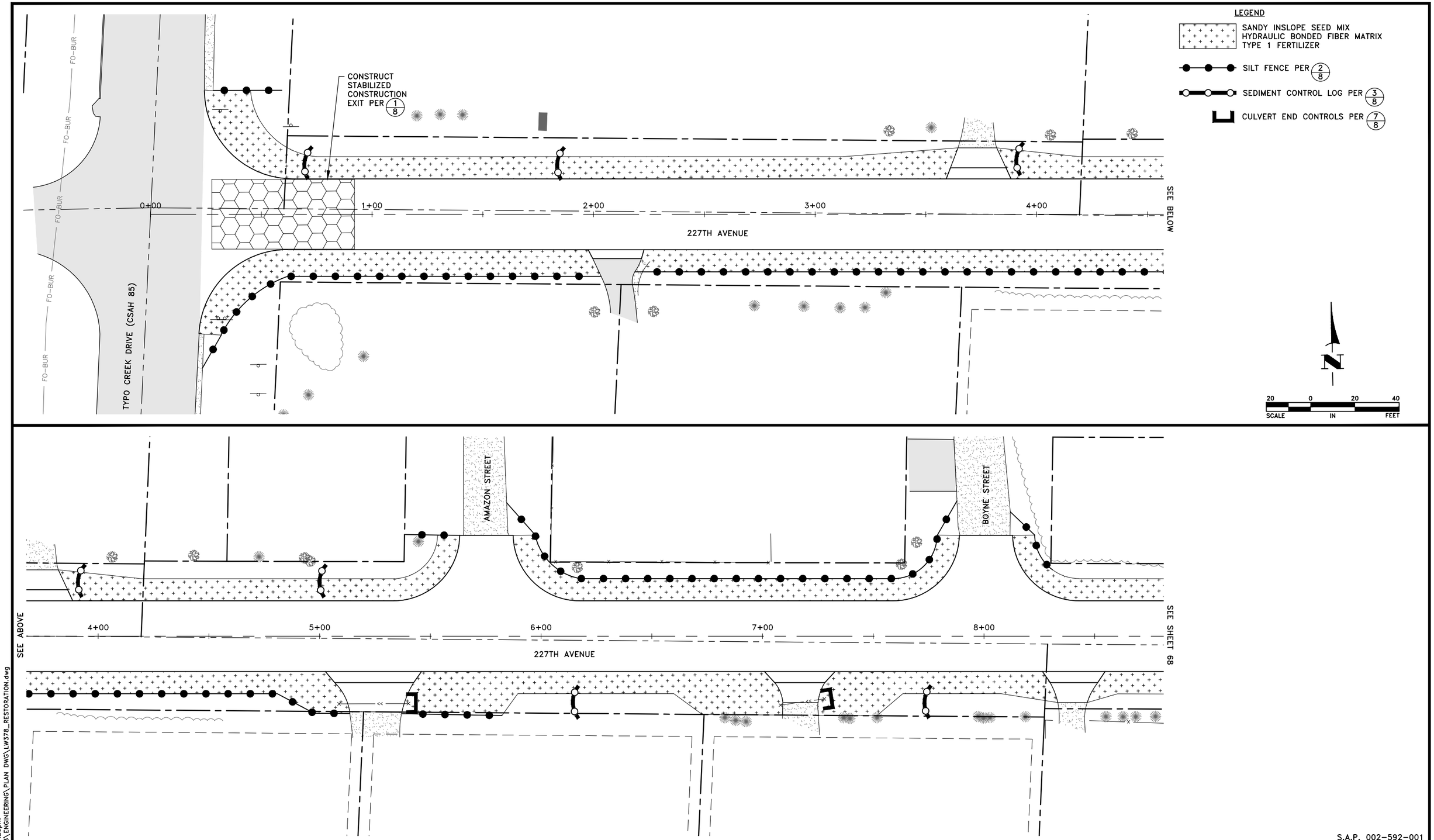
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

SIGNAGE AND STRIPING PLAN

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

LW378

Dec 04, 2025 – 1:20pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_STRIPING.dwg



S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

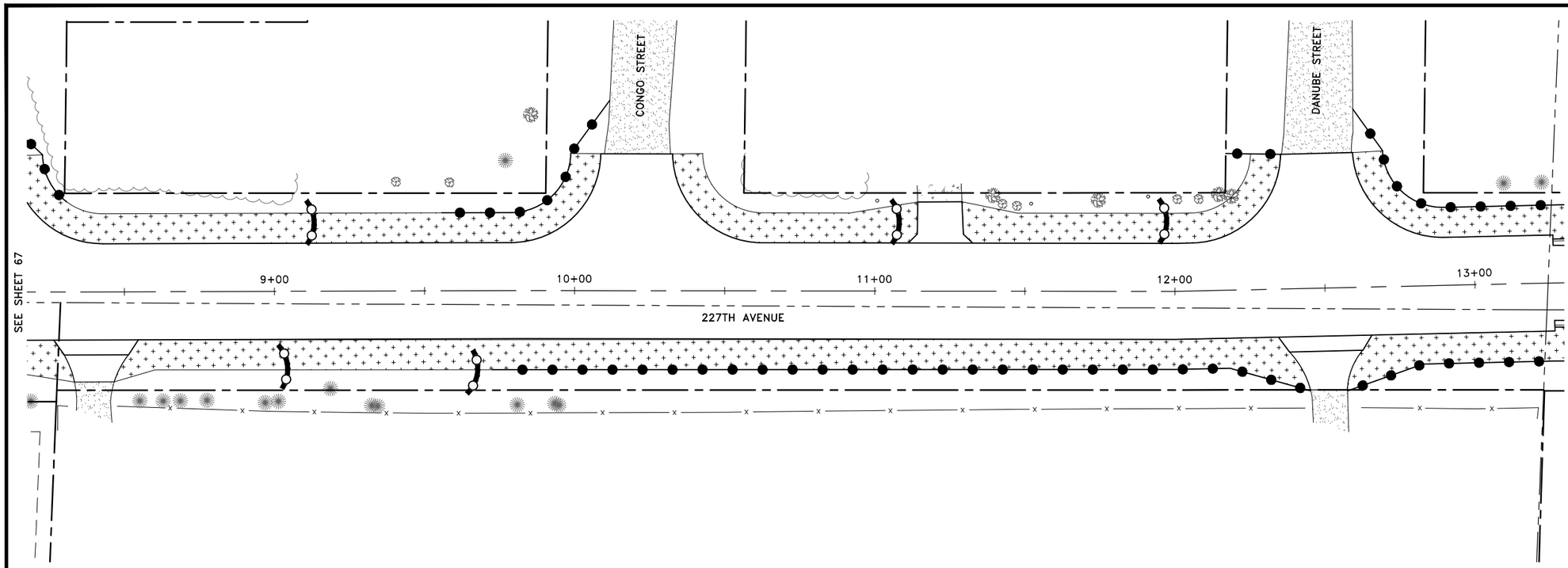
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

EROSION AND SEDIMENT CONTROL AND RESTORATION PLAN
227TH AVENUE
LINWOOD TOWNSHIP, MINNESOTA

SHEET 67 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:20pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_RESTORATION.dwg



LEGEND

SANDY INSLOPE SEED MIX
HYDRAULIC BONDED FIBER MATRIX
TYPE 1 FERTILIZER

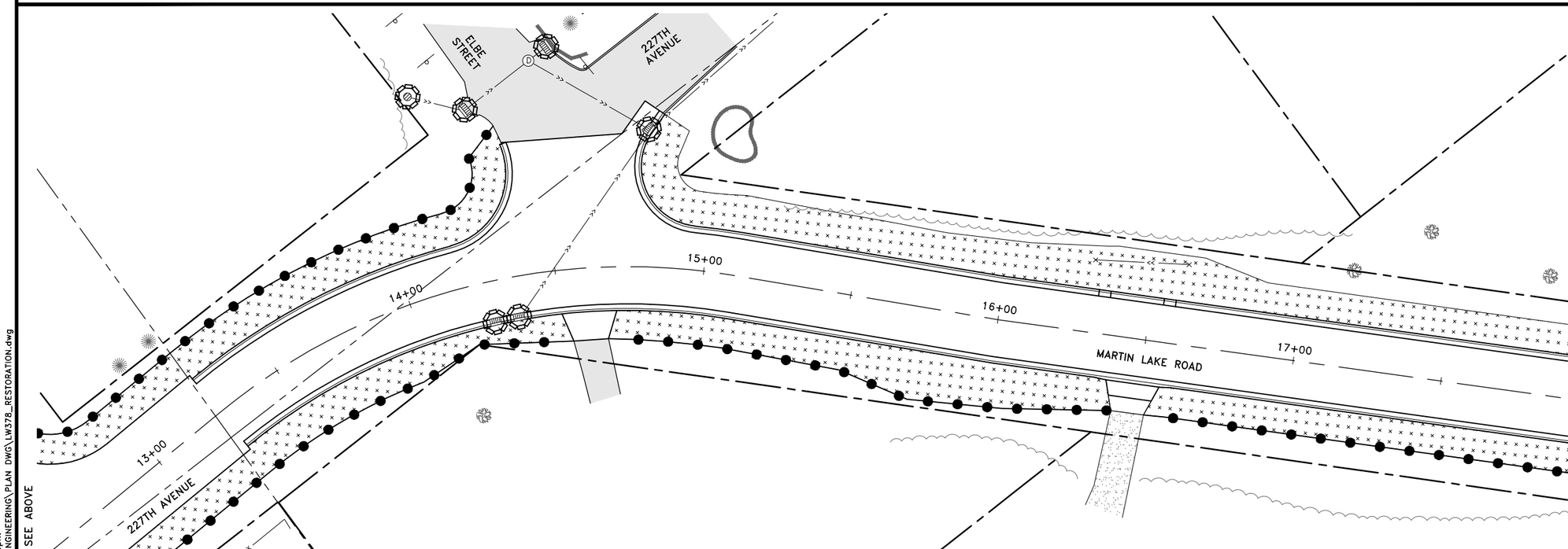
SILT FENCE PER 2/8

SEDIMENT CONTROL LOG PER 3/8

STORM DRAIN INLET PROTECTION (1)

N

20 0 20 40
SCALE IN FEET



REFERENCE NOTES:
(1) STORM DRAIN INLET PROTECTION SHALL BE PER 4/8, 5/8 AND 6/8 OR APPROVED EQUAL.

N

20 0 20 40
SCALE IN FEET

S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

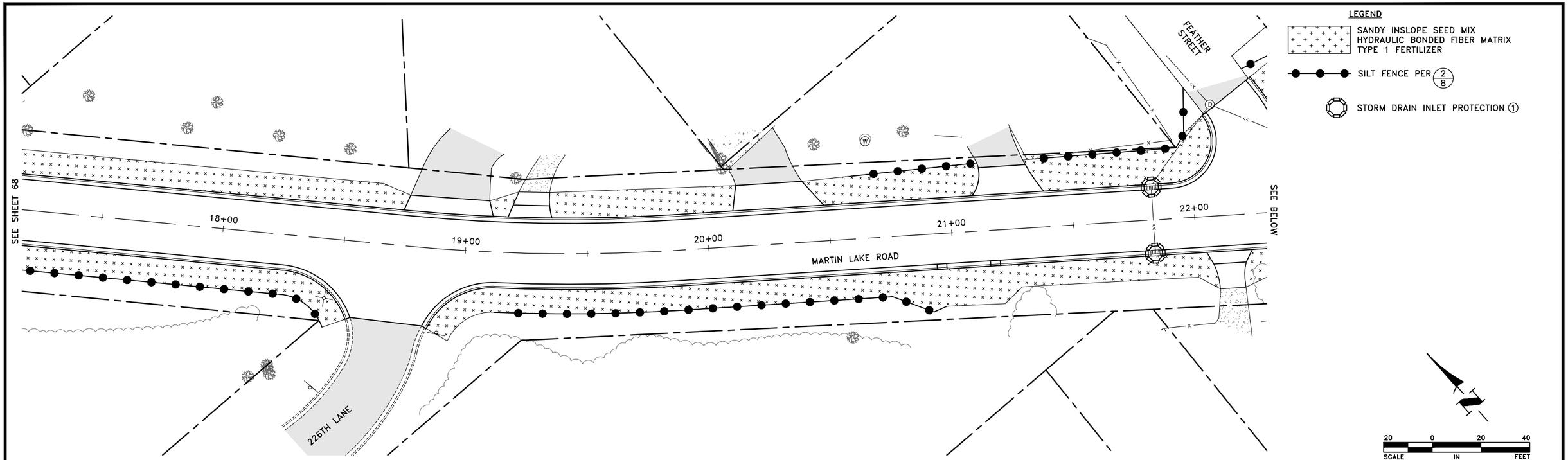
MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

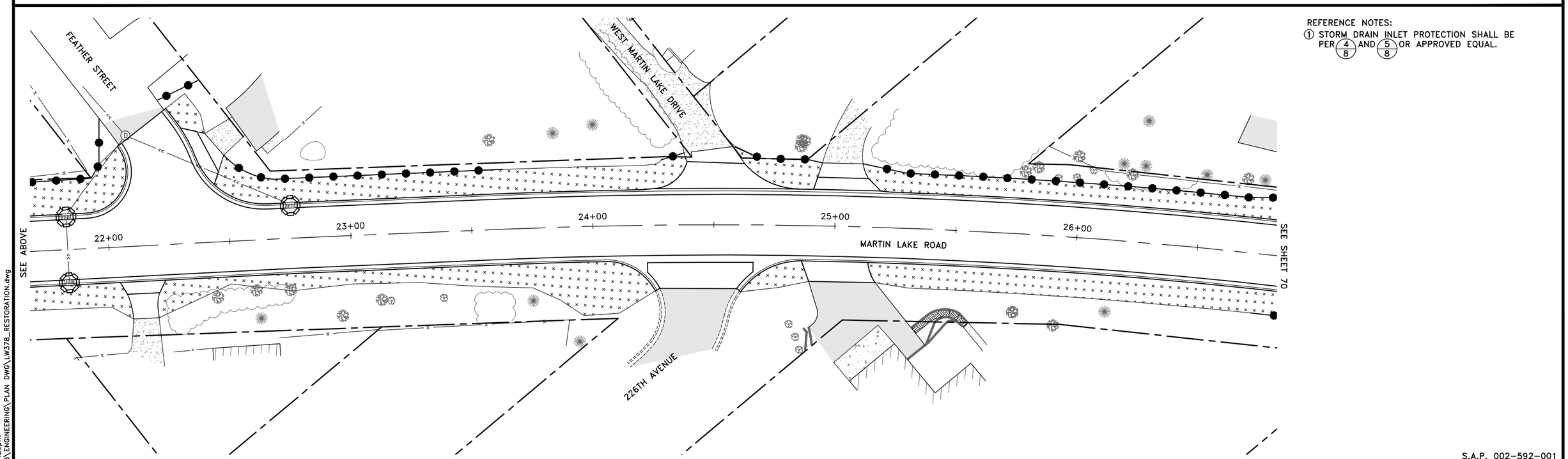
EROSION AND SEDIMENT CONTROL
AND RESTORATION PLAN
227TH AVENUE AND MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 68 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:20pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_RESTORATION.dwg





S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

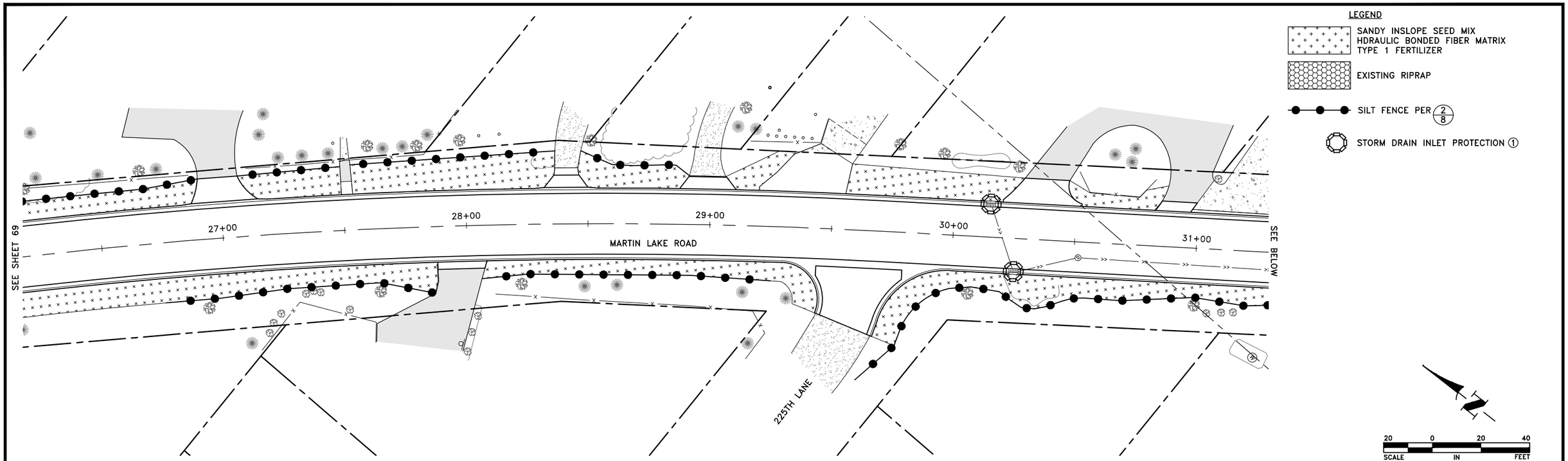
Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

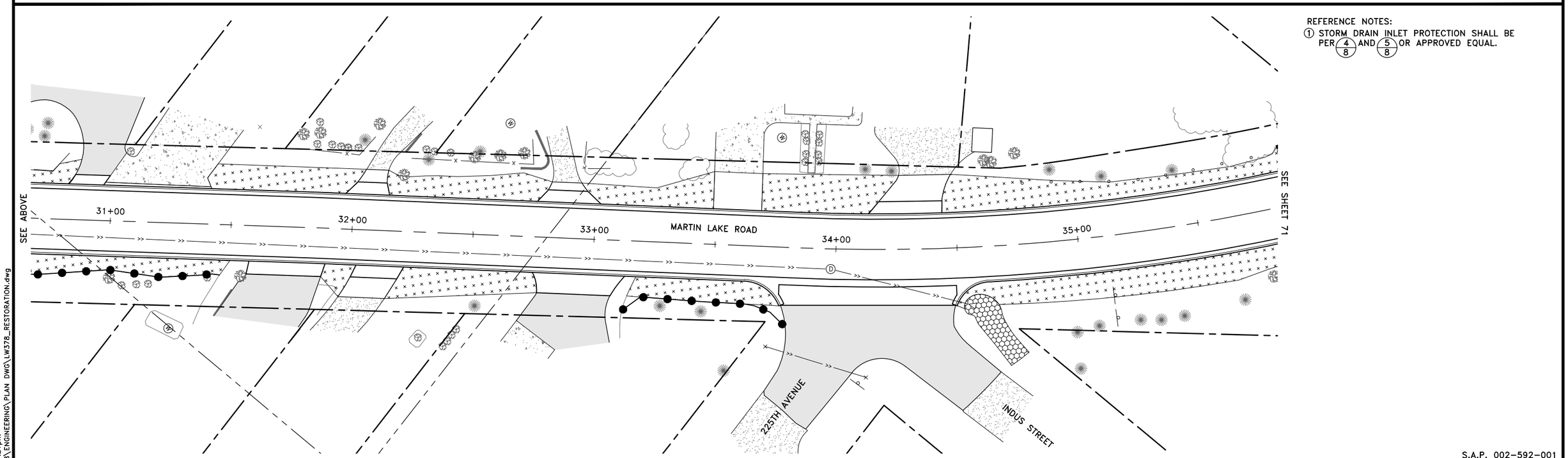
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

EROSION AND SEDIMENT CONTROL AND RESTORATION PLAN
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

LW378

Dec 04, 2025 – 1:20pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_RESTORATION.dwg





S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

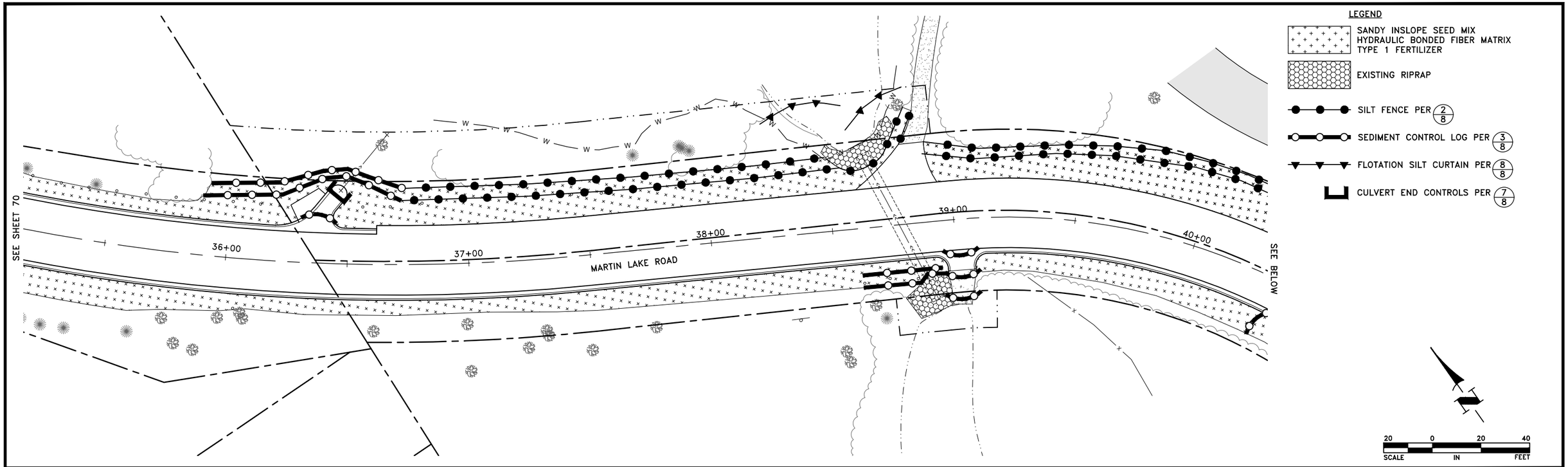
Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

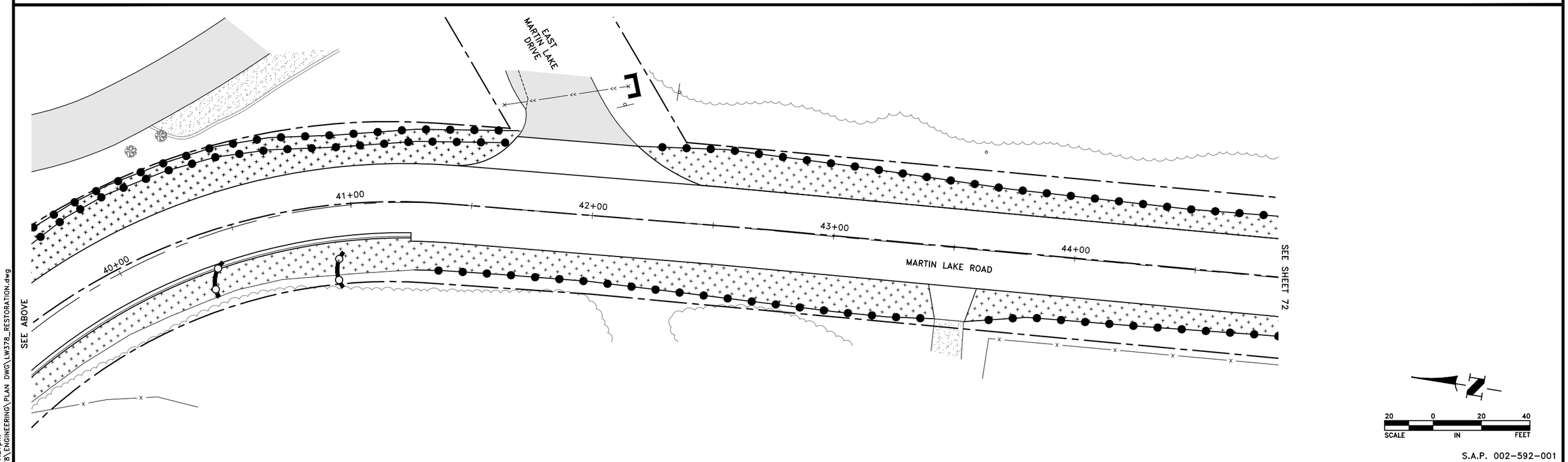
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

EROSION AND SEDIMENT CONTROL AND RESTORATION PLAN
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

LW378

Dec 04, 2025 – 1:21pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_RESTORATION.dwg





S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

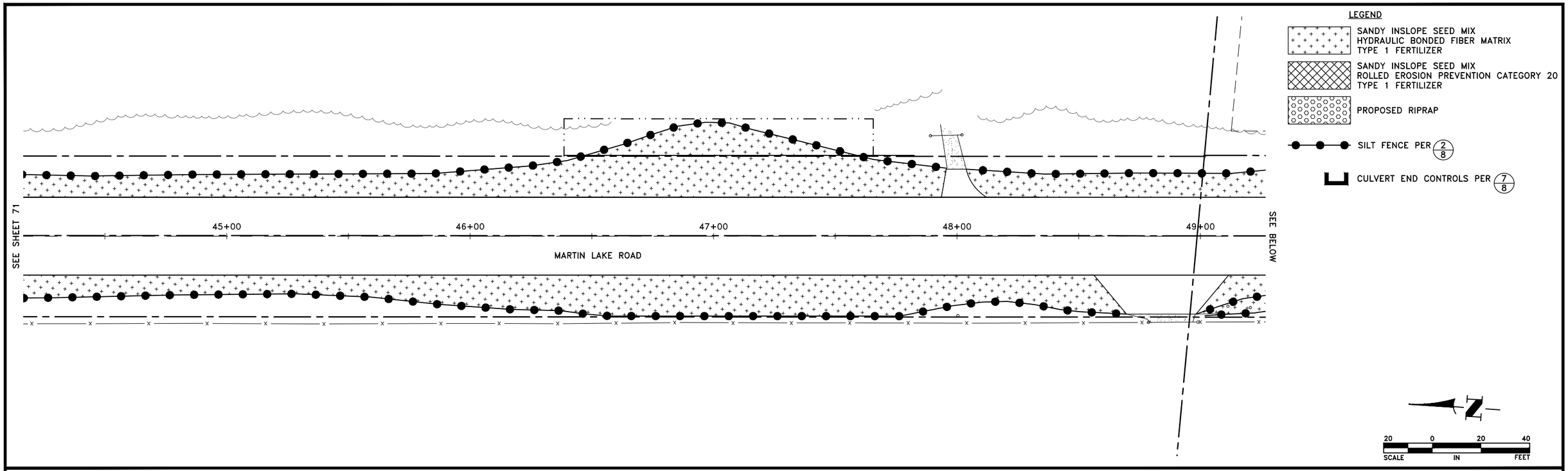
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

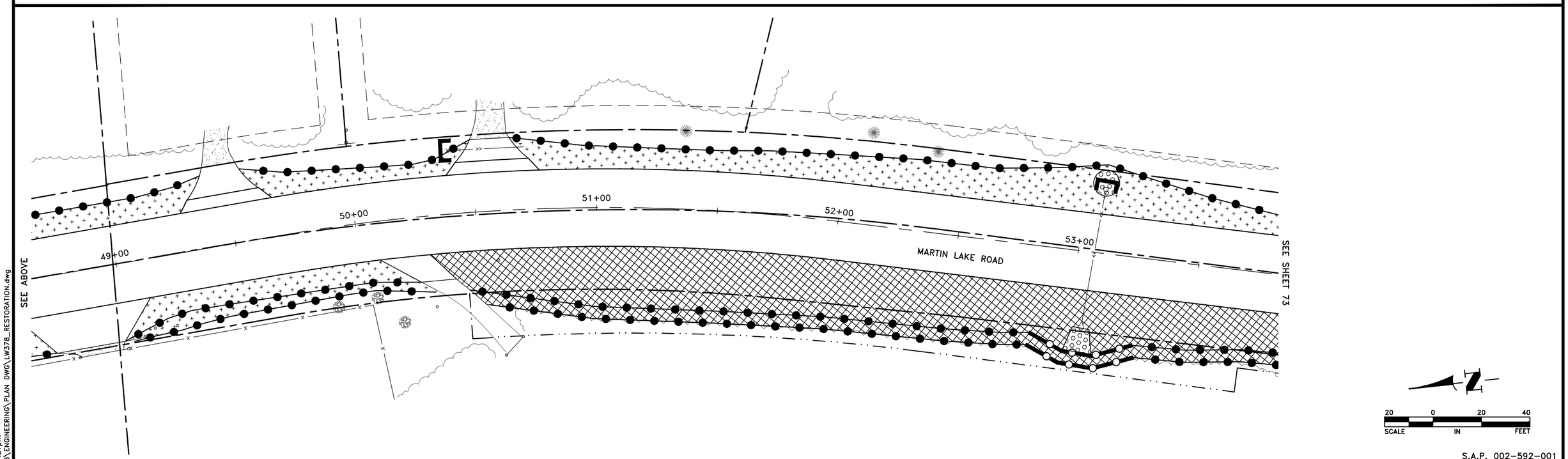
EROSION AND SEDIMENT CONTROL AND RESTORATION PLAN
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 71 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:21pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_RESTORATION.dwg





S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

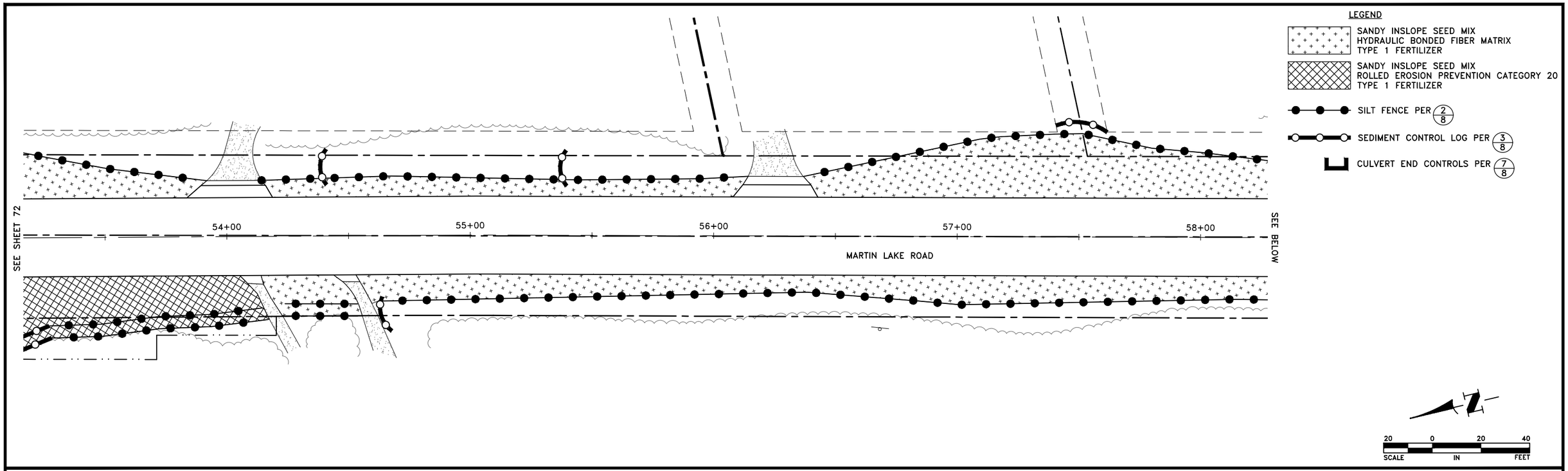
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

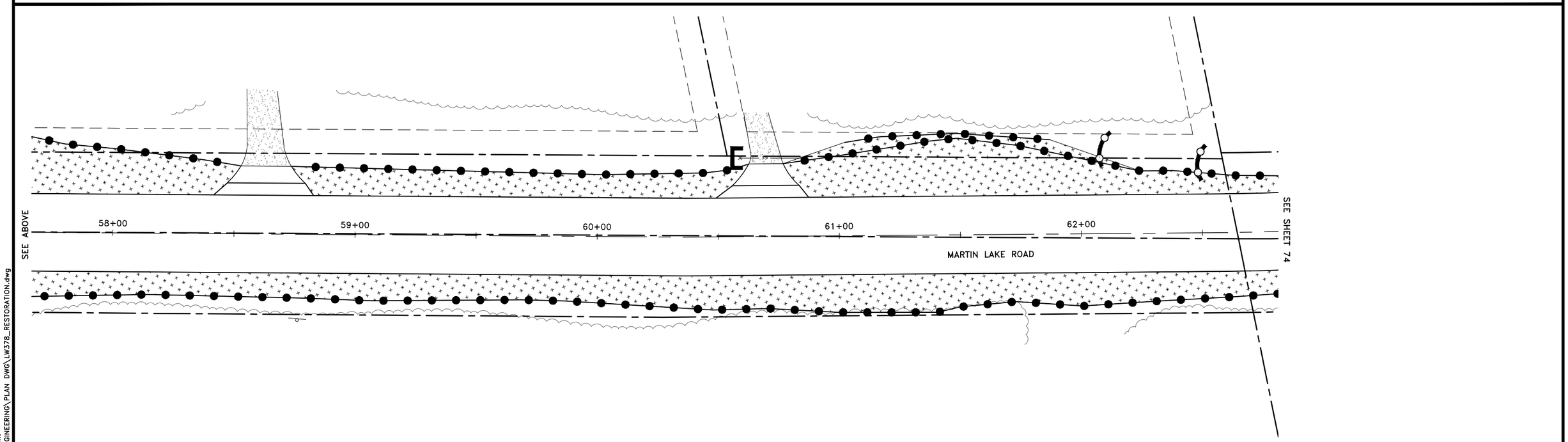
EROSION AND SEDIMENT CONTROL AND RESTORATION PLAN
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 72 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:21pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_RESTORATION.dwg





S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

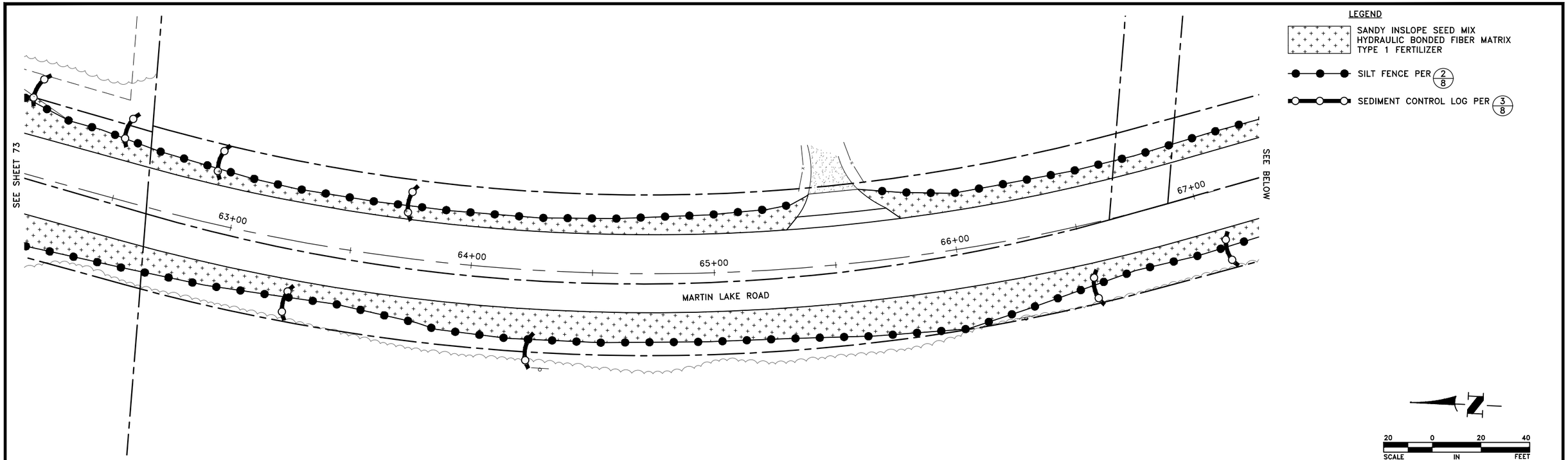
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

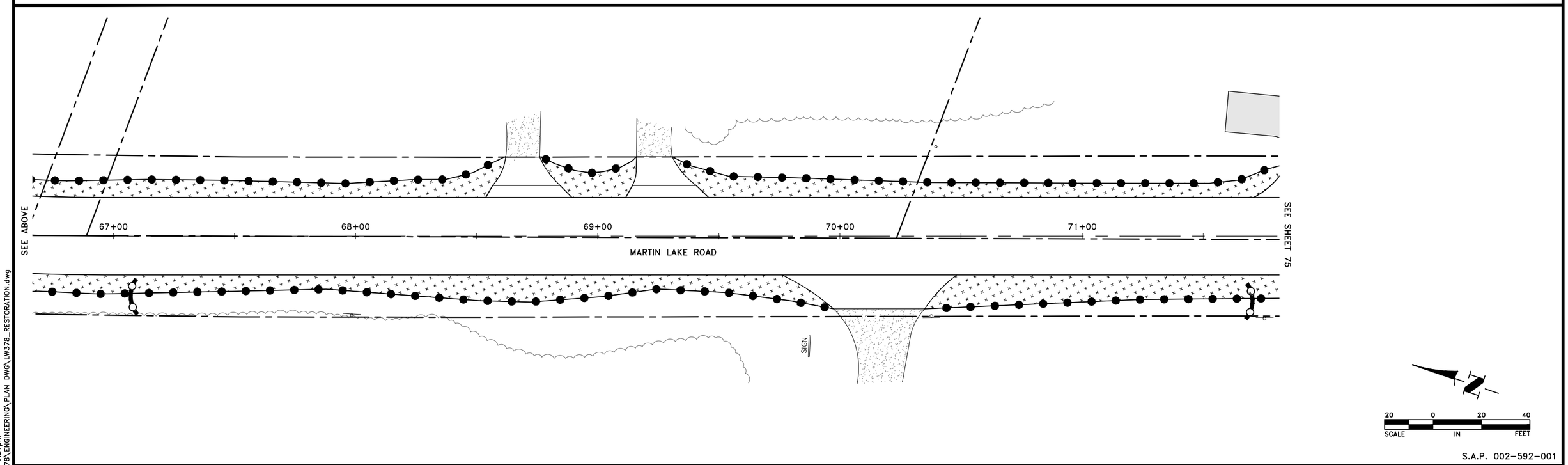
EROSION AND SEDIMENT CONTROL AND RESTORATION PLAN
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 73 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:21pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_RESTORATION.dwg





S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

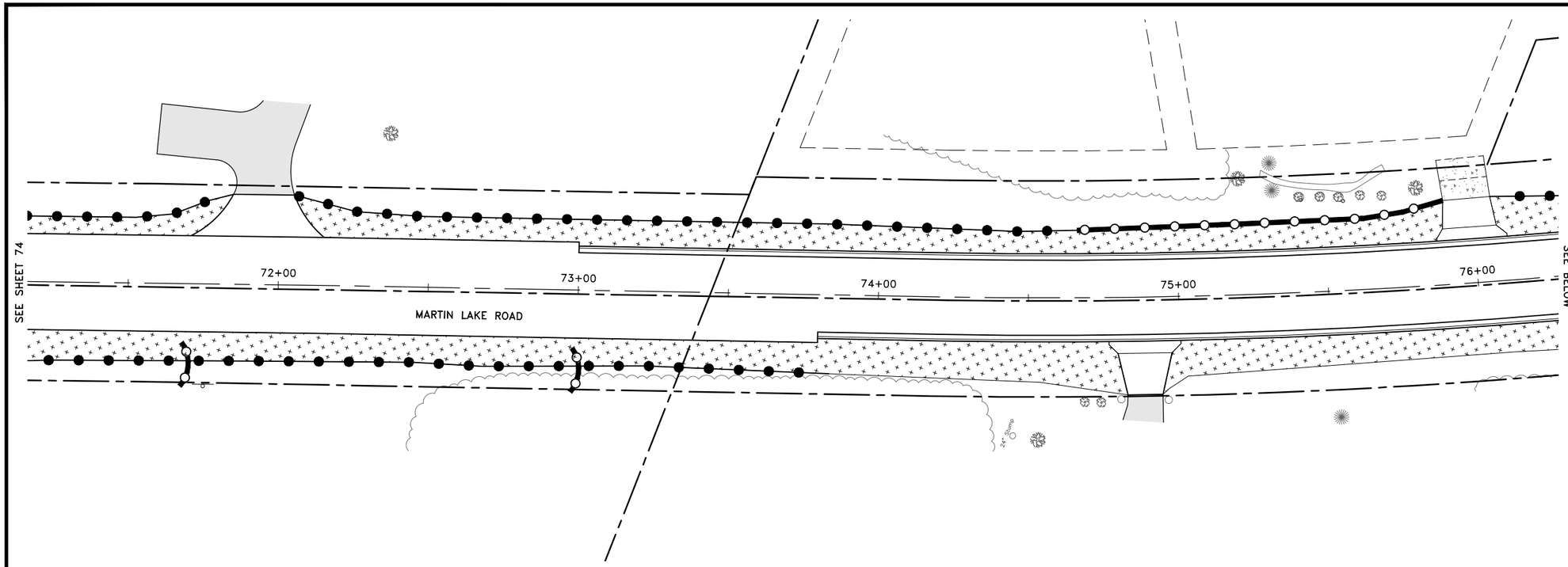
Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

EROSION AND SEDIMENT CONTROL AND RESTORATION PLAN
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

LW378

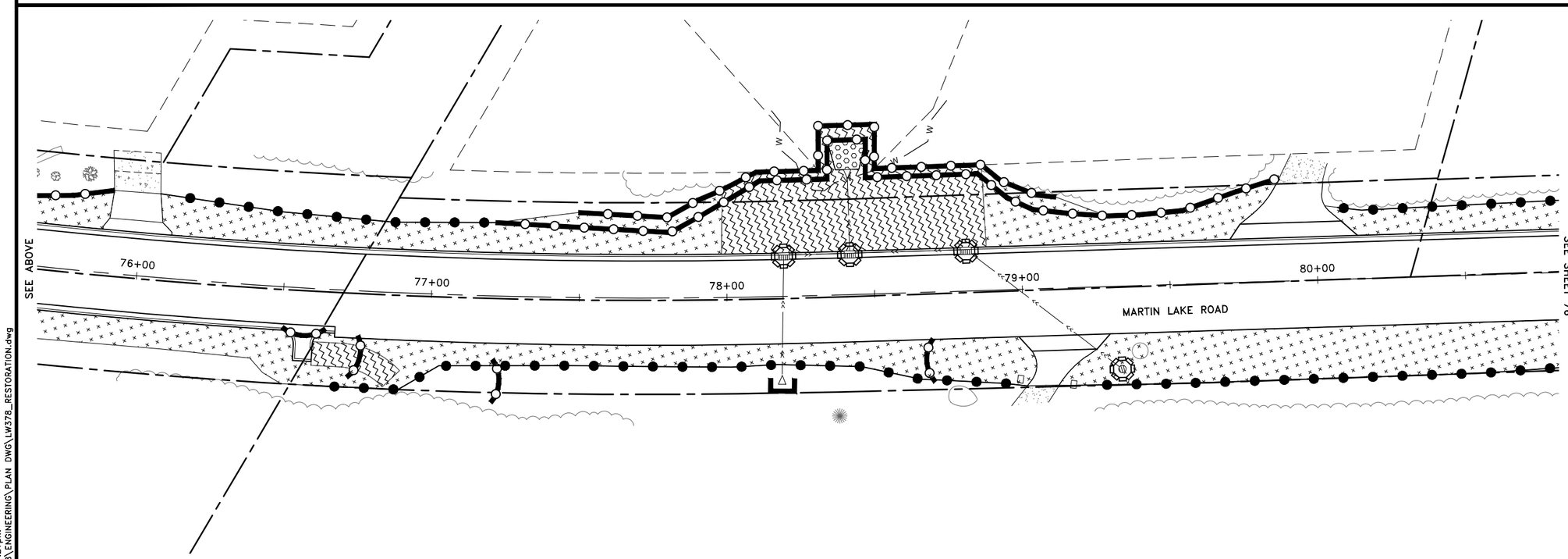
Dec 04, 2025 – 1:21pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_RESTORATION.dwg



LEGEND

- SANDY INSLOPE SEED MIX HYDRAULIC BONDED FIBER MATRIX TYPE 1 FERTILIZER
- SANDY INSLOPE SEED MIX ROLLED EROSION PREVENTION CATEGORY 72 TYPE 1 FERTILIZER
- PROPOSED RIPRAP
- SILT FENCE PER 2/8
- SEDIMENT CONTROL LOG PER 3/8
- CULVERT END CONTROLS PER 7/8
- STORM DRAIN INLET PROTECTION 1

20 0 20 40
SCALE IN FEET



REFERENCE NOTES:
1. STORM DRAIN INLET PROTECTION SHALL BE PER 4/8, 5/8 AND 6/8 OR APPROVED EQUAL.

20 0 20 40
SCALE IN FEET

S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

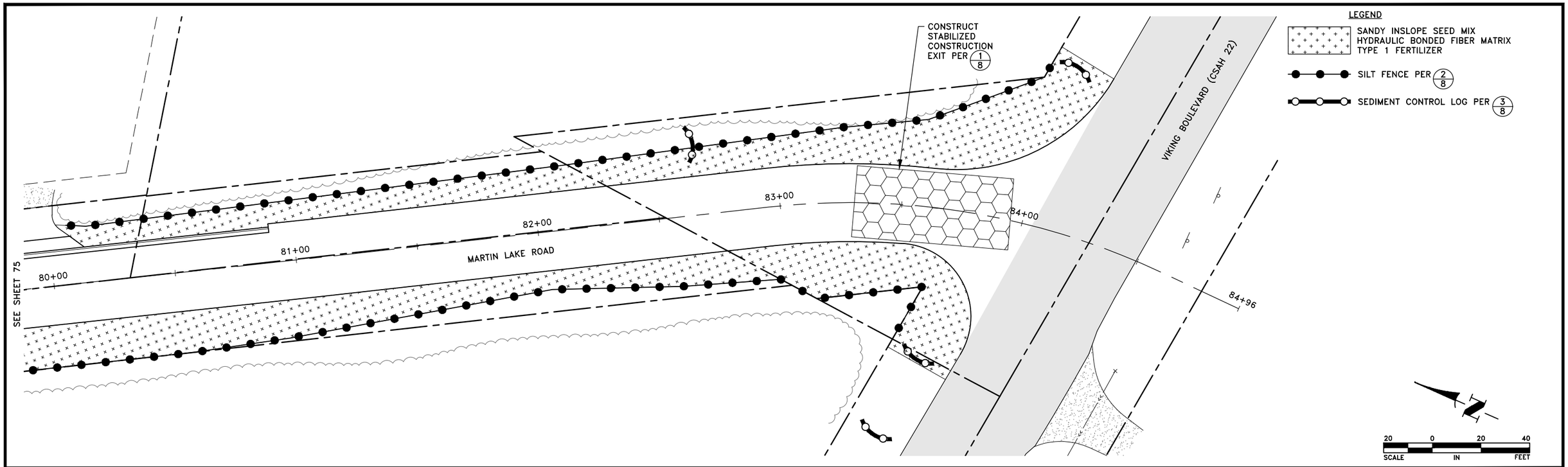
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

EROSION AND SEDIMENT CONTROL AND RESTORATION PLAN
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET 75 OF 76 SHEETS

LW378

Dec 04, 2025 – 1:21pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_RESTORATION.dwg



S.A.P. 002-592-001

DATE	REVISION

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHUM, P.E.
Date 12/1/25 Lic. No. 23461

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

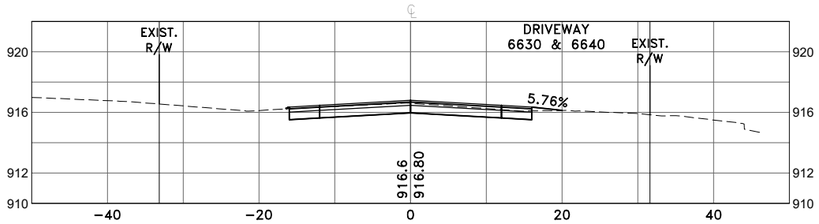
MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

EROSION AND SEDIMENT CONTROL AND RESTORATION PLAN
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

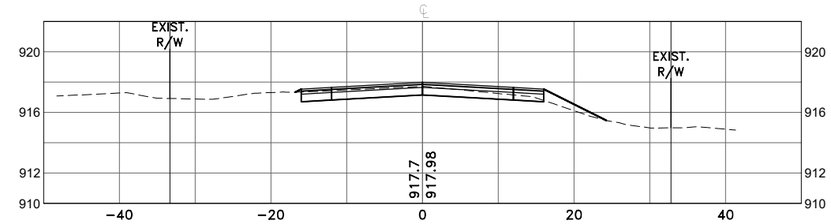
LW378

Dec 04, 2025 – 1:21pm
K:\MUNICIPAL\LW378\ENGINEERING\PLAN DWG\LW378_RESTORATION.dwg

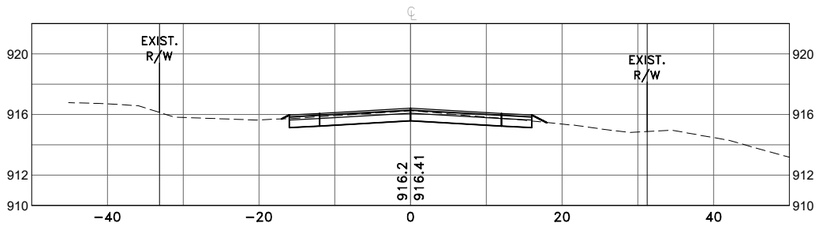
2+00



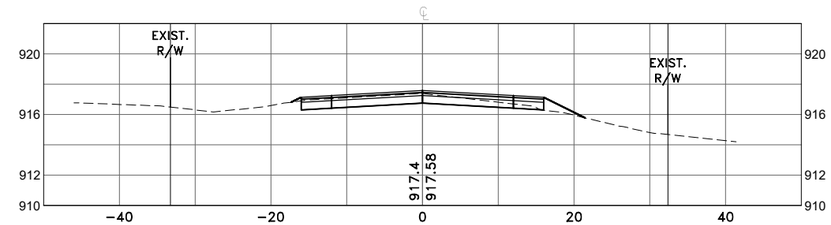
3+50



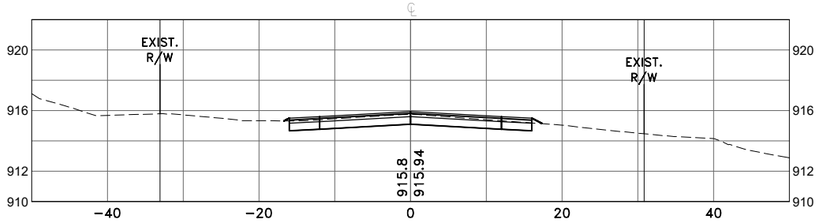
1+50



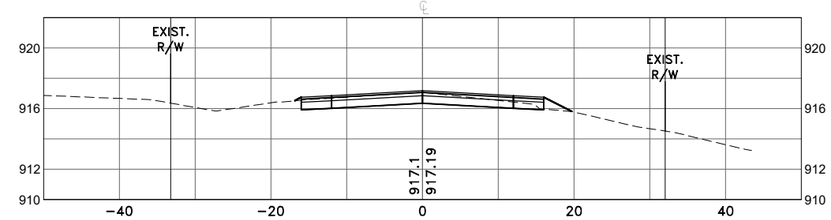
3+00



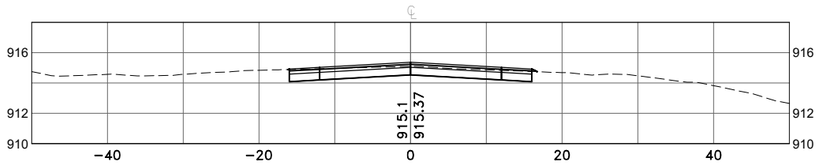
1+00



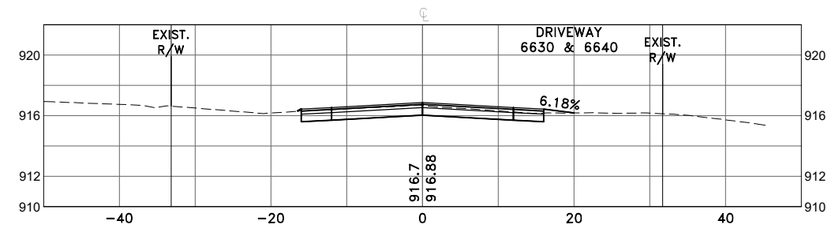
2+50



0+50



2+10



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

CROSS SECTIONS

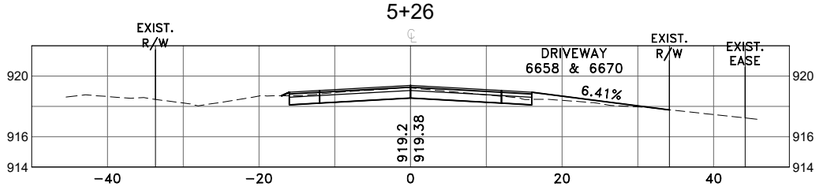
227TH AVENUE
LINWOOD TOWNSHIP, MINNESOTA

SHEET X1 OF X36 SHEETS

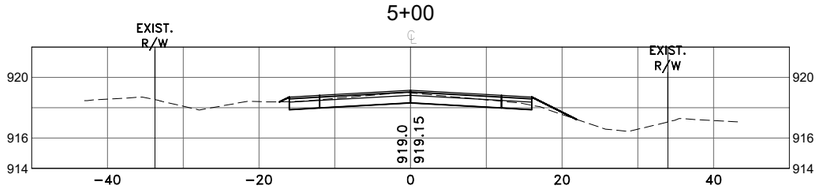
LW378

Dec 04, 2025 – 1:21pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

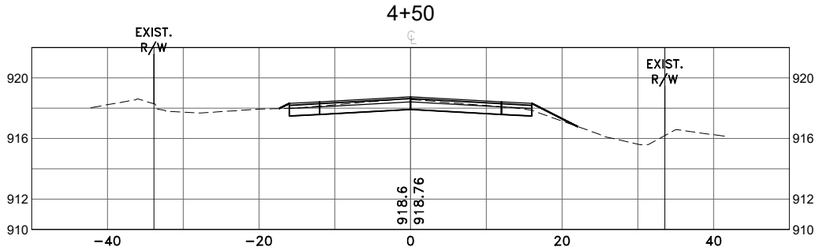
5+26



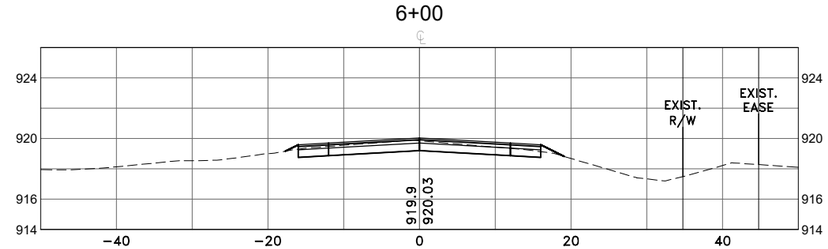
5+00



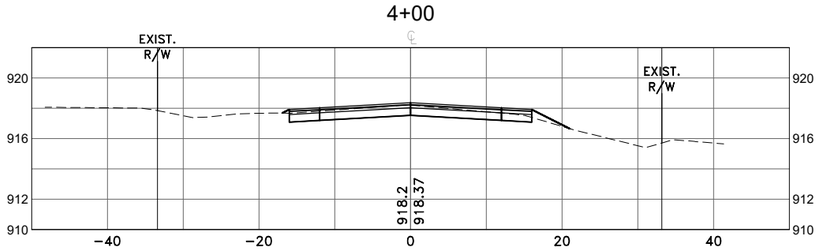
4+50



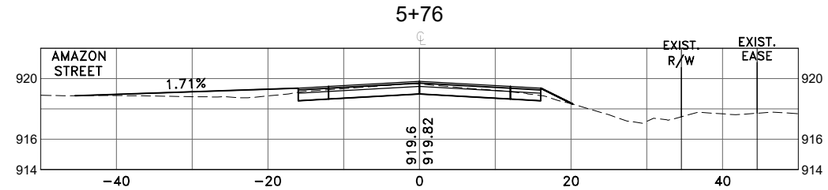
6+00



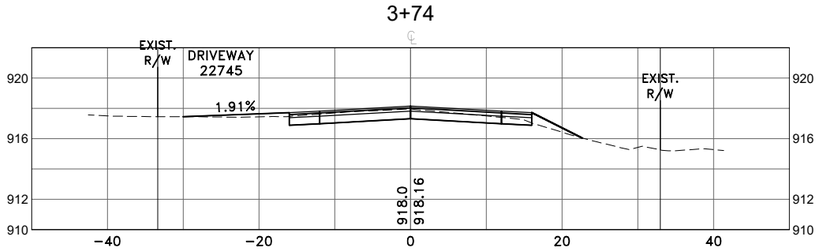
4+00



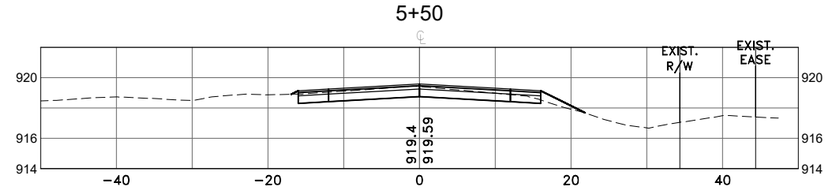
5+76



3+74



5+50



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

CROSS SECTIONS

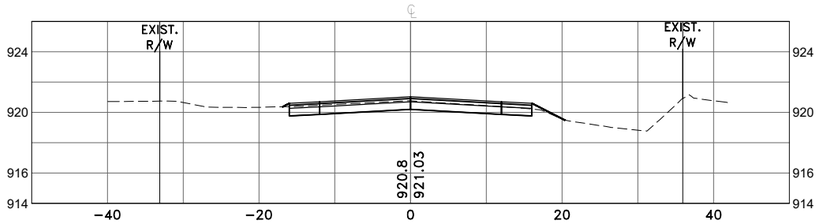
227TH AVENUE
LINWOOD TOWNSHIP, MINNESOTA

SHEET X2 OF X36 SHEETS

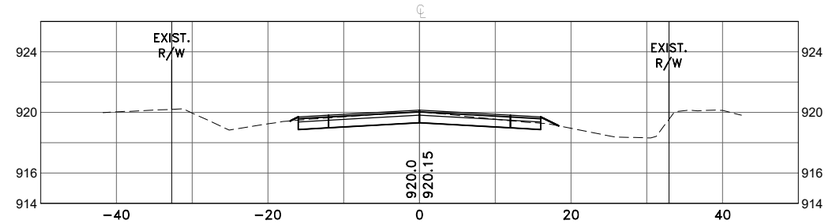
LW378

Dec 04, 2025 – 1:21pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

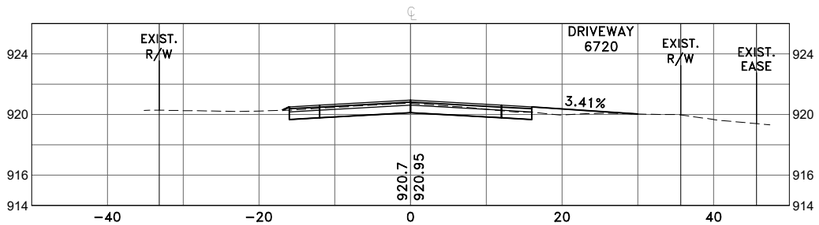
7+50



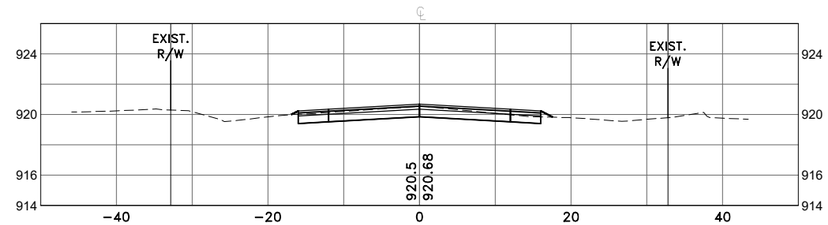
9+00



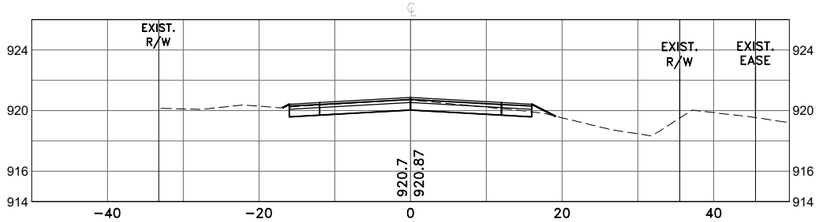
7+17



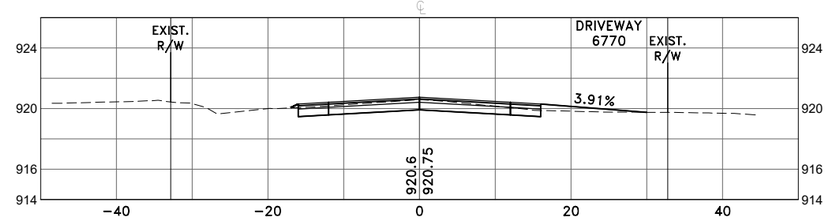
8+50



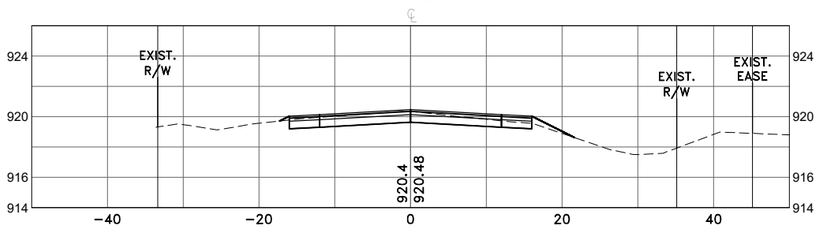
7+00



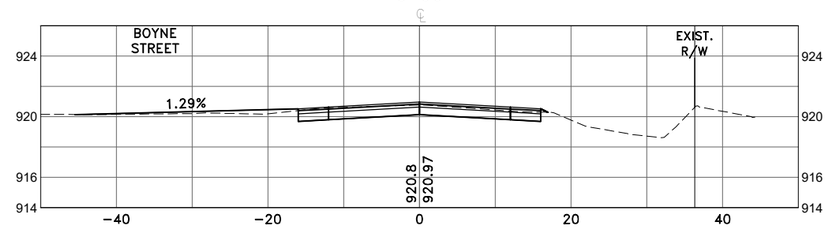
8+40



6+50



8+00



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

CROSS SECTIONS

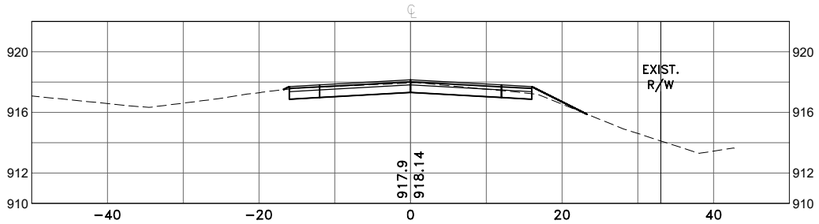
227TH AVENUE
LINWOOD TOWNSHIP, MINNESOTA

SHEET X3 OF X36 SHEETS

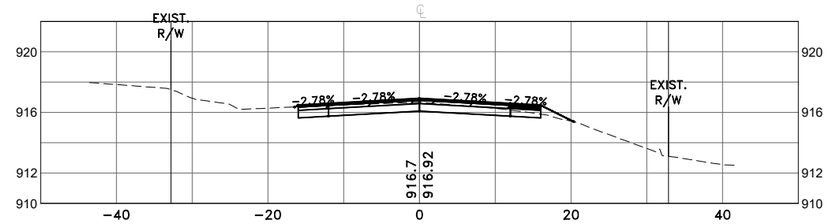
LW378

Dec 04, 2025 – 1:21pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

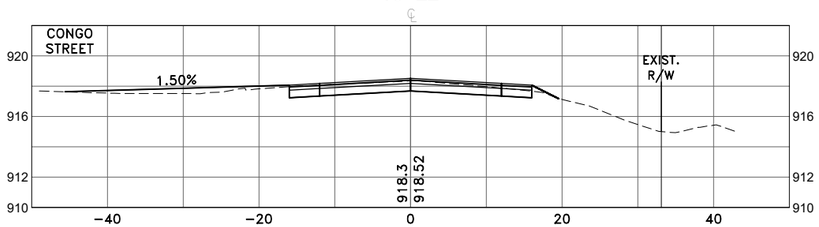
10+50



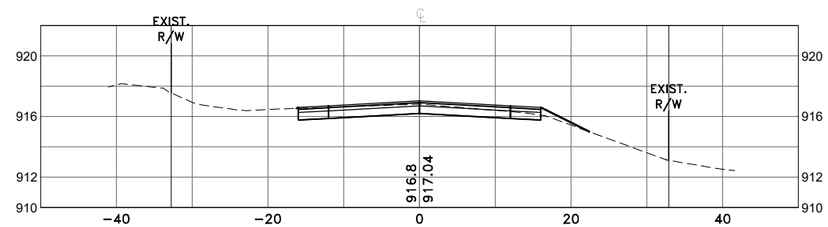
11+63.63



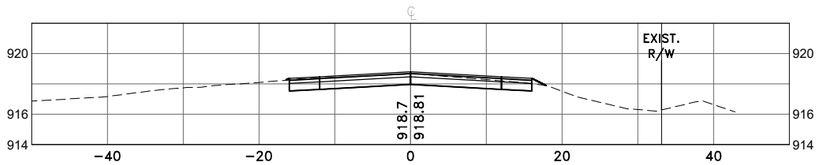
10+22



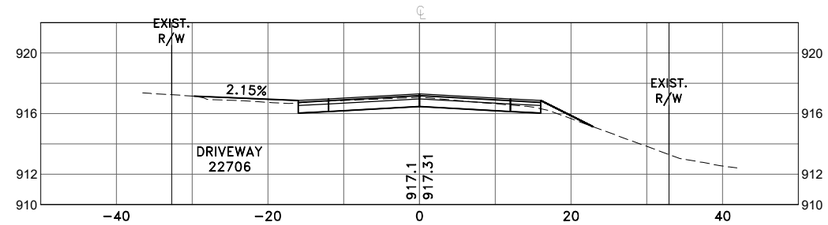
11+50



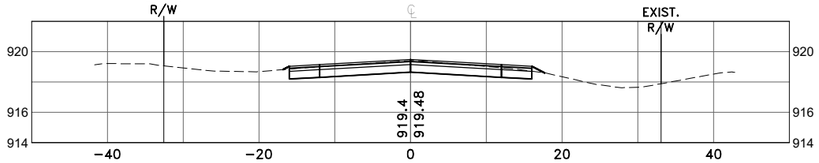
10+00



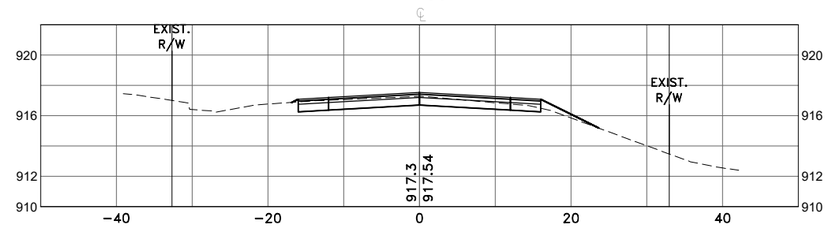
11+22



9+50



11+00



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

CROSS SECTIONS

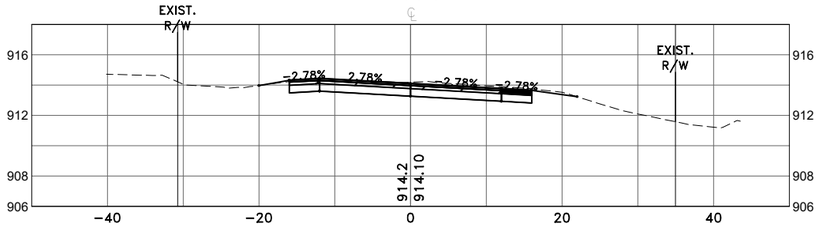
227TH AVENUE
LINWOOD TOWNSHIP, MINNESOTA

SHEET X4 OF X36 SHEETS

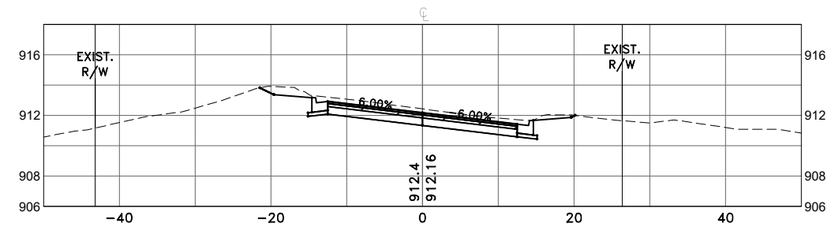
LW378

Dec 04, 2025 – 1:21pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

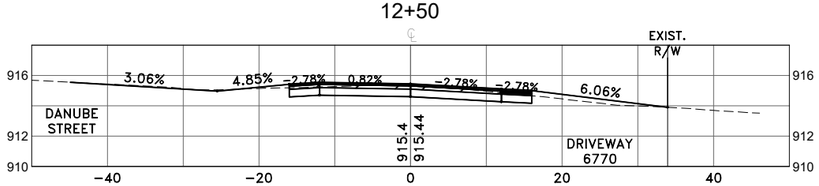
12+96.97



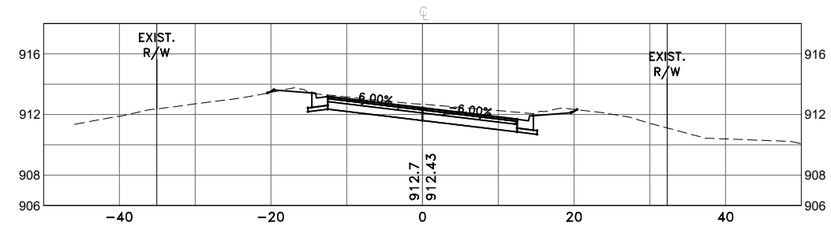
14+00



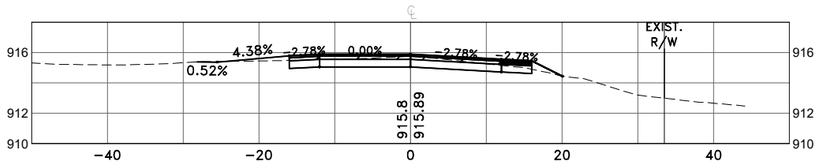
12+50



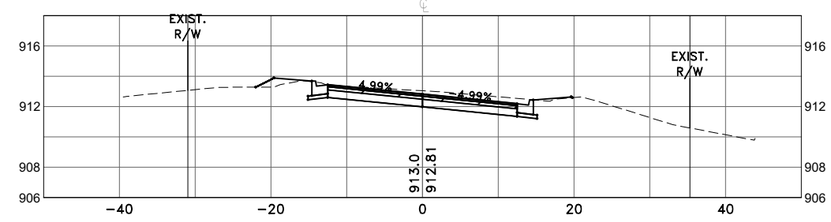
13+74.30



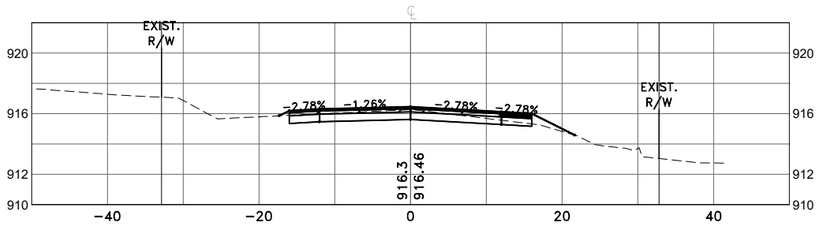
12+30.30



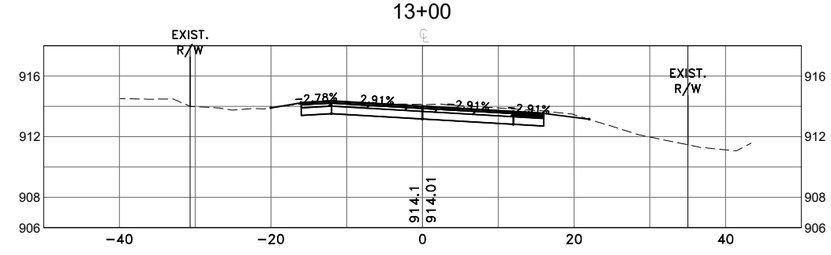
13+50



12+00



13+00



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

CROSS SECTIONS

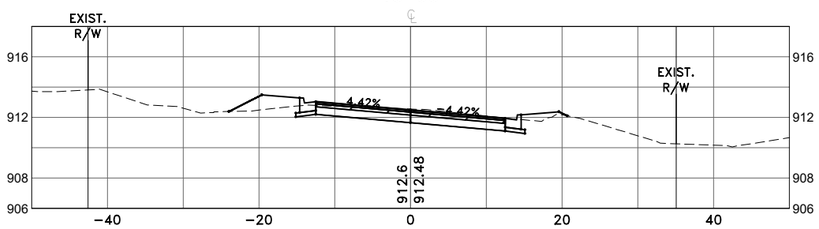
227TH AVENUE AND MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X5 OF X36 SHEETS

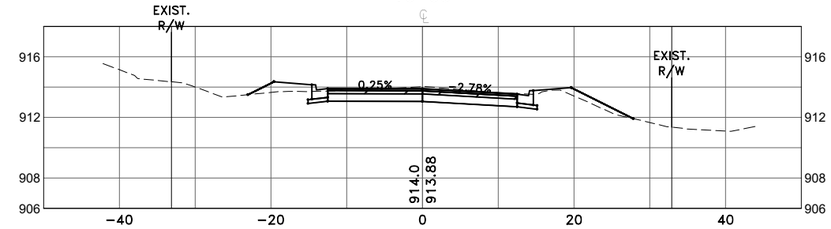
LW378

Dec 04, 2025 – 1:22pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

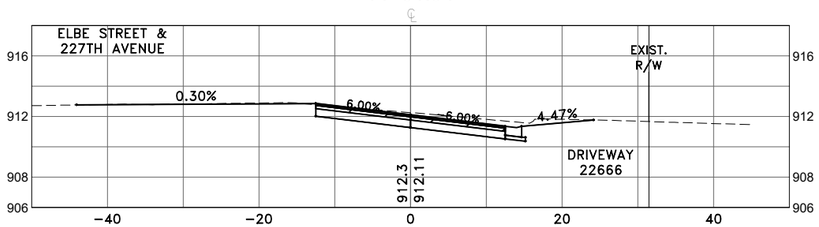
15+00



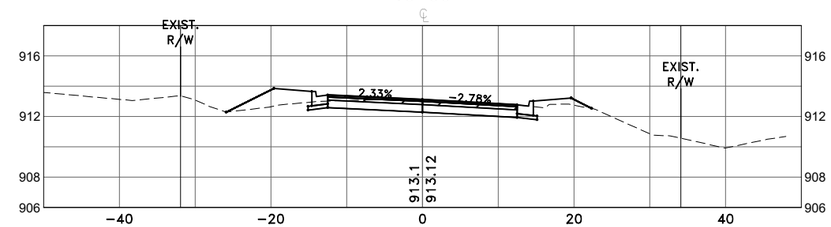
16+00



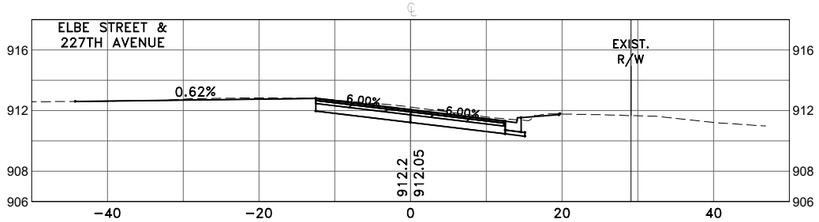
14+61.94



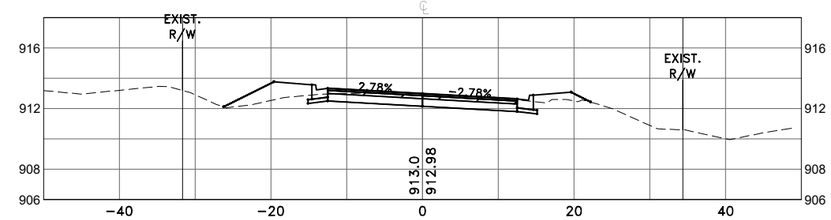
15+50



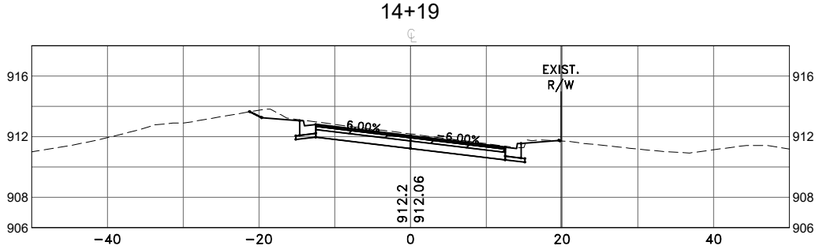
14+50



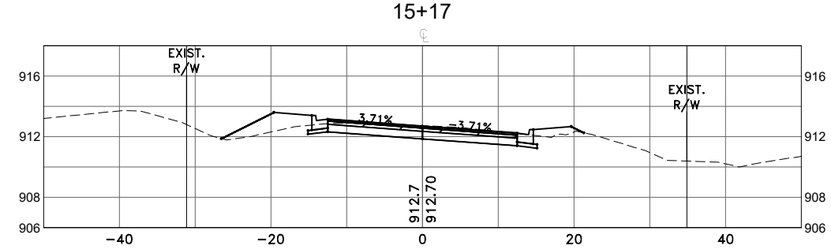
15+39.27



14+19



15+17



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

CROSS SECTIONS

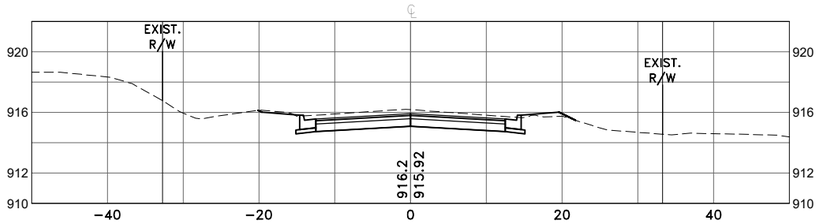
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X6 OF X36 SHEETS

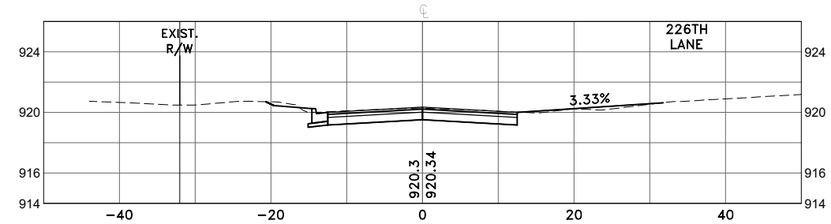
LW378

Dec 04, 2025 – 1:22pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

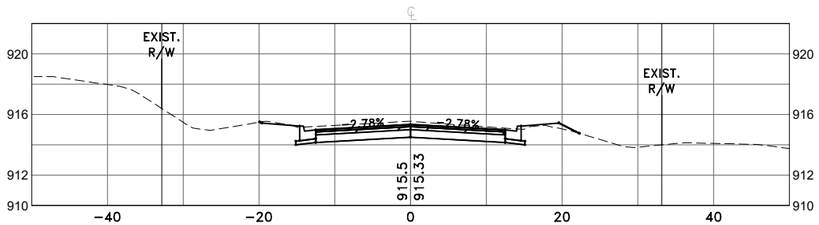
17+00



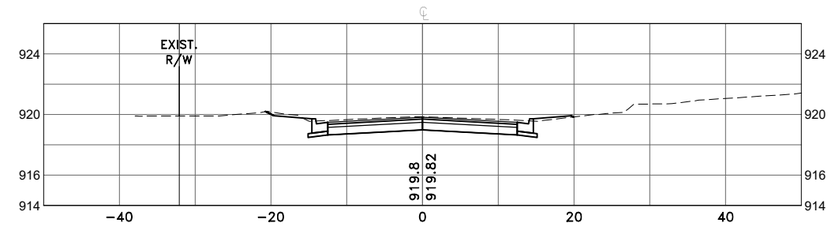
18+70



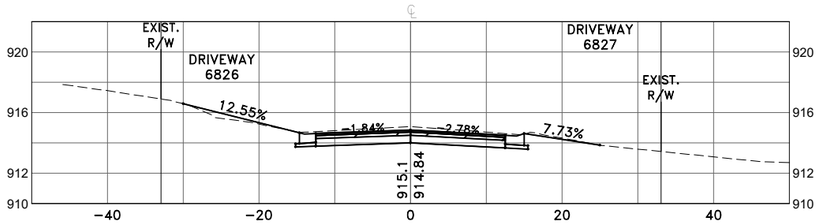
16+72.61



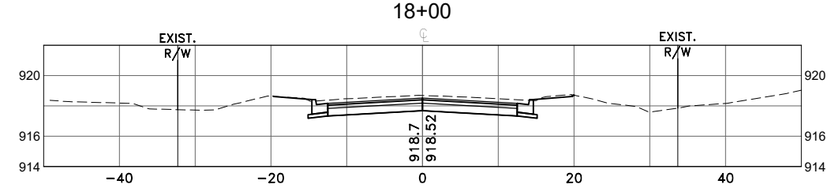
18+50



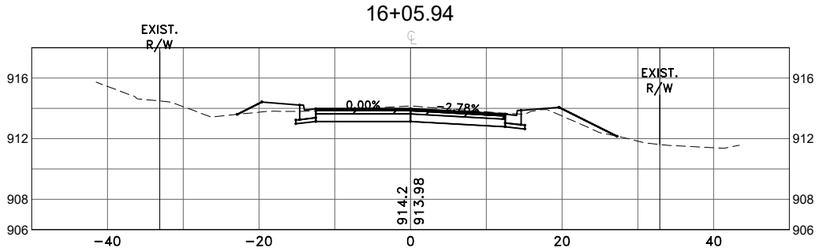
16+50



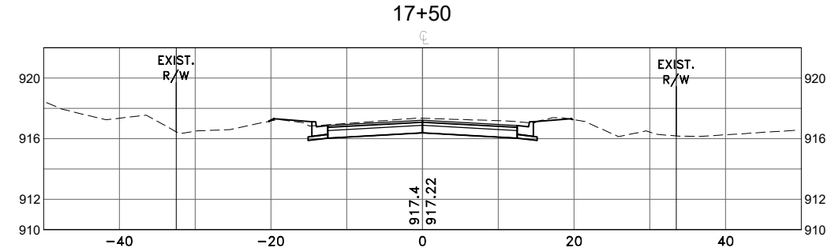
18+00



16+05.94



17+50



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

CROSS SECTIONS

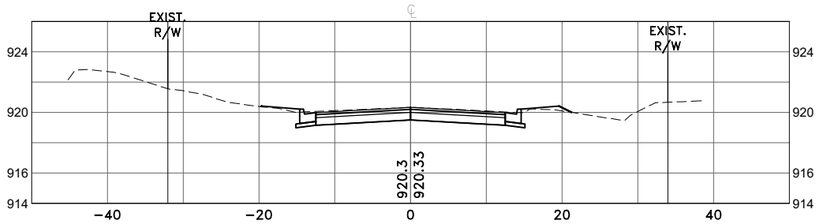
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X7 OF X36 SHEETS

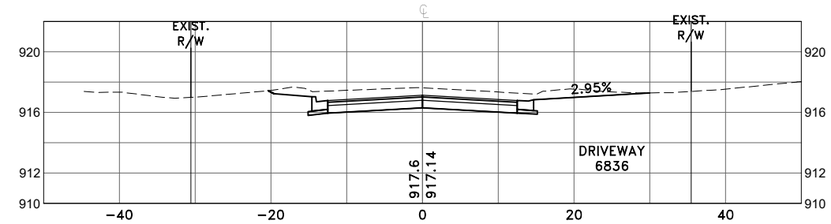
LW378

Dec 04, 2025 – 1:22pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

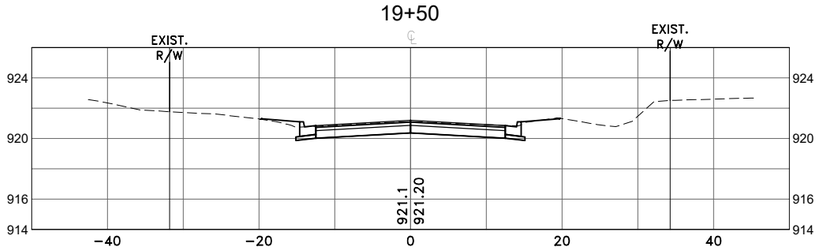
20+00



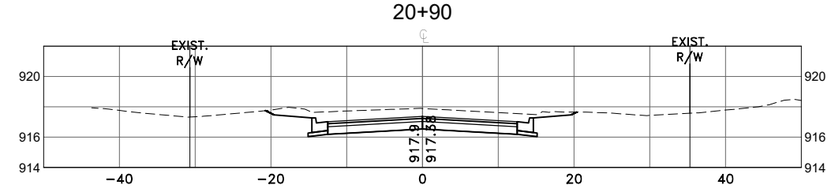
21+00



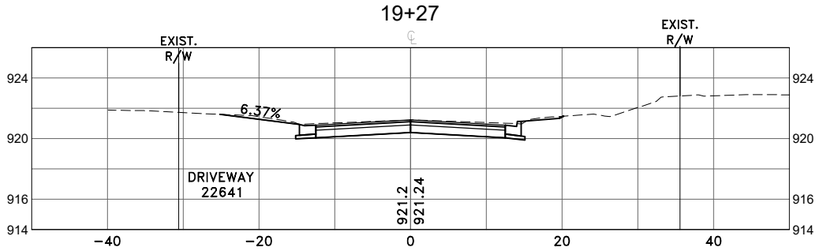
19+50



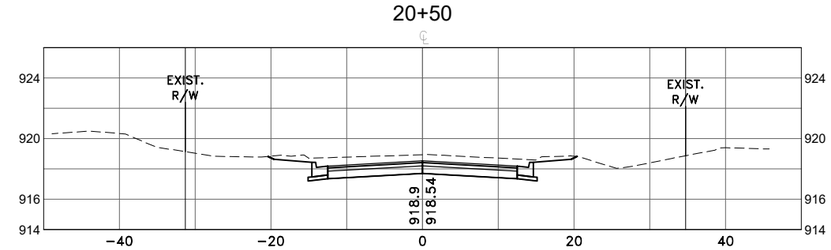
20+90



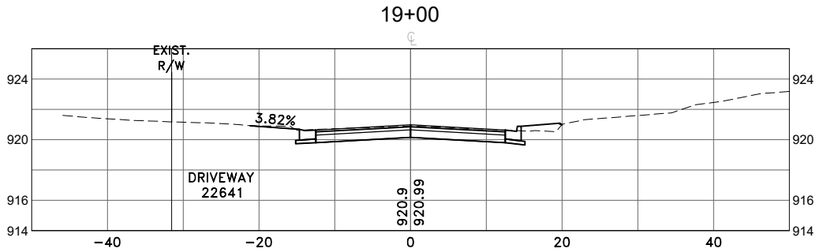
19+27



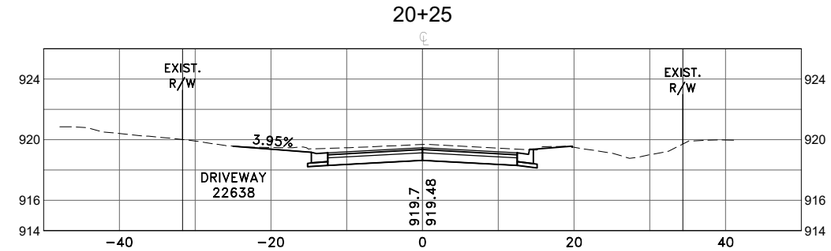
20+50



19+00



20+25



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

CROSS SECTIONS

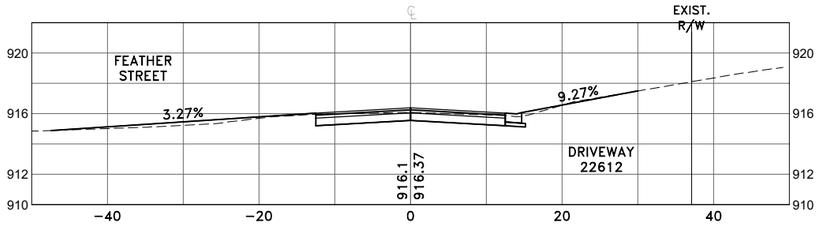
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X8 OF X36 SHEETS

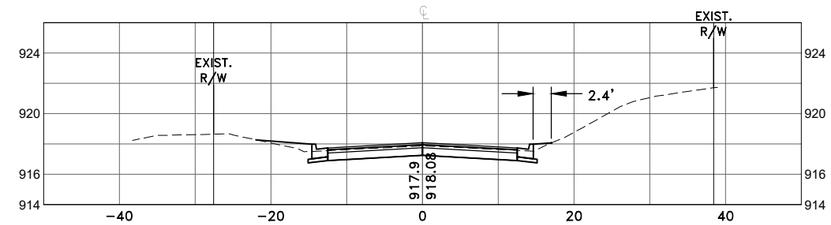
LW378

Dec 04, 2025 – 1:22pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

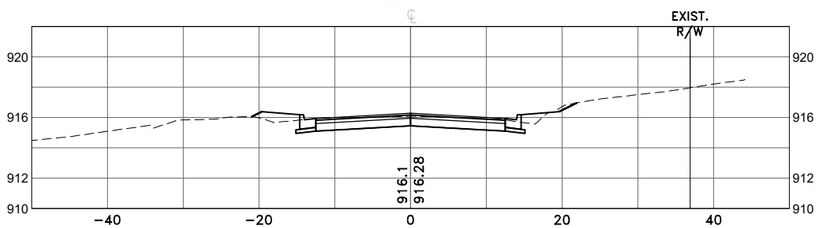
22+14



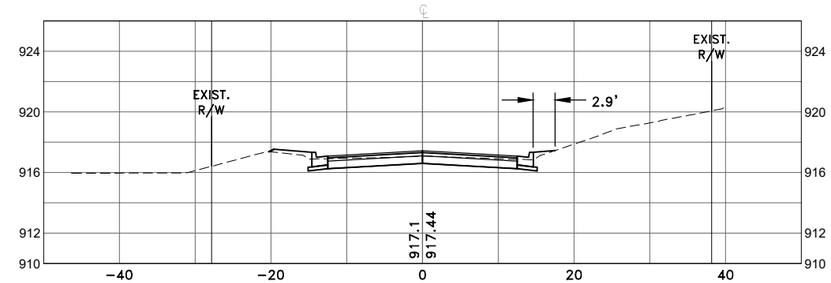
23+50



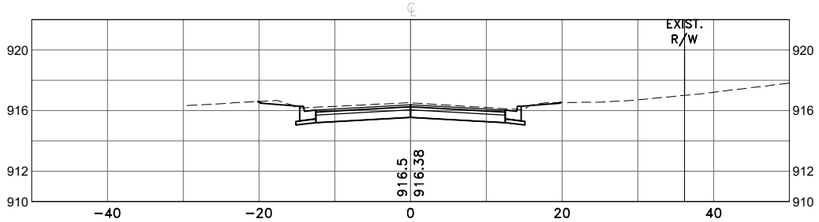
22+00



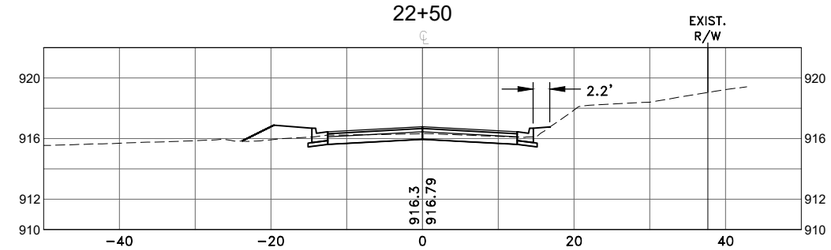
23+00



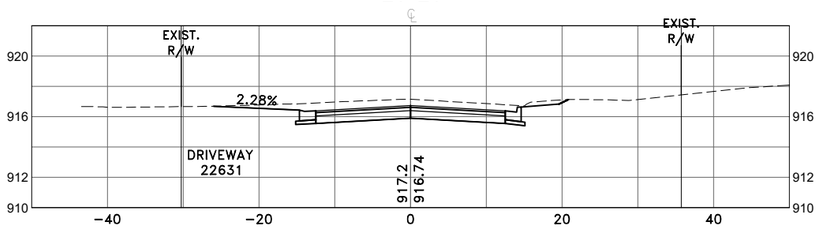
21+50



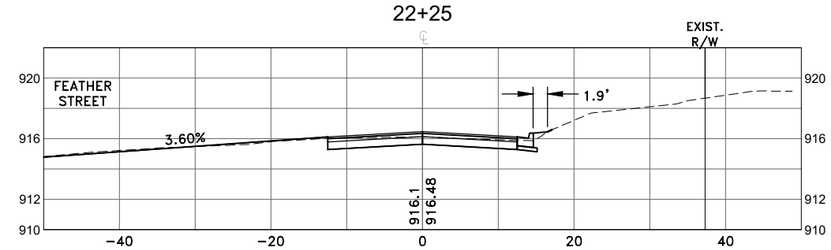
22+50



21+21



22+25



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

CROSS SECTIONS

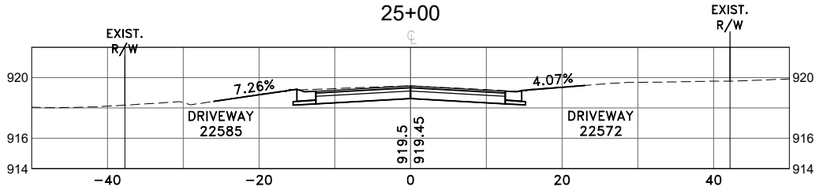
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X9 OF X36 SHEETS

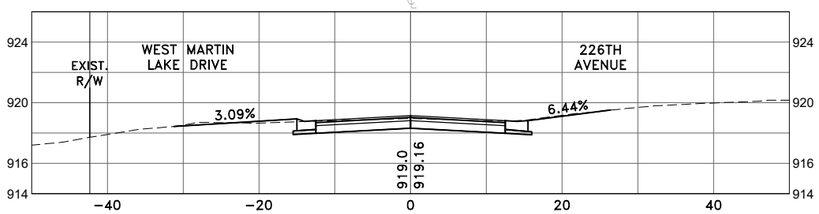
LW378

Dec 04, 2025 – 1:22pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

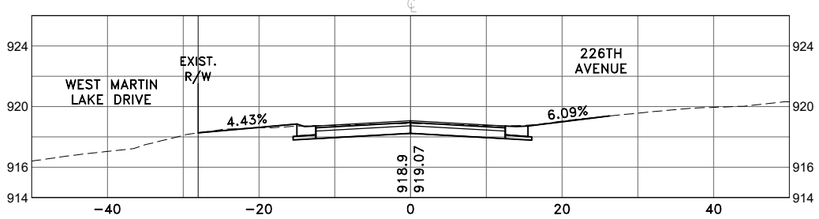
25+00



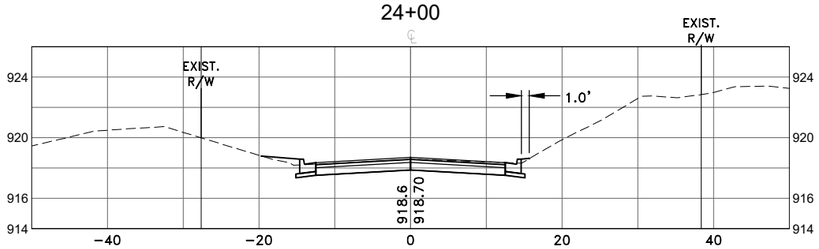
24+50



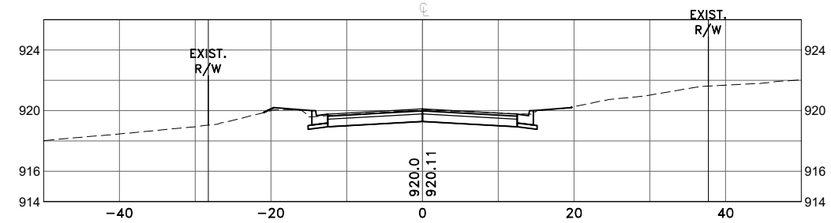
24+39



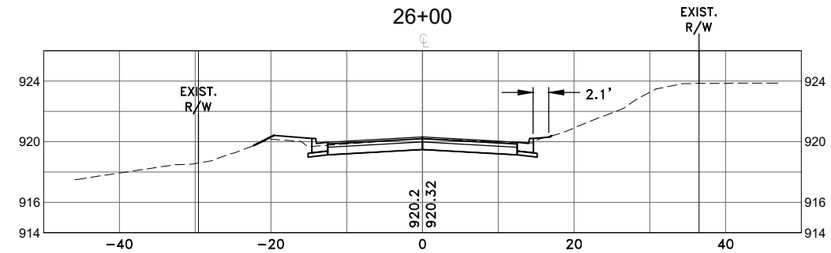
24+00



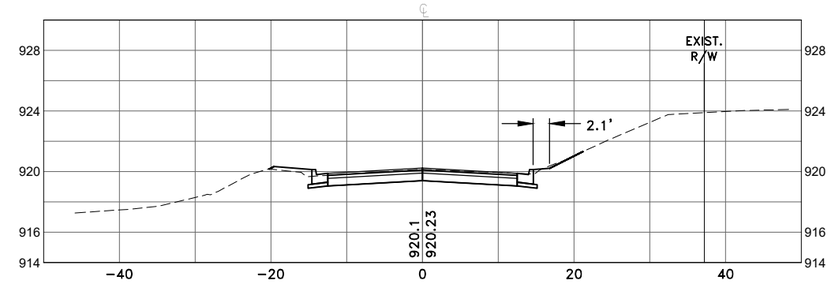
26+50



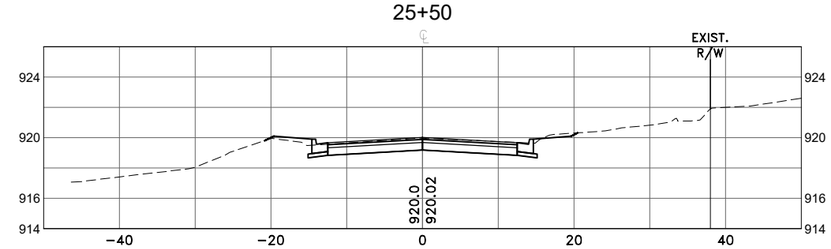
26+00



25+75



25+50



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

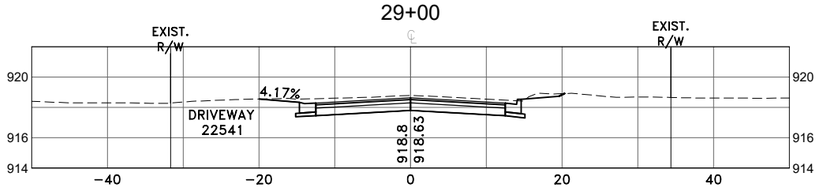
CROSS SECTIONS

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

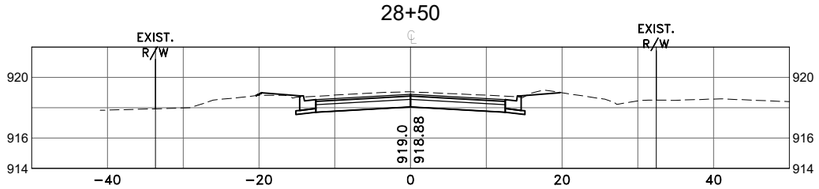
SHEET X10 OF X36 SHEETS

LW378

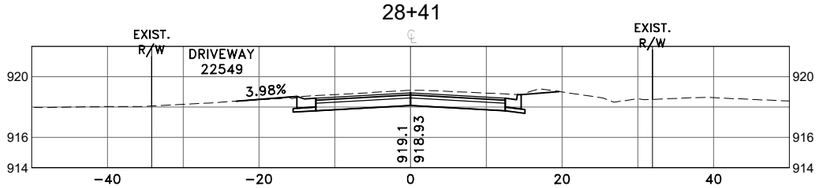
29+00



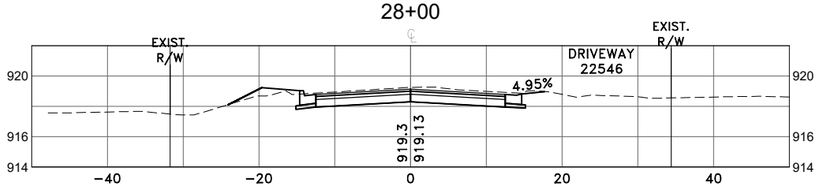
28+50



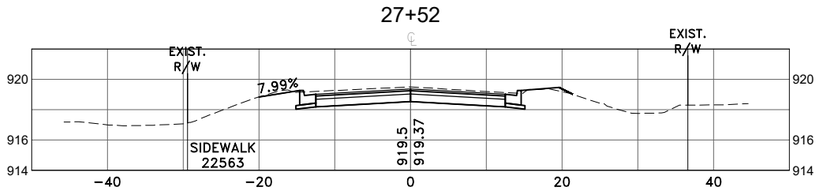
28+41



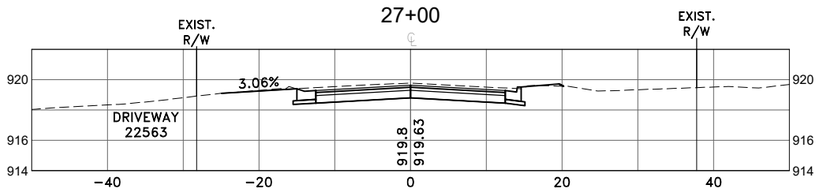
28+00



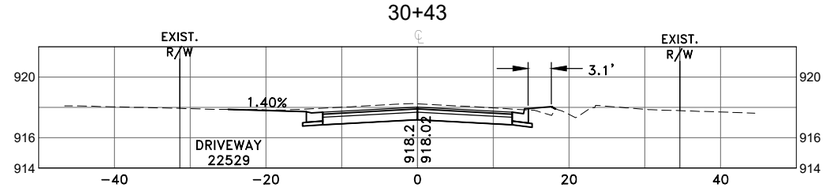
27+52



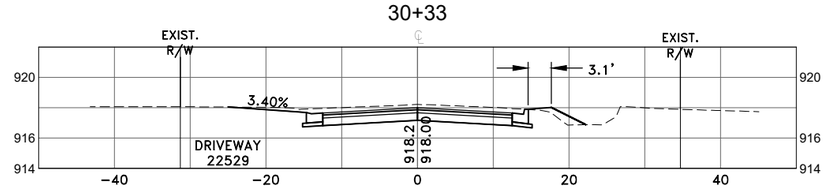
27+00



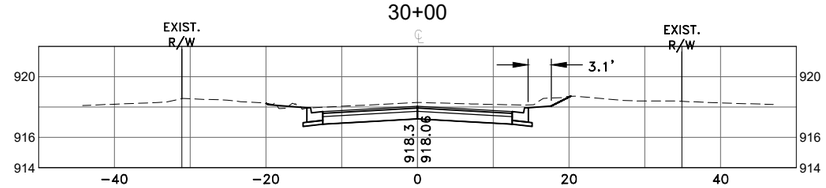
30+43



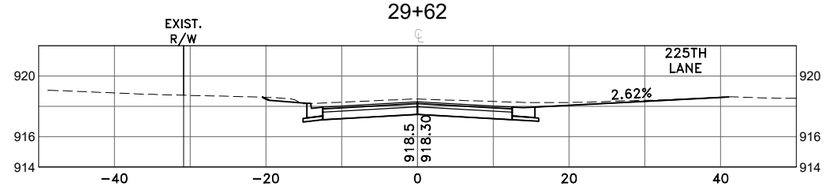
30+33



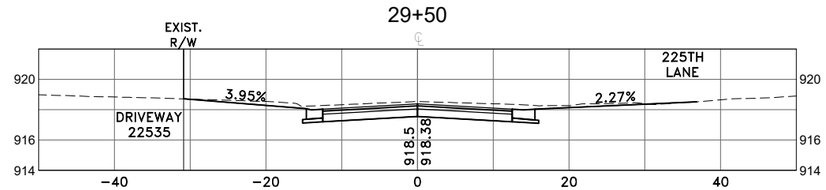
30+00



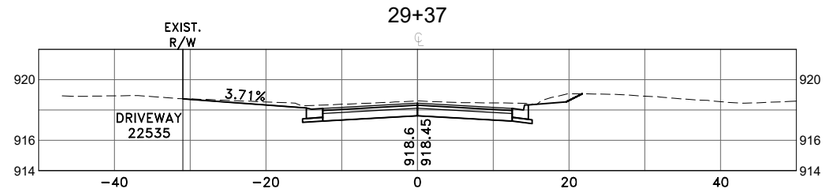
29+62



29+50



29+37



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

CROSS SECTIONS

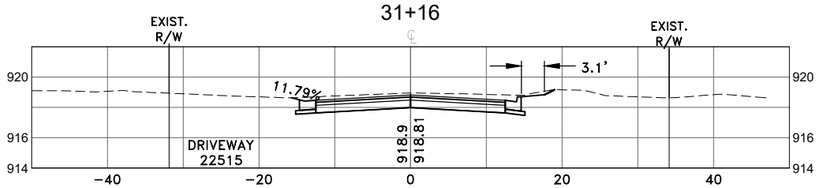
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X11 OF X36 SHEETS

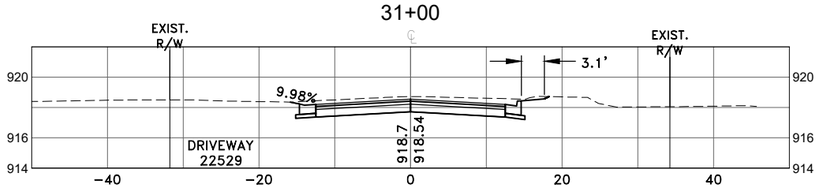
LW378

Dec 04, 2025 – 1:22pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

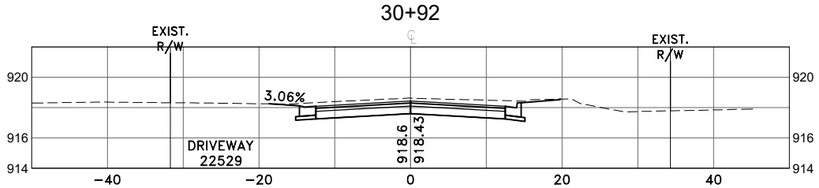
31+16



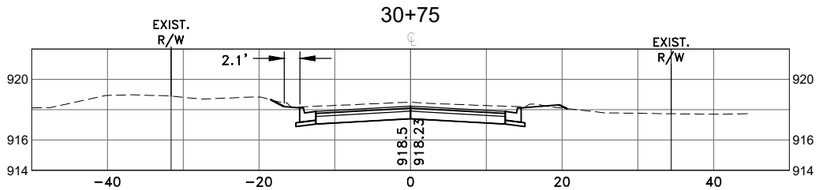
31+00



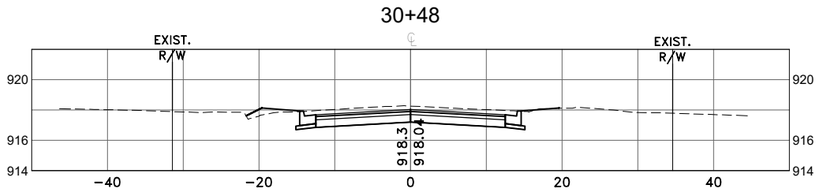
30+92



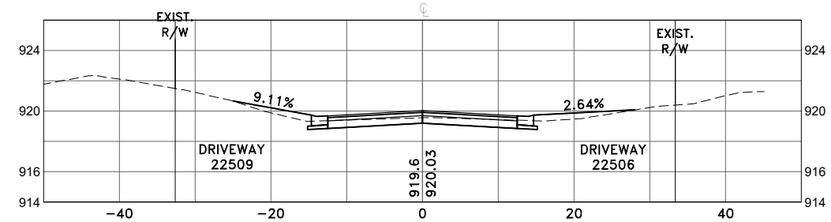
30+75



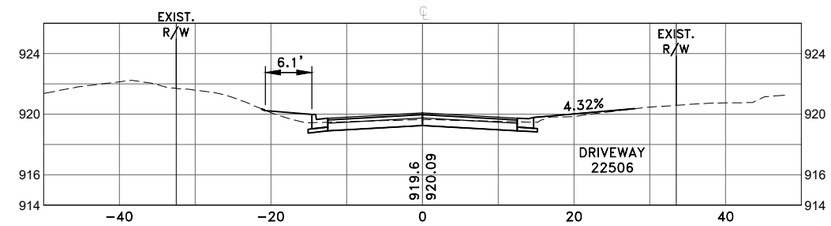
30+48



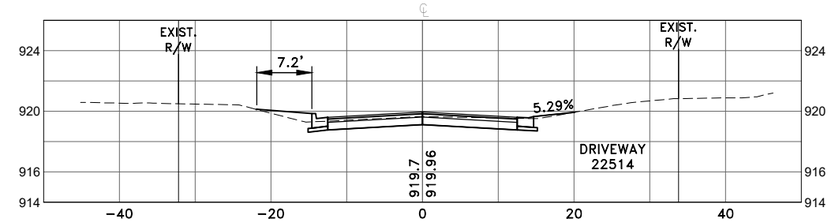
32+09



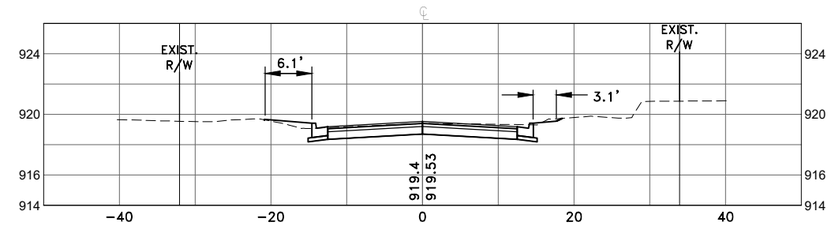
32+00



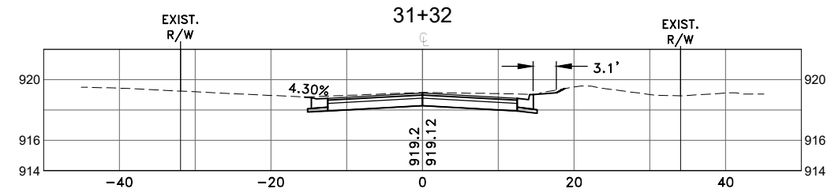
31+72



31+50



31+32



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

CROSS SECTIONS

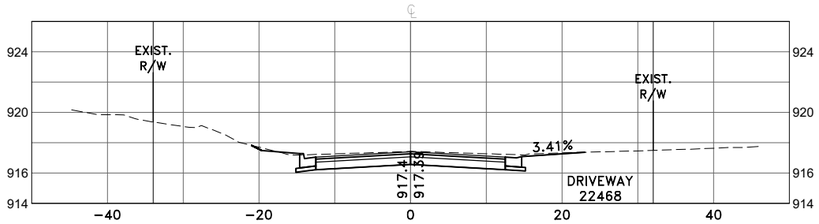
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X12 OF X36 SHEETS

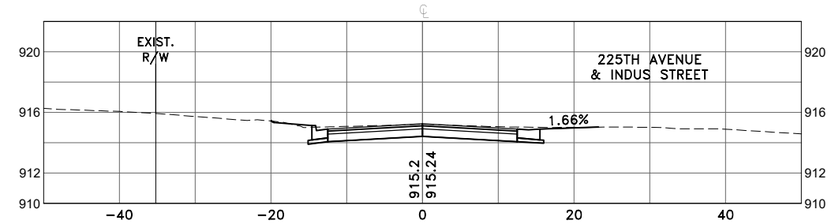
LW378

Dec 04, 2025 – 1:22pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

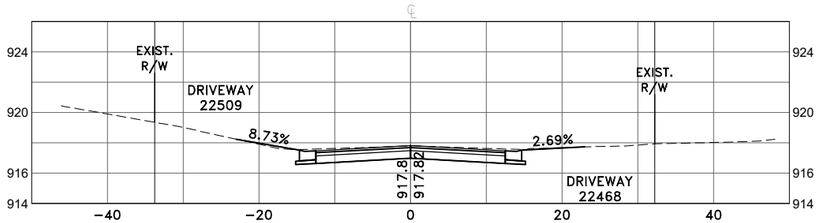
33+00



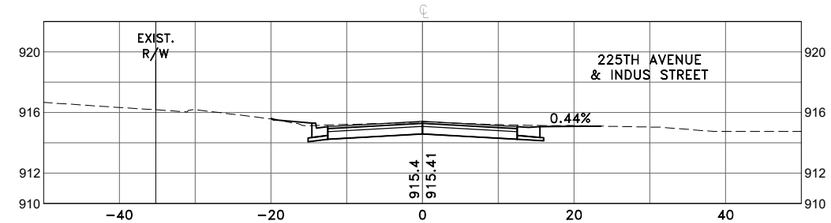
34+00



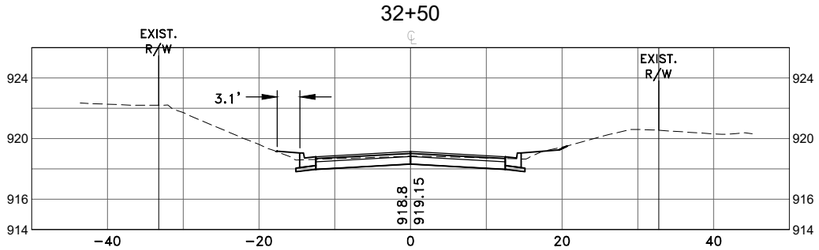
32+87



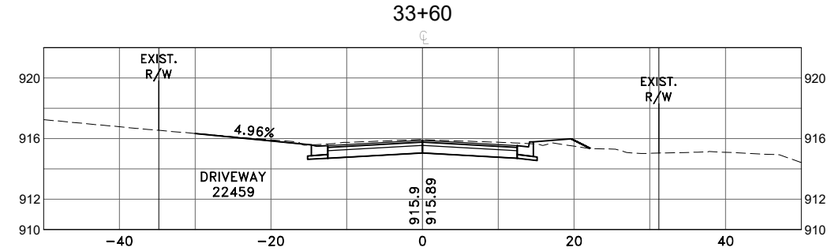
33+89



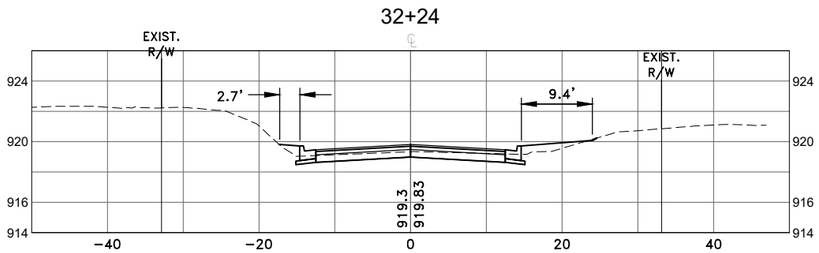
32+50



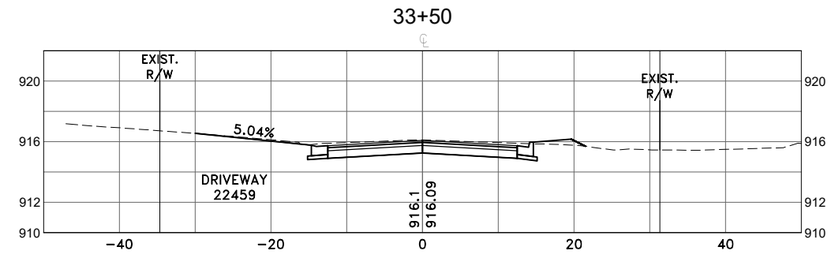
33+60



32+24



33+50



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

CROSS SECTIONS

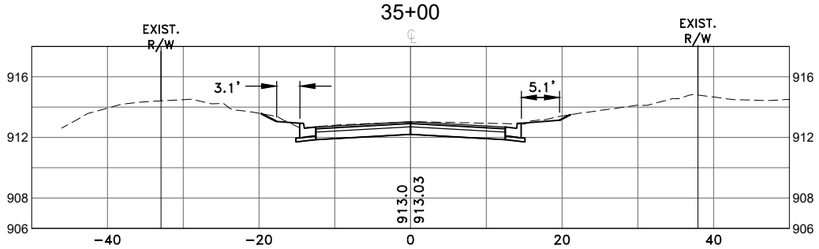
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X13 OF X36 SHEETS

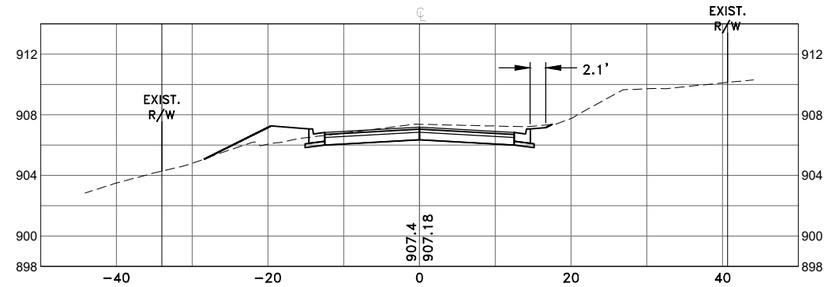
LW378

Dec 04, 2025 – 1:22pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

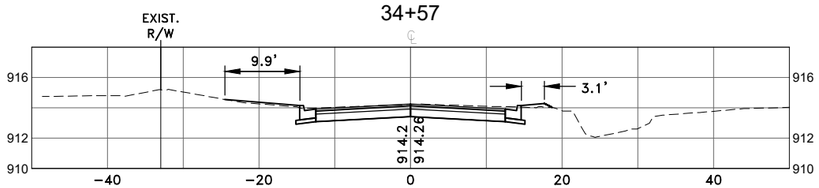
35+00



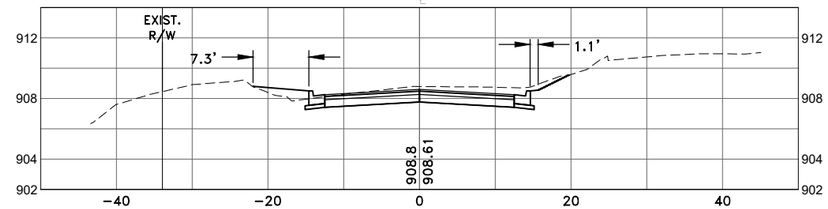
36+30



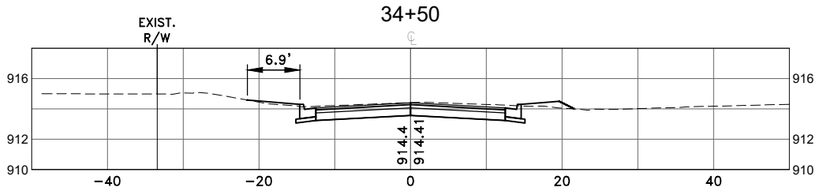
34+57



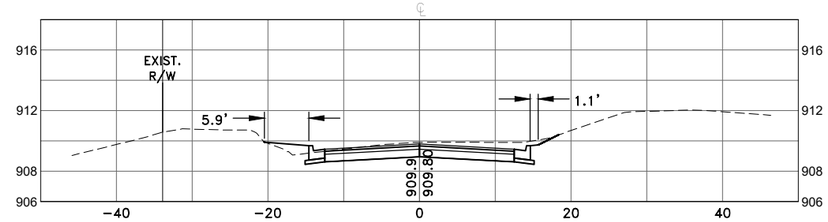
36+00



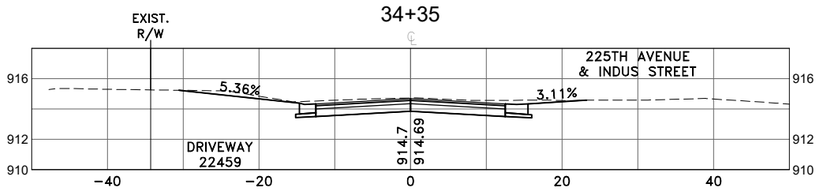
34+50



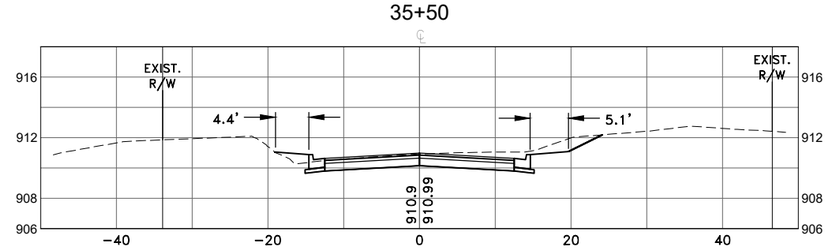
35+75



34+35



35+50



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

CROSS SECTIONS

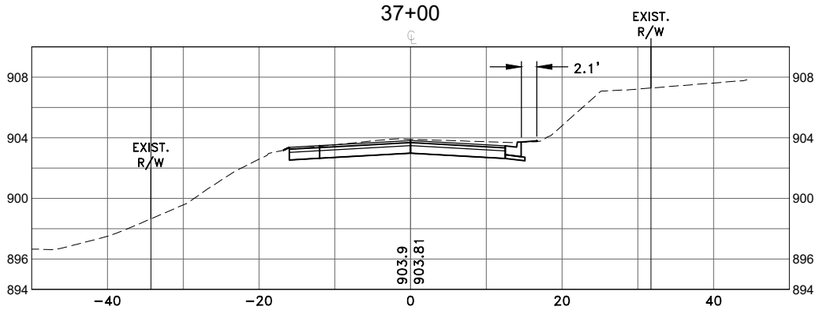
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X14 OF X36 SHEETS

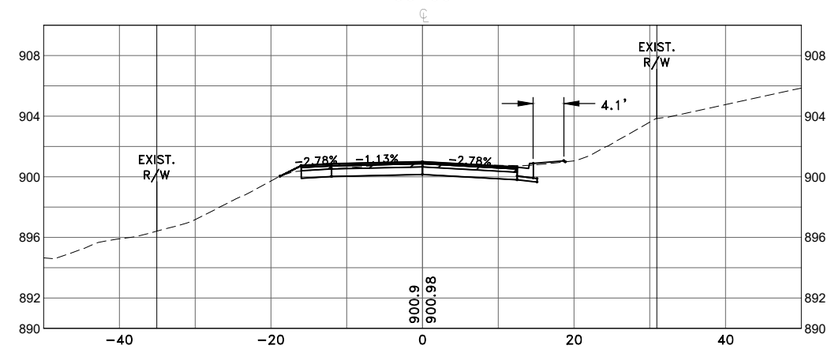
LW378

Dec 04, 2025 – 1:22pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

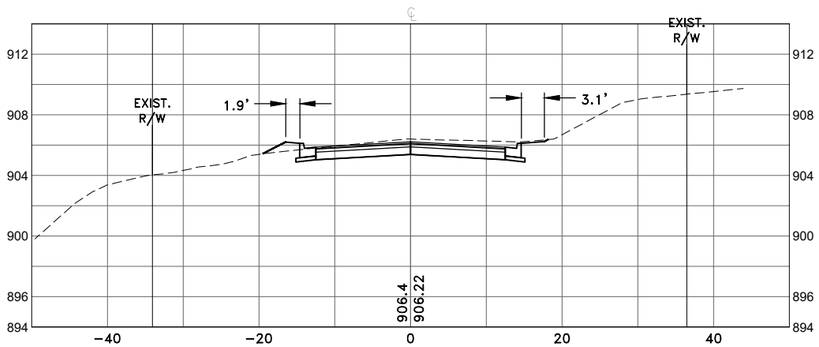
37+00



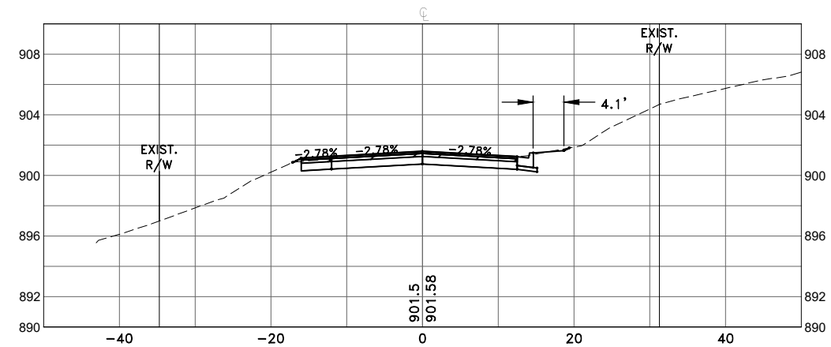
38+00



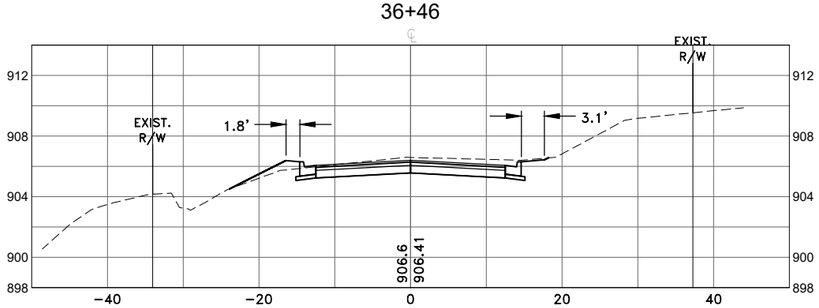
36+50



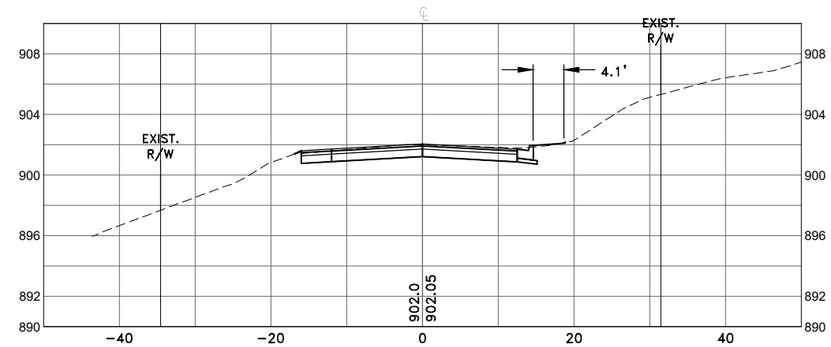
37+68.34



36+46



37+50



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

CROSS SECTIONS

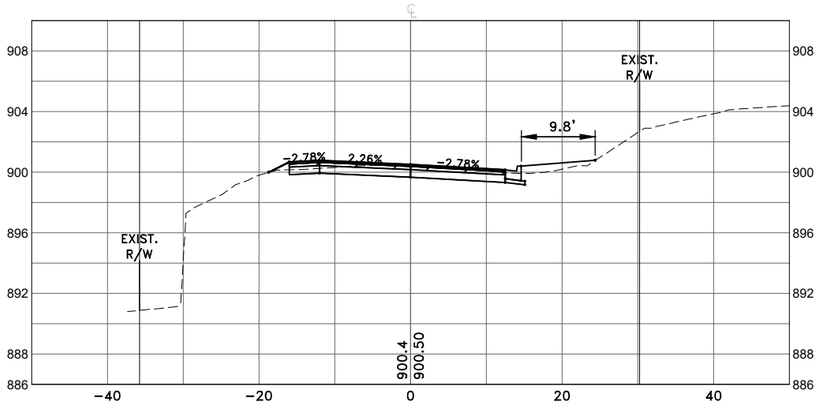
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X15 OF X36 SHEETS

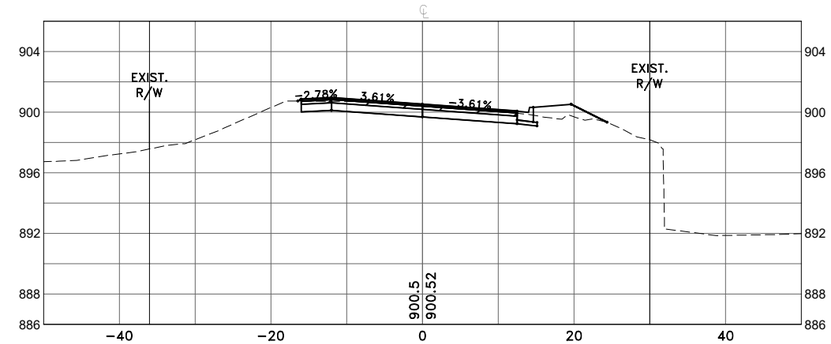
LW378

Dec 04, 2025 – 1:22pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

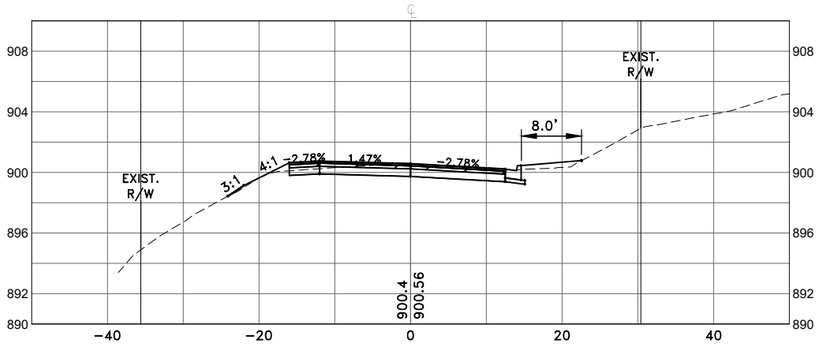
38+65



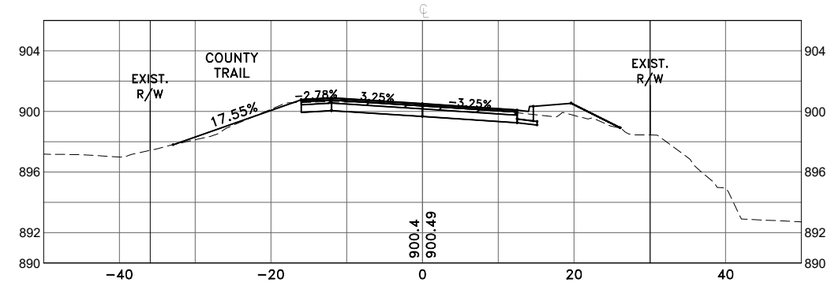
38+91



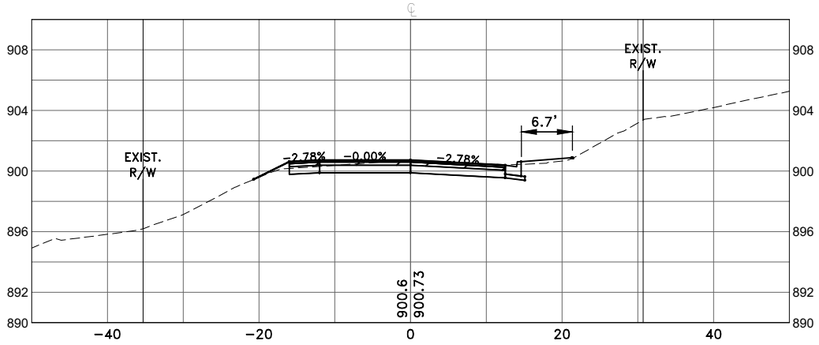
38+50



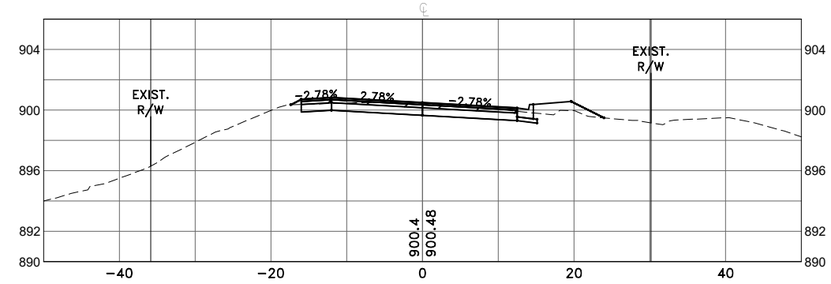
38+84



38+21.67



38+75



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

CROSS SECTIONS

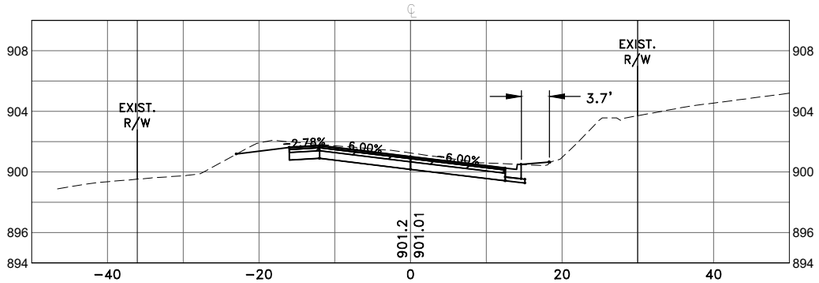
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X16 OF X36 SHEETS

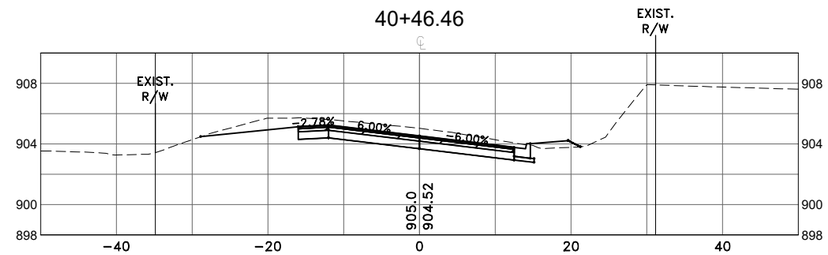
LW378

Dec 04, 2025 – 1:22pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

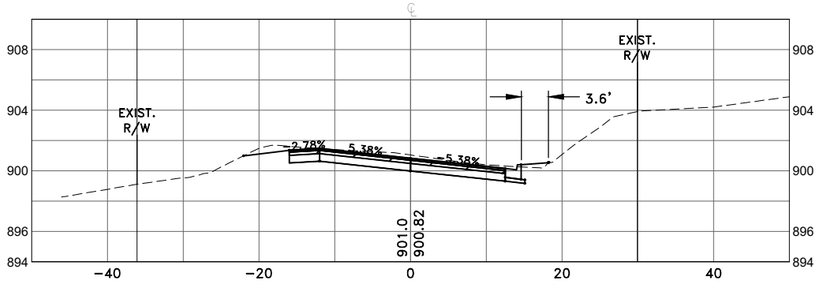
39+36.87



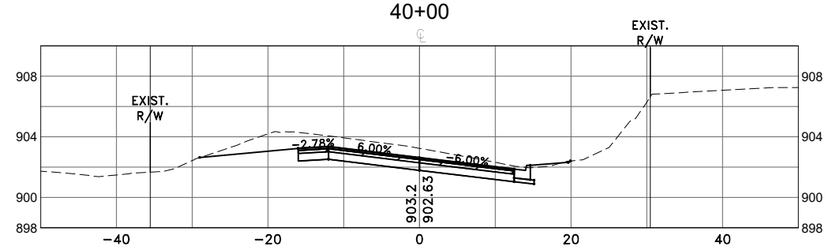
40+46.46



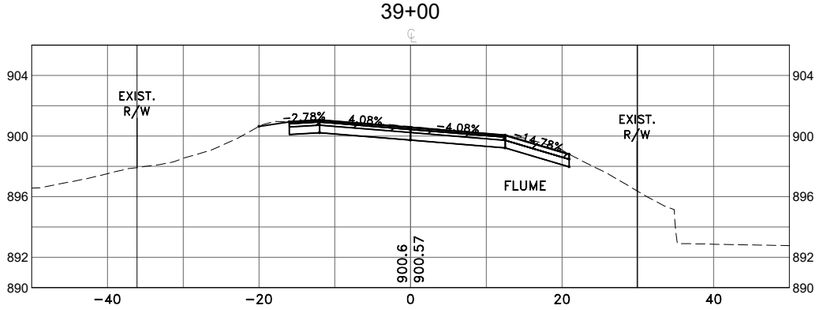
39+25



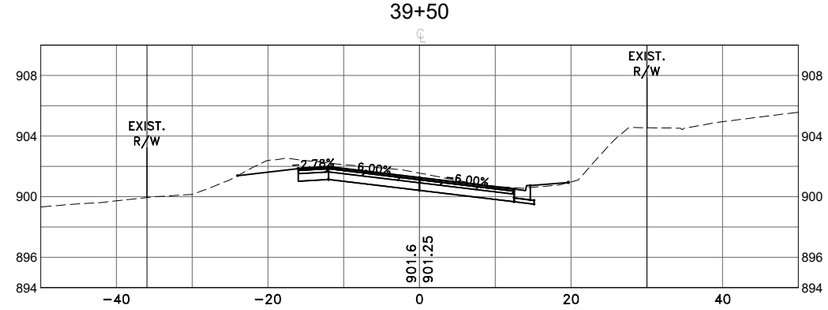
40+00



39+00



39+50



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

CROSS SECTIONS

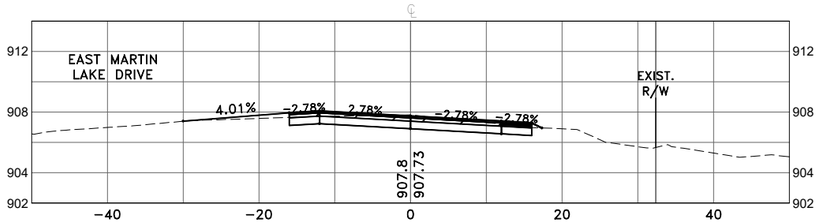
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X17 OF X36 SHEETS

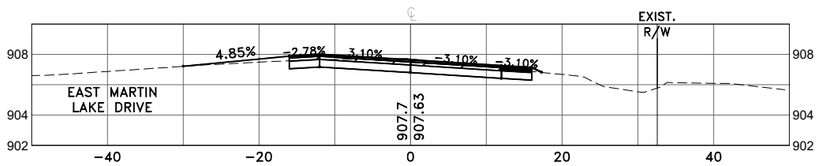
LW378

Dec 04, 2025 – 11:23pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

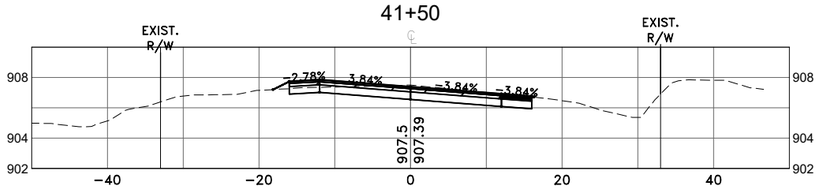
42+01.13



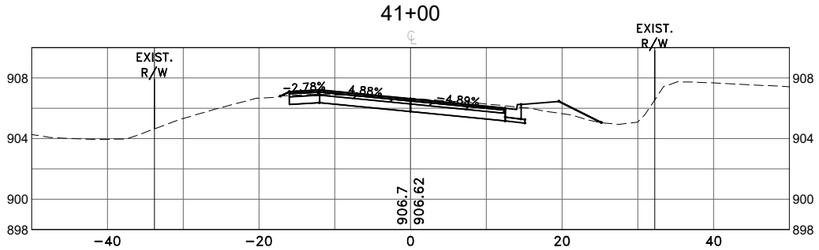
41+86



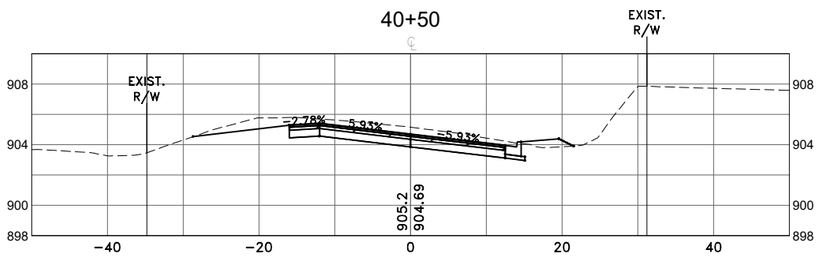
41+50



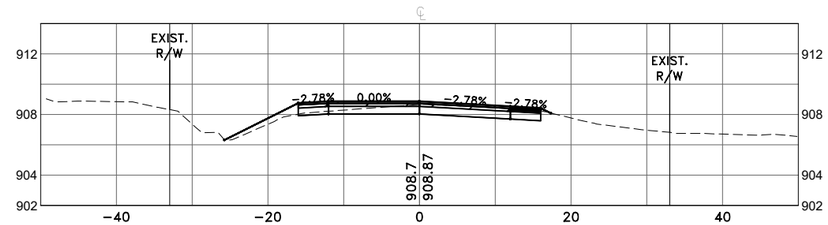
41+00



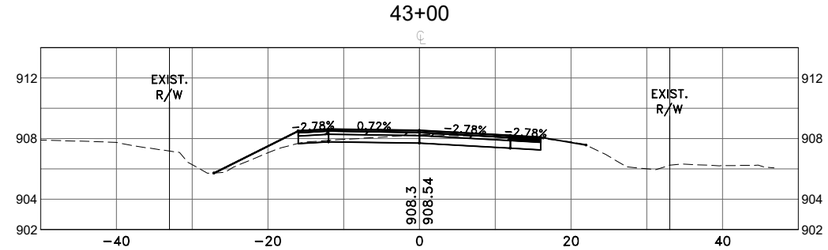
40+50



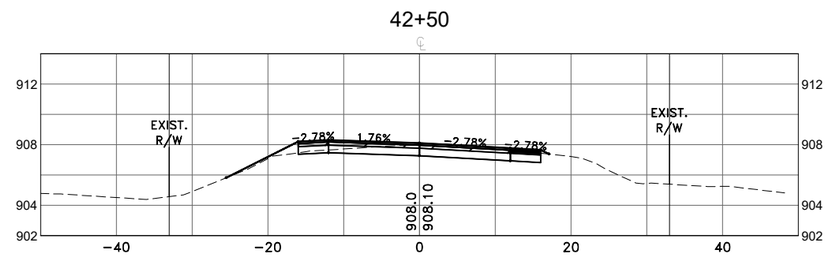
43+34.46



43+00



42+50



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

CROSS SECTIONS

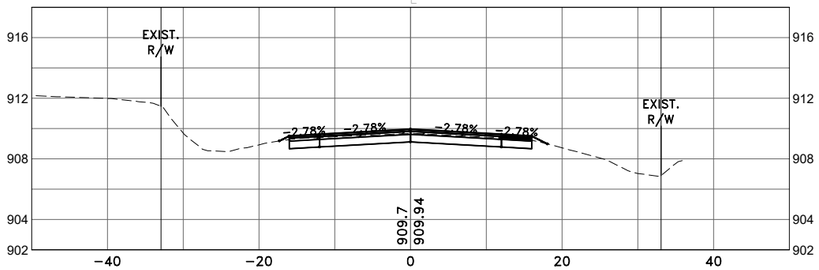
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X18 OF X36 SHEETS

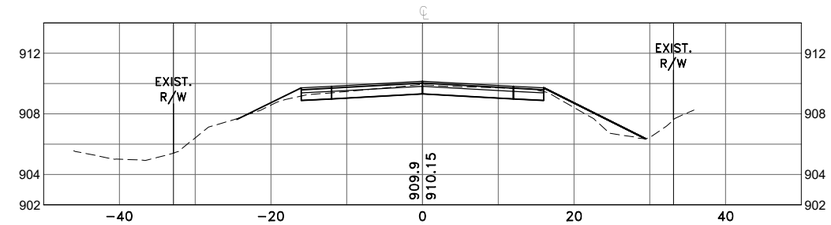
LW378

Dec 04, 2025 – 1:23pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

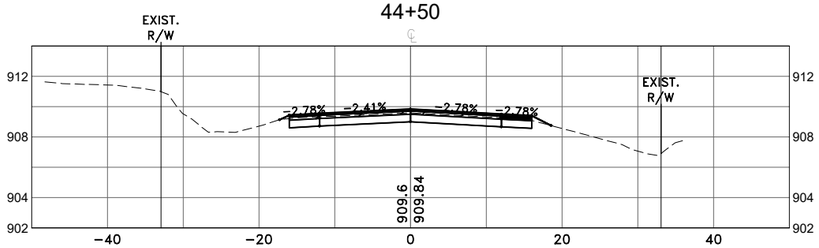
44+67.79



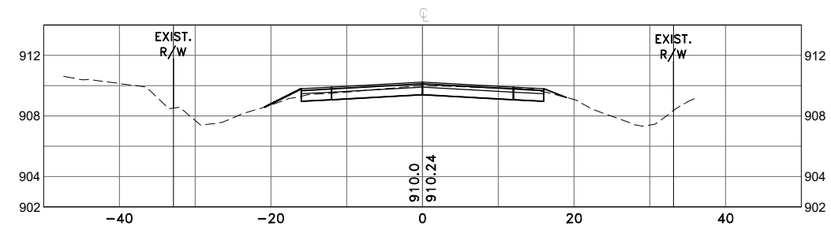
46+50



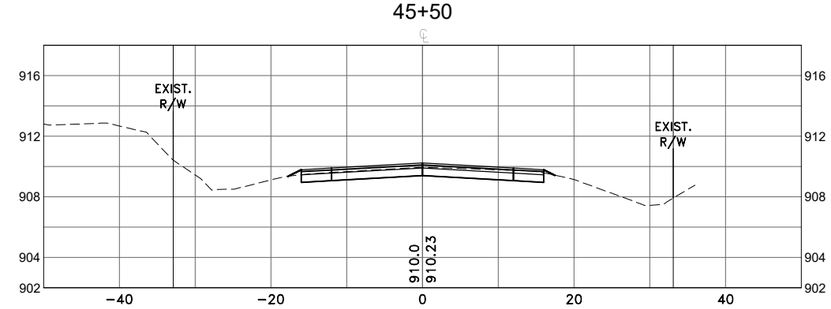
44+50



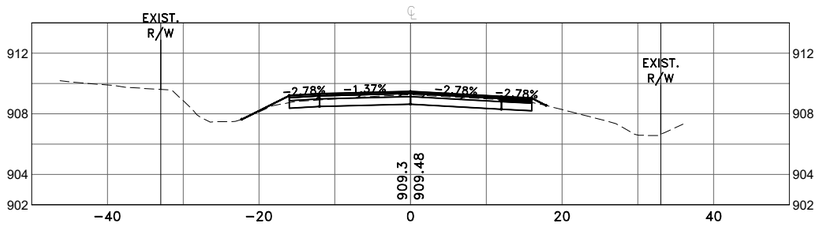
46+00



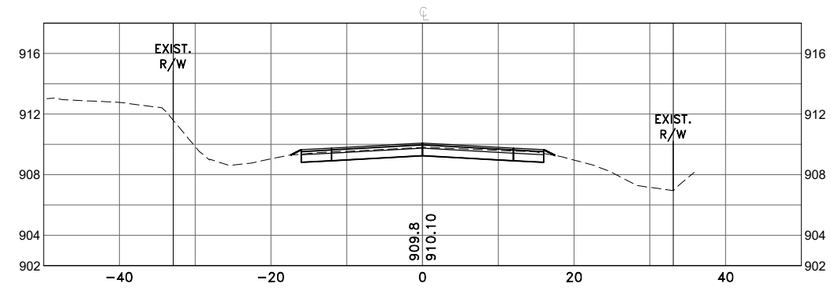
45+50



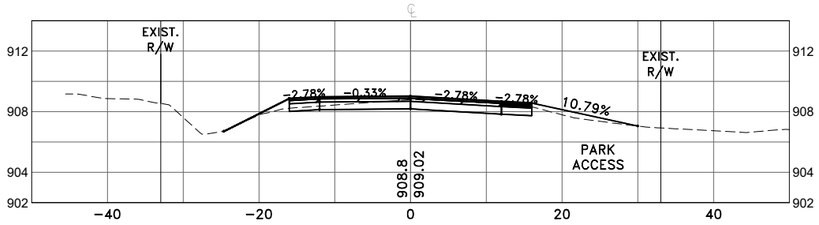
44+00



45+00



43+50



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

CROSS SECTIONS

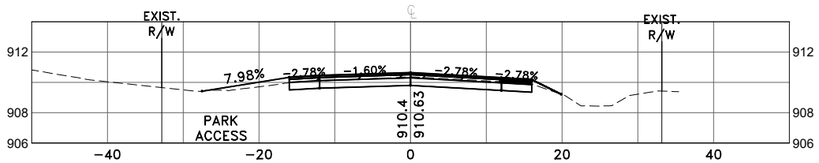
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X19 OF X36 SHEETS

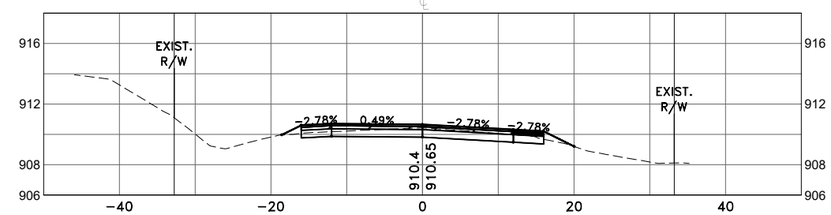
LW378

Dec 04, 2025 – 11:23pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

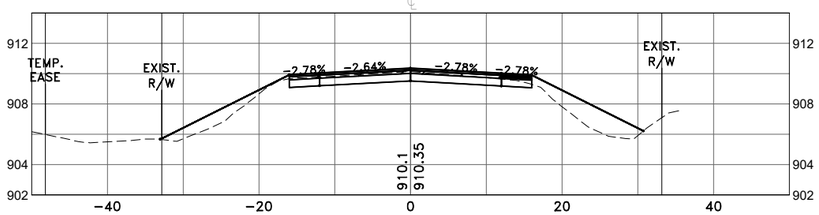
48+00



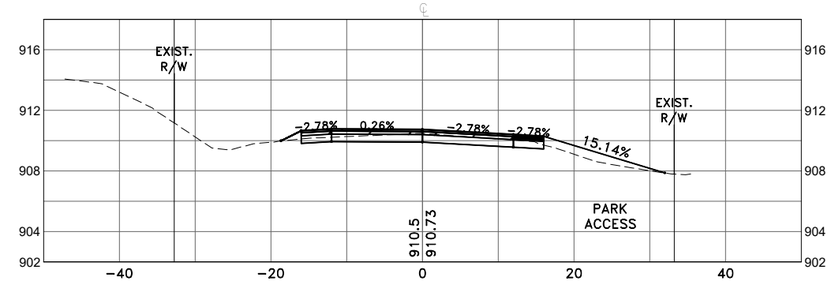
49+00



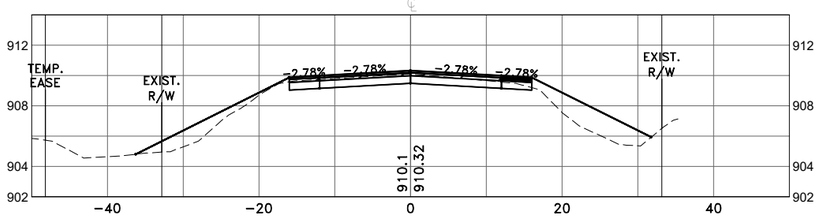
47+50



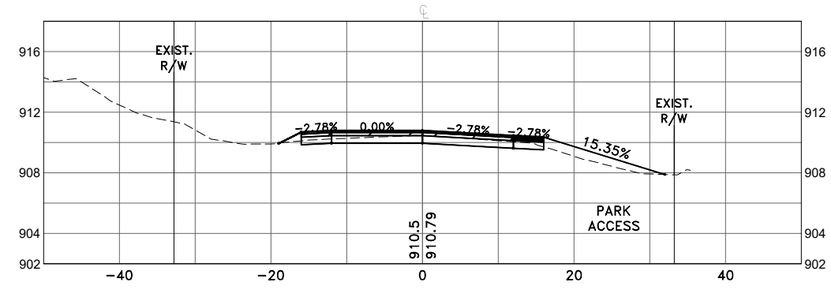
48+89



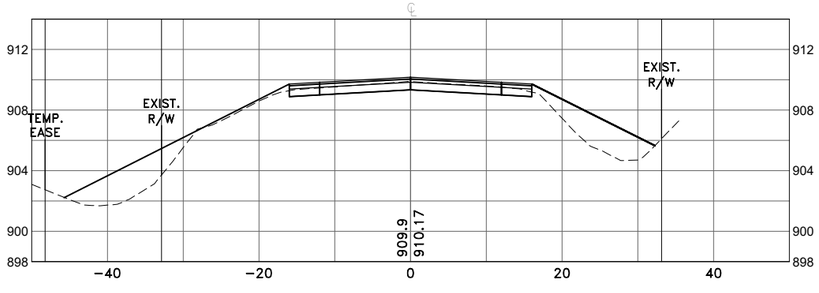
47+43.23



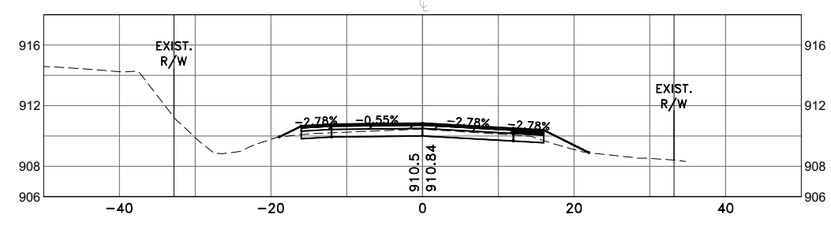
48+76.56



47+00



48+50



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

CROSS SECTIONS

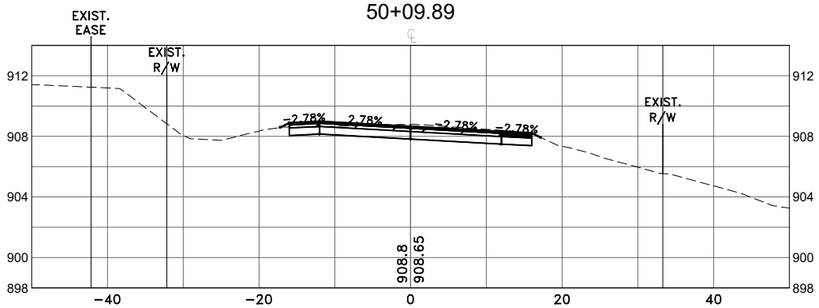
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X20 OF X36 SHEETS

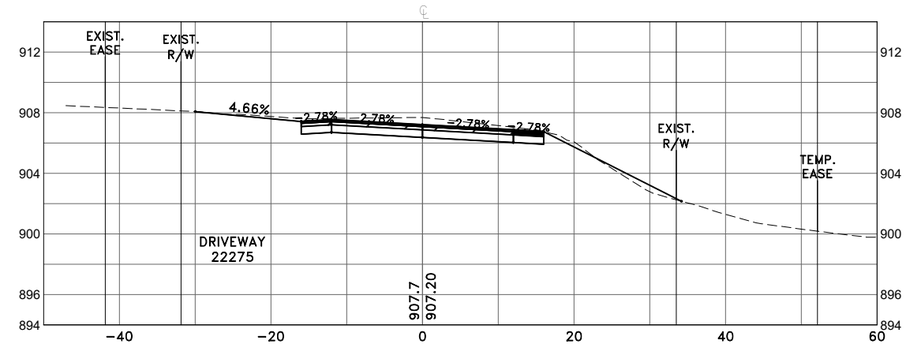
LW378

Dec 04, 2025 – 11:23pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

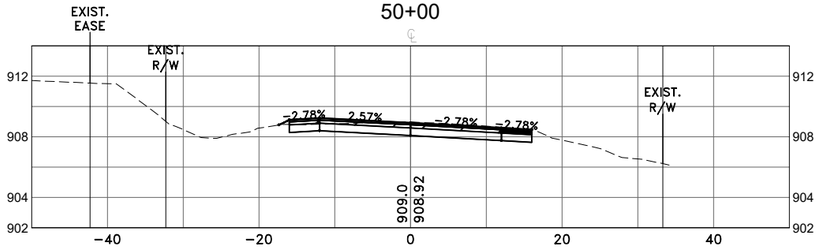
50+09.89



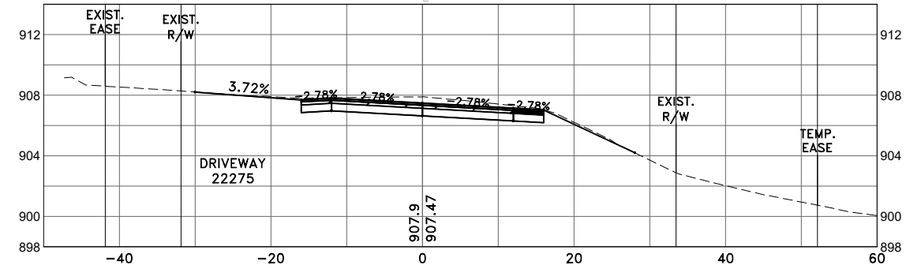
50+59



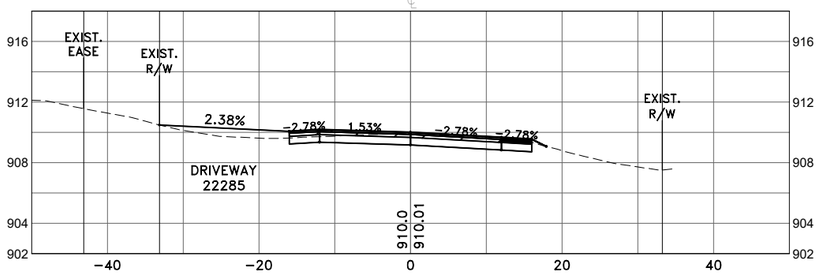
50+00



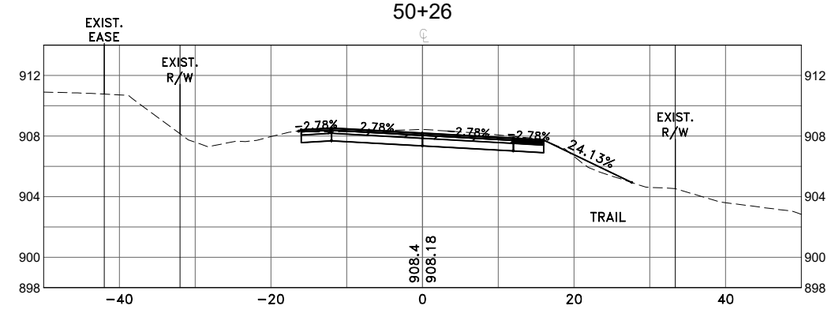
50+50



49+50



50+26



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

CROSS SECTIONS

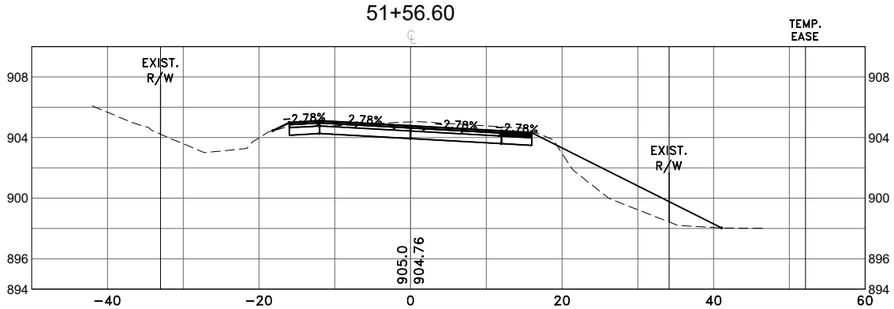
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X21 OF X36 SHEETS

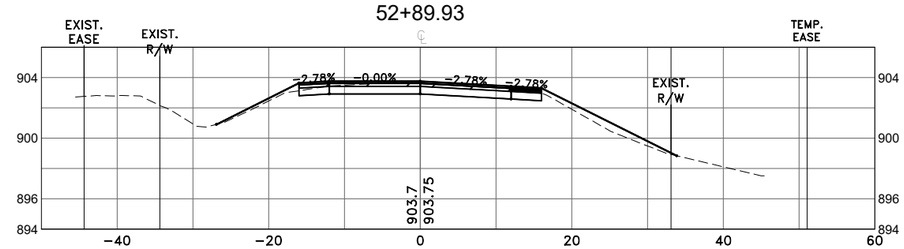
LW378

Dec 04, 2025 – 11:23pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

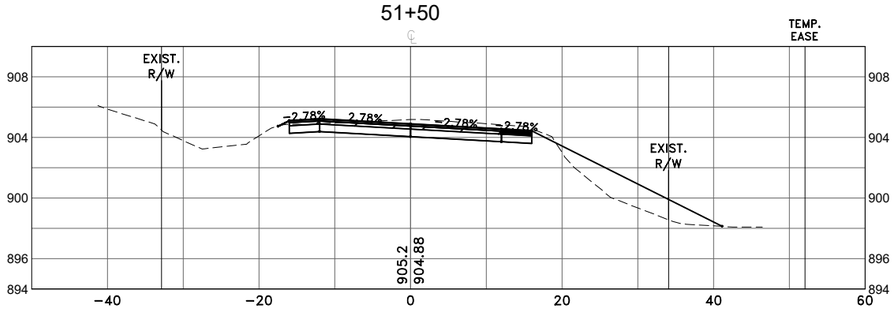
51+56.60



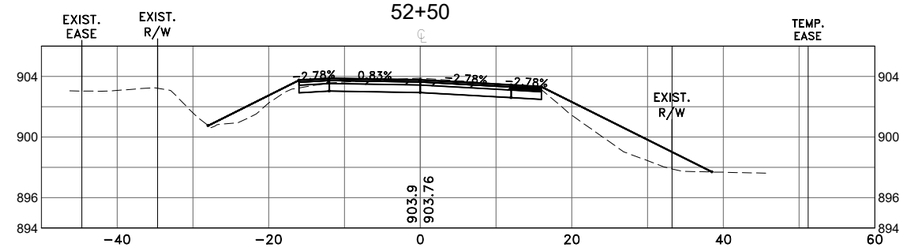
52+89.93



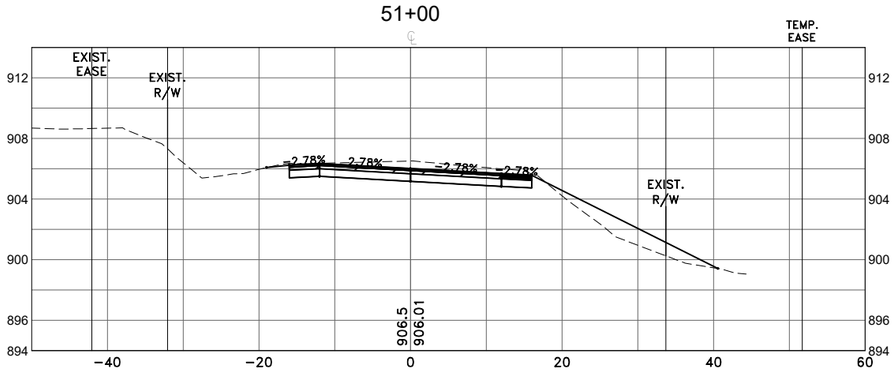
51+50



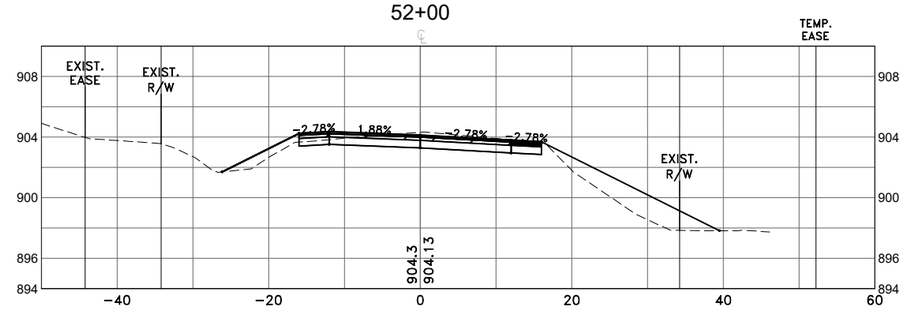
52+50



51+00



52+00



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

CROSS SECTIONS

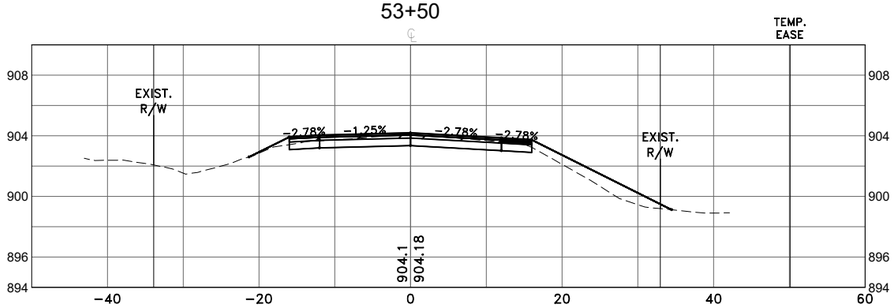
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X22 OF X36 SHEETS

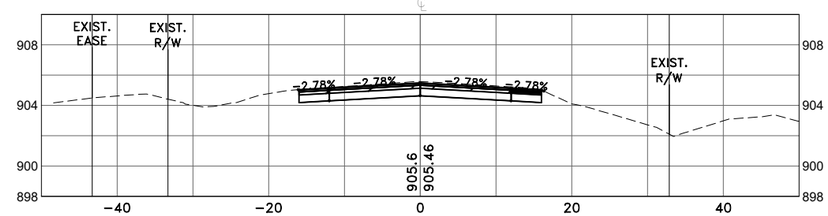
LW378

Dec 04, 2025 – 1:23pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

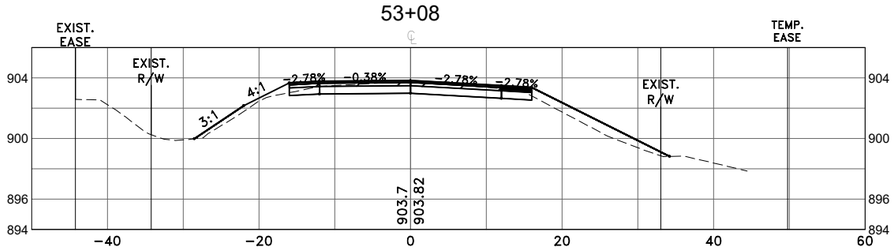
53+50



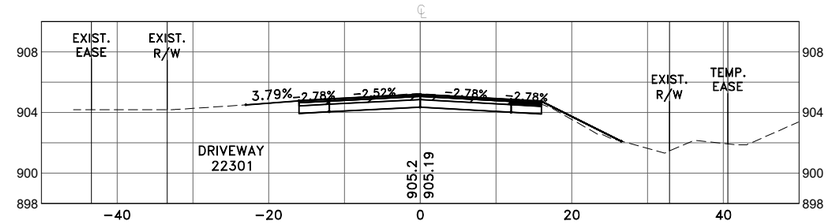
54+23.26



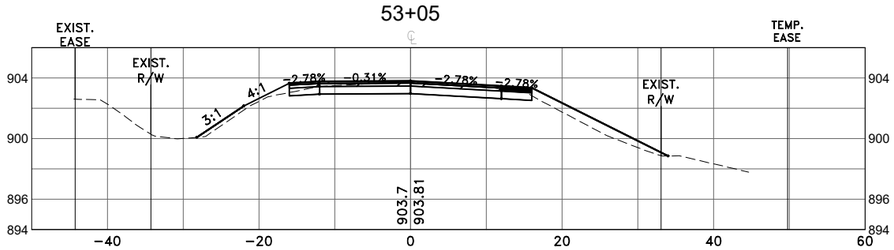
53+08



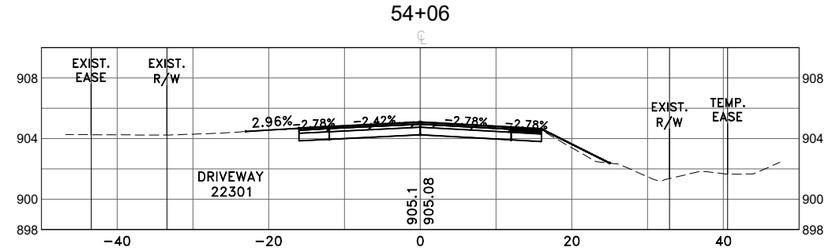
54+11



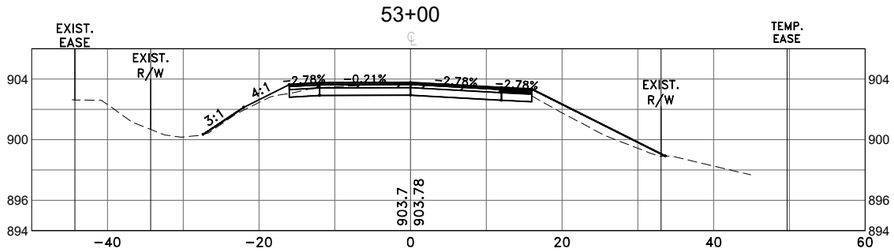
53+05



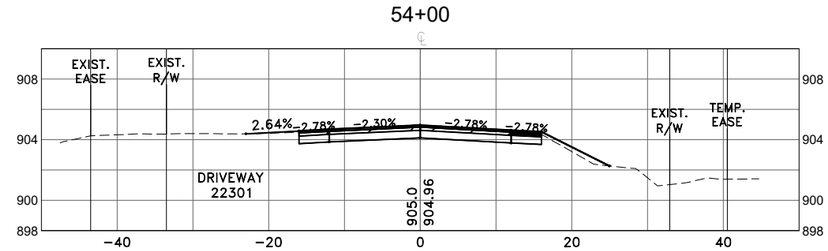
54+06



53+00



54+00



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

CROSS SECTIONS

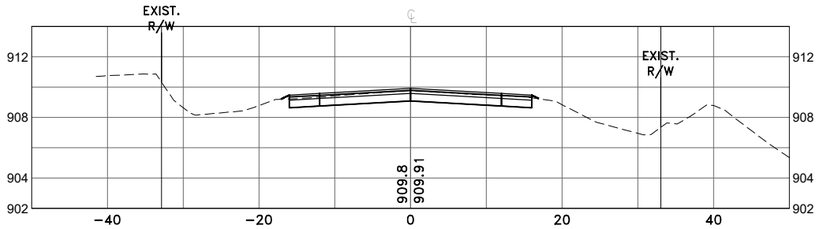
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X23 OF X36 SHEETS

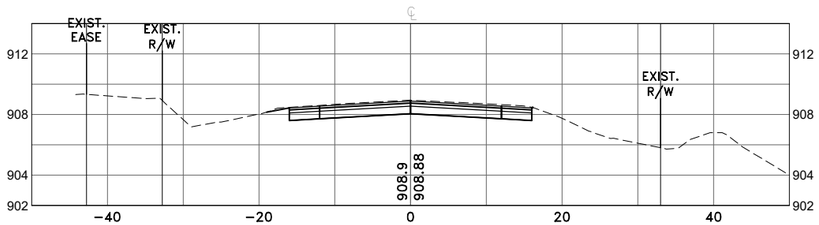
LW378

Dec 04, 2025 – 1:23pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

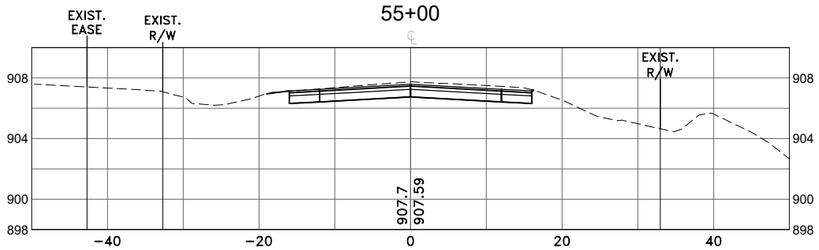
56+00



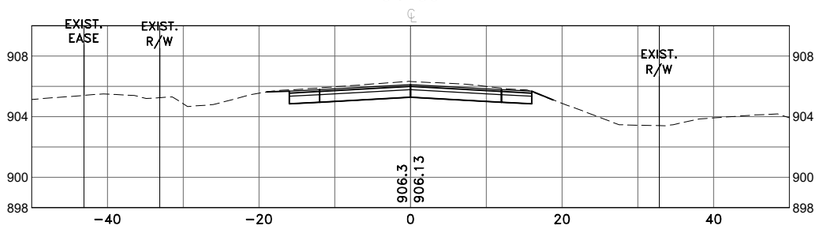
55+50



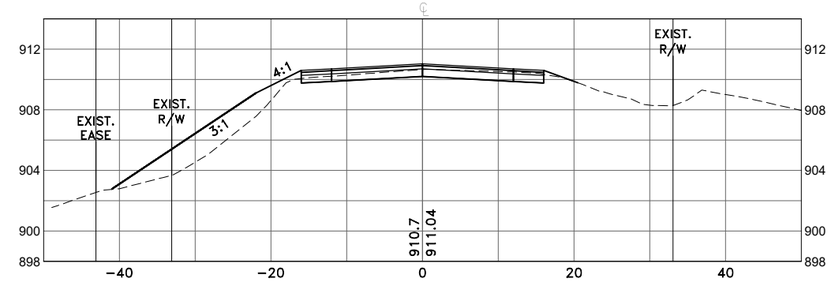
55+00



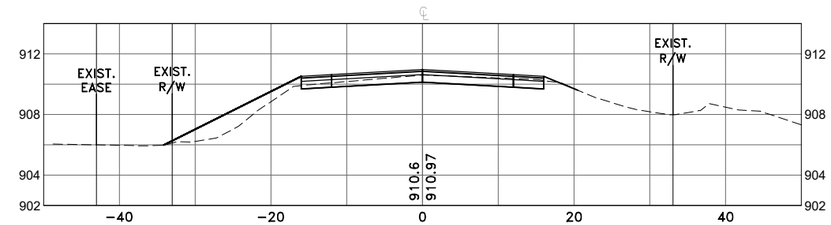
54+50



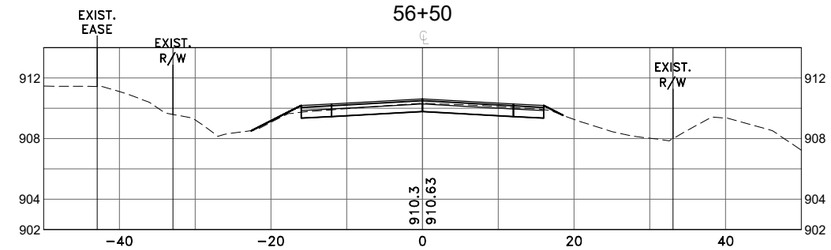
57+50



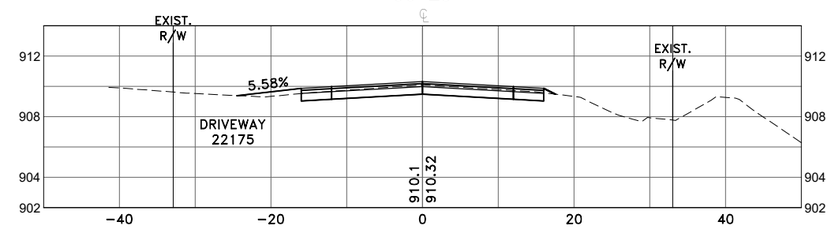
57+00



56+50



56+25



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

CROSS SECTIONS

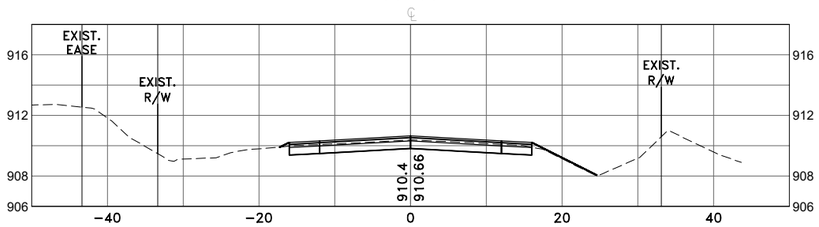
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X24 OF X36 SHEETS

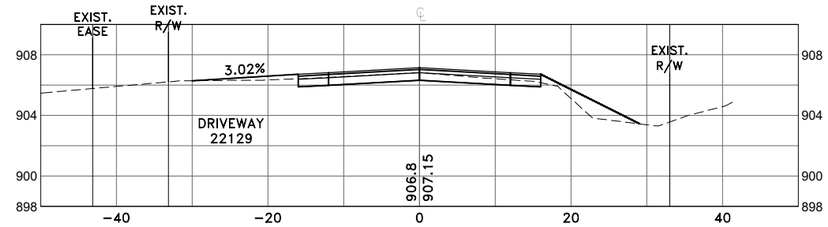
LW378

Dec 04, 2025 – 1:23pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

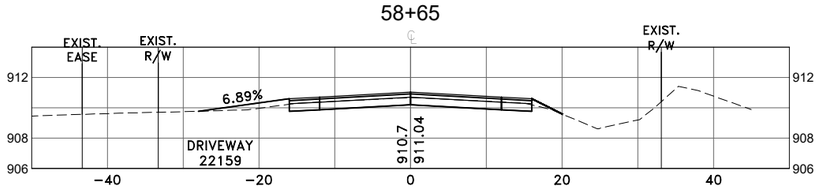
59+00



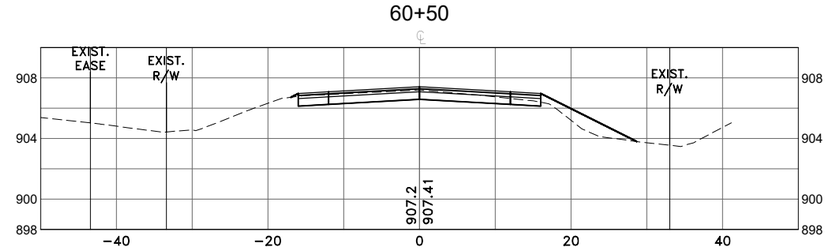
60+71



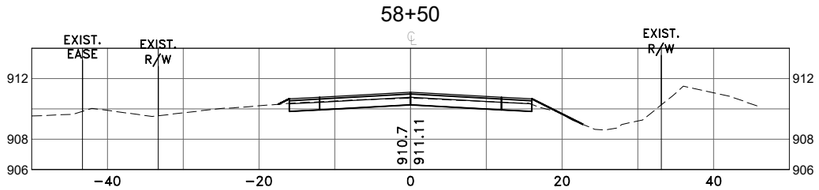
58+65



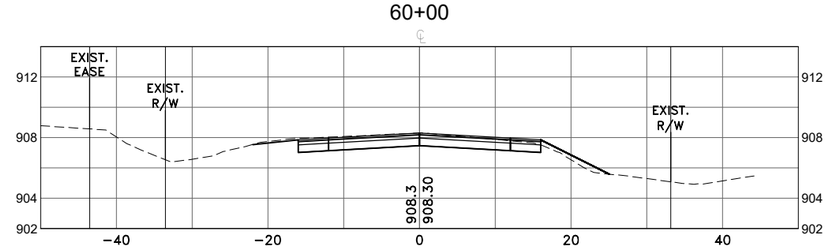
60+50



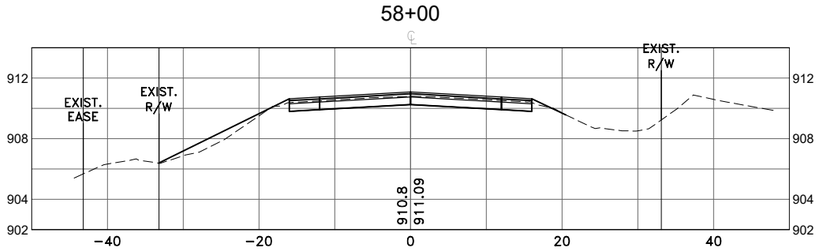
58+50



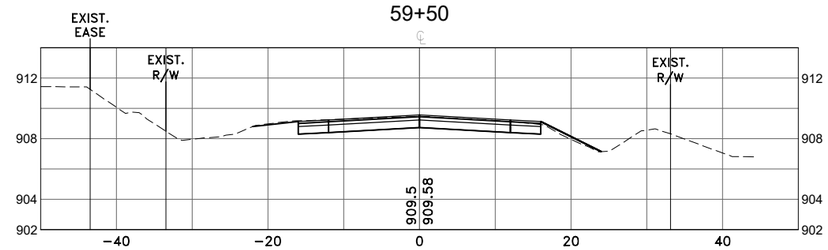
60+00



58+00



59+50



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

CROSS SECTIONS

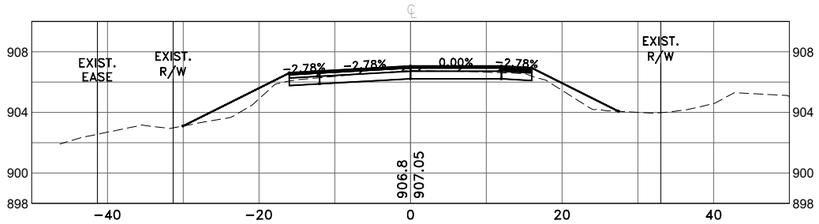
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X25 OF X36 SHEETS

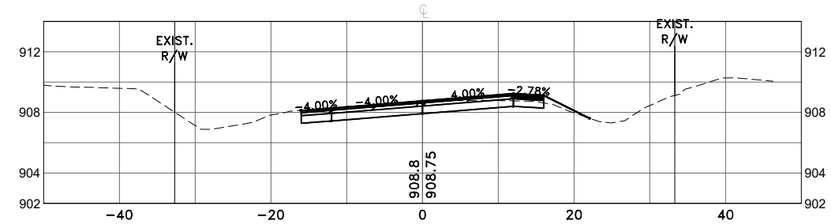
LW378

Dec 04, 2025 – 1:23pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

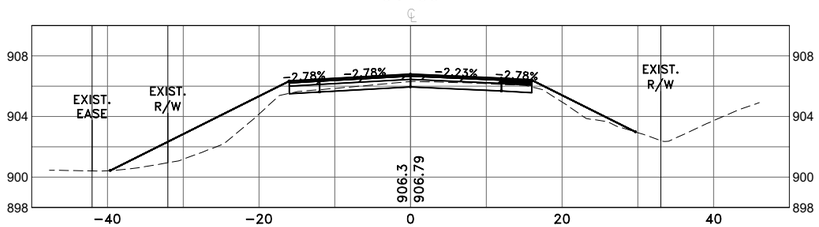
61+99.39



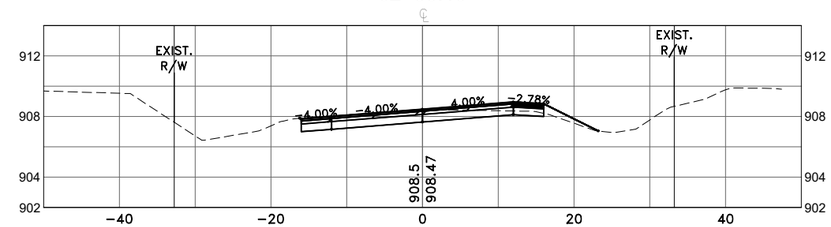
63+00



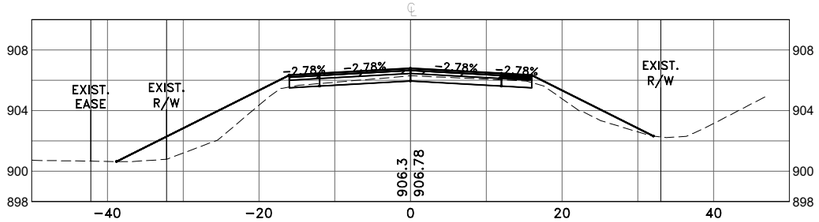
61+50



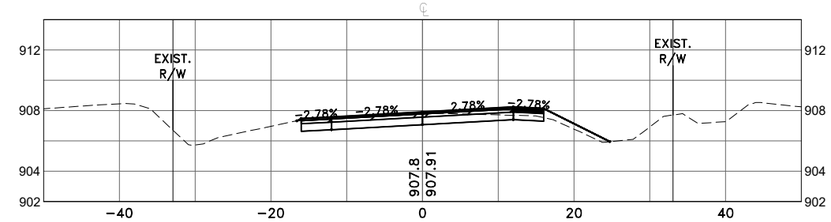
62+88.19



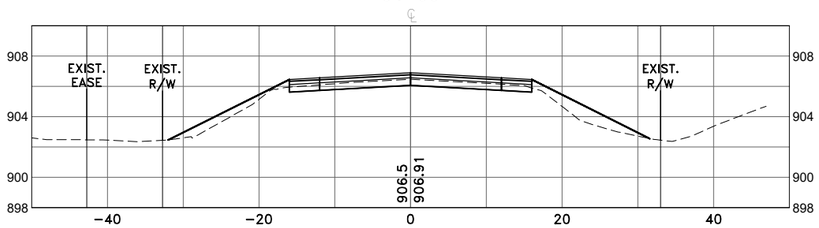
61+37.72



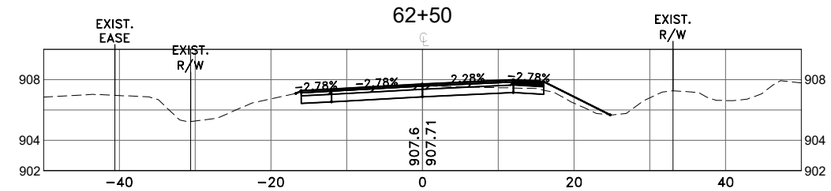
62+61.11



61+00



62+50



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

CROSS SECTIONS

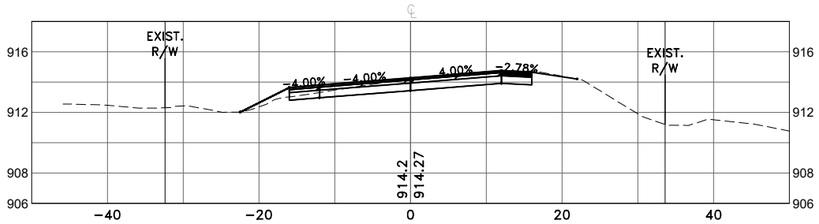
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X26 OF X36 SHEETS

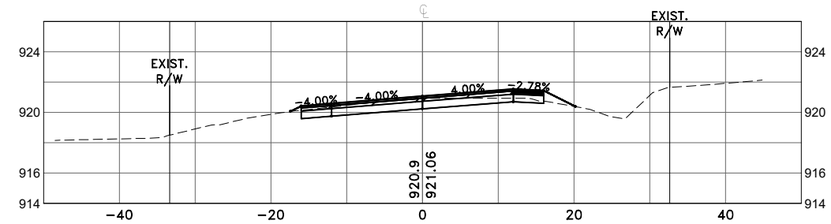
LW378

Dec 04, 2025 – 1:23pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

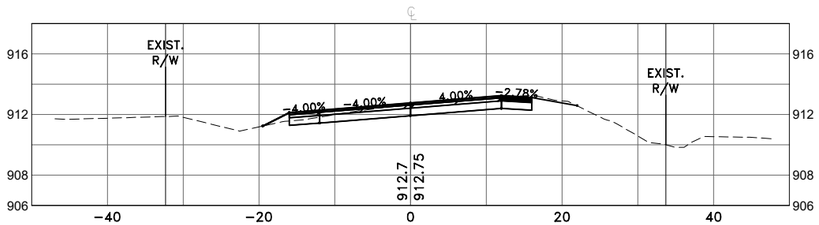
65+00



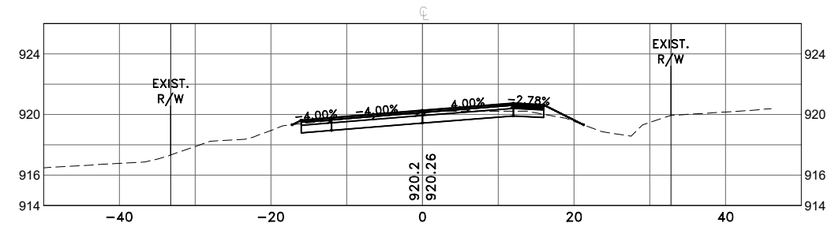
66+66.91



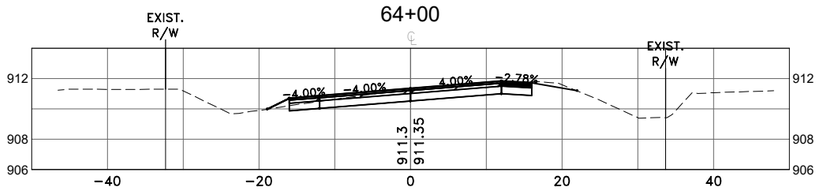
64+50



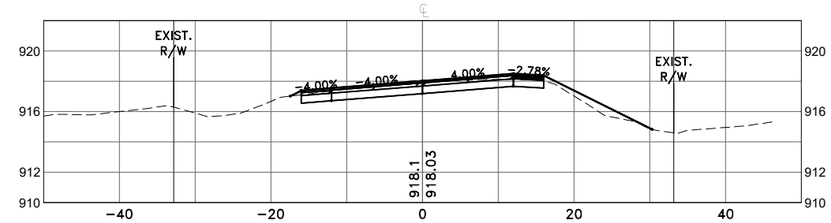
66+50



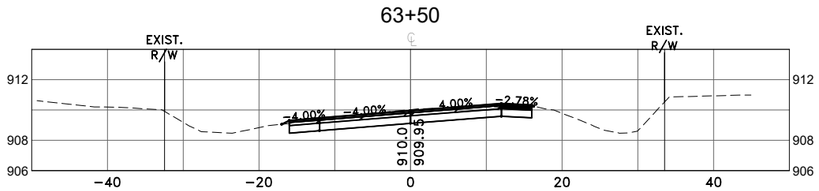
64+00



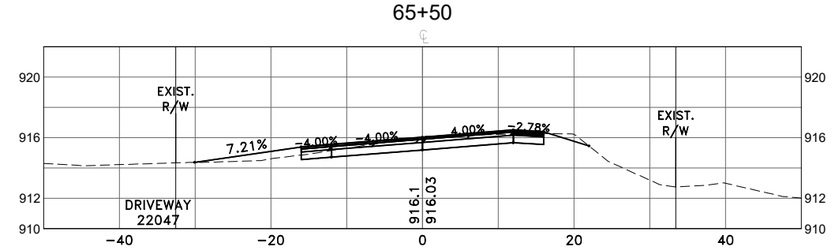
66+00



63+50



65+50



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

CROSS SECTIONS

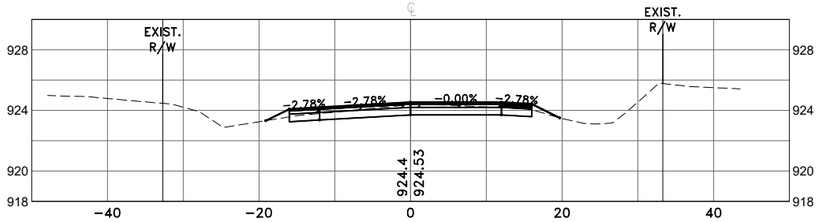
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X27 OF X36 SHEETS

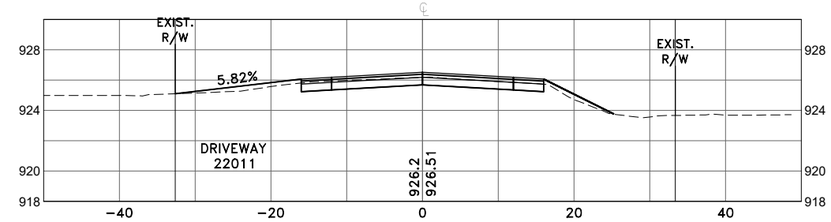
LW378

Dec 04, 2025 – 1:23pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

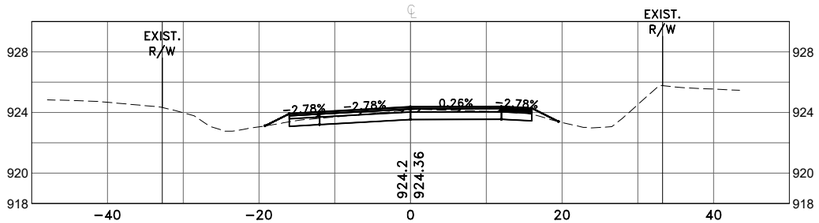
67+55.71



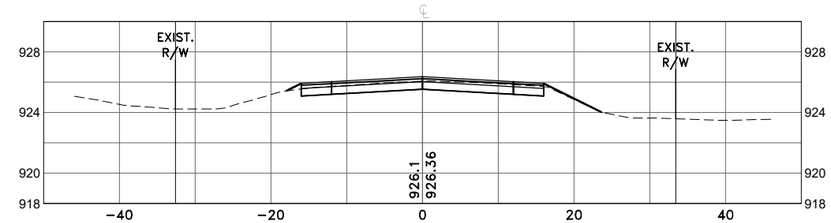
68+71



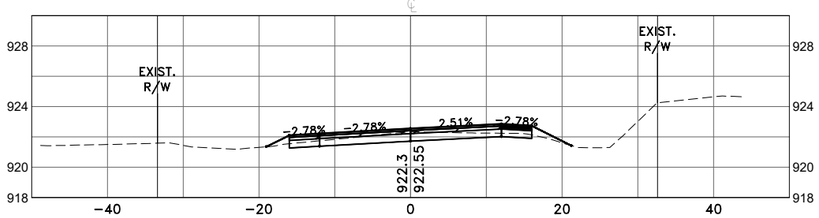
67+50



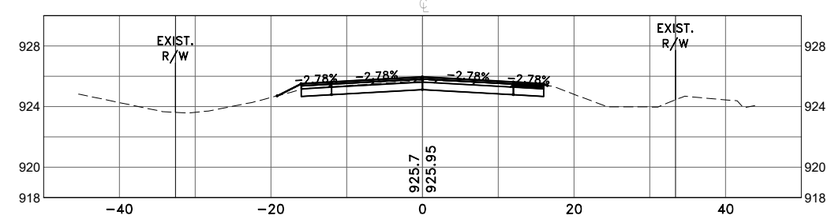
68+50



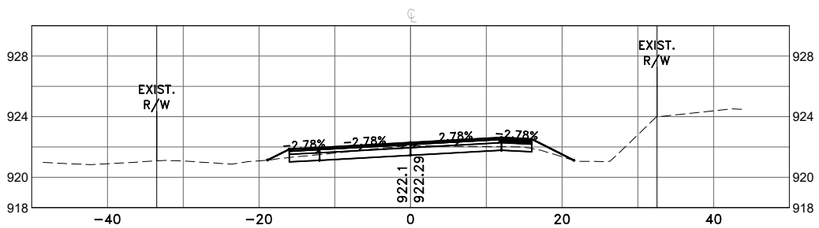
67+00



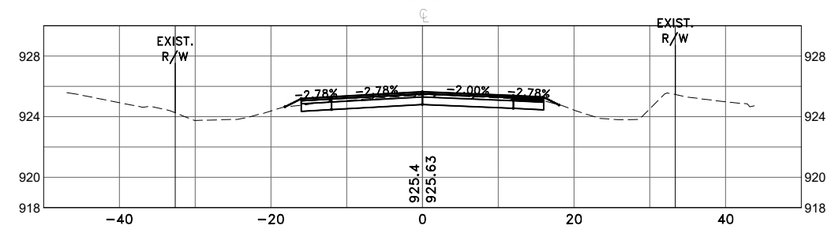
68+17.38



66+93.99



68+00



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

CROSS SECTIONS

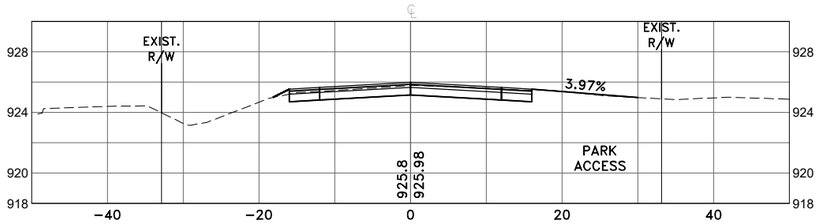
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X28 OF X36 SHEETS

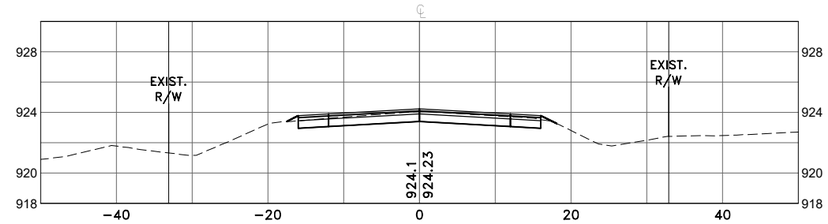
LW378

Dec 04, 2025 – 1:23pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

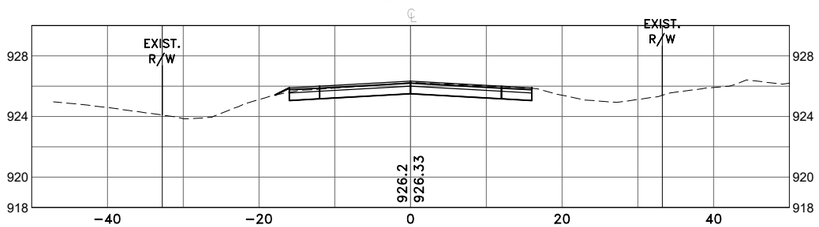
70+00



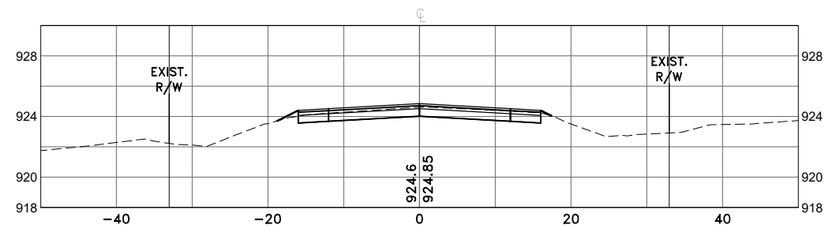
71+50



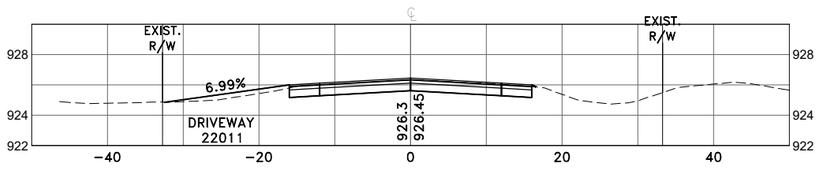
69+50



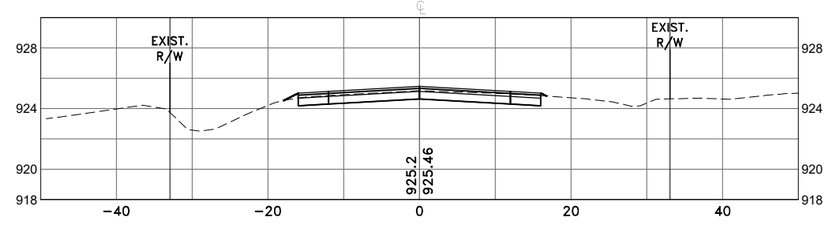
71+00



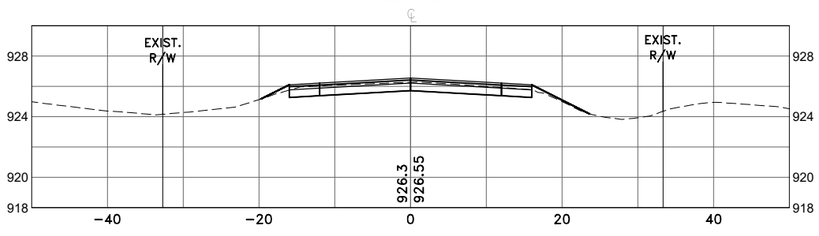
69+25



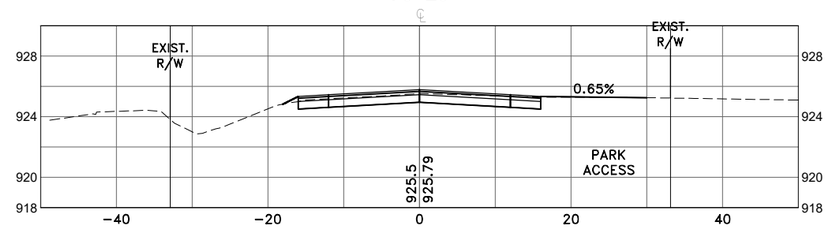
70+50



69+00



70+20



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

CROSS SECTIONS

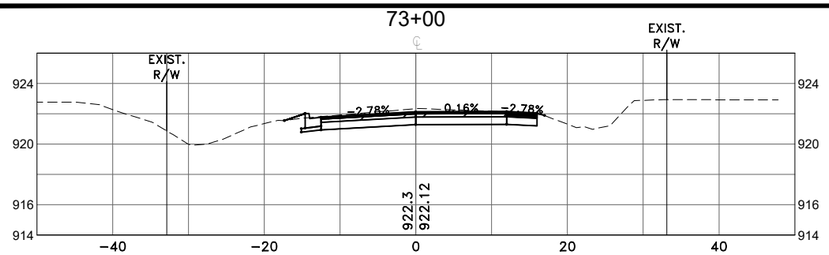
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X29 OF X36 SHEETS

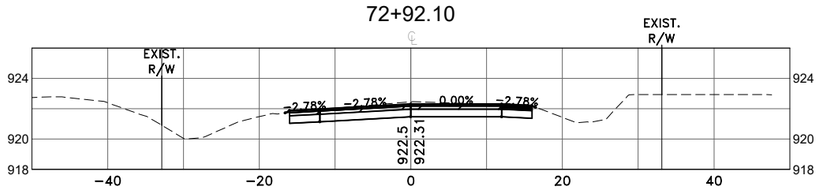
LW378

Dec 04, 2025 – 1:24pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

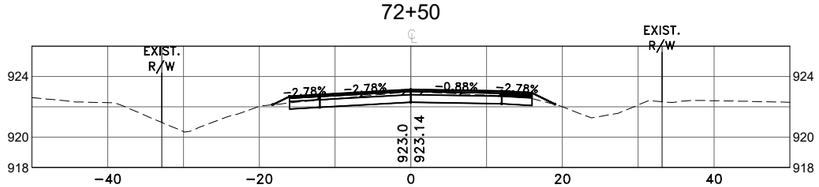
73+00



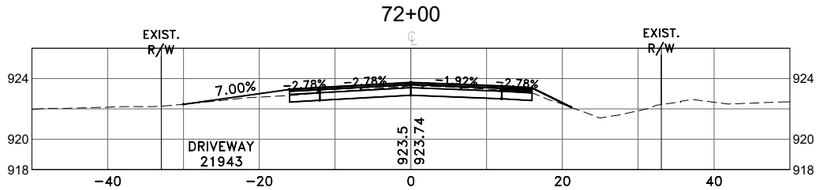
72+92.10



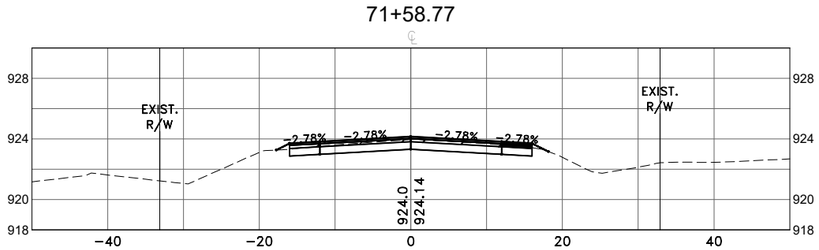
72+50



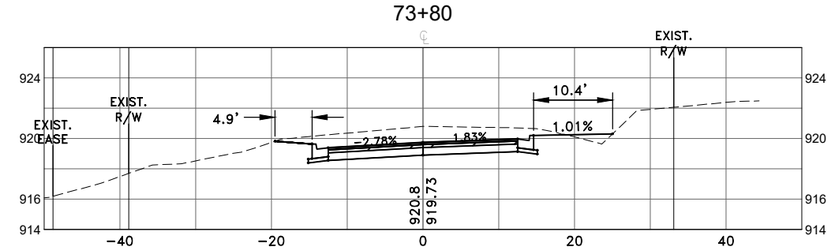
72+00



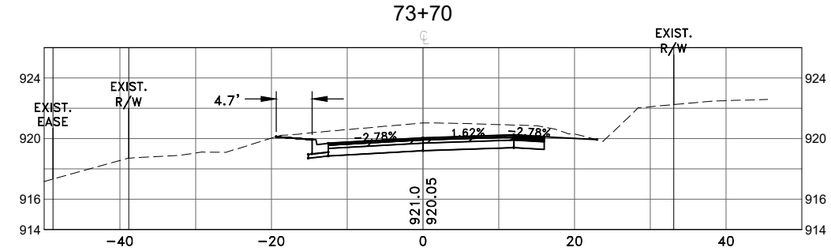
71+58.77



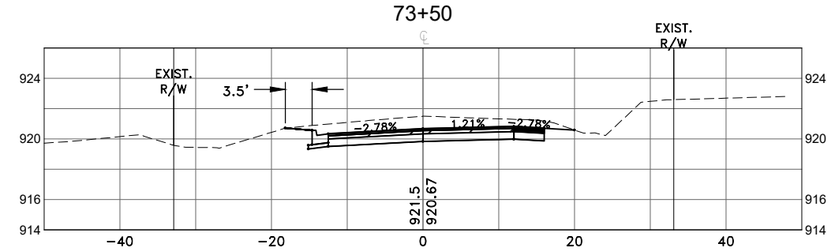
73+80



73+70



73+50



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

CROSS SECTIONS

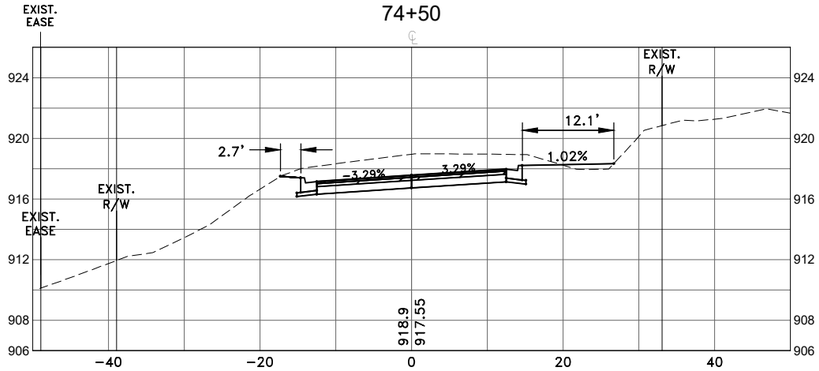
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X30 OF X36 SHEETS

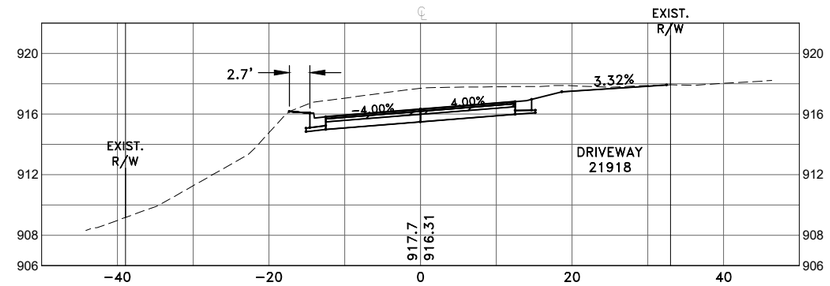
LW378

Dec 04, 2025 – 1:24pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

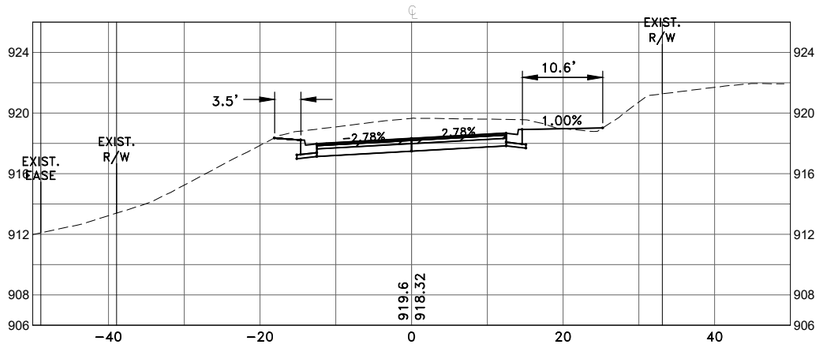
74+50



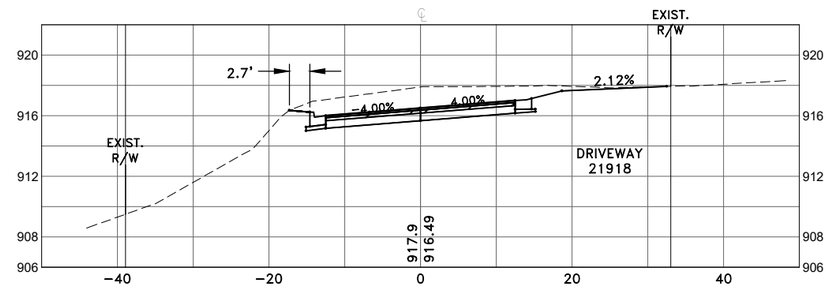
74+90



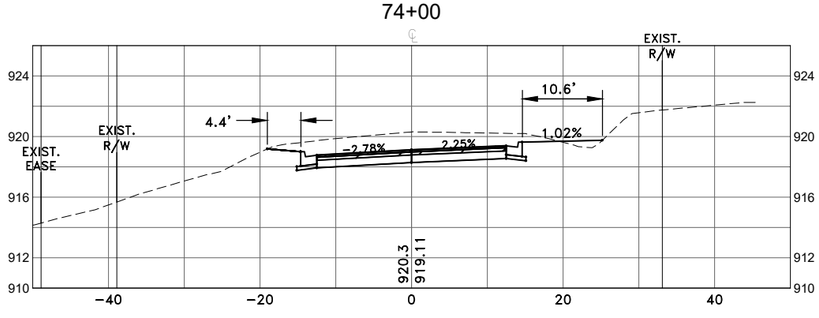
74+25.43



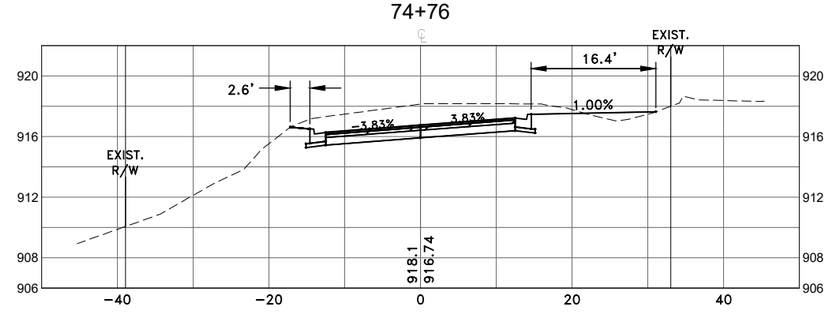
74+84.10



74+00



74+76



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

CROSS SECTIONS

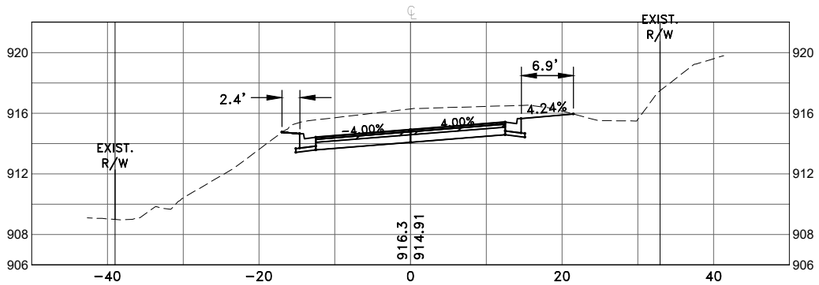
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X31 OF X36 SHEETS

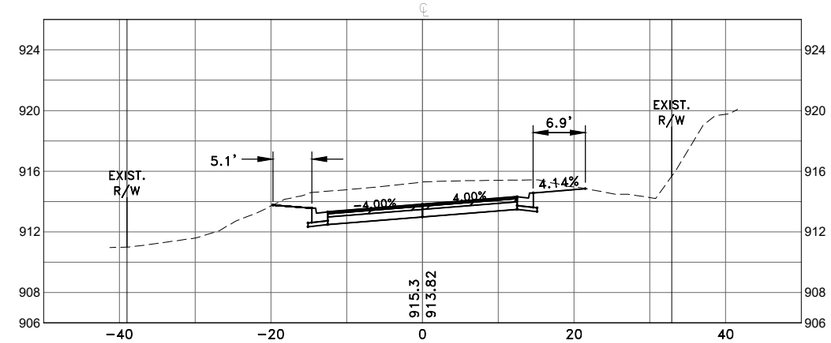
LW378

Dec 04, 2025 – 1:24pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

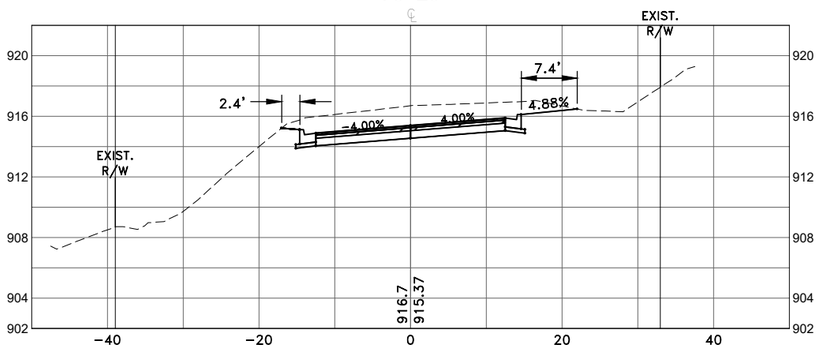
75+35



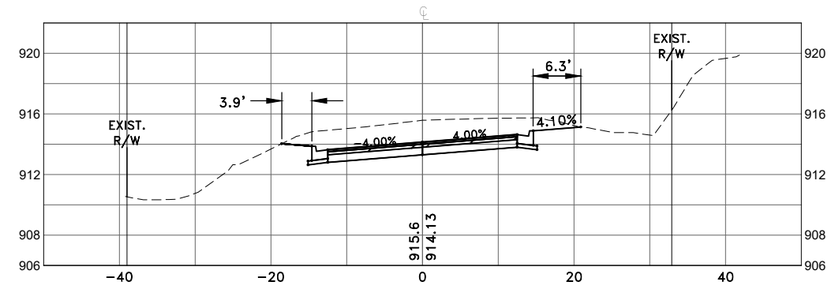
75+70



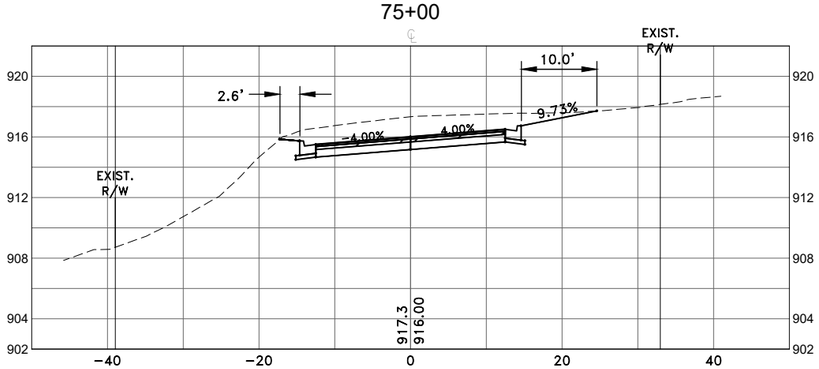
75+20



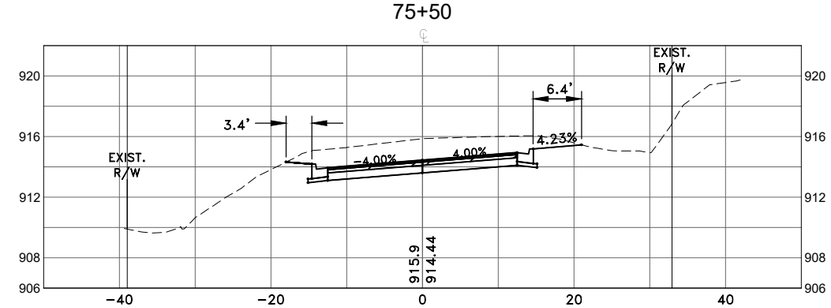
75+60



75+00



75+50



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

CROSS SECTIONS

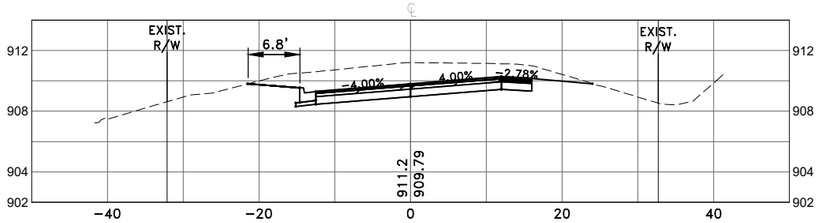
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X32 OF X36 SHEETS

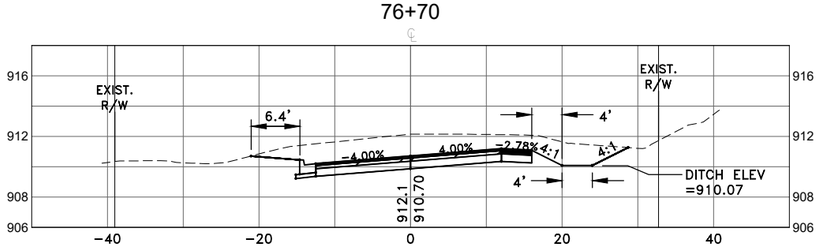
LW378

Dec 04, 2025 – 1:24pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

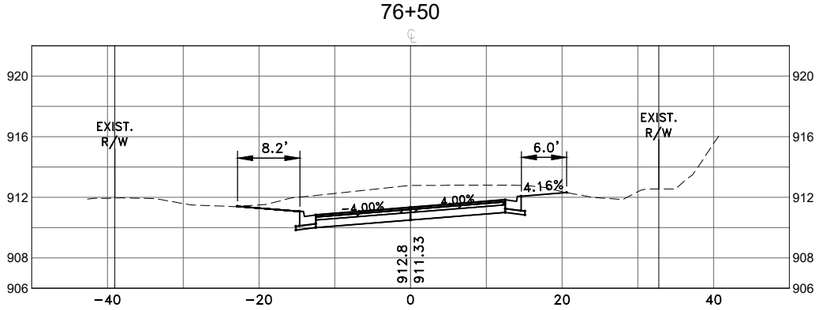
77+00



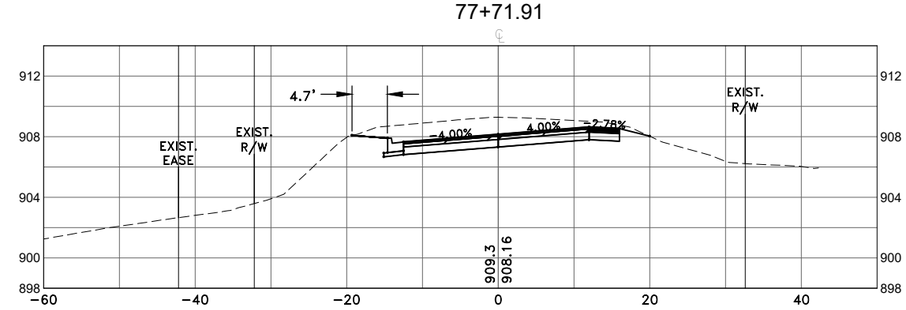
76+70



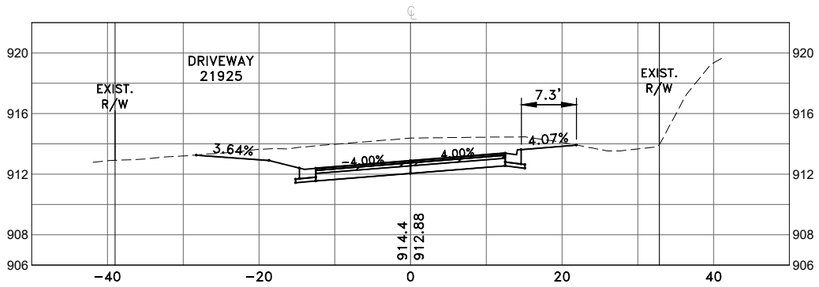
76+50



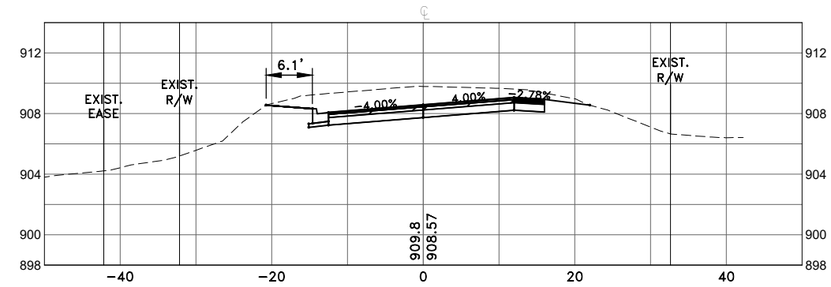
77+71.91



76+00



77+50



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

CROSS SECTIONS

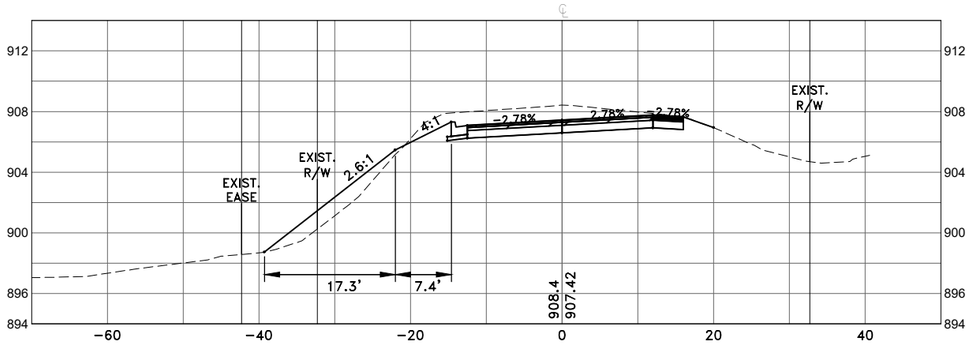
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X33 OF X36 SHEETS

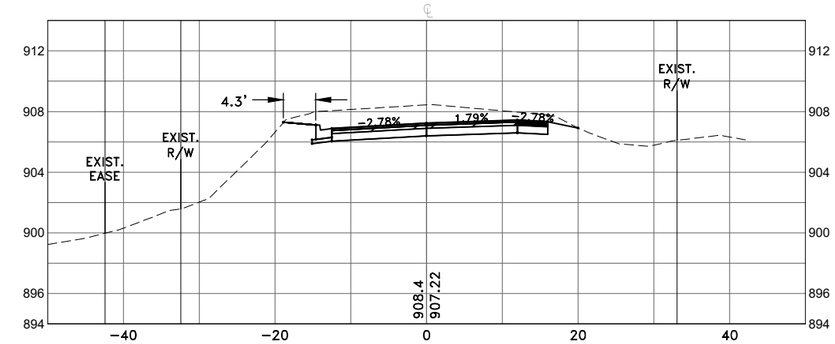
LW378

Dec 04, 2025 – 11:24pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

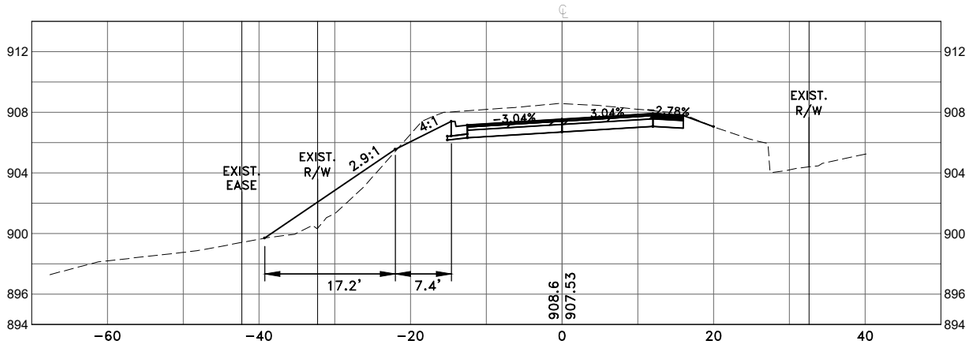
78+30.58



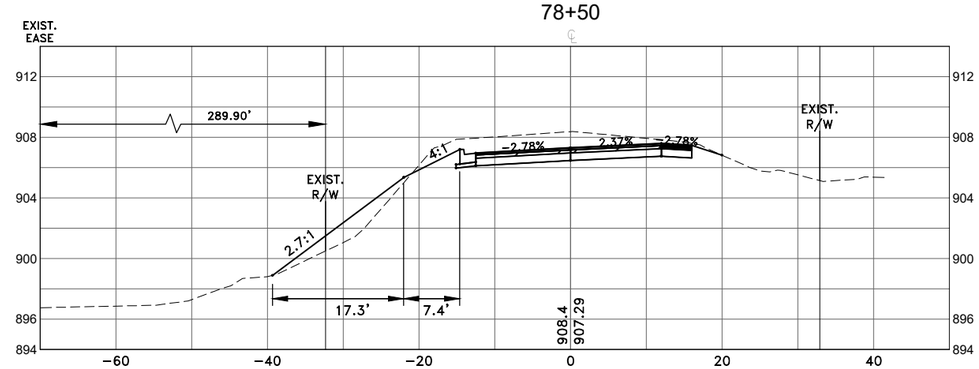
78+78



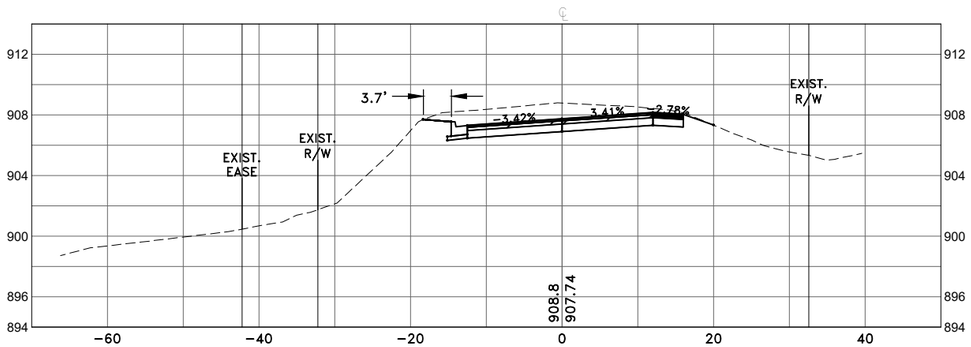
78+18



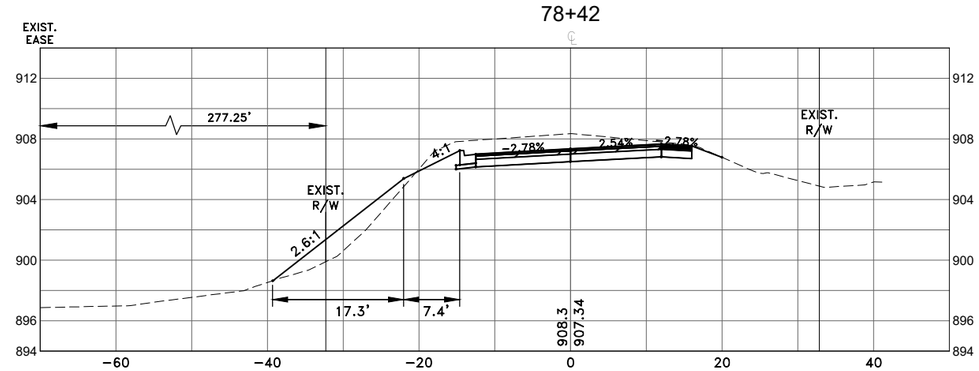
78+50



78+00



78+42



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

CROSS SECTIONS

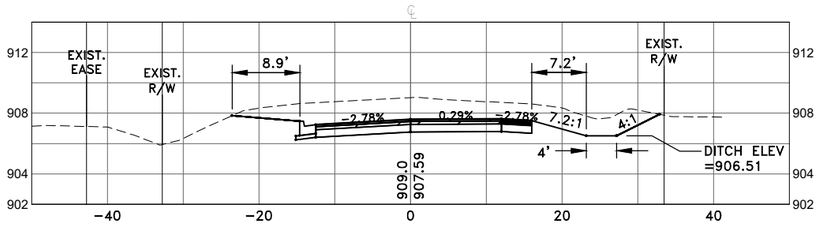
MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X34 OF X36 SHEETS

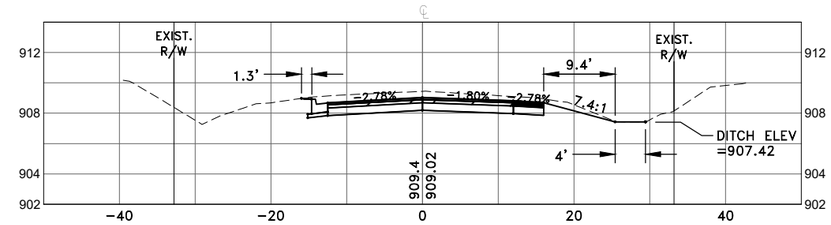
LW378

Dec 04, 2025 – 1:24pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg

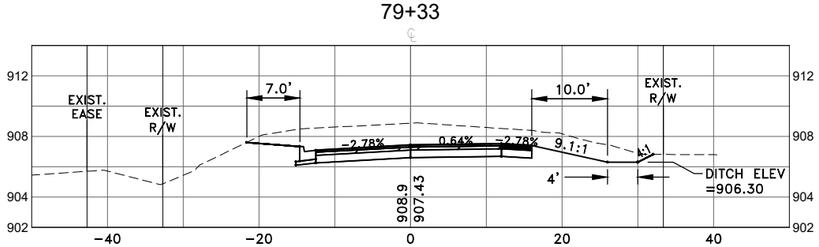
79+50



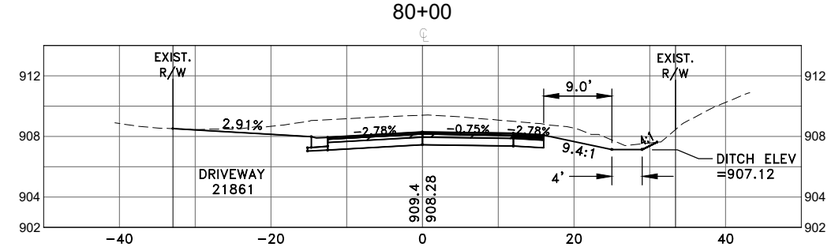
80+50



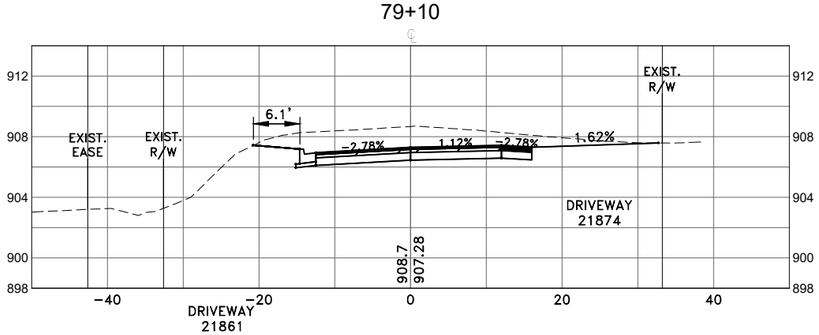
79+33



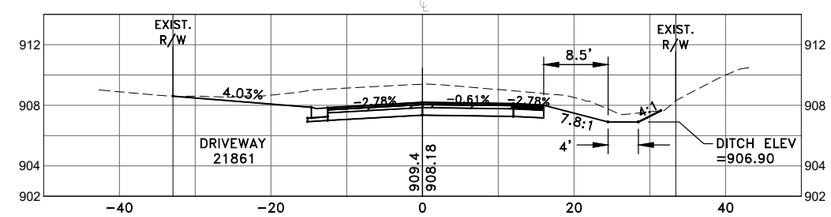
80+00



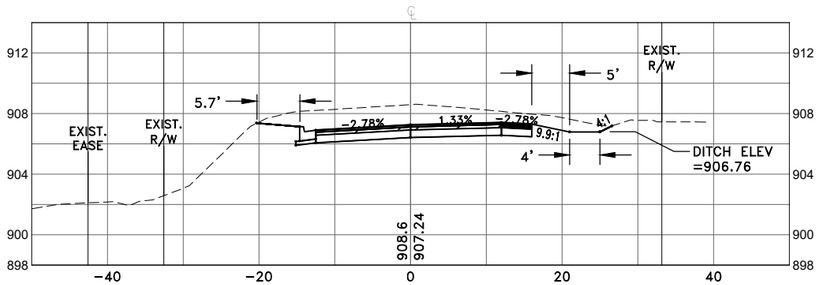
79+10



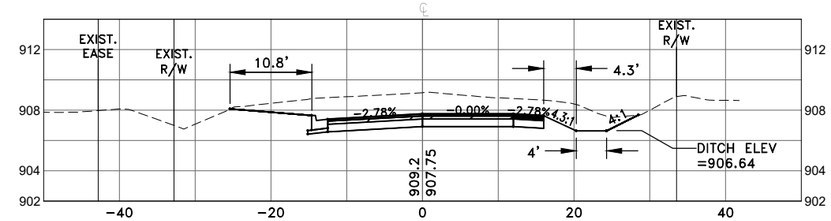
79+93



79+00



79+63.91



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE RECONSTRUCTION PROJECT

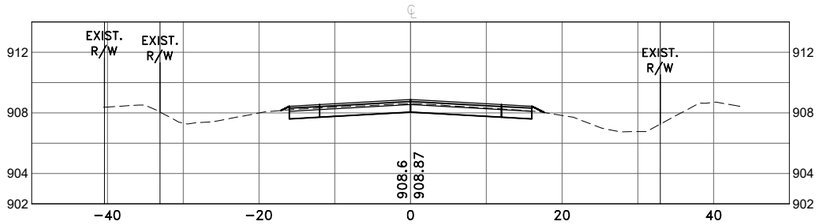
CROSS SECTIONS

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

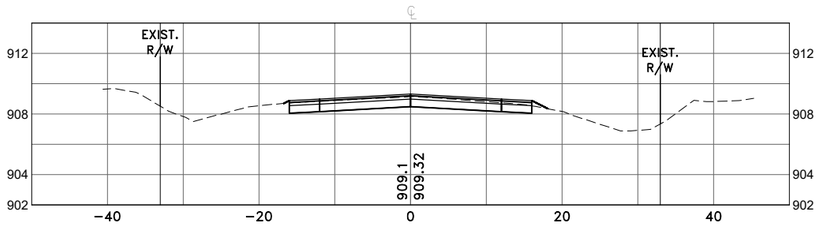
SHEET X35 OF X36 SHEETS

LW378

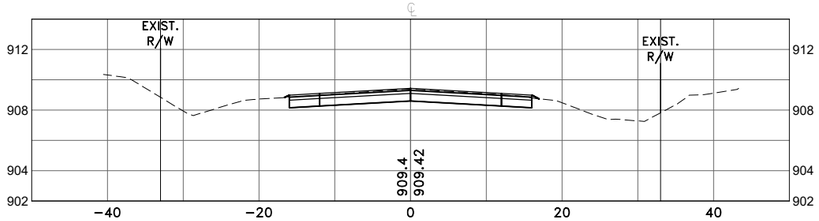
82+00



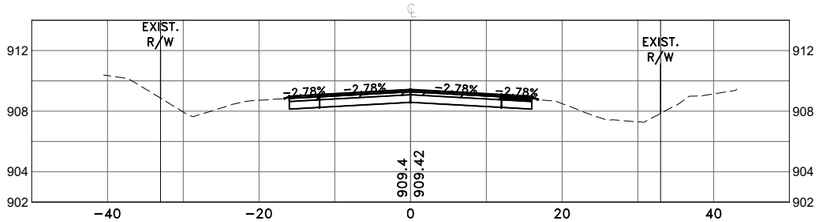
81+50



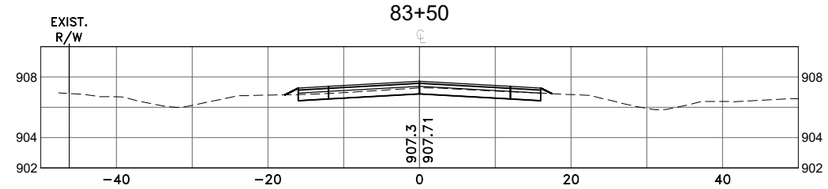
81+00



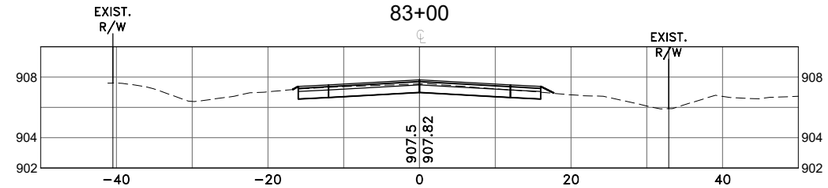
80+97.24



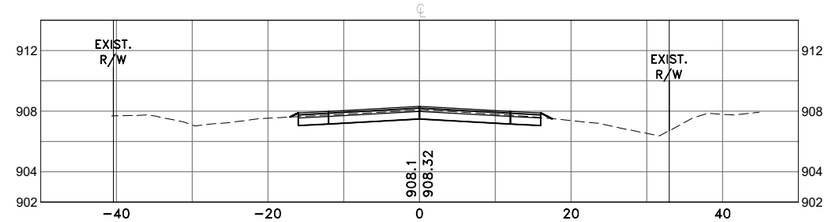
83+50



83+00



82+50



S.A.P. 002-592-001

DATE	REVISION

DESIGNED BY: TAE
DRAWN BY: TAE
CHECKED BY: CJJ

Hakanson Anderson
Civil Engineers and Land Surveyors
3601 Thurston Ave., Anoka, Minnesota 55303
763-427-5860 FAX 763-427-0520
www.hakanson-anderson.com

MARTIN LAKE ROAD AND 227TH AVENUE
RECONSTRUCTION PROJECT

CROSS SECTIONS

MARTIN LAKE ROAD
LINWOOD TOWNSHIP, MINNESOTA

SHEET X36 OF X36 SHEETS

LW378

Dec 04, 2025 – 1:24pm
K:\MUNICIPAL\LW378\ENGINEERING\BASE DWG\LW378_BASE.dwg